

Borrego Springs Watermaster  
Regular Board Meeting  
May 20, 2026 @ 3:00 p.m.

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**Instructions for Public Comment**

The public may address the Board on items within the Watermaster’s Jurisdiction that are included or not included on the meeting agenda.

To address the Board on items that are not included on the meeting agenda, the public may request to speak during **Agenda Item II – Public Correspondence**. Comments may be limited to three minutes per speaker.

To address the Board on items that are included on the meeting agenda, the Board Chairperson will call for public comments immediately following the agenda item’s staff report presentation and prior to Board discussion.

**AGENDA**

*Items with supporting documents in the Board Package are denoted with a page number.*

**I. OPENING PROCEDURES (Chair)**

- A. Call to Order and Begin Meeting Recording
- B. Pledge of Allegiance
- C. Roll Call
- D. Approval of Agenda

**II. PUBLIC CORRESPONDENCE/COMMENT (Chair)**

*The Board may direct staff to include topics brought forward during Public Correspondence and Comment on a future meeting agenda. No action or discussion is otherwise taken by the Board. Written correspondence includes items received between April 10, 2026 and May 13, 2026.*

- A. Public Correspondence Received
  - i. May 6, 2026 Letter from The Nature Conservancy .....Page 3
  - ii. May 13, 2026 Letter from David Garmon .....Page 8
- B. Public Comment

III. **CONSENT CALENDAR (Chair)**

Action Item: All items may be approved with a single motion

- A. Approval of Minutes: Regular Meeting – April 15, 2026 ..... Page 11
- B. Approval of April 2026 Financial Report .....Page 16

IV. **ITEMS FOR BOARD CONSIDERATION AND POSSIBLE ACTION**

- A. Technical Consultant and TAC/EWG Recommendations on Next Steps related to UCI GDE Study Report (MALONE) .....Page 20
- B. TAC Recommendations on Technical Scope-of-Work to Redetermine Sustainable Yield by 2030 (MALONE) .....Page 104
- C. Draft WY 2027 Budget (ADAMS).....Page 110
- D. Technical Review of Transfer Applications ..... **PAGE 1 PACKAGE ADDENDUM (publish 5/18)**
- E. Consideration of Approval of June 2026 TAC Meeting Agenda (MALONE) .....Page 121
- F. Review of Pumping-to-Date in WY 2026 (SALBERG) .....Page 122

V. **REPORTS**

- A. Legal Counsel Report – *verbal*
- B. Technical Consultant Report.....Page 129
  - TAC Membership Update
  - Spring 2026 Semi-Annual Monitoring Report-Out
  - UCI GDE Study Report Budget Status
- C. Executive Director Reports .....Page 131
  - Public Information Session on the 5-Year GMP Assessment and Update
  - Annual Meter Verifications
  - First and Second Installment of Pumping Assessments for WY 2026
  - BPA and Party Updates
- D. Chairperson’s Report – *verbal*

VI. **APPROVAL OF AGENDA FOR JUNE 3, 2026 SPECIAL BOARD MEETING.....Page 133**

VII. **BOARD MEMBER COMMENTS**

VIII. **NEXT MEETINGS OF THE BORREGO SPRINGS WATERMASTER**

- A. Special Board Meeting – Wednesday, June 3, 2026 at 10:00 am
- B. Special Board Meeting – Wednesday, June 24, 2026 at 9:00 am

IX. **ADJOURNMENT**

May 6, 2026

Borrego Springs Watermaster  
Board of Directors  
c/o West Yost Associates  
25 Edelman Suite 120  
Irvine, CA 92618

Submitted electronically to: [BorregoSpringsWM@westyost.com](mailto:BorregoSpringsWM@westyost.com)

**Re: Public Comment for May 20, 2026 Board Meeting – UCI GDE Study Report**

Dear Members of the Watermaster Board of Directors:

We thank the Board of Directors of the Borrego Springs Watermaster (Watermaster) for its efforts to develop science-informed management of groundwater dependent ecosystems (GDEs) in the Borrego Springs Groundwater Subbasin. This comment letter addresses the ongoing review of the UCI GDE Study Report, the recent Technical Consultant Recommendation Report developed by West Yost, and the upcoming Board discussion as to next steps for GDE management.

The Nature Conservancy has a long history and extensive experience developing guidance and technical resources to assist local groundwater managers and stakeholders as they implement SGMA comprehensively to sustainably manage groundwater resources for all beneficial users. To support the Watermaster in these efforts, we want to highlight - 1) the regulatory requirements under SGMA with respect to environmental beneficial users, 2) how the scientific research study completed by UCI advances understanding of GDEs in the Borrego Springs Subbasin, and 3) potential pathways towards multi-benefit solutions to achieve sustainable groundwater conditions.

Adaptive management is a key component of SGMA and provides an opportunity to iteratively adjust groundwater management strategies as our understanding of these groundwater systems is refined. In our view, the UCI GDE Study Report is a comprehensive, detailed study of ecosystem/groundwater dynamics that represents a significant advancement in the scientific understanding of local groundwater dependent ecosystems. This new information presents an opportunity to increase progress towards sustainable groundwater management in the Borrego Springs Subbasin, and we encourage the Watermaster to consider how to best adapt its management and monitoring framework to recognize, incorporate, and protect the subbasin's environmental beneficial users of groundwater.

### **Regulatory Requirements under SGMA**

The Watermaster currently manages the Borrego Springs Subbasin pursuant to the Groundwater Management Plan (GMP) adopted on April 8, 2021, as part of the Stipulated Judgement in the subbasin's comprehensive groundwater adjudication. The GMP, submitted as an Alternative Plan to the Department of Water Resources (DWR) under Water Code § 10737.4(a)(1) as management pursuant to an adjudication, is required to satisfy the objectives of SGMA.

SGMA defines sustainable groundwater management as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results" [Water Code § 10721(v)]. Undesirable results are further defined in the context of SGMA as one or more of chronic lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence, or depletions of interconnected surface water occurring within a groundwater subbasin [Water Code § 10721(x)].

The development and implementation of the GMP must consider all beneficial uses and users in the Borrego Springs Subbasin, including environmental users of groundwater [Water Code § 10723.2(e)]. SGMA defines groundwater dependent ecosystems (GDEs) as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" [23 CCR § 351(m)]. **Importantly, GDEs may rely on groundwater to meet some of their water supply needs, and an ecosystem's use of surface water, precipitation, or soil moisture from the unsaturated zone during certain times of year or to meet a portion of its water needs does not preclude it from being a GDE.**

Groundwater plans are required to identify GDEs within the subbasin [23 CCR § 354.16(g)], include a description of impacts to GDEs [Water Code § 10727.4(l)], and consider GDEs as beneficial users of groundwater when defining what conditions would constitute a subbasin undesirable result [23 CCR § 354.26(b)(3)]. Minimum threshold descriptions must state how the threshold, if reached, may affect the interests of all subbasin beneficial users, including environmental users such as GDEs [23 CCR § 354.28(b)(5)].

### **Scientific Review – Comments on the UCI GDE Study Report and the West Yost Technical Consultant Recommendation Report**

In our review, we found the UCI GDE Study Report to be thorough, comprehensive, and well-structured in its development of a GDE identification, assessment and monitoring program. We believe the report clearly constitutes the **best available science on GDEs** that is **readily available** for groundwater management decision-making. We strongly agree with the finding from the Technical Consultant Recommendation Report that "**the UCI GDE Study Report is a significant**

**advancement in the scientific understanding of the Borrego Springs [BS] Mesquite Bosque.**” While additional monitoring and scientific studies may further inform decision-making and data refinement over time, the existence of ongoing or potential future studies should not preclude near-term management actions needed to support sustainability objectives. Delaying action risks slowing progress and may result in impacts to the Mesquite Bosque that could be difficult or impossible to reverse. To our knowledge, no other scientific study or articulation of “best available science” has been presented that contradicts the conclusions of the UCI Study Report. As such, we respectfully encourage that the findings of the UCI Study be appropriately incorporated into near-term groundwater management decisions.

We would like to clarify several important points related to statewide datasets and TNC GDE guidance documents with respect to their interpretation and use for groundwater management in the Borrego Springs Subbasin.

First, the January 2020 Groundwater Management Plan (GMP) for the Borrego Springs Groundwater Subbasin states that “DWR removed a previously large area [of mapped GDEs] around and north of the Borrego Sink from the NCCAG dataset because it was determined that the habitat no longer met the criteria for inclusion in the database.” (Borrego Springs GMP pg. 767). Based on TNC’s involvement in the development of the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset, we would like to help clarify that **this statement is inaccurate**. At the time the NCCAG dataset was created, the area referenced in the GMP was not included in the input datasets that were available for use. As a result, this area was not mapped in the NCCAG dataset not because it was evaluated and subsequently removed based on inclusion criteria, but because sufficient local data were not available for incorporation at that time. Accordingly, the use of the NCCAG dataset in the 2020 Borrego Springs GMP to represent the “current extent” of honey mesquite GDEs in the Borrego Springs Subbasin underestimates their extent. Other locally available mapping efforts, including those conducted by the U.S. Geological Survey, the County of San Diego, and more recent analyses documented in the UCI GDE Report, indicate a substantially larger extent of honey mesquite GDEs within the subbasin. We offer this clarification to support accurate interpretation of the NCCAG dataset and to ensure that GDEs are appropriately considered within ongoing and future groundwater management decisions.

Guidance from TNC on identifying GDEs recommends that groundwater managers “compile locally available vegetation maps, such as those found in habitat conservation plans, environmental documents, vegetative surveys conducted by local research institutions or NGOs, and plans and monitoring reports on

endangered species" to verify, add, or eliminate polygons in the statewide NCCAG dataset (TNC GDE Guidance 2018). Going forward, we recommend that local datasets are used to aid in GDE identification efforts, and we emphasize that an absence of mapped phreatophytic vegetation in the statewide NCCAG dataset does not equate to an absence of GDE existence.

Next, the 2020 Borrego Springs GMP also states that "The honey mesquite bosque... north of the Borrego Sink, is considered a pre-2015 impact. Groundwater levels have long since declined below a level which can support the estimated rooting depth of the habitat, which is estimated to be approximately 20 feet" (Borrego Springs GMP pg. 118). DWR's Assessment of the Borrego Springs Subbasin Alternative Plan quotes this section as the GMP's rationale for the lack of GDE existence in the Borrego Sink area. At the time, this was the analysis and conclusion based on the available information. However, **the UCI GDE Study Report and the Technical Consultant Recommendation Report both agree** that cited references in the UCI GDE Study report support the conclusion that "Mesquite trees in the BS Mesquite Bosque have deep tap roots that could reach the capillary fringe above the regional aquifer system". **This was determined by the Technical Consultant Recommendation report to be the best available science on Mesquite Tree Rooting Depth and Connection to Groundwater.** This determination provides updated science-based information for GDE identification and management – Mesquite trees have deep roots to tap groundwater (39 – 175 ft-bgs) which exceed current (post-2015) estimates of depth to groundwater underlying the BS Mesquite Bosque (22 – 134 ft-bgs). TNC has updated its plant rooting depth database to reflect the current references representing the best available science on Mesquite rooting depth.

The UCI GDE Report's advancement in our understanding of Mesquite tree rooting depths and ability to access groundwater fundamentally alters the basis for the 2020 Borrego Springs GMP's omission of GDEs in the Borrego Sink area. These findings indicate that the BS Mesquite Bosque is a groundwater dependent ecosystem and beneficial user of groundwater under SGMA definitions, and as such, warrants consideration and protection in groundwater management decisions for all beneficial users. This new information on the BS Mesquite Bosque should be included in the upcoming periodic review of the Borrego Springs GMP so that DWR can evaluate GMP progress with an updated understanding of GDE existence and subsequent management requirements.

#### **A Path Forward - Recommended Next Steps**

We recognize that the Mesquite Bosque habitat in the vicinity of the Borrego Sink has experienced significant degradation since the early 1900s, in both extent and health, as a result of historic observed declining groundwater levels due to

extensive groundwater pumping. Some of these impacts to the habitat occurred pre-2015 and predate SGMA regulatory requirements.

Impacts to GDEs from changing groundwater conditions can range in severity from short-term adverse impacts, such as water stress, to severe adverse impacts including irreversible ecosystem collapse. **The presence of impacts prior to 2015 does not negate the need to evaluate and address impacts occurring after 2015 or GMP adoption**, and highlights the importance of ongoing habitat evaluation and implementation of management measures and protections to help avoid future impacts. The UCI GDE Study report provides evidence demonstrating the existence of functioning GDEs that currently rely on groundwater and provide critical ecosystem services to rare plant and animal species. SGMA does not require the restoration of the BS Mesquite Bosque habitat back to its full original extent or condition, but it does require the prevention of additional impacts through sustainable groundwater management that considers all beneficial users. We encourage the Watermaster to explore targeted project and management actions that can preserve the existing GDEs and prevent additional impacts.

The newly available information describing the Mesquite Bosque as a GDE presents an opportunity for the Watermaster to adaptively improve groundwater management in the Borrego Springs Subbasin for the protection and benefit of all beneficial users. To support the Watermaster in identifying actionable next steps, we recommend the following:

- 1) Acknowledge and designate the BS Mesquite Bosque as a groundwater dependent ecosystem and a beneficial user of groundwater.
- 2) Address Recommended Corrective Action 3 from DWR's Borrego Springs Determination - "Discuss the impacts to beneficial uses and users... at the established minimum thresholds... Clarify the expected impacts to beneficial uses and users if all representative monitoring points in the Subbasin are at their respective minimum thresholds". This will enable the Watermaster to evaluate whether additional sustainable management criteria are necessary to prevent undesirable results to environmental beneficial users.
- 3) Begin conservation and restoration prioritization and planning analyses for the BS Mesquite Bosque, following the UCI GDE Study Management Recommendations #2 & 4. Restoration opportunities exist that can provide multi-benefit solutions and increase groundwater sustainability across the subbasin for all groundwater users.

Thank you for your time.  
Best Regards,



Bridget Gibbons  
Groundwater Project Director  
**The Nature Conservancy**



Nicholas Murphy  
Senior Groundwater Scientist  
**The Nature Conservancy**



**To:** Andy Malone, Samantha Adams, Lauren Salberg, West Yost  
Borrego Watermaster Directors  
Technical Advisory Committee Members  
Environmental Working Group Members

**Re:** Recap and Assessment of WM's Evaluative Process for UCI GDE Report

**Date:** May 20, 2026

The essential question before this Board is no longer scientific. It is institutional.

The scientific question — whether there is a groundwater dependent ecosystem (“GDE”) in the Borrego Subbasin — has already been asked and answered through an unusually rigorous public process.

The California Department of Water Resources (“DWR”) and the Borrego Water District (“BWD”) authorized the expenditure of \$1 million in Proposition 68 public funds to answer that question. The researchers selected for the task were among the nation’s leading authorities on groundwater dependent ecosystems. Importantly, these are not unfamiliar or untested researchers. The Watermaster itself retained UCI researchers to perform work on one of its Prop 68 funded projects.

The resulting UCI GDE Study, published in May 2025, developed four independent lines of scientific inquiry. All four reached the same conclusion: the mesquite bosque in the Borrego Subbasin is a groundwater dependent ecosystem. That conclusion has not stood alone.

Six of the ten unique, prequalified, and duly appointed members of the TAC and EWG have concluded that the UCI report constitutes the best available science regarding the mesquite bosque and affirm that the bosque is a GDE. Most recently, The Nature Conservancy — DWR’s principal scientific collaborator on groundwater dependent ecosystems throughout California — submitted a letter affirming that the UCI study represents the best available science concerning Borrego’s mesquite bosque.

At some point, this Board must ask itself a simple question: What additional evidence is realistically being sought?

For a year now, the Watermaster has remained trapped in an increasingly elaborate procedural cycle that appears designed not to evaluate the science, but to postpone accepting its implications.

Initially, the Watermaster delayed consideration of the UCI findings until Water Year 2026. It then spent months developing an RFP for an external scientific reviewer. When the first RFP proved inadequate, the process restarted with a revised RFP and a second circulation to potential reviewers. Thereafter, the Watermaster concluded that external review was too expensive and instead selected its own Technical Consultant to conduct what was described as an “independent” review.

What followed was a prolonged and highly intricate consultation process involving repeated drafts, comments, revisions, and renewed reviews among TAC and EWG members. After a full year of procedural layering, the process has produced no additional scientific clarity.

The distinction that has been lost throughout this process is the distinction between best available science and best conceivable science.

SGMA does not require perfect certainty. It requires responsible action based on the best available scientific information. If the standard becomes absolute unanimity, infinite process, or the elimination of all conceivable disagreement, then no groundwater agency in California will ever be able to act.

I would like to address further the consultation process designed by the Technical Consultant.

There are fundamentally two categories of TAC and EWG participants. The first are paid professional consultants. The second are unpaid volunteers serving the public interest while balancing demanding professional obligations of their own. Many of these unpaid members struggled to comply with an uncertain and shifting review schedule, despite repeated assurances that adequate time would be provided for their conclusions to be incorporated into the final report.

Yet at its last meeting, Watermaster determined — after the fact — that comments submitted beyond a newly imposed deadline would not be included in the Technical Consultant’s final report because the Watermaster and Technical Consultant are “too busy with too many other items” to include these comments now deemed to be late.

That explanation is difficult to reconcile with the facts.

Six of your ten prequalified and duly appointed advisors expressed their conclusions regarding best available science and the existence of a GDE in exactly 108 words. After a year consumed by procedural maneuvering, it strains credibility to suggest that Watermaster lacks the institutional capacity to acknowledge and include 108 words representing the majority view of its own advisors.

Indeed, one would think the Board would want to know that information simply as a matter of intellectual honesty.

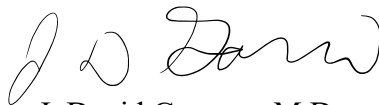
In the end, the facts remain unchanged.

DWR and BWD funded a major scientific investigation. The work was performed by nationally recognized experts. The conclusions were supported by four independent lines of evidence. A majority of Watermaster's own appointed advisors affirm the report represents the best available science. And now DWR's principal statewide collaborator on GDEs, The Nature Conservancy, has independently affirmed those same conclusions.

No additional procedural complexity will change the facts on the ground.

There is a groundwater dependent ecosystem in the center of this valley. And the sooner Watermaster recognizes that reality, the sooner this basin can move toward compliance with the requirements of SGMA as it pertains to environmental users of water.

Sincerely yours,

A handwritten signature in black ink, appearing to read "J. David Garmon". The signature is fluid and cursive, with the first letters of each word being capitalized and prominent.

J. David Garmon, M.D.  
President, TCDC

JDG:ms

**MINUTES**  
**BORREGO SPRINGS WATERMASTER BOARD MEETING**  
**Conducted Virtually via GoToMeeting**  
**Wednesday, April 15, 2026, 3:00 p.m.**

The following individuals were present at the meeting:

<b>Directors Present</b>	Chair Tyler Bilyk – Agricultural Sector
	Vice Chair Jim Bennett – County of San Diego
	Treasurer Shannon Smith – Recreational Sector
	Secretary Gina Moran – Borrego Water District (BWD)
	Mark Jorgensen – Community Representative
<b>Watermaster Staff Present</b>	James M. Markman, Legal Counsel
	Samantha Adams, Executive Director, West Yost
	Andrew Malone, Lead Technical Consultant, West Yost
	Lauren Salberg, Staff Geologist, West Yost
<b>Others Present</b>	David Garmon
	Diane Johnson, BWD Board Member
	Geoff Poole, BWD General Manager
	George Peraza, DWR
	Jessica Clabaugh, BWD Finance Office
	Jim Dax, Board Alternate - Community Representative
	Kathy Dice, BWD Board Member
	Laurel Brigham, UCI
	Lee Alan Scharf
	Marisa Earll, Intera
	Michael Sweesy
	Nikki Fiore, UCI
	Peter
	Rich Pinel, Board Alternate - Recreational Sector
	Rodney Bruce, Rams Hill
	Steph DiPalma
	Steve Anderson, BB&K, representing BWD
	Tammy Baker, BWD Board Member and Board Alternate - BWD
	Travis Huxman, UCI
	Trey Driscoll, Intera, TAC Member representing BWD
	Yara Pasner, Intera

Please visit the [Watermaster's Website](#)<sup>1</sup> to access the Agenda Packet, recording, and presentation for the April 15, 2026 Meeting. The following meeting minutes identify the start time each agenda item discussion (hours, minutes, seconds: 00:00:00), which can be used as a reference to find and listen to the details of each topic discussed in the [meeting recording](#) for specifics and context.

<sup>1</sup> <https://borregospringswatermaster.com/past-watermaster-meetings/>

## I. Opening Procedures

- A. Chair Bilyk called the meeting to order at 3:00 PM at which time the meeting recording was started. 00:00:00
- B. Chair Bilyk led the meeting participants in the Pledge of Allegiance. 00:00:14
- C. Samantha Adams, Executive Director (ED) called roll and confirmed that a quorum of all members of the Board were present. 00:00:42
- D. Approval of Agenda. The Board discussed the agenda topics for the April 15, 2026 Board meeting. 00:01:17

**Motion:** Motioned by Director Smith, seconded by Director Moran to approve the Agenda. 00:01:48

*Motion carried unanimously by voice vote (5-0-0).*

## II. Public Correspondence

- A. *Correspondence Received.* Chair Bilyk referenced the correspondence included in the agenda package. 00:02:12
- B. *Public Comments.* Chair Bilyk called for public comments. Public comment was made by: 00:02:40
- David Garmon on the topic of Watermaster's review of the UCI Groundwater Dependent Ecosystem (GDE) Study.
  - Laurel Brigham on the topic of Watermaster's review of the UCI Groundwater Dependent Ecosystem (GDE) Study.

## III. Consent Calendar

Chair Bilyk called for discussion on the Consent Calendar items included in the April 15, 2026 agenda package. 00:08:17

- There were no public comments.
- Board discussion ensued prior to determining action.

**Motion:** Motioned by Director Jorgensen, seconded by Director Moran, to approve the Consent Calendar. 00:10:39

*Motion carried unanimously by roll-call vote (5-0-0).*

## IV. Items for Board Consideration and Possible Action

- A. *Addressing Board Comments on the 5-Year GMP Assessment Report and Update.* 00:11:06  
ED Adams gave a presentation describing the memo and summary tables included in the agenda package.
- Public comment was made by David Garmon.
  - Board discussion ensued, including Legal Counsel input, to determine action.

**Motion:** Motioned by Director Smith, seconded by Director Moran, to: 00:35:31

1. Prepare the draft 5-Year Assessment of the Groundwater Management Plan (GMP) and 2026 GMP Update for public release incorporating approved changes based on Board feedback,

2. Provide notice to stakeholders and Parties via email and website of the Watermaster's intent to update the GMP and submit the Assessment Report to the DWR by June 25, 2026 and publish the draft documents for a 30-day comment period, and
3. Direct Legal Counsel to initiate the process to amend the Judgment to update Exhibit 1 to replace the 2020 GMP with the 2026 GMP Update Exhibit 1 of the Judgment.

*Motion carried unanimously by roll-call vote (5-0-0).*

- B. *WY 2026 2<sup>nd</sup> Quarter Budget Status Review.* ED Adams provided a summary of the memo included in the agenda package and described the proposed amendment to the WY 2026 budget. 00:36:29

- There were no public comments.
- Board discussion ensued to determine action.

**Motion:** Motioned by Chair Bilyk, seconded by Director Moran, to amend the WY 2026 budget to "carry-forward \$14,466 from WY 2025 and amend the statement of work with West Yost to reflect the carry-forward. 01:02:18

*Motion carried unanimously by roll-call vote (5-0-0).*

- C. *Scoping Discussion for WY 2027 Budget.* ED Adams provided a summary of the memo included in the agenda package and led a guided discussion with the Board on specific assumptions to use when preparing the draft WY 2027 budget. 01:02:59

- Public comment was made by David Garmon, Rich Pine, and Jim Dax.
- Board discussion ensued. Following the discussion, the Board directed staff to prepare the draft budget for WY 2027 in consideration of the Board's input (shown on slides 23 to 28 of the [Board presentation](#)).

- D. *Proposed Process and Schedule for Revised BPA Transfer Approval Approach.* ED Adams provided a summary of the memo included in the agenda package. 02:15:20

- Public comments were made by Tammy Baker and Steve Anderson.
- Board discussion ensued, and the Board directed staff to bring this topic to the TAC at its May 2026 TAC meeting. Specifically, the Board requested that the TAC advise on how to assess if BPA transfers may cause or exacerbate Undesirable Results, including what available data can be used in the evaluation (*i.e.*, pumping records or BVHM results).

- E. *Review of Judgment Requirements on Approval of New De Minimis Wells.* ED Adams provided a summary of the memo included in the agenda package. 03:01:19

- Public comments were made by Steve Anderson, David Garmon, and Diane Johnson.
- Board discussion ensued, including Legal Counsel input, to determine action.

**Motion:** Motioned by Director Jorgensen, seconded by Director Moran, to strike the term “threaten to” from the Judgment and submit a Judgment amendment to the Court. 03:27:07

*Motion failed to pass by roll-call vote (2-3-0). Directors Moran and Jorgensen voted yes; Chair Bilyk, Vice Chair Bennett, and Director Smith voted no.*

F. *Review of New Well Application Cost Recovery.* ED Adams provided a summary of the memo included in the agenda package. 03:28:27

- There were no public comments.
- Board discussion ensued. Following the discussion, the Board directed Staff to prepare a revised Resolution (later in WY 2026) to recover costs on well applications inclusive of the Board’s input.

#### V. Reports.

A. *Legal Counsel Report.* Mr. Markman had no topics to report on. 03:36:47

- No Board discussion.

B. *Technical Consultant Report.* Mr. Malone reported on the items listed in the agenda package memo (see slides 45 through 50 of the [Board presentation slides](#)). 03:36:57

- Board discussion ensued, and the Board directed Staff that comments submitted by the TAC or EWG after the established deadline should not be incorporated into the draft TAC/EWG Recommendation Report due to potential impacts to schedule and budget.

C. *Executive Director Report.* ED Adams reported on the items listed in the agenda package memo, in addition to a new Party with an approved intervention to the Judgment (see slides 51 through 52 of the [Board presentation slides](#)). 03:51:44

- Board discussion ensued, no direction was provided to Staff.

D. *Chairperson’s Report.* Chair Bilyk had no report. 03:56:05

#### VI. Approval of Agenda Items for May 20, 2026 Board Meeting

ED Adams reviewed the list of potential agenda items for the next several Board meetings listed in the agenda package. 03:56:15

- Board discussion ensued to determine action.

**Motion:** Motioned by Director Moran seconded by Vice Chair Bennett, to approve the following agenda for the May 20, 2026 Regular Board Meeting: 04:02:32

- GMP Assessment Report and Workshop: Revised 5-Yr Assessment Report and GMP Update
- Report out from May TAC meeting
- TC and TAC/EWG Recommendations on Next Steps related to the GDE Study Report
- Review of Draft WY 2027 Budget

- Review of Pumping-to-Date in WY 2026

*Motion carried unanimously by roll-call vote (5-0-0).*

**VII. CLOSED SESSION**

The Board of Directors entered a Closed Session at 7:03 PM. 04:03:26

The public meeting was reconvened at 8:34 PM. There were no reportable actions from the Closed Session. 04:12:31

**VIII. Board Member Comments**

Chair Bilyk called for comments. Director Smith thanked the group. 04:12:43

**IX. Next Meetings of the Borrego Springs Watermaster**

Chair Bilyk reviewed the meetings listed in the agenda package. 04:12:59

**X. Adjournment**

Chair Bilyk adjourned the meeting at 8:35 PM. 04:13:22

\_\_\_\_\_  
Recorded by:  
Lauren Salberg, Staff Geologist, West Yost

\_\_\_\_\_  
Attest:  
Gina Moran, Secretary of the Board

2:57 PM

**Borrego Springs Watermaster  
Profit & Loss for Fiscal Year 2025-2026  
October 2025 through April 2026**

05/12/26

Accrual Basis

	Oct 25	Nov 25	Dec 25	Jan 26	Feb 26	Mar 26	Apr 26	TOTAL
<b>Ordinary Income/Expense</b>								
<b>Income</b>								
DWR Grant Reimbursement <sup>t</sup>	0.00	0.00	0.00	263,282.30	0.00	0.00	0.00	263,282.30
Pumping Assessment	0.00	175,024.32	0.00	0.00	0.00	0.00	0.00	175,024.32
Services Rendered	0.00	0.00	0.00	0.00	0.00	0.00	326.00	326.00
WY 2025 - Expected Grant Reimb <sup>v</sup>	0.00	0.00	0.00	(266,268.25)	0.00	0.00	0.00	(266,268.25)
<b>Total Income</b>	0.00	175,024.32	0.00	(2,985.95)	0.00	0.00	326.00	172,364.37
<b>Expense</b>								
Audit	0.00	161.00	0.00	6,489.00	0.00	1,662.00	225.00	8,537.00
Bank Service Charges	25.00	0.00	0.00	25.00	26.00	0.00	0.00	76.00
Consulting Services	78,630.25	69,187.07	40,445.00	61,329.45	59,958.10	25,460.05	85,185.76	420,195.68
Consulting Services- Meter Read	215.00	322.50	161.25	161.25	170.25	276.25	110.50	1,417.00
Insurance	3,946.02	3,946.02	3,946.02	3,946.02	3,946.02	3,946.02	3,946.02	27,622.14
Interest Expense	1,044.69	0.00	0.00	0.00	0.00	0.00	0.00	1,044.69
Legal	5,000.00	4,855.00	3,445.00	3,500.00	5,745.00	11,305.14	13,641.10	47,491.24
Meter Read Expenses	0.00	0.00	0.00	0.00	0.00	0.00	3,166.35	3,166.35
<b>Total Expense</b>	88,860.96	78,471.59	47,997.27	75,450.72	69,845.37	42,649.46	106,274.73	509,550.10
<b>Net Ordinary Income</b>	(88,860.96)	96,552.73	(47,997.27)	(78,436.67)	(69,845.37)	(42,649.46)	(105,948.73)	(337,185.73)
<b>Net Income</b>	<b>(88,860.96)</b>	<b>96,552.73</b>	<b>(47,997.27)</b>	<b>(78,436.67)</b>	<b>(69,845.37)</b>	<b>(42,649.46)</b>	<b>(105,948.73)</b>	<b>(337,185.73)</b>

<sup>t</sup> Reflects actual reimbursement received from DWR.

<sup>v</sup> Reflects reversal of estimated reimbursement amounts.

2:53 PM

**Borrego Springs Watermaster**  
**Balance Sheet for Fiscal Year 2025-2026**  
As of April 30, 2026

05/12/26

Accrual Basis

	Apr 30, 26
<b>ASSETS</b>	
<b>Current Assets</b>	
Checking/Savings	
US Bank	806,882.12
<b>Total Checking/Savings</b>	806,882.12
Accounts Receivable	
Accounts Receivable	3,972.05
<b>Total Accounts Receivable</b>	3,972.05
<b>Other Current Assets</b>	
Prepaid Expenses	32,580.28
<b>Total Other Current Assets</b>	32,580.28
<b>Total Current Assets</b>	843,434.45
<b>TOTAL ASSETS</b>	<b>843,434.45</b>
<b>LIABILITIES &amp; EQUITY</b>	
<b>Liabilities</b>	
<b>Current Liabilities</b>	
Accounts Payable	
Accounts Payable	155,228.15
<b>Total Accounts Payable</b>	155,228.15
<b>Other Current Liabilities</b>	
Accrued Payables	78,328.26
Assessment Prepayment	149.94
<b>Total Other Current Liabilities</b>	78,478.20
<b>Total Current Liabilities</b>	233,706.35
<b>Total Liabilities</b>	233,706.35
<b>Equity</b>	
Retained Earnings	946,913.83
Net Income	-337,185.73
<b>Total Equity</b>	609,728.10
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<b>843,434.45</b>

**Item III.B**

2:55 PM

**Borrego Springs Watermaster  
Expense Distribution Detail**

05/12/26

April 2026

Accrual Basis

Type	Date	Num	Memo	Account	Amount
<b>Borrego Water Dist</b>					
Bill	04/29/2026	202614	March 2026 Meter Reads	Meter Read Expenses	3,166.35
Total Borrego Water Dist					3,166.35
<b>C.J. Brown &amp; Company CPAs</b>					
Bill	04/30/2026	260472	Services rendered during the month of April 2026	Audit	225.00
Total C.J. Brown & Company CPAs					225.00
<b>RWG Law</b>					
General Journal	04/01/2026	133R	RWG Estimate for March 1, 2026 to March 31, 2026	Legal	(7,500.00)
Bill	04/13/2026	257999	Services rendered through March 31, 2026	Legal	7,445.10
Bill	04/30/2026	258470	Services rendered through April 30, 2026	Legal	13,696.00
Total RWG Law					13,641.10
<b>West Yost &amp; Associates</b>					
General Journal	04/01/2026	133R	WY Estimate for March 1, 2026 to March 31, 2026	Consulting Services	(43,023.50)
General Journal	04/01/2026	133R	WY Estimate for March 1, 2026 to March 31, 2026	Consulting Services- Meter Read	(110.50)
Bill	04/30/2026	2067148	West Yost Consulting Services March 1, 2026 to March 31, 2026	Consulting Services	49,991.50
Bill	04/30/2026	2067148	West Yost Consulting Services March 1, 2026 to March 31, 2026	Consulting Services- Meter Read	110.50
General Journal	04/30/2026	135	WY Estimate for April 1, 2026 to April 30, 2026	Consulting Services	78,217.76
General Journal	04/30/2026	135	WY Estimate for April 1, 2026 to April 30, 2026	Consulting Services- Meter Read	110.50
Total West Yost & Associates					85,296.26
<b>TOTAL</b>					<b>102,328.71</b>

**Borrego Springs Watermaster**

Register: US Bank  
 From 04/01/2026 through 04/30/2026  
 Sorted by: Date, Type, Number/Ref

<b>Date</b>	<b>Number</b>	<b>Payee</b>	<b>Account</b>	<b>Memo</b>	<b>Payment</b>	<b>C</b>	<b>Deposit</b>	<b>Balance</b>
4/17/2026	2225	C.J. Brown & Company CPAs	Accounts Payable	Audit services rendered during the month of February 2026	1,662.00			874,402.47
4/17/2026	2226	RWG Law	Accounts Payable	Services rendered through January 31, 2026	6,745.00			867,657.47
4/17/2026	2227	West Yost & Associates	Accounts Payable	Services from January 1, 2026 to January 31, 2026	60,775.35	X		806,882.12

**Borrego Springs Watermaster  
Board of Directors Meeting  
May 20, 2026  
AGENDA ITEM IV.A**

**To:** Board of Directors  
**From:** Andy Malone, Technical Consultant  
**Date:** May 15, 2026  
**Subject:** Technical Consultant and TAC/EWG Recommendations on Next Steps related to UCI GDE Study Report

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<input checked="" type="checkbox"/> <b>Recommended Action</b>	<input type="checkbox"/> <b>Provide Direction to Staff</b>	<input type="checkbox"/> <b>Information and Discussion</b>
<input type="checkbox"/> <b>Fiscal Impact</b>	<input checked="" type="checkbox"/> <b>Cost Estimate</b>	

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**Recommended Actions**

1. Direct legal counsel to prepare a legal opinion on whether the Watermaster’s management and proposed monitoring programs satisfy SGMA requirements regarding consideration of potential GDEs.
2. Direct staff to include a scope-of-work and budget to prepare a “Monitoring Work Plan for the BS Mesquite Bosque” in the Watermaster’s draft scope and budget for WY 2027.

**Fiscal Impact:**

1. The estimated cost to prepare the legal memo is \$7,500. Sufficient funds are available for legal services in the approved WY 2026 budget.
2. The estimated cost to prepare a “Monitoring Work Plan for the BS Mesquite Bosque” is \$35,421. With Board direction, the scope-of-work and cost estimate will be included in the draft budget for WY 2027 for Board consideration at its June 24, 2026 meeting.

**Background and Previously Related Actions by the Board**

A study of the Mesquite Bosque surrounding the Borrego Sink (BS Mesquite Bosque) was recently conducted by the University of California at Irvine (UCI) to generate more information on the groundwater dependency of the Mesquite Bosque surrounding the Borrego Sink, which has been documented in the UCI GDE Study Report.<sup>1</sup> The main conclusions and recommendations of the UCI GDE Study Report were that the BS Mesquite Bosque is a groundwater dependent ecosystem (GDE) and should be recognized and considered as such in the Watermaster’s Groundwater Management Plan (GMP).

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<sup>1</sup> [https://borregospringswatermaster.com/wp-content/uploads/2025/07/GDE-Final-report\\_15May2025-1.pdf](https://borregospringswatermaster.com/wp-content/uploads/2025/07/GDE-Final-report_15May2025-1.pdf)

In May 2024, the Watermaster approved a policy regarding the use of “best available science” as it relates to using it to support management and policy decisions (BAS policy).<sup>2</sup> This policy permits the use of technical information not generated by the Watermaster to inform its policy decisions; however, the Watermaster shall not rely on or use such technical information to take action or make policy decisions without an independent review and recommendation from the Technical Advisory Committee (TAC), the Environmental Working Group (EWG), and/or the Watermaster Technical Consultant (TC). Pursuant to the Watermaster’s policy, and to be consistent with SGMA, technical information and data shall constitute the “best available science” only if it is:

- Relevant to the decision being made by the Watermaster,
- Available to the Watermaster within a reasonable time in advance of the Watermaster’s decision, and
- Consistent with scientific and engineering professional standards of practice.

The policy question at hand with respect to the new information provided by the UCI GDE Study Report is:

Is the BS Mesquite Bosque an environmental beneficial user of the regional aquifer system (i.e., GDE) such that the Watermaster’s management plan should be changed to (i) identify it as an environmental beneficial user of the regional aquifer system and (2) define and implement new management criteria and/or management actions?

In November 2025, the Watermaster Board approved a scope of work and budget for West Yost (Watermaster TC) to: (i) perform a technical review of UCI GDE Study Report; (ii) prepare a recommendation report for the Board (TC Recommendation Report); and (iii) facilitate the preparation of a recommendation report to the Board from the TAC and EWG (TAC/EWG Recommendation Report). The schedule to implement the scope of work aimed to present the recommendation reports to the Board in May 2026.

The final TC Recommendation Report and TAC/EWG Recommendation Report are attached to this memorandum. The main objectives of these Recommendation Reports are to:

1. Document the technical review of the UCI GDE Study Report to determine if it is “best available science” (BAS) that can be relied upon by the Watermaster to take action or make policy decisions, as stated in its policy regarding the use of BAS.
2. Provide the Board with recommendations for next steps.

For the purpose of this discussion, the use of the term “BAS” always refers to its full policy definition: *BAS that can be relied upon by the Watermaster to take action or make policy decisions.*

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<sup>2</sup> [https://borregospringswatermaster.com/wp-content/uploads/2025/02/BSWM-Policy-on-Use-of-Best-Available-Science\\_final.pdf](https://borregospringswatermaster.com/wp-content/uploads/2025/02/BSWM-Policy-on-Use-of-Best-Available-Science_final.pdf)

### **TAC/EWG Recommendation Report**

Four TAC members and two EWG members submitted comments and recommendations on the UCI Study Report and draft TC Recommendation Report by the requested deadline to have their input included in the TAC/EWG Recommendation Report. These TAC/EWG members expressed a range of perspectives on whether the UCI GDE Study Report constitutes BAS and whether the BS Mesquite Bosque should be classified as a GDE. All four TAC members recommended some form of monitoring and investigation to generate more information on the groundwater dependency of the BS Mesquite Bosque and inform future Watermaster policy and management decisions.

The TAC/EWG Recommendation Report is enclosed and includes a link to access all comments received from the TAC and EWG members.

### **Technical Consultant Recommendation Report**

The TC identified several data gaps and/or gaps in understanding in the UCI GDE Study Report that call into question UCI's ability to interpret the data and arrive at its definitive conclusions that the current BS Mesquite Bosque is a GDE and the extent and health of the BS Mesquite Bosque will experience degradation caused by the pumping Rampdown, which allows for a gradual stabilization of groundwater levels from 2020 through 2040. The most important of the identified gaps in understanding is the role of deep soil moisture within the vadose zone as a potential water source that supports the BS Mesquite Bosque. Therefore, the TC believes it remains an open and important question whether what remains of the BS Mesquite Bosque today is dependent on:

1. Soil moisture in the vadose zone, which is periodically replenished by infiltrating precipitation and stormwater runoff that accumulates in the vicinity of the Borrego Sink.
2. The deeper saturated zone of the regional aquifer system.
3. Or both of the above in different areas of the Bosque and to different degrees.

To elaborate, the TC believes the UCI GDE Study Report did not sufficiently recognize the gaps and limitations in the currently available data and did not appropriately consider/analyze the alternative sources of water that could be satisfying the current ET demands of the BS Mesquite Bosque. Therefore, the unqualified and definitive conclusions of the UCI Study Report, and the accompanying management recommendations, are not "consistent with scientific and engineering professional standards of practice;" and hence, should not be considered BAS that, by itself, should be relied upon by the Watermaster to take action to change its management plan or make policy decisions.

That said, the TC believes UCI GDE Study Report presents evidence that indicates the current BS Mesquite Bosque could be, at least in part, a GDE, particularly in areas surrounding the Borrego Sink where depth to groundwater is presumably the shallowest and where the healthiest stands of Mesquite exist. Based on this potential, the TC recommends that Watermaster consider the BS Mesquite Bosque a "potential GDE" and implement an adaptive management framework to first determine if declining groundwater levels caused by the pumping Rampdown are causing or could cause significant and unreasonable degradation of the BS Mesquite Bosque, and if shown to be

necessary, implement adaptive management actions to protect the environmental beneficial uses in the Basin.

In its recommendation report, the TC provides several recommendations for Board consideration to address the gaps in understanding to help determine: (i) if and where the BS Mesquite Bosque is a GDE; (ii) if declining groundwater levels caused by the pumping Rampdown is causing or could cause significant and unreasonable degradation of the BS Mesquite Bosque; (iii) if the Watermaster is accurately estimating groundwater evapotranspiration in the Basin water budget as a component of the Sustainable Yield; and (iv) if Watermaster's management and monitoring programs satisfy SGMA requirements regarding potential GDEs. These recommendations are summarized below:

- Prepare a "Monitoring Work Plan for the BS Mesquite Bosque" with TAC/EWG input. The objectives of the monitoring program should be to:
  - Prioritize and fill gaps in understanding identified in this recommendation report.
  - Track the extent and health of the BS Mesquite Bosque during implementation of the pumping Rampdown.
  - Track additional relevant factors that could be affecting the extent and health of the BS Mesquite Bosque. These could include changes in groundwater levels, temperature, precipitation, surface water inflows, pests, human disturbance, and others that may be identified as relevant.

The monitoring program results could improve the understanding of the groundwater dependency of the BS Mesquite Bosque (or lack thereof) and could be used to adapt the Watermaster's groundwater management actions to protect the Bosque from significant and unreasonable degradation, if the monitoring program results indicate the degradation is being caused by declining groundwater levels associated with the pumping Rampdown.

- The Borrego Valley Hydrologic Model (BVHM) simulates groundwater evapotranspiration as part of the water budget of the groundwater basin. For example, the BVHM estimated about 331 acre-feet of groundwater evapotranspiration in WY 2022. This functionality of the BVHM should be evaluated against what is currently known about the BS Mesquite Bosque, which could lead to recommendations to update the BVHM and improve its ability to estimate the water budget of the Basin that is used in the 5-year redeterminations of the Sustainable Yield required by the Judgment. (This task was previously approved by the Board as part of the scope of work to recalculate the 2030 Sustainable Yield and is discussed further in Agenda Item IV.B of this agenda packet)
- The BVHM could also be used to predict future changes in groundwater levels beneath the BS Mesquite Bosque and groundwater evapotranspiration during the SGMA planning horizon (through 2070).
- Prepare a legal opinion as to whether Watermaster's management and proposed monitoring programs satisfy SGMA requirements regarding consideration of potential GDEs. The memorandum would describe:

- The history and current understanding of the BS Mesquite Bosque as a potential GDE
- The Watermaster’s current management program to achieve sustainability (e.g., pumping Rampdown and expected stabilization of groundwater levels, implementation of monitoring programs, etc.)
- The proposed monitoring and modeling efforts for the Mesquite Bosque area (bulleted above)
- SGMA statutory and regulatory provisions governing sustainable groundwater management, including consideration of potential GDEs

The memorandum should be prepared by Watermaster legal counsel in the current fiscal year, with support from the Technical Consultant, and before proceeding with the proposed work plan.

### **Next Steps**

Of the TC recommendations listed above, staff is seeking Board direction at the May meeting:

- The preparation of a legal opinion is the logical first step for the Board to ensure it is proceeding pursuant to SGMA requirements regarding consideration of potential GDEs in its management of the Borrego Springs Subbasin. The legal opinion should be prepared in WY 2026 so the Watermaster can develop appropriate scope and budget for next steps in WY 2027. Legal counsel believes a written opinion could be prepared for about \$7,500 and sufficient funds are available in the approved WY 2026 budget for legal services to cover this work.
- The preparation of a Monitoring Work Plan for the BS Mesquite Bosque should follow the legal opinion, since the legal opinion may inform the need for and content of a monitoring program. In addition, the preparation of the monitoring work plan should be conducted with input from the TAC and EWG, and funds to support this effort were not included in the approved budget for WY 2026. The cost estimate to prepare a Monitoring Work Plan for the BS Mesquite Bosque is \$35,421. Attachment 1 includes a high-level outline of the proposed work plan and a task-level cost estimate. Staff is requesting Board direction on whether to include this scope of work and cost estimate in its WY 2027 budget that will come before the Board for adoption at its meeting in June 24, 2026.

### **Enclosures**

**Attachment 1** – Outline and Cost for the Monitoring Work Plan for the BS Mesquite Bosque

**TAC/EWG Recommendation Report** – *Assessment of UCI GDE Study Report as “Best Available Science” and Recommendations for Next Steps*

**Technical Consultant Recommendation Report** – *Technical Review of the UCI GDE Study Report and Recommendations for Next Steps*

## ATTACHMENT 1

## Monitoring Work Plan for the BS Mesquite Bosque – Draft Outline

Section	Description
1	<p><b>Background and Objectives</b></p> <p>Explain the Bosque as a potential GDE</p> <p>Objectives are to understand the following:</p> <ul style="list-style-type: none"> <li>Is the Bosque degrading in health during the Rampdown?</li> <li>If it is degrading - what factors are contributing?</li> <li>Is the Bosque a GDE, and if so, where?</li> </ul> <p>Describe work plan organization</p>
2	<p><b>Methods to Evaluate Mesquite Bosque Health and Factors that can Affect Health</b></p> <p>Describe each line of evidence (data) that will be evaluated and how the data will be characterized to facilitate interpretations (e.g., describe figures and charts that would be prepared)</p>
3	<p><b>Implementation Plan</b></p> <p>This is the plan, schedule, and cost to perform the data collection and analysis described in Section 2</p>
4	<p><b>Activities and Costs to Fill Gaps in Understanding</b></p> <p>This is a description of the methods/scope/cost to address other gaps in understanding identified in the TC Evaluation of the UCI Study that would require partnerships, grant funding, or other financial resources to pursue (if determined to be needed)</p>

## Monitoring Work Plan for the BS Mesquite Bosque – Cost Estimate

Task	Cost
<b>Task 1 - Prepare Draft Mesquite Bosque Monitoring Program Work Plan</b>	<b>\$25,932</b>
Prepare Annotated Outline and Section 1	\$3,406
Prepare Section 2	\$8,276
Prepare Section 3	\$2,045
Prepare Section 4	\$8,816
Internal QAQC, finalize, compile, and publish draft report	\$3,389
<b>Task 2 – TAC/EWG Meeting to Present Work Plan</b>	<b>\$3,996</b>
<b>Task 3 – Finalize Work Plan based on TAC/EWG and Board Comments</b>	<b>\$5,493</b>
<b>TOTAL COST</b>	<b>\$35,421</b>

## TAC/EWG RECOMMENDATION REPORT

DATE: May 6, 2026

TO: Board of Directors  
*Borrego Springs Watermaster*

FROM: Technical Advisory Committee/Environmental Working Group  
*Borrego Springs Watermaster*

SUBJECT: Assessment of UCI GDE Study Report as “Best Available Science” and Recommendations for Next Steps

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### BACKGROUND AND OBJECTIVES

In the early 1900s, prior to significant groundwater pumping in the Basin, groundwater levels were much higher compared to current conditions, and a large GDE existed in the vicinity of the BS where groundwater levels were at or near the ground surface. The phreatophytes that comprised the GDE consisted of Mesquite trees, salt grass, willow, and rushes, collectively referred to herein as the “BS Mesquite Bosque.” Subsequent groundwater pumping in the Basin caused significant declines in groundwater levels, which resulted in degradation in the extent and health of the BS Mesquite Bosque.

Appendix D4 of the Borrego Springs Watermaster’s current Groundwater Management Plan ([GMP](#))<sup>1</sup> states that the rooting depths of the BS Mesquite Bosque became largely disconnected from the regional aquifer of the Basin by about 1985 because of the long-term declines in groundwater levels that occurred across the Basin since the 1940s. Therefore, the BS Mesquite Bosque was not considered a GDE in the GMP.

A study of the BS Mesquite Bosque was recently conducted by the University of California Irvine (UCI) to generate more information on the groundwater dependency of the BS Mesquite Bosque, which has been documented in a report ([UCI GDE Study Report](#)).<sup>2</sup> The UCI GDE Study Report evaluated multiple lines of evidence and concluded that the BS Mesquite Bosque is connected to the regional aquifer system, functions as a beneficial user of the Basin, and therefore, should be recognized and considered as a beneficial user of groundwater in the Watermaster’s GMP.

In May 2024, the Watermaster approved a policy regarding the use of “best available science (BAS).”<sup>3</sup> This policy permits the use of technical information not generated by the Watermaster to inform its policy decisions; however, the Watermaster shall not rely on or use such technical information to take action or make policy decisions without an independent review and recommendation from the Technical Advisory Committee (TAC), the Environmental Working Group (EWG), and/or Watermaster technical consultants. While the UCI GDE Study Report may provide useful new information, the Watermaster has not completed a formal review of the report, and hence, has not yet determined that the UCI GDE Study Report

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<sup>1</sup> [https://borregospringswatermaster.com/wp-content/uploads/2022/10/Exhibit-1\\_GMP.pdf](https://borregospringswatermaster.com/wp-content/uploads/2022/10/Exhibit-1_GMP.pdf)

<sup>2</sup> [https://borregospringswatermaster.com/wp-content/uploads/2025/07/GDE-Final-report\\_15May2025-1.pdf](https://borregospringswatermaster.com/wp-content/uploads/2025/07/GDE-Final-report_15May2025-1.pdf)

<sup>3</sup> [https://borregospringswatermaster.com/wp-content/uploads/2025/02/BSWM-Policy-on-Use-of-Best-Available-Science\\_final.pdf](https://borregospringswatermaster.com/wp-content/uploads/2025/02/BSWM-Policy-on-Use-of-Best-Available-Science_final.pdf)

TAC/EWG Recommendation Report

Assessment of UCI GDE Study Report as “Best Available Science” and Recommendations for Next Steps

Page 2

constitutes “best available science” that can be relied upon by the Watermaster to take action or make policy decisions.

At its November 3 and 19, 2025 meetings, the Watermaster Board approved a scope of work and budget for West Yost (as the Watermaster’s Technical Consultant [TC]) to: (i) perform a technical review of UCI GDE Study Report as “best available science [BAS]”; (ii) prepare a recommendation report for the Board; and (iii) facilitate the preparation of a recommendation report to the Board from the TAC and EWG. The scope-of-work is summarized in Table 1 below.

<b>Table 1. Scope-of-Work to Perform a Technical Review of the UCI GDE Study Report</b>		
<b>Task No.</b>	<b>Task Description</b>	<b>Schedule</b>
1	TAC/EWG/TC review of UCI GDE Study Report as BAS	November 2025
2	TC reviews TAC/EWG comments on UCI GDE Study Report	
3	Prepare Draft TC Recommendation Report	Nov 2025 – Jan 2026
4	TAC/EWG meeting to review Draft TC Recommendation Report and receive TAC/EWG feedback	February 2026
5	Prepare Draft TAC/EWG Recommendation Report on BAS and next steps (based on TAC/EWG feedback)	March 2026
6	TAC/EWG meeting to review Draft TAC/EWG Recommendation Report and receive additional TAC/EWG feedback	April 2026
7	Prepare Draft-Final TAC/EWG Recommendation Report (based on TAC/EWG feedback)	
8	Prepare Final TC and TAC/EWG Recommendation Reports	May 2026
9	Board meeting to present the Final TC and TAC/EWG Recommendation Reports, including discussion on recommended next steps	May 20, 2026

As of May 6, 2026, Tasks 1-8 have been completed, including the preparation of this final TAC/EWG Recommendation Report based on all feedback received from TAC and EWG members. The main objectives of this Recommendation Report are to:

1. Summarize the opinions of the TAC/EWG members on their assessment of the UCI GDE Study Report as BAS that can be relied upon by the Watermaster to take action or make policy decisions.
2. Summarize the TAC/EWG member recommendations to the Board for next steps, if any.

**SUMMARY OF TAC/EWG ASSESSMENT AND RECOMMENDATIONS**

Through the execution of Tasks 1-7 of the scope-of-work, the TAC/EWG members were provided opportunities to submit written feedback on their assessment of the UCI GDE Study Report as BAS and their recommendations to the Board for next steps regarding the GDE issue. Table 2 summarizes this feedback by TAC/EWG members. Four (4) TAC members and two (2) EWG members (commenters) submitted comments and recommendations by the requested deadline:

1. Jim Bennett, P.G., C.HG. (TAC/EWG member representing the County of San Diego)

## TAC/EWG Recommendation Report

Assessment of UCI GDE Study Report as “Best Available Science” and Recommendations for Next Steps

Page 3

2. Trey Driscoll, PG, CHG; INTERA (TAC member representing BWD)
3. Mark C. Jorgensen (EWG member)
4. John Peterson P.G., C.HG. (EWG member)
5. Robert C. Wagner, P.E.; Wagner & Bonsignore Consulting Civil Engineers (TAC member representing AAWARE)
6. Tom Watson, PG.; Aquilogic (TAC member representing Rams Hill)

One (1) TAC member and three (3) EWG members did not submit written feedback by the requested deadline.

Table 2 includes weblinks to each written submission by the commenters for a record of TAC/EWG opinions and recommendations. To access all written submissions, you may download a zipped file [here](#).<sup>4</sup>

### Summary of TAC/EWG Opinions

TAC/EWG members expressed a range of perspectives on whether the UCI GDE Study Report constitutes BAS that should be relied upon by the Watermaster to take action or make policy decisions and whether the BS Mesquite Bosque should be classified as a GDE. Key observations from the comments include:

- Best Available Science to make policy/management decisions:
  - The four (4) TAC members concluded that the UCI report, on its own, does not constitute BAS for management decisions, though some note it provides useful information.
  - The two (2) EWG members consider the UCI report to represent BAS.
- Mesquite Bosque as a GDE:
  - Two (2) TAC members and one (1) EWG member do not take a definitive position, citing uncertainty or insufficient evidence.
  - Two (2) TAC members concluded that the Mesquite Bosque is likely not a GDE.
  - One (1) EWG member supports classification of the Mesquite Bosque as a GDE.
- Overall, comments reflect differing technical interpretations and levels of confidence in the available data, with several commenters highlighting uncertainty and limitations in the current understanding.<sup>5</sup>

### Recommended Actions Identified in Comments

Across the comments, several recommendations and suggested actions were forwarded to the Board for consideration:

- For the two (2) EWG members that recognized the UCI GDE Study Report as BAS, recommendations included:
  - Accept GDE status for the Mesquite Bosque and end the BAS review.

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<sup>4</sup> [https://borregospringswatermaster.com/wp-content/uploads/2026/05/TAC-EWG\\_Comments\\_GDE3.zip](https://borregospringswatermaster.com/wp-content/uploads/2026/05/TAC-EWG_Comments_GDE3.zip)

<sup>5</sup> Comments from the three TAC/EWG members that did not submit by the deadline are included in the zipped file

## TAC/EWG Recommendation Report

*Assessment of UCI GDE Study Report as “Best Available Science” and Recommendations for Next Steps*

Page 4

- Allocate 645 acre-feet per year for the GDE in the annual water budget.
- Consider Mesquite ecology in future statewide water-related funding opportunities.
- Avoid relying solely on the UCI study for management decisions at this time. Multiple TAC members indicated that the study should not be used as a standalone basis for policy or setting/changing Sustainable Management Criteria (SMC).
- Incorporate the UCI study as one line of evidence within a broader body of science. Several TAC members suggested considering the study alongside existing GMP information and other available data.
- Maintain focus on the Watermaster’s core Basin-management initiatives:
  - Pumping reduction and groundwater stabilization
  - Monitoring-driven, adaptive management
- Expand and refine monitoring and data collection. Suggested actions include:
  - Expanding groundwater-level and vegetation monitoring networks
  - Integrating vegetation metrics (e.g., NDVI), soil moisture, and precipitation data
  - Improving understanding of depth-to-groundwater and vadose zone processes
- Conduct additional technical and hydrogeologic investigations. Suggested efforts include:
  - Geophysical investigations, coring, and multi-depth wells
  - Evaluation of unsaturated zone processes
  - Continued refinement of the hydrogeologic conceptual model
- Evaluate findings through established Watermaster processes. Several commenters referenced:
  - Continued TAC and stakeholder engagement
  - Integration of new information through future GMP updates and the 5-year GMP assessment process

Given the range of perspectives and differing technical interpretations expressed, **TAC/EWG input did not result in a consensus recommendation to the Board at this time.**

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## ATTACHMENTS

Table 2. Borrego Springs Mesquite Bosque – TAC/EWG Review of UCI GDE Study Report  
*Comparison of assessments of “best available science” and recommended next steps*

**Table 2. Borrego Springs Mesquite Bosque – TAC/EWG Review of UCI GDE Study Report**  
*Comparison of author/team assessments of “best available science” and recommended next steps*

TAC/EWG Member/Team	Comment Letter(s) Received	Assessment of UCI GDE Study Report as “Best Available Science”	View on Mesquite Bosque as a GDE	Recommended Next Steps and/or Management Actions
<b>AAWARE</b> Robert C. Wagner, P.E. (TAC) Jan Hendrickx, PhD Leonardo Urrego-Vallowe, M.S.	<a href="#">10/8/2025: Comments on UCI GDE Report</a>  <a href="#">3/6/2026: Non-GDE Findings 219A</a>  <a href="#">3/6/2026: Non-GDE Findings 220A</a>  <a href="#">3/12/2026: Recommendations</a>  <a href="#">4/22/2026: Final summary and response to UCI comments</a>	No. The UCI report should not be considered BAS for policy decisions. UCI did not account for all potential water fluxes with the bosque, misinterpreted the available data, and misused Open ET models and EC footprints for ET estimation. Hence, UCI overstated the likelihood and volume of groundwater uptake by the bosque. The better BAS framework is the body of all scientifically sound information (including Appendix D4 of the GMP), not a single report.	The available data indicate that the Mesquite Bosque functions as a "non-GDE" sustained by surface-derived water, vadose-zone storage, and run-on rather than the regional aquifer system. More data are not needed to support this "non-GDE" conclusion.	Do not rely on the UCI report alone for groundwater management. Implement a monitoring approach similar to that proposed by the County of San Diego TAC member, but add precipitation monitoring using roughly 4–6 tipping-bucket rain gauges within the bosque. Integrate precipitation monitoring with NDVI, soil moisture, and groundwater monitoring.
<b>Borrego Springs Community</b> Mark C. Jorgensen (EWG)	<a href="#">9/24/2025: Comments on UCI GDE Report</a>  <a href="#">3/12/2026: Review of TC Report</a>  <a href="#">4/18/2026: Additional comments on UCI GDE Report</a>	Yes. The UCI report is the best science currently available. Rejects the idea that a BAS determination requires every possible data gap to be filled.	Unequivocal yes. The Mesquite Bosque is a GDE and a beneficial user of groundwater.	Accept the UCI report as BAS. Accept GDE status for the Mesquite Bosque. Allocate 645 acre-feet per year for the GDE in the annual water budget. Consider Mesquite ecology in future statewide water-related funding opportunities. Stop prolonging the BAS review process.
<b>BWD</b> Trey Driscoll, PG, CHG (TAC) Adam Norris, PG, CHG Wesley Neely, PhD Trevor Jones, PhD Guillermo Martinez, PhD, PE	<a href="#">10/24/2025: Comments on UCI GDE Report</a>	Nuanced/mixed. The UCI report provides new information and multiple lines of evidence that the bosque relies on a combination of surface water, groundwater, and possibly unsaturated-zone water, but notes several data gaps and misinterpretations of the existing data. The UCI report does not provide a clear path for direct integration into basin management. In sum, the UCI report is informative, but not yet management-ready BAS.	BWD does not reject groundwater dependence outright; it describes the bosque as relying on a combination of water sources and highlights the potential for groundwater accessibility within Mesquite rooting depths in some areas, while stressing uncertainty about true depth to groundwater and the possibility of perched groundwater/vadose-zone storage as waters available for Mesquite uptake.	Use the UCI study as new information, but do more hydrogeologic and monitoring work before changing sustainable management criteria or adopting bosque-specific management thresholds. Additional work could include: expand the GDE monitoring well network (BSMW-5R, MW-3, MW-4, MW-5B, WWTP-1, WWTP-2, WWTP-3, WWTP-4S, WWTP-4D, Berkovitch, County Yard); install transducers in WWTP wells; conduct additional hydrogeologic investigations (surface geophysics, sonic coring, multi-depth wells, resistivity/groundwater comparisons); evaluate the unsaturated zone with Hydrus or similar; coordinate next steps through the TAC/stakeholder process.
<b>County of San Diego</b> Jim Bennett, P.G., C.HG. (TAC/EWG)	<a href="#">10/9/2025: Comments on UCI GDE Report</a>  <a href="#">3/9/2026: Recommendations</a>	No. Largely, the UCI report is not BAS that should be used for making policy/management decisions. The County rates some sections of the UCI report as pending expert verification or still uncertain, but finds most major hydrogeologic interpretations “Not Met” as BAS, especially the perched groundwater analysis, mapping of depth to groundwater, isotope-based GDE classification, ET attribution, and groundwater-level threshold concepts.	The County does not give a simple yes/no GDE conclusion. Instead, it says the current record does not support defensible groundwater-elevation thresholds for the remaining bosque and that SGMA obligations should remain centered on managing long-term groundwater decline.	Keep groundwater basin management focused on the pumping rampdown and groundwater stabilization. Monitor groundwater levels in and around the bosque plus NDVI/vegetation conditions. Integrate the UCI information and monitoring data through the GMP update process (next due in 2030). Prepare a technical memorandum for legal review on what SGMA requires in response to what is currently known and understood about the bosque. Consider the use of intra-basin transfers as a tool if local pumping reductions ever become necessary.
<b>Rams Hill</b> Tom Watson, PG (TAC) Sean Hartman, PhD	<a href="#">2/4/2026: Comments on UCI GDE Report</a>  <a href="#">3/7/2026: Recommendations</a>  <a href="#">4/22/2026: Responses to UCI Comments</a>	No. The stable isotope analysis as a method to determine the water(s) available to plants can be BAS, but the UCI interpretation of the isotopic data is not BAS. UCI’s deuterium-excess framework obscures the non-linearity in the isotopic data. Therefore, the UCI study does not meet BAS sufficient for Watermaster policy decisions.	The stable isotope data indicate that more likely than not, the Mesquite Bosque is not a GDE. The distribution of isotope values in dual isotope space indicates the honey mesquite are primarily, if not entirely, hydrated by soil water.	In its current form, the UCI study should not be used to make policy decisions or make changes to the Watermaster’s GMP. If additional work is performed, focus on filling data gaps as identified in several TAC comments, particularly the characteristics of soil moisture deeper than sampled by UCI (>1.5 m), such as soil moisture content and isotopic composition.
<b>John Peterson P.G., C.HG. (EWG)</b>	<a href="#">4/18/2026: Comments on UCI GDE Report</a>	Yes. The UCI report represents BAS because the scientists that conducted the study are well qualified and experienced.	The Mesquite Bosque is a GDE--particularly in areas surrounding the Borrego Sink where the stands of Mesquite trees are dense and healthy and depth to groundwater is presumably the shallowest. However, in areas more distant from the Borrego Sink where groundwater levels are much deeper, the Mesquite tree roots may be disconnected from groundwater and dependent on soil moisture.	None stated.

*Acronyms:*

BAS = Best Available Science; ET = evapotranspiration; GDE = groundwater dependent ecosystem; NDVI = Normalized Difference Vegetation Index; SGMA = Sustainable Groundwater Management Act; UCI = University of California at Irvine



## TECHNICAL CONSULTANT RECOMMENDATION REPORT

DATE: May 15, 2026 Project No.: 940-80-25-12 (430)  
SENT VIA: EMAIL

TO: Board of Directors,  
*Borrego Springs Watermaster*

CC: Technical Advisory Committee; Environmental Working Group

FROM: Andy Malone, PG (West Yost)  
Technical Consultant, Borrego Springs Watermaster

SUBJECT: Technical Review of the UCI GDE Study Report and Recommendations for Next Steps

### EXECUTIVE SUMMARY

In the early 1900s, prior to significant groundwater pumping in the Borrego Springs Subbasin (Basin), groundwater levels were much higher compared to current conditions, and a large groundwater dependent ecosystem (GDE)<sup>1</sup> existed in the vicinity of the Borrego Sink (BS) where groundwater levels were at or within about 10 feet of the ground surface. The phreatophytes that comprised the GDE consisted of Mesquite trees, salt grass, willow, and rushes, collectively referred to herein as the “BS Mesquite Bosque.” Subsequent groundwater pumping in the Basin caused significant declines in groundwater levels, which resulted in widespread degradation in the health of the BS Mesquite Bosque. Figure ES-1 shows the mapped extent of the BS Mesquite Bosque in 2016.

The Sustainable Groundwater Management Act (SGMA) requires that all beneficial uses and users of groundwater, including environmental users of groundwater (GDEs) as of the passage of the law in 2014, be considered in Groundwater Sustainability Plans (GSPs). That consideration is specified in SGMA as follows:

- Water Code Section 10723.2 provides that a SGMA Agency “shall consider the interests of all beneficial uses or users of groundwater including (e) Environmental users of groundwater.”
- Water Code section 10727.4 (f) requires a Groundwater Sustainability Plan to include the subject of the impacts of the plan on groundwater dependent ecosystems. Accordingly, if a GDE is recognized in a Basin subject to SGMA, the beneficial use of basin water to support that GDE must be considered a beneficial use of that water. That beneficial use would be required to be considered by the SGMA Agency with all other identified beneficial uses when exercising its discretion in making decisions to avoid undesirable results.

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<sup>1</sup> The GSP Regulations define GDEs as “ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface”

Appendix D4 of the Borrego Springs Watermaster’s current Groundwater Management Plan ([GMP](#))<sup>2</sup>, published in 2020, states that the rooting depths of the BS Mesquite Bosque became largely disconnected from the regional aquifer of the Basin by about 1985 because of the long-term declines in groundwater levels that occurred across the Basin since the 1940s. Therefore, the BS Mesquite Bosque was not identified as a beneficial user of groundwater in the GMP, and hence, sustainable management criteria were not developed (e.g. minimum thresholds for groundwater levels to avoid undesirable results).

A study was recently conducted by the University of California Irvine (UCI) to generate more information on the groundwater dependency of the BS Mesquite Bosque, which has been documented in a report ([UCI GDE Study Report](#)).<sup>3</sup> Through the analysis of multiple lines of evidence, the main conclusions of the UCI GDE Study Report were:

- The BS Mesquite Bosque is connected to the regional aquifer system, functions as a beneficial user of the Basin groundwater, and therefore, should be recognized as a GDE.
- The BS Mesquite Bosque is continuing to decline in health during the post-SGMA period (2015-2024), which is primarily driven by declining groundwater levels.

The main recommendations of the UCI GDE Study Report are:

- The Watermaster should designate the BS Mesquite Bosque as an environmental beneficial user of Basin groundwater in the GMP
- The Watermaster should allocate 645 acre-feet per year of groundwater to the BS Mesquite Bosque in the Basin water budget
- The Watermaster should establish minimum thresholds for groundwater elevations and rates of groundwater-level decline at key wells to protect the BS Mesquite Bosque
- Future hydrologic and biologic monitoring of the BS Mesquite Bosque should include:
  - Groundwater levels at key wells
  - Changes in groundwater levels
  - Changes in vegetation health via remote-sensing and field surveys
  - Evapotranspiration (ET) of the BS Mesquite Bosque
- Restore mesquite bosque habitat
- The Watermaster should explore potential strategies to improve groundwater conditions

The Watermaster directed its Technical Consultant to perform a technical review of the UCI GDE Study Report to determine if it is “best available science” (BAS) that can be relied upon by the Watermaster to take action or make policy decisions, as stated in its policy regarding the use of BAS.<sup>4</sup>

This Technical Consultant Recommendation Report documents the review of the UCI GDE Study Report, including each line of evidence presented and the validity of the conclusions and recommendations by

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<sup>2</sup> [https://borregospringswatermaster.com/wp-content/uploads/2022/10/Exhibit-1\\_GMP.pdf](https://borregospringswatermaster.com/wp-content/uploads/2022/10/Exhibit-1_GMP.pdf)

<sup>3</sup> [https://borregospringswatermaster.com/wp-content/uploads/2025/07/GDE-Final-report\\_15May2025-1.pdf](https://borregospringswatermaster.com/wp-content/uploads/2025/07/GDE-Final-report_15May2025-1.pdf)

<sup>4</sup> [https://borregospringswatermaster.com/wp-content/uploads/2025/02/BSWM-Policy-on-Use-of-Best-Available-Science\\_final.pdf](https://borregospringswatermaster.com/wp-content/uploads/2025/02/BSWM-Policy-on-Use-of-Best-Available-Science_final.pdf)

the study authors. Table ES-1 presents a summary of our assessment of each line of evidence in the UCI GDE Study Report used by UCI to draw the above noted conclusions and recommendations.

In summary, we identified several data gaps and/or gaps in understanding that call into question UCI's ability to interpret the data and arrive at its *definitive* conclusions that the current BS Mesquite Bosque is a GDE and the extent and health of the BS Mesquite Bosque will experience degradation caused by the pumping Rampdown, which allows for a gradual stabilization of groundwater levels from 2020 through 2040. The most important of the identified gaps in understanding is the role of deep soil moisture within the vadose zone as a potential water source that supports the BS Mesquite Bosque. In our assessment of the UCI GDE Study Report, and all available data and information on this topic, it remains an open and important question whether what remains of the BS Mesquite Bosque today is dependent on:

1. Soil moisture in the vadose zone, which is periodically replenished by infiltrating precipitation and stormwater runoff that accumulates in the vicinity of the Borrego Sink.
2. The deeper saturated zone of the regional aquifer system.
3. Or both of the above in different areas of the Bosque and to different degrees.

Therefore, we believe it is premature of the UCI GDE Study Report to: (i) conclusively identify the BS Mesquite Bosque as a GDE; (ii) to recommend allocation of 645 acre-feet per year of Basin groundwater to the BS Mesquite Bosque; (iii) to conclude that future declines in groundwater levels caused by the pumping Rampdown will degrade the BS Mesquite Bosque; and (iv) to recommend establishing specific sustainable management criteria to protect the BS Mesquite Bosque.

To elaborate, the UCI GDE Study Report did not sufficiently recognize the gaps and limitations in the currently available data and did not appropriately consider/analyze the alternative sources of water that could be satisfying the current ET demands of the BS Mesquite Bosque. Therefore, the unqualified and *definitive* conclusions of the UCI Study Report, and the accompanying management recommendations, are not consistent with scientific and engineering professional standards of practice; and hence, should not be considered BAS that, by itself, should be relied upon by the Watermaster to take action or make policy decisions.

While it does not meet the BAS standard of the Watermaster's policy, the UCI GDE Study Report is an advancement in the scientific understanding of the BS Mesquite Bosque. In our opinion, the report presents evidence that indicates the current BS Mesquite Bosque could be, at least in part, a GDE, particularly in areas surrounding the Borrego Sink where depth to groundwater is presumably the shallowest and where the healthiest stands of Mesquite exist. Based on this potential, we recommend the Watermaster consider the BS Mesquite Bosque a "potential GDE" and implement an adaptive management framework to first determine if declining groundwater levels caused by the pumping Rampdown are causing or could cause significant and unreasonable degradation of the BS Mesquite Bosque, and if shown to be necessary, implement adaptive management actions to protect the environmental beneficial uses in the Basin.

It should be emphasized here that the Watermaster is already implementing a significant management action to Rampdown pumping to stop the chronic lowering of groundwater levels that has been occurring since the 1940s. The Rampdown requires an incremental annual reduction in pumping over a 20-year period such that aggregate pumping by all BPA parties is equal to the Sustainable Yield by 2040. The reduction in pumping through WY 2025 is significantly ahead of schedule and has resulted in a gradual

stabilization of groundwater levels, which should be beneficial to the BS Mesquite Bosque, if and where it is a GDE.

Herein, following our assessment of the lines of evidence presented in the UCI Study Report, we provide several recommendations for Board consideration to address the gaps in understanding identified in this recommendation report to help determine: (i) if and where the BS Mesquite Bosque is a GDE; (ii) if declining groundwater levels caused by the pumping Rampdown is causing or could cause significant and unreasonable degradation of the BS Mesquite Bosque; (iii) if the Watermaster is accurately estimating groundwater evapotranspiration in the Basin water budget as a component of the Sustainable Yield; and (iv) if Watermaster's management and monitoring programs satisfy SGMA requirements regarding potential GDEs. These recommendations are noted in Table ES-1 and summarized below:

- Prepare a "Monitoring Work Plan for the BS Mesquite Bosque" with TAC/EWG input. The objectives of the monitoring program should be to:
  - Prioritize and fill gaps in understanding identified in this recommendation report.
  - Track the extent and health of the BS Mesquite Bosque during implementation of the pumping Rampdown.
  - Track additional relevant factors that could be affecting the extent and health of the BS Mesquite Bosque. These could include changes in groundwater levels, temperature, precipitation, surface water inflows, pests, human disturbance, and others that may be identified as relevant.

The monitoring program results could improve the understanding of the groundwater dependency of the BS Mesquite Bosque (or lack thereof) and could be used to adapt the Watermaster's groundwater management actions to protect the Bosque from significant and unreasonable degradation, if the monitoring program results indicate the degradation is being caused by declining groundwater levels associated with the pumping Rampdown.

- The Borrego Valley Hydrologic Model (BVHM) simulates groundwater evapotranspiration as part of the water budget of the groundwater basin. For example, the BVHM estimated about 331 acre-feet of groundwater evapotranspiration in WY 2022. This functionality of the BVHM could be evaluated against what is currently known about the BS Mesquite Bosque, which could lead to recommendations to update the BVHM and improve its ability to estimate the water budget of the Basin that is used in the 5-year redeterminations of the Sustainable Yield required by the Judgment.
- The BVHM could also be used to predict future changes in groundwater levels beneath the BS Mesquite Bosque and groundwater evapotranspiration during the SGMA planning horizon (through 2070).
- Prepare a legal opinion as to whether the Watermaster's management and monitoring programs satisfy SGMA requirements regarding consideration of potential GDEs. The memorandum would describe:
  - The history and current understanding of the BS Mesquite Bosque as a potential GDE
  - The Watermaster's current management program to achieve sustainability (e.g., pumping Rampdown and expected stabilization of groundwater levels, implementation of monitoring programs, etc.)
  - The proposed monitoring and modeling efforts for the Mesquite Bosque area (bulleted above)

Technical Consultant Recommendation Report

*Technical Review of the UCI GDE Study Report and Recommendations for Next Steps*

Page 5

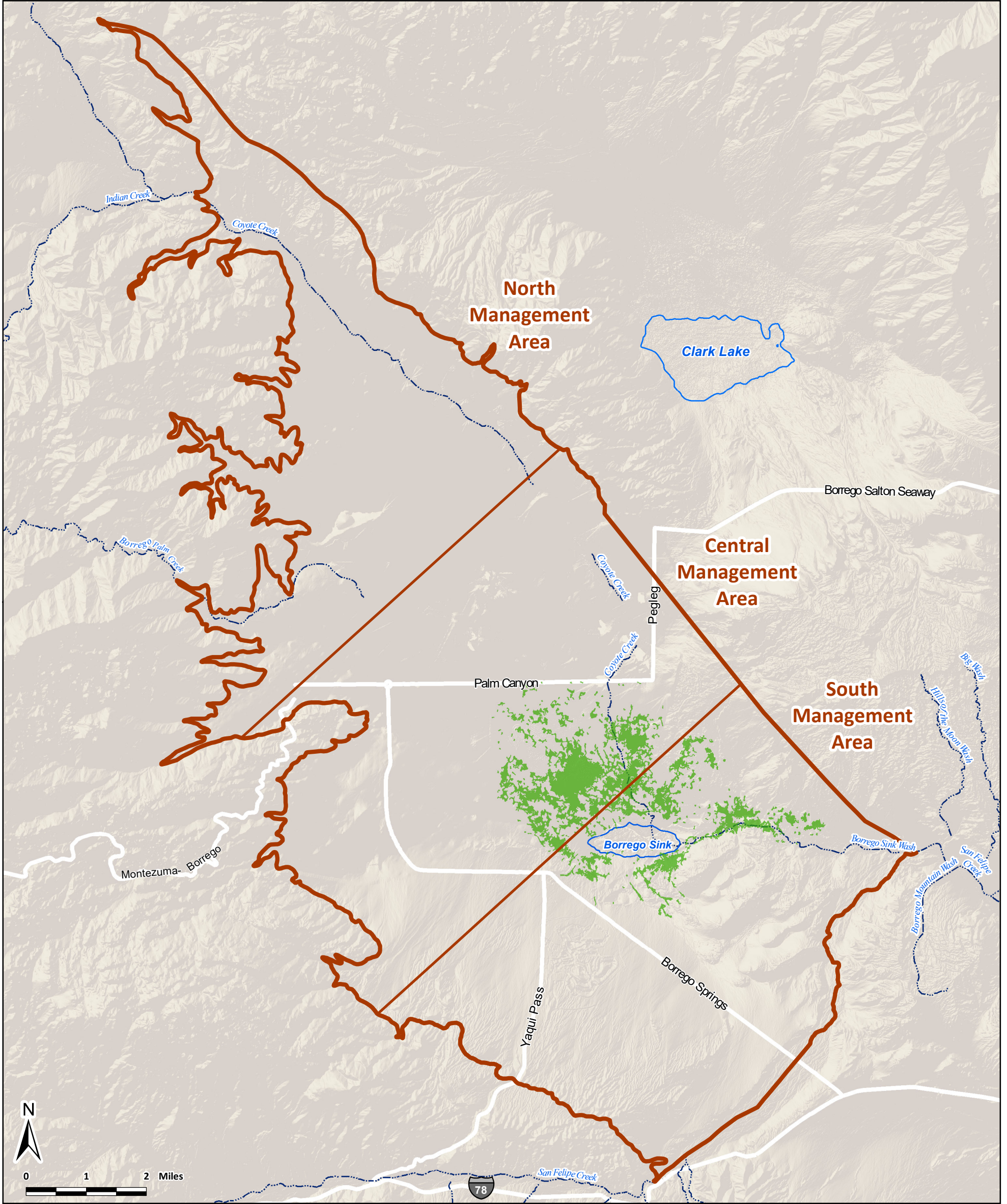
- SGMA statutory and regulatory provisions governing sustainable groundwater management, including consideration of potential GDEs

The memorandum should be prepared by Watermaster legal counsel, with support from the Technical Consultant.

This report is organized into the following sections that describe the above information in greater detail:

- Background and Objectives
- Technical Approach
- Technical Review and Findings
- Conclusions and Recommendations

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**Mesquite Bosque Habitat near Borrego Sink**  
As mapped by UCI using air photo from National Agriculture Imagery Program, April 2016

**Other Features**  
Borrego Springs Subbasin with Management Area Divisions

**Surface Water Features**  
Stream Channel  
Playa Lake



Figure ES-1

**Extent of Mesquite Bosque Habitat in the Borrego Springs Subbasin**

Borrego Springs Watermaster  
Borrego Springs Subbasin  
GDE Study Report Review

Table ES-1. Summary of Assessment of UCI GDE Study Report and Recommendations for Next Steps			
UCI GDE Study Report Section	UCI Line of Evidence	Assessment of Best Available Science	Recommendations
<b>Mapping of Mesquite Bosque</b>	About 350 acres of live Mesquite tree canopy was mapped in the BS Mesquite Bosque using image classification of a 2016 air photo in ArcGIS Pro.	<b>BAS determination: Partially Met</b>  The mapping approach appears to produce reasonable results and could be used as a repeatable, objective method for change detection over time. However, before use, the mapping approach should be validated by a remote-sensing specialist.	Before using this mapping approach for change detection over time, an independent remote-sensing specialist should evaluate and validate the approach and offer any recommended adjustments.
<b>Study Site and Tree Selection for Ecological Data Collection</b>	Four (4) sites in the BS Mesquite Bosque were selected for habitat and tree-specific study. Site 1 (southern portion of the BS Mesquite Bosque) was selected for more intensive study of isotopic chemistry and water potential. Site 5 was located in the CDL Mesquite Bosque as a comparison.	<b>BAS determination: Partially Met</b>  Site selection was appropriately distributed across the BS Mesquite Bosque. However, Site 4 would have been a more appropriate choice for more intensive study. This is because the depth-to-groundwater is deeper, so if groundwater dependency is demonstrated at Site 4, it would follow that other areas within the BS Mesquite Bosque where groundwater is shallower are also GDEs. In addition, Site 4 is closer to the main areas of pumping in the Basin and the locations of monitored wells.	A new monitoring well(s) could be used to improve confidence in the data analyses and interpretations.
<b>Mapping Depth to Groundwater</b>	Depth-to-groundwater in the Basin for Fall 2024 was estimated by subtracting a groundwater-elevation raster provided by Watermaster from a 1-meter USGS DEM in ArcGIS Pro. The analysis indicated that depth-to-groundwater was closest to the surface near the Borrego Sink, with depths as shallow as 18 ft-bgs in Fall 2024.	<b>BAS determination: Partially Met</b>  The mapping of depth-to-groundwater used Watermaster's readily available groundwater-elevation raster. However, this raster was generated from sparse measured data within the BS Mesquite Bosque area and its purpose is for regional analysis; hence, the raster is an approximate estimate of depth-to-groundwater. Therefore, it should not be used for site-specific analyses and interpretations in the report, such as recommending minimum thresholds for groundwater levels.	Measured depth-to-groundwater within the BS Mesquite Bosque area is a data gap that should be filled to increase confidence in the estimation of depth-to-groundwater and the assessment of the BS Mesquite Bosque as a GDE.
<b>Mesquite Tree Rooting Depth and Connection to Groundwater</b>	The report cites references where Mesquite trees have developed deep roots to tap groundwater, ranging from approximately 39 to 175 ft-bgs, which is comparable to or exceeds the current estimates of depth-to-groundwater underlying the BS Mesquite Bosque (22 to 134 ft-bgs).	<b>BAS determination: Met</b>  The main conclusion of this report section that Mesquite trees in the BS Mesquite Bosque have deep tap roots that could reach the capillary fringe above the regional aquifer system is supported by the cited references.	The maximum rate of groundwater-level decline that Mesquite tree tap roots can follow downward without compromising Mesquite tree health should be researched and understood better. This rate should be compared against current and predicted future rates of groundwater-level decline to better understand the potential impact of the pumping Rampdown on the BS Mesquite Bosque, if it is a GDE.
<b>Shallow Soil Conditions</b>	The study used soil moisture sensors and field soil moisture data to characterize soil moisture conditions to 5 ft-bgs during "sampling" events. The results indicated relatively "dry" shallow soil conditions (<10% soil moisture).	<b>BAS determination: Not Met</b>  Mesquite trees are adapted to arid desert environments, and their roots can access soil moisture of <10%. The sampling and analysis of soil conditions to depths of only 5 ft-bgs leaves a gap in understanding of soil conditions from 5 ft-bgs to the saturated zone (i.e., >100 ft-bgs). Soil moisture within this depth interval could be a source of water for the Mesquite tree roots but was not analyzed in the study.	Fill the gap in understanding of the texture, moisture content, and isotopic water chemistry of the soil profile from 5 ft-bgs to the saturated zone.
<b>Isotopic Analysis</b>	The study employed an analysis of hydrogen and oxygen isotopes in Mesquite tree tissue (and Creosote and Saltbush) versus the same isotopes in groundwater and shallow soil water to assess and quantify the contribution of these two source waters to the vegetation. The main results and conclusions were:  -- Mesquite trees draw water from both shallow soil water and the regional aquifer system.  -- The percentage of groundwater in Mesquite tree tissue in the BS Mesquite Bosque ranged from 54% to 82%.  -- Creosote and Saltbush also draw water from soil moisture and another water source(s).	<b>BAS determination: Partially Met</b>  The isotopic data suggest there must be another water source for the Creosote and Saltbush that is deeper than 5 ft-bgs with an isotopic signature like the regional aquifer. However, the isotopic analysis did not include sampling, analysis, and consideration of soil moisture deeper than 5 ft-bgs as a potential source water for the vegetation (i.e., Mesquite, Creosote, and Saltbush). Soil moisture within this depth interval could be a source of water for the vegetation but was not analyzed. This data gap adds uncertainty to the conclusion of the study that the BS Mesquite Bosque is a GDE.	Fill the gap in understanding of the isotopic composition of soil moisture from 5 ft-bgs to the saturated zone. These data could more definitively describe and quantify the relative roles of shallow soil moisture (<5 ft-bgs), deeper soil moisture (>5 ft-bgs) and/or the regional aquifer in supplying the ET demands of the Mesquite trees.

**Table ES-1. Summary of Assessment of UCI GDE Study Report and Recommendations for Next Steps**

UCI GDE Study Report Section	UCI Line of Evidence	Assessment of Best Available Science	Recommendations
<b>Water Potential</b>	<p>The study measured leaf water potential of Mesquite and Creosote across the summer months to assess differences in water availability and water stress between in the BS Mesquite Bosque and CDL Mesquite Bosque (the comparison site with comparatively shallow groundwater levels). The main conclusion was that the Mesquite trees in the BS Mesquite Bosque are dependent on groundwater because of the following observations:</p> <p>-- The Mesquite trees at the BS site and the CDL site exhibited similar water availability and water stress, with the BS site showed slightly less water availability and greater water stress than the CDL site. The report suggests that this observation was likely due to higher groundwater levels at the CDL site.</p> <p>-- The Creosote showed less water availability and greater water stress than Mesquite. The report suggests that this observation was likely due to groundwater availability for the Mesquite.</p>	<p><i>BAS determination : Partially Met</i></p> <p>The water-potential data and analyses produce reasonable results. However, we disagree with the conclusion that these data indicate that the Mesquite trees are using the regional aquifer. An alternative explanation is that the Mesquite trees at the BS site are using deeper soil moisture (&gt;5 ft-bgs) which could explain:</p> <p>-- Lower water potential for Mesquite at the BS site versus the CDL site.</p> <p>-- Lower water potential for the shallow-rooted Creosote vs. the deeper-rooted Mesquite.</p>	
<b>Remote-Sensing Analysis (NDVI)</b>	<p>The study employed three analytical approaches using the remote-sensing metric NDVI to assess the greenness (health) of the Mesquite trees. The conclusion was that various areas within the BS Mesquite Bosque have high NDVI signals that indicate access to groundwater, similar to the CDL site, with the strongest indicators of groundwater use concentrated around the Borrego Sink where groundwater is shallowest.</p>	<p><i>BAS determination : Partially Met</i></p> <p>We agree that NDVI can be used to assess the greenness (health) of vegetation, and that the NDVI analyses in the study could be indicating that groundwater is supporting the healthy stands of Mesquite near the Borrego Sink. However, the analyses in the study do not represent conclusive proof of groundwater dependency. An alternative explanation is that these areas of lowest land-surface elevation also receive the highest accumulation of surface-water runoff and infiltration, which could be supporting the Mesquite trees. In our experience, we believe there are more scientifically-defensible methods to use NDVI data to better understand the water sources available to the Mesquite and the stresses that have (or are currently) affecting the health of the Mesquite trees. See the Technical Consultant Recommendations.</p>	<p>NDVI data from the mid-1980s to the present should be analyzed for site-specific areas of the BS Mesquite Bosque on time series charts and compared against all potential stresses to the Mesquite trees (e.g., changes in groundwater levels, precipitation, surface water availability, temperature, human disturbance, etc.) to better understand: how the health of the Mesquite trees has changed over time in different areas of the BS Mesquite Bosque, and how the various stresses may have influenced the observed changes in Mesquite health over time. This type of analysis may reveal more information about which water sources were most important for Mesquite tree survival and health in different areas of the BS Mesquite Bosque since the mid-1980s.</p>
<b>Dry Period Evapotranspiration in the GDE</b>	<p>The study employed instrumentation to directly measure ET rates in the BS and CDL Mesquite Bosques from May 2024 to January 2025. The monitoring results showed that despite extremely low rainfall, ET rates remained consistently high across all monitored sites, well beyond the amount of available rainfall, which confirms that Mesquite trees rely on groundwater to support growth and transpiration.</p>	<p><i>BAS determination : Partially Met</i></p> <p>We agree that the ET rates measured by the sensors are greater than the rates of direct precipitation; and hence, other source(s) of water must be necessary to satisfy the measured ET rates in the BS Mesquite Bosque over the dry, hot growing season.</p> <p>However, we disagree with study conclusion that the ET sensors provide direct evidence of groundwater use by Mesquite trees. The other source(s) of water could be:</p> <p>-- The deep regional aquifer.</p> <p>-- Soil moisture within the unsaturated zone that is fed by infiltration of precipitation and stormwater runoff that flows through and accumulates in the BS Mesquite Bosque.</p> <p>-- Both above.</p>	<p>This method of ET monitoring generates site-specific estimates of ET, which could be used to better constrain the BVHM estimates of groundwater ET. The ET estimates from the ET sensors should be compared more thoroughly to other ET estimation methods (e.g. OpenET, CIMIS, etc.). Uncertainty in the ET estimates should be described and quantified, as well as the uncertainty in the type of water being utilized by the Mesquite trees (e.g., soil moisture vs. aquifer).</p>

**Table ES-1. Summary of Assessment of UCI GDE Study Report and Recommendations for Next Steps**

UCI GDE Study Report Section	UCI Line of Evidence	Assessment of Best Available Science	Recommendations
<p><b>Historical Precipitation Trends</b></p>	<p>To better understand how surface-water availability to the BS Mesquite Bosque has changed over time, the study assessed historical trends in precipitation using monthly data downloaded from PRISM over the period September 1981 to December 2024. The study concluded that there have not been dramatic declines in precipitation which might explain the decline in the extent and health of the BS Mesquite Bosque, and that the trend towards lower water year precipitation is not statistically significant.</p>	<p><i>BAS determination : Not Met</i></p> <p>We disagree that the declining trend in precipitation over the last few decades is not statistically significant. Our analysis of the historical precipitation data indicates the region has been experiencing a 30-year dry period since 1995, punctuated by a few wet years.</p>	<p>Climatic data (e.g., precipitation and temperature) should be compared against NDVI data over time to better understand the relationship between climate and the health/extent of the BS Mesquite Bosque.</p>
<p><b>Considering GDEs in Minimum Thresholds</b></p>	<p>The study calculated the mean NDVI across the BS Mesquite Bosque during the dry season (1 May –30 June 2024) and analyzed its relationship to depth-to-groundwater in 2024 in an effort to recommend minimum thresholds for depth to groundwater. NDVI values declined substantially at depths greater than 60-75 feet bgs, suggesting that Mesquite tree health is impaired beyond this range—likely due to reduced access to groundwater.</p>	<p><i>BAS determination : Not Met</i></p> <p>The highest NDVI values are concentrated in areas surrounding the Borrego Sink. This spatial pattern of healthy Mesquite trees is likely due to greater access to the various water sources in these areas, including: relatively shallow groundwater; relatively abundant stormwater runoff that preferentially accumulates in the Borrego Sink area and percolates to the underlying soils; or both.</p> <p>Currently, there are too many data gaps to establish numeric minimum thresholds for groundwater levels, including: (i) a paucity of measured depth to the groundwater table and its capillary fringe; (ii) knowledge of the maximum depth and growth rates for Mesquite tree tap roots; and (iii) the role of soil moisture as a water source for the Mesquite trees.</p>	<p>Minimum thresholds for groundwater levels are not recommended at this time until the data gaps are sufficiently filled.</p>
<p><b>Mesquite Bosque Health and Ecological Condition Assessment</b></p>	<p>The study calculated cumulative annual NDVI in the BS Mesquite Bosque and compared it with cumulative annual NDVI in the CDL Mesquite Bosque as a reference to a likely GDE over the period WY 2019-2024. The results showed the BS Mesquite Bosque experienced significant declines in NDVI compared to relatively stable NDVI in the CDL Mesquite Bosque. The study concluded that the NDVI declines in the BS Mesquite Bosque reflect its high susceptibility to decreasing groundwater levels.</p>	<p><i>BAS determination : Partially Met</i></p> <p>We agree that the NDVI data from 2019-2024 indicate a degrading trend in the greenness of the BS Mesquite Bosque, which could be caused by declining groundwater levels.</p> <p>However, we disagree that declining groundwater levels were the only possible cause. Climate was not considered in this analysis. WYs 2021, 2022, and 2024 were relatively dry years. The declines in NDVI in the BS Mesquite Bosque during 2021, 2022, and 2024, while the NDVI of the CDL Mesquite Bosque remained stable, may be indicating the reliance of the BS Mesquite Bosque on surface water to replenish soil moisture, which was low in these dry years.</p>	<p>NDVI analyses should be performed over space and time and then be compared against all the stressors that can affect the BS Mesquite Bosque (e.g., changes in groundwater levels, precipitation, temperature, human disturbances, etc.).</p>

**Table ES-1. Summary of Assessment of UCI GDE Study Report and Recommendations for Next Steps**

UCI GDE Study Report Section	UCI Line of Evidence	Assessment of Best Available Science	Recommendations
<p><b>Field Assessments of Live and Dead Trees</b></p>	<p>The study surveyed live and dead Mesquite trees at BS Site 1 and CDL Site 5, and noted several dead trees at BS Site 1 and all live trees at CDL Site 5. The report claims that these findings highlight the negative effects of declining groundwater levels on the BS Mesquite Bosque.</p>	<p><i>BAS determination : Partially Met</i></p> <p>We agree that the available evidence indicates that historical widespread Mesquite tree mortality across the BS Mesquite Bosque was due, at least in part, to the historical overdraft of the Basin and the associated declines in groundwater levels.</p> <p>However, the air photo map in the report shows stands of dead Mesquite trees directly adjacent to stands of live Mesquite trees, which raises challenges with the study conclusion that the BS Mesquite Bosque is a GDE that is being adversely impacted by declining groundwater levels:</p> <p>-- If Site 1 of the BS Mesquite Bosque is a GDE with access to the regional aquifer, should we expect to see continuous stands of live Mesquite trees, rather than the “patchwork” of live and dead trees shown on air photo?</p> <p>-- Does the “patchwork” of live and dead trees indicate that the Mesquite trees are disconnected from the regional aquifer and instead are accessing surface water and soil moisture that is only available in certain areas of surface-water flow and/or the requisite underlying hydrogeology that preferentially retains soil moisture?</p>	<p>NDVI analyses should be performed over space and time and then be compared against all the stressors that can affect the BS Mesquite Bosque (e.g., changes in groundwater levels, precipitation, temperature, human disturbances, etc.).</p>
<p><b>Quantification of Mesquite Groundwater Transpiration</b></p>	<p>The study estimated the annual volumes of groundwater ET (<math>ET_{gw}</math>) that support the BS Mesquite Bosque using data derived from OpenET and the ET sensors and the equation [<math>ET_{gw} = \text{Total ET} - \text{Precipitation}</math>]. The study results and conclusions were:</p> <p>-- OpenET substantially underestimates ET relative to the ET sensors.</p> <p>-- <math>ET_{gw}</math> of the BS Mesquite Bosque is at least 645 afy.</p>	<p><i>BAS determination : Partially Met</i></p> <p>We agree that the estimates of total ET in the study indicate that the BS and CDL Mesquite Bosques are using significantly more water than is provided by direct precipitation, and that the main source of water needed to support the ET demands of the Mesquite trees is stored in the subsurface.</p> <p>However, the study methods ignored:</p> <p>-- The potential role of soil moisture in the vadose zone as a water source that is satisfying at least a portion of the <math>ET_{gw}</math> demands of the Mesquite trees</p> <p>-- The ET demands of other non-Mesquite vegetation.</p>	<p>Continue the monitoring and estimation of ET of the BS Mesquite Bosque. These data can be used to constrain future BVHM updates and recalibrations to more accurately simulate the water budget of the Basin. However, additional consideration and analyses should be performed to address the following:</p> <p>-- OpenET estimates of ET are derived from six different models plus an “ensemble mean.” More expert analysis is necessary to choose the OpenET models best suited for estimating ET in natural desert environments.</p> <p>-- The potential role of soil moisture in satisfying at least a portion of the ET demands.</p> <p>-- The ET demands of other non-Mesquite vegetation.</p>
<p><b>Chronic Lowering of Groundwater Levels</b></p>	<p>The study assessed rates/trends in historical changes in groundwater levels at wells near the BS and CDL Mesquite Bosques for pre- and post-SGMA periods. The main observations and conclusions were:</p> <p>-- Historical and recent declines in groundwater levels were greatest near the BS Mesquite Bosque, primarily due to over-pumping of the Borrego Springs Subbasin.</p> <p>-- The high rates and magnitudes of groundwater declines indicate a high likelihood that these declines are responsible for the past and current adverse impacts on the BS Mesquite Bosque, which will continue unless without actions to reduce the groundwater-level declines.</p>	<p><i>BAS determination : Partially Met</i></p> <p>We agree with the observations that historical groundwater-level declines have been substantial, and that these declines have been responsible for adverse impacts to the BS Mesquite Bosque which was once a thriving GDE.</p> <p>We disagree with conclusion of the study that current declines in groundwater levels are responsible for current trends in degradation of the BS Mesquite Bosque. There are other alternative explanations, such as the recent relatively dry climate that could be adversely affect Mesquite trees that do not have access to the regional aquifer system.</p>	<p>The Watermaster is already implementing the pumping rampdown (and is substantially ahead of schedule) to stabilize groundwater levels across the Basin. The Watermaster should continue these efforts to stabilize groundwater levels and continue its current groundwater-level monitoring program to track its progress towards groundwater-level stabilization.</p> <p>Additional monitoring wells within the BS Mesquite Bosque are needed to understand depth-to-groundwater and ongoing changes in depth-to-groundwater. In addition, other important understanding on the soil profile, and its role in supporting the Mesquite trees, could be collected if a new monitoring well is constructed.</p>

**Table ES-1. Summary of Assessment of UCI GDE Study Report and Recommendations for Next Steps**

UCI GDE Study Report Section	UCI Line of Evidence	Assessment of Best Available Science	Recommendations
<p><b>Changes in Mesquite Bosque Health</b></p>	<p>The study assessed long-term trends in Mesquite Bosque health in relation to groundwater levels by analyzing annual average NDVI over the dry season (May 1-June 30) for the pre-SGMA period (1984-2015) and post-SGMA period (2015-2024). The main results and conclusions were:</p> <ul style="list-style-type: none"> <li>-- For the pre-SGMA period, NDVI declines were widespread and coincided with about 45 ft (~1.5 ft/yr) of groundwater-level declines. Concentrated strongholds of healthy Mesquite habitat were noted around the Borrego Sink, where groundwater is closer to the surface, and near the WWTP percolation ponds.</li> <li>-- For the post-SGMA period, NDVI declines and groundwater-level declines continued, but at reduced rates.</li> <li>-- The areas of NDVI stability and improvement coincide with current strongholds of healthy mesquite habitat, particularly around the Borrego Sink and near the percolation ponds of the WWTP.</li> <li>-- Other factors also contributed to the observed NDVI declines: development, Mesquite removal, soil erosion, off-road traffic, climate change, disease, and pests.</li> </ul>	<p><b>BAS determination : Partially Met</b></p> <p>We agree that this analysis indicates that groundwater-level declines during the pre-SGMA period (1984-2015) were largely responsible for the declines in NDVI and widespread die-off of Mesquite trees, except in areas of surface water availability (e.g., WWTP ponds and Coyote Creek floodplain).</p> <p>The analysis does not necessarily confirm that groundwater-level declines during the post-SGMA period (2015-2024) were responsible for the concurrent declines in NDVI, based on the following:</p> <ul style="list-style-type: none"> <li>-- The patterns of NDVI increases and decreases are “patchy” across the BS Mesquite Bosque, which is inconsistent with the proposed cause of declines in regional groundwater levels, but may be more consistent with site-specific availability (or lack thereof) of surface water, soil moisture, and/or perched groundwater, which are controlled by the surface-water flow patterns and the underlying hydrogeology.</li> <li>-- 2015-2024 was a relatively dry period, which could be responsible for observed NDVI declines for Mesquite that can no longer access the regional groundwater table.</li> </ul>	<p>NDVI analysis using Landsat-derived NDVI data (1984-2025) should be performed at specific cells (or groups of cells) where the Mesquite trees in BS Mesquite Bosque were once or are currently dense, so that other non-mesquite vegetation is screened out. Time-series charts should be prepared for these focused areas to compare the changes in NDVI vs. all factors that could influence the health of the Mesquite trees, such as: changes in groundwater levels; temperature; precipitation; surface water inflows; etc. This analysis may better describe the most relevant factors that have affected the BS Mesquite Bosque over time.</p> <p>Other factors that could have also contributed to the decline of BS Mesquite Bosque need to be better characterized and mapped relative to the changes in NDVI, such as: areas of human development; areas where Mesquite trees were removed; areas of soil disturbances, erosion, and off-road traffic; diseases; and pests.</p>
<p><b>Perched Aquifer Evaluation</b></p>	<p>The study evaluated the hypothesis that that “perched groundwater” conditions beneath the BS Mesquite Bosque support its ET demands, rather than the deeper regional aquifer system. The evidence evaluated included: well driller’s logs, AEM surveys, soil moisture data of the top 5 ft of soil profile, and historical groundwater-level monitoring data. The study concluded that perched groundwater conditions do not exist beneath the BS Mesquite Bosque.</p>	<p><b>BAS determination : Not Met</b></p> <p>We disagree with the methods and conclusions of the evaluation:</p> <ul style="list-style-type: none"> <li>-- Perched groundwater conditions have been documented to exist in the vicinity of the BS Mesquite Bosque (e.g., in the vicinity of the BWD WWTP percolation ponds).</li> <li>-- The interpretations of the AEM survey resistivity profiles were incorrect.</li> <li>-- The soil profile has not been physically explored or characterized, which is a significant data gap.</li> <li>-- Well driller’s logs are sparse and the borehole sediment descriptions are typically of low resolution and poor quality; hence, these logs are not good information to identify perched groundwater.</li> <li>-- Water-levels measured at wells screened across the saturated zone are not good indicators of the presence/absence of perched groundwater conditions.</li> </ul>	<p>The gap in understanding of the soil profile should be filled, potentially through the installation of a new monitoring well(s) in the BS Mesquite Bosque. This work could include:</p> <ul style="list-style-type: none"> <li>-- Characterization of the soil profile from the ground surface to/through the saturated zone, including the presence or absence of “perched” groundwater conditions.</li> <li>-- Collection of soil samples to analyze for soil moisture and isotopic water chemistry across the vadose zone.</li> <li>-- Inspection of the vadose zone and saturated zone for evidence of live Mesquite tree roots.</li> <li>-- Installation and monitoring of soil-moisture sensors across the entire thickness of the vadose zone to track seasonal and long-term changes in soil moisture.</li> </ul>

**Table ES-1. Summary of Assessment of UCI GDE Study Report and Recommendations for Next Steps**

UCI GDE Study Report Section	UCI Line of Evidence	Assessment of Best Available Science	Recommendations
<p><b>Monitoring Recommendations</b></p>	<p>The study included various recommendations for future hydrologic and biologic monitoring of the BS Mesquite Bosque, including:</p> <ul style="list-style-type: none"> <li>-- Groundwater levels at key wells.</li> <li>-- Changes in groundwater levels.</li> <li>-- Changes in vegetation health via remote-sensing and field surveys.</li> <li>-- ET</li> </ul>	<p><i>BAS determination : Partially Met</i></p> <p>We believe that hydrologic/biologic monitoring of the BS Mesquite Bosque over time should be performed to:</p> <ul style="list-style-type: none"> <li>-- Improve the understanding the relationship (or lack thereof) between changes in groundwater levels and the health of the BS Mesquite Bosque.</li> <li>-- Inform adaptive management strategies to protect the BS Mesquite Bosque, if the monitoring results deem this necessary.</li> </ul> <p>However, we suggest monitoring methods that are somewhat different than those recommended in the UCI GDE Study Report (see Technical Consultant Recommendations to the right).</p>	<p>The Watermaster should consider the development of a <i>Monitoring Work Plan for the BS Mesquite Bosque</i>, which could include the following:</p> <ul style="list-style-type: none"> <li>-- Tracking the extent and health of BS Mequite Bosque via remote-sensing and field surveys.</li> <li>-- Identification of additional existing wells in the bosque for groundwater monitoring.</li> <li>-- Construction of a new monitoring well(s) that could also include efforts to characterize the vadose zone.</li> <li>-- Tracking of all factors that could affect the health of the BS Mesquite Bosque.</li> <li>-- Characterization of the role of soil moisture within the vadose zone as a potential water source that supports the BS Mesquite Bosque.</li> <li>-- Monitoring ET and estimating ET<sub>gw</sub> of the BS Mesquite Bosque.</li> </ul>
<p><b>Management Recommendations</b></p>	<p>The study included various recommendations for management actions to protect the BS Mesquite Bosque, including:</p> <ul style="list-style-type: none"> <li>-- Designate the BS Mesquite Bosque as a GDE.</li> <li>-- Establishing minimum thresholds for groundwater levels and rates of change in groundwater levels.</li> <li>-- Allocation of at least 645 afy of ET<sub>gw</sub> to the BS Mesquite Bosque in the Subbasin water budget.</li> <li>-- Explore potential strategies to improve groundwater conditions.</li> </ul>	<p><i>BAS determination : Partially Met</i></p> <p>We believe the available data/information suggest that the existing BS Mesquite Bosque could be a beneficial user of the regional aquifer system, at least in part.</p> <p>However, there are important gaps in understanding (that the report does not acknowledge) that must be filled before a conclusion can be reached regarding the groundwater dependency, or lack thereof, of the BS Mesquite Bosque.</p> <p>Therefore, until the gaps in understanding are filled, we believe it's premature to:</p> <ul style="list-style-type: none"> <li>-- Establish minimum thresholds for groundwater levels at wells and/or rates of groundwater level decline.</li> <li>-- Allocate 645 afy to the BS Mesquite Bosque in the Subbasin water budget.</li> </ul>	<p>A memorandum should be prepared that describes:</p> <ul style="list-style-type: none"> <li>-- The history and current understanding of the BS Mesquite Bosque as a potential GDE.</li> <li>-- The Watermaster's current management program to achieve sustainability (e.g., pumping Rampdown, stabilization of groundwater levels, implementation of monitoring programs, etc.).</li> <li>-- The monitoring and/or modeling efforts proposed for the Mesquite Bosque area.</li> <li>-- SGMA statutory and regulatory provisions governing sustainable groundwater management, including consideration of potential GDEs.</li> </ul> <p>The memorandum should be reviewed by legal counsel to evaluate whether the Watermaster's management program satisfies SGMA requirements regarding potential GDEs.</p>

## BACKGROUND AND OBJECTIVES

In the early 1900s, prior to significant groundwater pumping in the Borrego Springs Subbasin (Basin), groundwater levels were much higher compared to current conditions, and a large groundwater dependent ecosystem (GDE)<sup>5</sup> existed in the vicinity of the Borrego Sink (BS) where groundwater levels were at or within about 10 feet of the ground surface. The phreatophytes that comprised the GDE consisted of Mesquite trees, salt grass, willow, and rushes, collectively referred to herein as the “BS Mesquite Bosque.” Subsequent groundwater pumping in the Basin caused significant declines in groundwater levels, which resulted in widespread degradation in the health of the BS Mesquite Bosque.

The Sustainable Groundwater Management Act (SGMA) requires that all beneficial uses and users of groundwater, including environmental users of groundwater (GDEs) as of the passage of the law in 2014, be considered in Groundwater Sustainability Plans (GSPs). That consideration is specified in SGMA as follows:

- Water Code Section 10723.2 provides that a SGMA Agency “shall consider the interests of all beneficial uses or users of groundwater including (e) Environmental users of groundwater.”
- Water Code section 10727.4 (f) requires a Groundwater Sustainability Plan to include the subject of the impacts of the plan on groundwater dependent ecosystems. Accordingly, if a GDE is recognized in a Basin subject to SGMA, the beneficial use of basin water to support that GDE must be considered a beneficial use of that water. That beneficial use would be required to be considered by the SGMA Agency with all other identified beneficial uses when exercising its discretion in making decisions to avoid undesirable results.

Appendix D4 of the Borrego Springs Watermaster’s current GMP<sup>6</sup> states that the rooting depths of the BS Mesquite Bosque became largely disconnected from the regional aquifer of the Basin by about 1985 because of the long-term declines in groundwater levels that occurred across the Basin since the 1940s. Therefore, the BS Mesquite Bosque was not considered a GDE or beneficial user of groundwater in the GMP.

A study of the BS Mesquite Bosque was recently conducted by the UCI to generate more information on the groundwater dependency of the BS Mesquite Bosque, which has been documented in the UCI GDE Study Report.<sup>7</sup> Through the analysis of multiple lines of evidence, the main conclusions of the UCI GDE Study Report were:

- The BS Mesquite Bosque is connected to the regional aquifer system, functions as a beneficial user of the Basin groundwater, and therefore, should be recognized as a GDE.
- The BS Mesquite Bosque is continuing to decline in health during the post-SGMA period (2015-2024), which is primarily driven by declining groundwater levels.

The main recommendations of the UCI GDE Study Report are:

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<sup>5</sup> The GSP Regulations define GDEs as “ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface”

<sup>6</sup> [https://borregospringswatermaster.com/wp-content/uploads/2022/10/Exhibit-1\\_GMP.pdf](https://borregospringswatermaster.com/wp-content/uploads/2022/10/Exhibit-1_GMP.pdf)

<sup>7</sup> [https://borregospringswatermaster.com/wp-content/uploads/2025/07/GDE-Final-report\\_15May2025-1.pdf](https://borregospringswatermaster.com/wp-content/uploads/2025/07/GDE-Final-report_15May2025-1.pdf)

- The Watermaster should designate the BS Mesquite Bosque as an environmental beneficial user of Basin groundwater in the GMP
- The Watermaster should allocate 645 acre-feet per year of groundwater to the BS Mesquite Bosque in the Basin water budget
- The Watermaster should establish minimum thresholds for groundwater elevations and rates of groundwater-level decline at key wells to protect the BS Mesquite Bosque
- Future hydrologic and biologic monitoring of the BS Mesquite Bosque should include:
  - Groundwater levels at key wells
  - Changes in groundwater levels
  - Changes in vegetation health via remote-sensing and field surveys
  - Evapotranspiration (ET) of the BS Mesquite Bosque
- Restore mesquite bosque habitat
- The Watermaster should explore potential strategies to improve groundwater conditions

In May 2024, the Watermaster approved a policy regarding the use of “best available science.”<sup>8</sup> This policy permits the use of technical information not generated by the Watermaster to inform its policy decisions; however, the Watermaster shall not rely on or use such technical information to take action or make policy decisions without an independent review and recommendation from the Technical Advisory Committee (TAC), the Environmental Working Group (EWG), and/or Watermaster technical consultants. Pursuant to the Watermaster’s policy, and to be consistent with SGMA, technical information and data shall constitute the “best available science” only if it is:

- Relevant to the decision being made by the Watermaster,
- Available to the Watermaster within a reasonable time in advance of the Watermaster’s decision, and
- Consistent with scientific and engineering professional standards of practice.

While the UCI GDE Study Report may provide useful new information, the Watermaster had not yet formally reviewed the report, and hence, had not yet determined that the UCI GDE Study Report constitutes “best available science” that should be relied upon by the Watermaster to take action or make policy decisions.

At its November 3 and 19, 2025 meetings, the Watermaster Board approved a scope of work and budget for West Yost (as the Watermaster’s Technical Consultant) to: (i) perform a technical review of UCI GDE Study Report; (ii) prepare a recommendation report for the Board; and (iii) facilitate the preparation of recommendation reports to the Board from the TAC and EWG. The scope of work is summarized in Table 1 below.

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<sup>8</sup> [https://borregospringswatermaster.com/wp-content/uploads/2025/02/BSWM-Policy-on-Use-of-Best-Available-Science\\_final.pdf](https://borregospringswatermaster.com/wp-content/uploads/2025/02/BSWM-Policy-on-Use-of-Best-Available-Science_final.pdf)

Table 1. Scope of Work to Perform a Technical Review of the UCI GDE Study Report	
Task Description	Schedule
Review UCI GDE Study Report	November 2025
Review TAC/EWG comments on UCI GDE Study Report	
Prepare a Draft Technical Consultant (TC) Recommendation Report	Nov. 2025 – Jan. 2026
TAC/EWG meeting to review Draft TC Recommendation Report	February 2026
Prepare a Draft TAC/EWG Recommendation Report	March 2026
TAC/EWG meeting to review Draft TAC/EWG Recommendation Report and receive additional TAC/EWG feedback	April 2026
Prepare Draft-Final TAC/EWG Recommendation Report (based on TAC/EWG feedback)	
Prepare Final TC and TAC/EWG Recommendation Reports	May 2026
Board meeting to present the Final TC and TAC/EWG Recommendation Reports, including discussion on recommended next steps	May 20, 2026

The main objectives of this Technical Consultant Recommendation Report are to:

1. Document the technical review of the UCI GDE Study Report to determine if it is “best available science” (BAS) that should be relied upon by the Watermaster to take action or make policy decisions, as stated in its policy regarding the use of BAS.
2. Provide the Board with recommendations for next steps.

### TECHNICAL APPROACH

The UCI GDE Study Report presented multiple lines of evidence—including data generated from field studies, advanced sensor technologies, and remote-sensing datasets—and *definitively* concluded that the BS Mesquite Bosque is connected to the regional aquifer system and functions as an environmental beneficial user of the Basin.

This technical review of the data, analyses, conclusions, and recommendations of the UCI GDE Study Report involved the following:

- Review of each line of evidence in the UCI GDE Study Report and preparation of a list of comments, questions, data gaps, and recommendations.
- Review of prior work related to the Mesquite Bosque and groundwater dependency, including:
  - Appendix D4 of the GMP
  - United States Geological Survey (USGS). 2015. *Hydrogeology, Hydrologic Effects of Development, and Simulation of Groundwater Flow in the Borrego Valley, San Diego County, California*<sup>9</sup>

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<sup>9</sup> USGS, 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>.

- Various references cited in the UCI GDE Study Report
- Correspondence with the report authors from UCI to ask and answer questions on the UCI GDE Study Report.
- Review of the comments prepared by various TAC and EWG members on the UCI GDE Study Report.<sup>10</sup>
- Correspondence with members of the TAC and EWG to ask and answer questions regarding their comments on the UCI GDE Study Report.
- Joint meetings of the TAC/EWG on February 26 and April 8, 2026<sup>11</sup> to discuss the UCI GDE Study Report, the draft Technical Consultant Recommendation Report, and the TAC/EWG recommendations to the Board on next steps.

To perform an unbiased and objective review of the UCI GDE Study Report, it was important to recognize there are three competing conceptual models that describe the potential source water(s) that could be supplying the evapotranspiration (ET) demands of the remaining live Mesquite trees in the currently existing BS Mesquite Bosque:

1. ***Soil moisture and/or perched groundwater within the vadose (semi-saturated) zone beneath the BS Mesquite Bosque.*** These waters exist within the pore spaces of the course-grained and fine-grained sediments within the vadose zone and would be available for uptake by the shallow lateral roots and deep tap roots of the Mesquite trees. These waters originate from percolating surface waters that accumulate in the vicinity of the BS Mesquite Bosque via direct precipitation, stormwater runoff from upstream watersheds, and wastewater percolation at constructed ponds. See Figure 1 below.
2. ***The deeper regional aquifer system (saturated zone) beneath the BS Mesquite Bosque.*** These waters exist within the fully-saturated pore spaces of the course-grained and fine-grained sediments below the groundwater table (but also in a semi-saturated state within the capillary fringe that could extend several feet above the groundwater table) and would be available for uptake by the deep tap roots of the Mesquite trees. These waters originate from all sources of recharge to the Basin, including: subsurface inflow from the surrounding mountain-front watersheds; streambed infiltration of stormwater runoff; deep percolation of precipitation and applied water on croplands, golf courses, and urban landscapes; and wastewater percolation at constructed ponds. See Figure 2 below.
3. ***Both (1.) and (2.)***. It is possible that both processes are occurring in different areas of the Mesquite Bosque. For example, in areas of the Bosque where depth to the groundwater table and capillary fringe is relatively shallow, the tap roots of the Mesquite trees may still be able to access the regional aquifer system. In contrast, in areas of the Bosque where depth to the groundwater table and capillary fringe is greater, the Mesquite tree roots may only be able to access soil moisture and/or perched groundwater.

As each line of evidence in the UCI GDE Study Report was reviewed, all three conceptual models (described above) were considered equally viable as potential sources of water supply to the Mesquite trees. Ignoring any of the conceptual models when evaluating the data and interpretations in the UCI GDE Study Report would result in a biased and subjective review of the study. Therefore, in this review of the

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<sup>10</sup> [https://borregospringswatermaster.com/wp-content/uploads/2026/05/TAC-EWG\\_Comments\\_GDE3.zip](https://borregospringswatermaster.com/wp-content/uploads/2026/05/TAC-EWG_Comments_GDE3.zip)

<sup>11</sup> <https://borregospringswatermaster.com/environmental-working-group/>

Technical Consultant Recommendation Report

*Technical Review of the UCI GDE Study Report and Recommendations for Next Steps*

Page 17

UCI GDE Study Report, the question was always asked: “Can the results and conclusions of the UCI GDE Study Report potentially be explained by an alternative conceptual model, or not?”

This technical approach to review of scientific data and information—namely, the equal consideration of alternative explanations—is critical to unbiased and subjective science, and in our opinion, is consistent with scientific and engineering professional standards of practice.

Figure 1 below shows conceptual model for the currently existing BS Mesquite Bosque where the Mesquite tree roots are disconnected from the regional aquifer system and instead are using soil moisture and localized perched groundwater within the vadose zone.

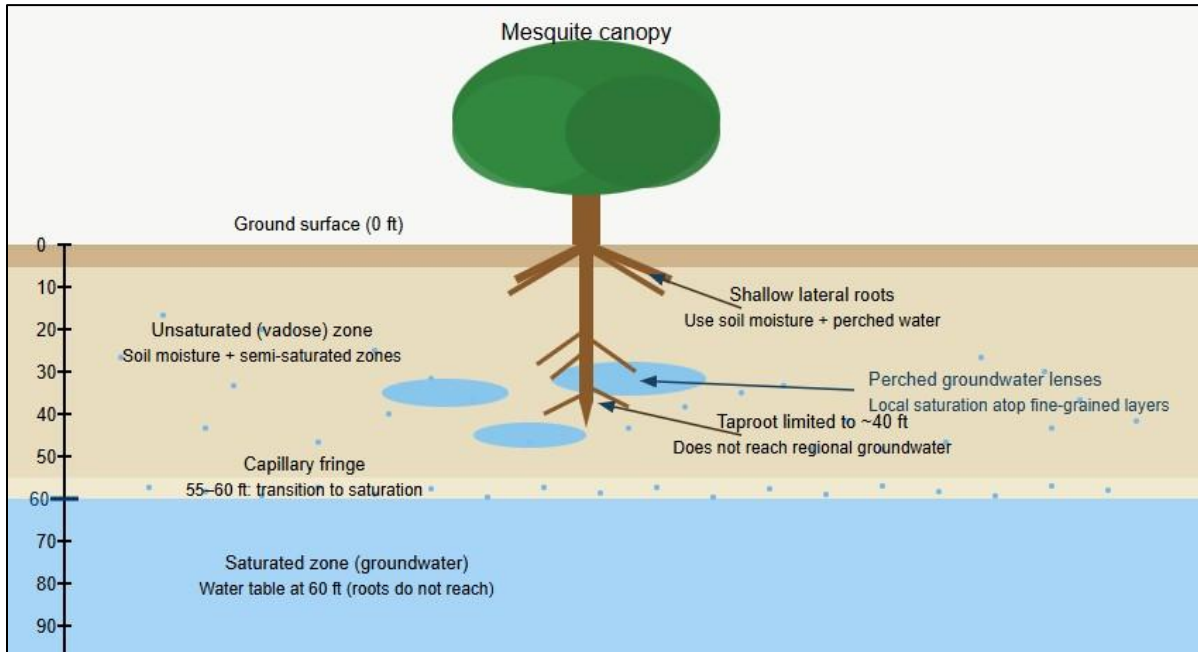


Figure 1.

Figure 2 shows a conceptual model for the currently existing BS Mesquite Bosque where the Mesquite tree roots are using waters derived from the regional aquifer system (as well as soil moisture and localized perched groundwater within the vadose zone).

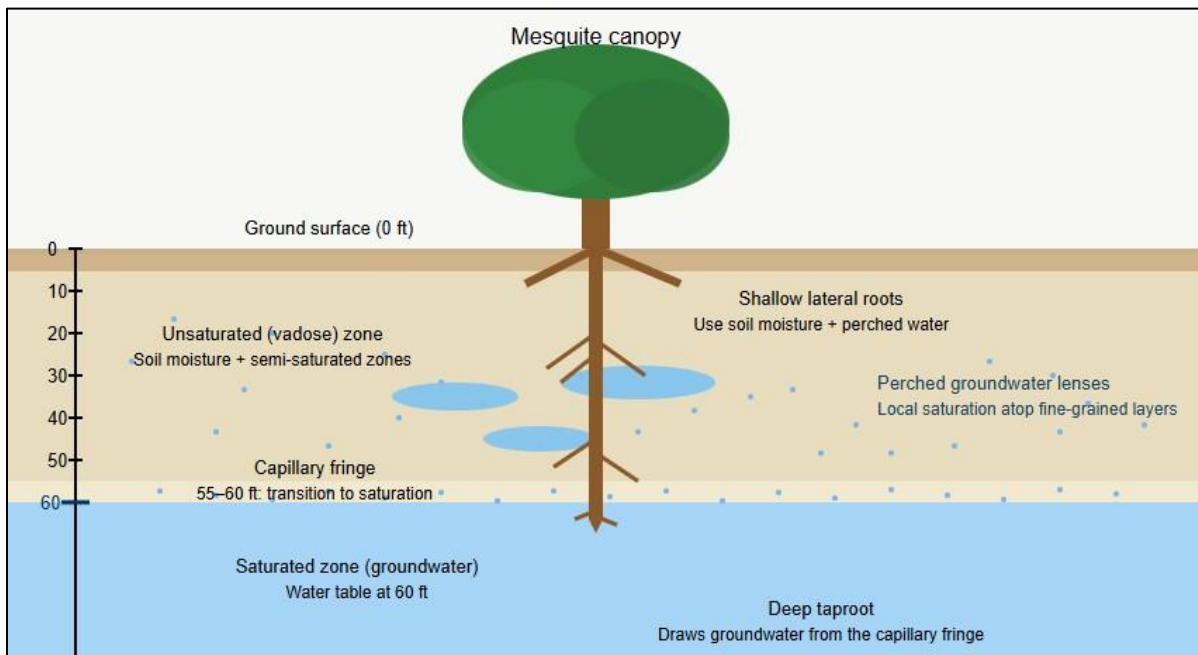


Figure 2.

## TECHNICAL REVIEW AND FINDINGS

Herein, we summarize each main section of the UCI GDE Study Report that caused the report authors to: (i) *definitively* identify the BS Mesquite Bosque as a GDE; (ii) to recommend allocation of 645 acre-feet per year of Basin groundwater to the BS Mesquite Bosque; (iii) to conclude that future declines in groundwater levels caused by the pumping Rampdown will degrade the BS Mesquite Bosque; and (iv) to recommend establishing specific sustainable management criteria to protect the BS Mesquite Bosque.

We also describe our assessment of each section of the report as “best available science” (BAS) and assign a BAS rating:

- **Met** – We agree with the scientific methods used, interpretations of the data, and the conclusions of the analysis.
- **Partially Met** – We agree with some but not all scientific methods used, interpretations of the data, and/or the conclusions of the analysis.
- **Not Met** – We disagree with the scientific methods used, interpretations of the data, and the conclusions of the analysis.

Of the 19 report sections, we rated BAS for one section as Met; 14 sections as Partially Met; and four sections Not Met. In many cases, we identified data gaps and/or gaps in understanding that hindered the interpretation of the data, and therefore, do not support arriving at the definitive conclusions and recommendations in the UCI GDE Study Report. Hence, **we do not consider the UCI GDE Study Report as BAS that the Watermaster should exclusively rely on to take action or make policy decisions.** In this section, we also provide several recommendations to fill the gaps in understanding, which are meant to kickstart a discussion with the TAC, EWG, and Board on recommended next steps.

## Mapping of Mesquite Bosque

The UCI GDE Study Report included new base maps of live Mesquite tree canopy and BS Mesquite Bosque habitat for April 2016, which represented the closest year to SGMA implementation (2015) that contained high-quality imagery when plants were active. The mapping approach used 0.7-meter resolution National Agriculture Imagery Program imagery (NAIP) visualized in the near infrared and an object-based supervised image classification in ArcGIS Pro (v. 3.1.0) with the Support Vector Machine (SVM). Supervised image classification involves creating training samples which the software then learns from to classify the entire image into set categories (e.g., live mesquite, dead mesquite, barren land, etc.).

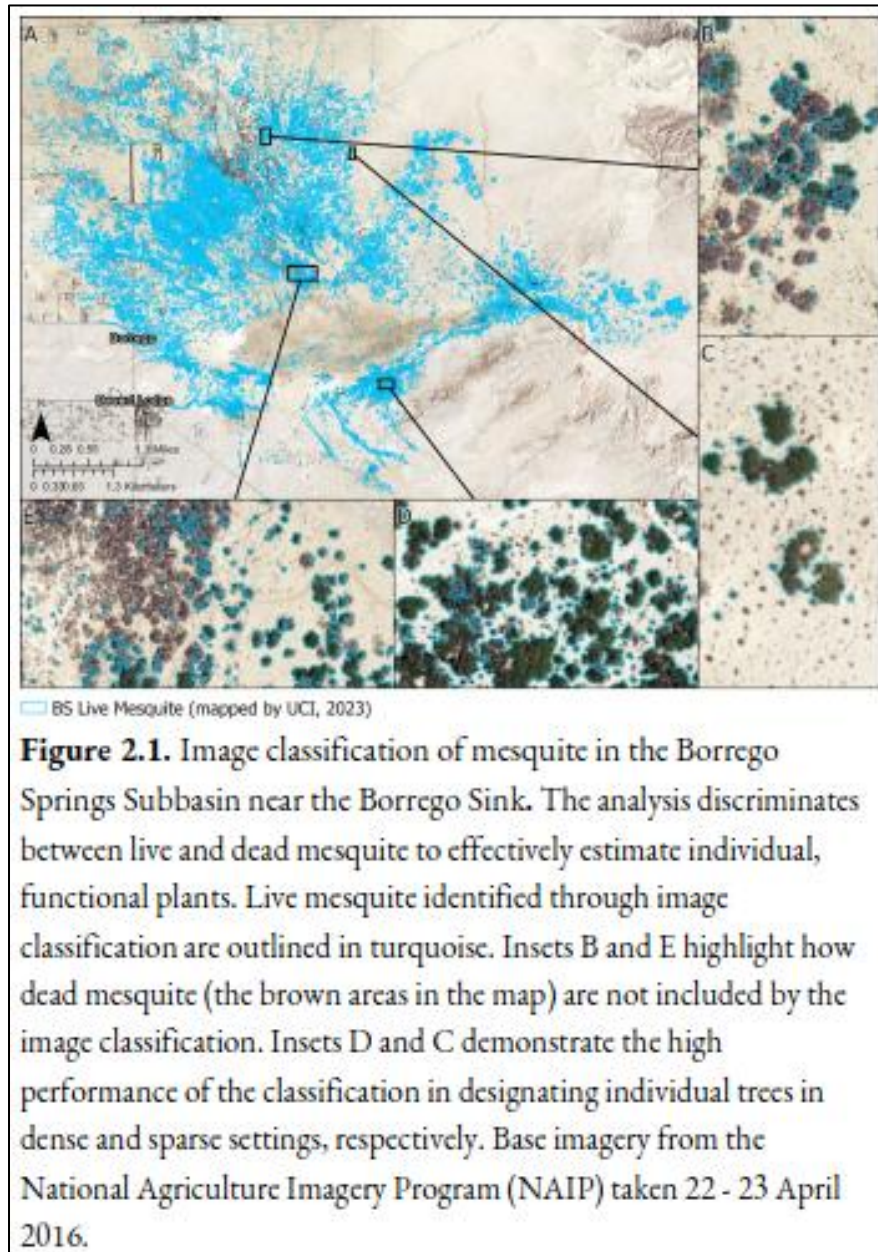
The mapping was performed in two defined areas where Mesquite trees are present: (i) the main study area surrounding the Borrego Sink in the Basin and (ii) a reference area where groundwater is relatively shallow in the adjacent Clark Dry Lake (CDL) groundwater subbasin. The main findings from this mapping effort were:

- *Borrego Sink*: 350.1 acres of live mesquite tree canopy (see Figure 2.1 from the report below)
- *Clark Dry Lake*: 86.2 acres of live mesquite tree canopy (see Figure 2.3 in the report)

The UCI GDE Study Report referenced a 1995 effort that mapped the extent of the BS Mesquite Bosque at 2,800 acres. Although different mapping methods were used in the 1995 effort, the comparison to the 2016 map indicates a reduction in live Mesquite tree canopy but also could be due to a difference in mapping methods.

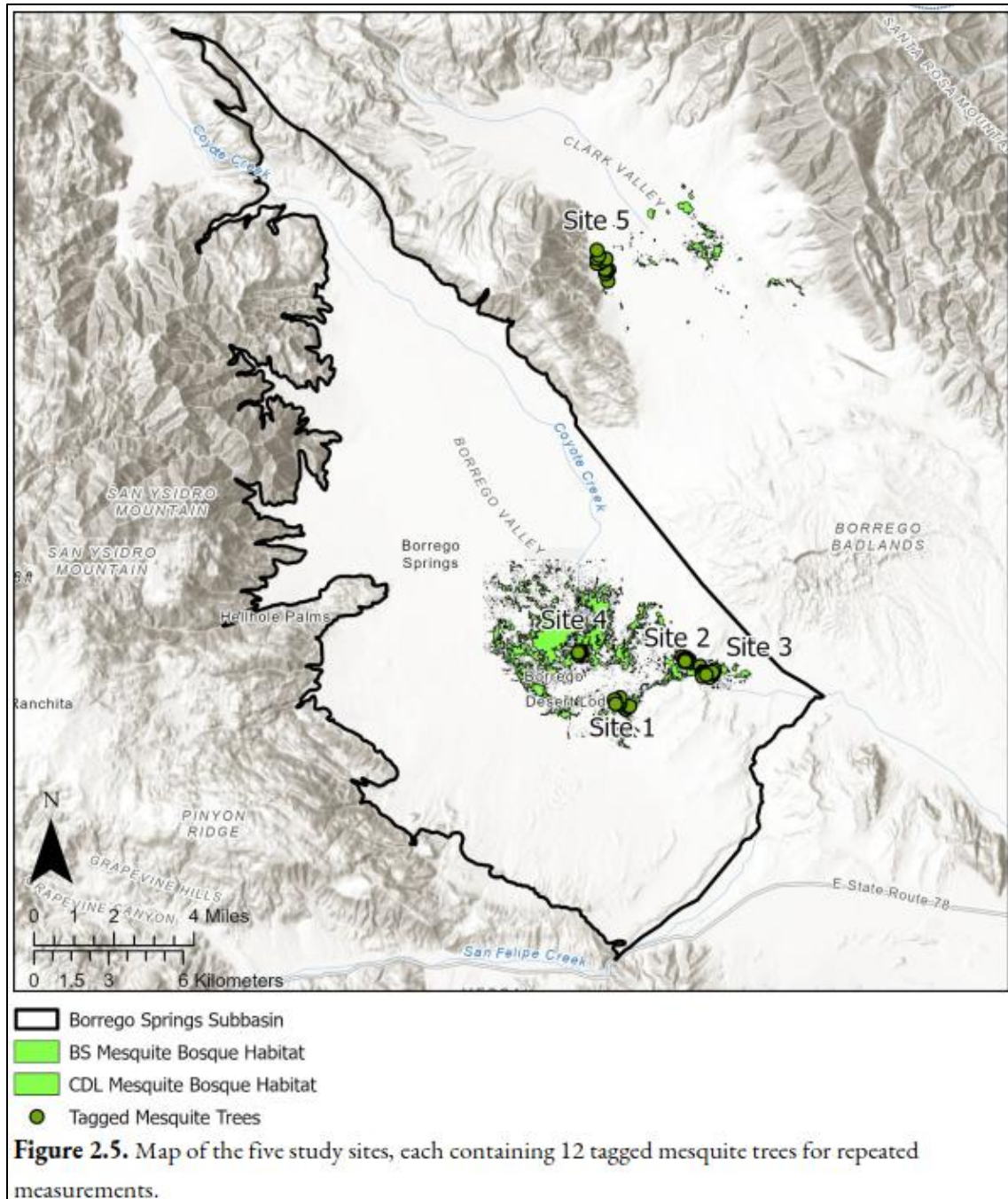
### Technical Consultant Assessment and Recommendations:

- *BAS determination: Partially Met*
  - The mapping approach of the live Mesquite tree canopy using image classification in ArcGIS Pro appears to produce reasonable results.
  - The resulting maps represent an improved understanding of locations of live Mesquite tree canopy in the BS Mesquite Bosque as of 2016, which establishes a “2016 baseline.”
  - However, the mapping approach should be validated by a remote-sensing specialist.
- Recommendations:
  - The mapping approach in ArcGIS Pro appears to be repeatable and objective, and if so, could be used as a monitoring technique for change detection of the extent and health of the live Mesquite tree canopy over time.
  - Before using this mapping approach for change detection over time, an independent remote-sensing specialist should evaluate and validate the approach and offer any recommended adjustments.



### Study Site and Tree Selection for Ecological Data Collection

The UCI GDE Study identified five (5) sites that were selected for habitat and tree-specific study (see Figure 2.5 from the report below). Sites 1-4 are in the BS Mesquite Bosque and Site 5 is in the CDL Mesquite Bosque for comparison. These sites were selected based on the mapped Mesquite Bosque habitat, parcel ownership (Anza Borrego Desert State Park or Anza Borrego Foundation), and accessibility. Site 1 (southern portion of the BS Mesquite Bosque) and 5 (CDL) were selected for more intensive study of isotopic chemistry and water potential.

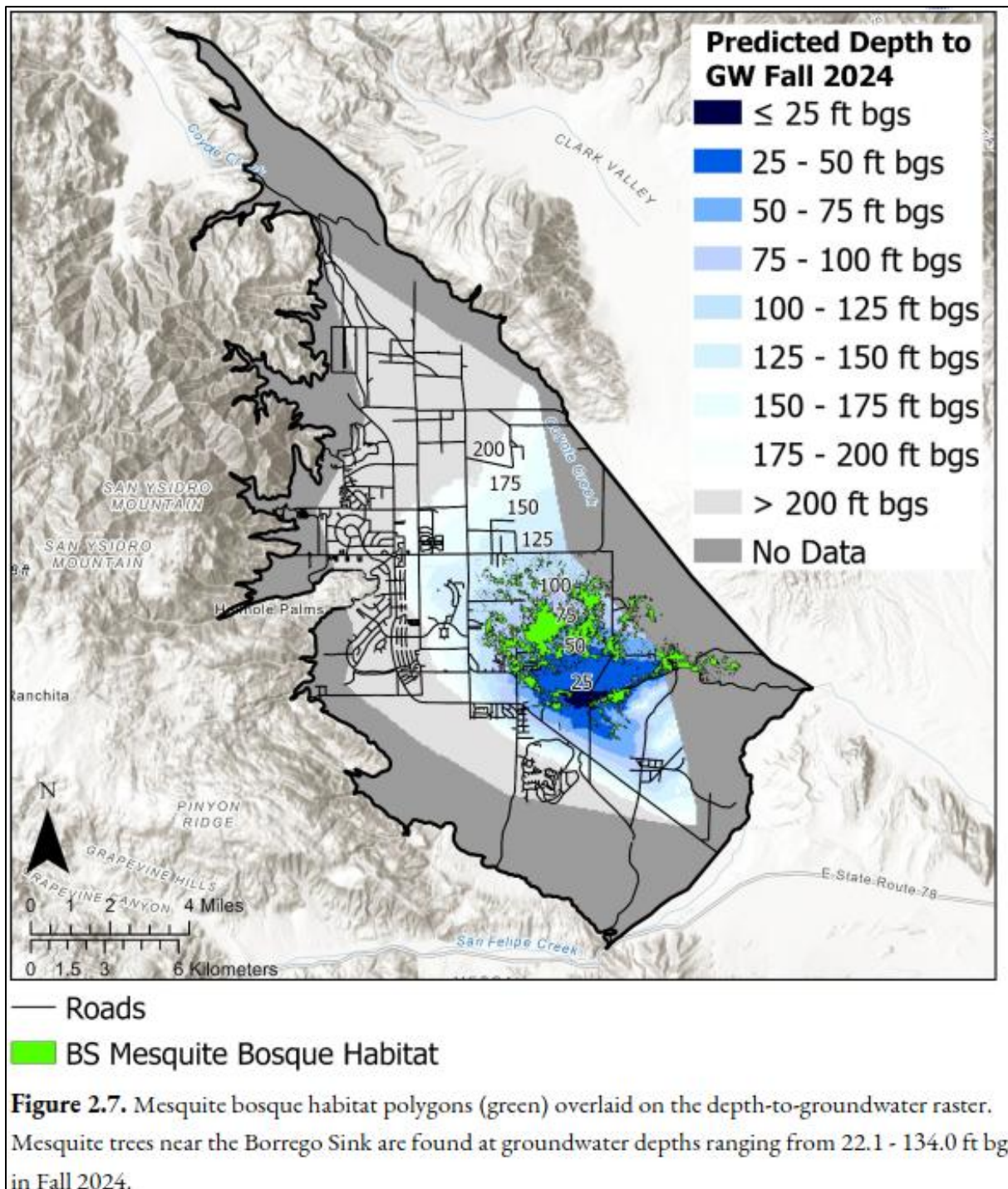


**Technical Consultant Assessment and Recommendations:**

- **BAS determination: Partially Met**
  - Site selection was appropriately distributed across the BS Mesquite Bosque. However, Site 1 is located south of the Borrego Sink adjacent to the uplifted and folded sedimentary rocks in the SMA. This area has complex underlying hydrogeology which may not be representative of the hydrogeology in other locations of the BS Mesquite Bosque. And unfortunately, there are no nearby monitoring wells that could be used to better describe the underlying hydrogeology, depth-to-groundwater, and groundwater chemistry at Site 1.
  - In retrospect, Site 4 would have been a more appropriate choice for more intensive study. This is because the depth-to-groundwater is deeper, so if groundwater dependency is demonstrated at Site 4, it would follow that other areas within the BS Mesquite Bosque where groundwater is shallower are also GDEs. In addition, Site 4 is closer to the main areas of pumping in the Basin and the locations of monitored wells.
- **Recommendations:**
  - A new monitoring well(s) could be used to improve confidence in the data analyses and interpretations.

### Mapping Depth to Groundwater

The UCI GDE Study generated estimates of depth-to-groundwater in the Basin for Fall 2024 by subtracting a groundwater-elevation raster provided by the Watermaster from a high-resolution 1-meter digital elevation model (DEM) across the Basin from the USGS in ArcGIS Pro (see Figure 2.7 from the report below). The analysis indicated that depth-to-groundwater is closest to the surface near the Borrego Sink, with depths as shallow as 18 feet below ground surface (ft-bgs) in Fall 2024.



#### Technical Consultant Assessment and Recommendations:

- *BAS determination: Partially Met*
  - This mapping technique provides a reasonable first-order estimate of depth-to-groundwater in the vicinity of the BS Mesquite Bosque. However:
    - The Watermaster’s groundwater-elevation raster was generated based on limited field measurements because wells are sparse within the BS Mesquite Bosque area.
    - The groundwater-elevation raster was generated for specific Watermaster purposes to characterize basin-wide groundwater conditions within the regional aquifer system (e.g., change in groundwater storage and groundwater flow directions).

Hence, the Watermaster’s groundwater-elevation raster should be considered an approximate estimate, which limits the accuracy of UCI’s calculated depth-to-groundwater within the BS Mesquite Bosque area.

- Recently collected data by the Watermaster from new monitoring wells in the area indicate that depth-to-groundwater may be greater than estimated in the UCI GDE Study:
  - Depth-to-groundwater at WWTP-3 = 55 ft-bgs on 3/8/2023
  - Depth-to-groundwater at Not-Broom Well = 81.7 ft-bgs on 3/19/2025
    - In summary, the mapping of depth-to-groundwater used Watermaster’s readily available groundwater-elevation raster. However, this raster was generated from sparse measured data within the BS Mesquite Bosque area and its purpose is for regional analysis; hence, the raster is an approximate estimate of depth-to-groundwater. Therefore, it should not be used for site-specific analyses and interpretations in the report, such as setting minimum thresholds for groundwater levels.
- *Recommendations:*
  - Measured depth-to-groundwater within the BS Mesquite Bosque area is a data gap that should be filled to increase confidence in the estimation of depth-to-groundwater and the assessment of the BS Mesquite Bosque as a GDE.

## Mesquite Tree Rooting Depth and Connection to Groundwater

The UCI GDE Study Report referenced multiple studies to confirm that Mesquite trees can develop deep roots to tap groundwater, with documented rooting depths ranging from approximately 39 to 175 ft-bgs:

- In the Borrego Sink, Jenkins et al. (1988) recorded Mesquite tree roots extending at least 39.4 feet.
- Phillips (1963) observed *Prosopis juliflora* roots reaching depths of 175 feet near Tucson, Arizona.

The UCI GDE Study claims that the capillary fringe may also extend from 6-11 feet above the saturated zone, which makes groundwater available at even shallower depths.

The study cites these references to demonstrate the potential for Mesquite tree species to access groundwater at depths (39 to 175 ft-bgs), which is comparable to or exceeds the current estimates of depth-to-groundwater underlying the BS Mesquite Bosque (22 to 134 ft-bgs).

### Technical Consultant Assessment and Recommendations:

- *BAS determination: Met*
  - The main conclusion of this report section that Mesquite trees in the BS Mesquite Bosque have deep tap roots that could reach the capillary fringe above the regional aquifer system is supported by the cited references.

## Shallow Soil Conditions

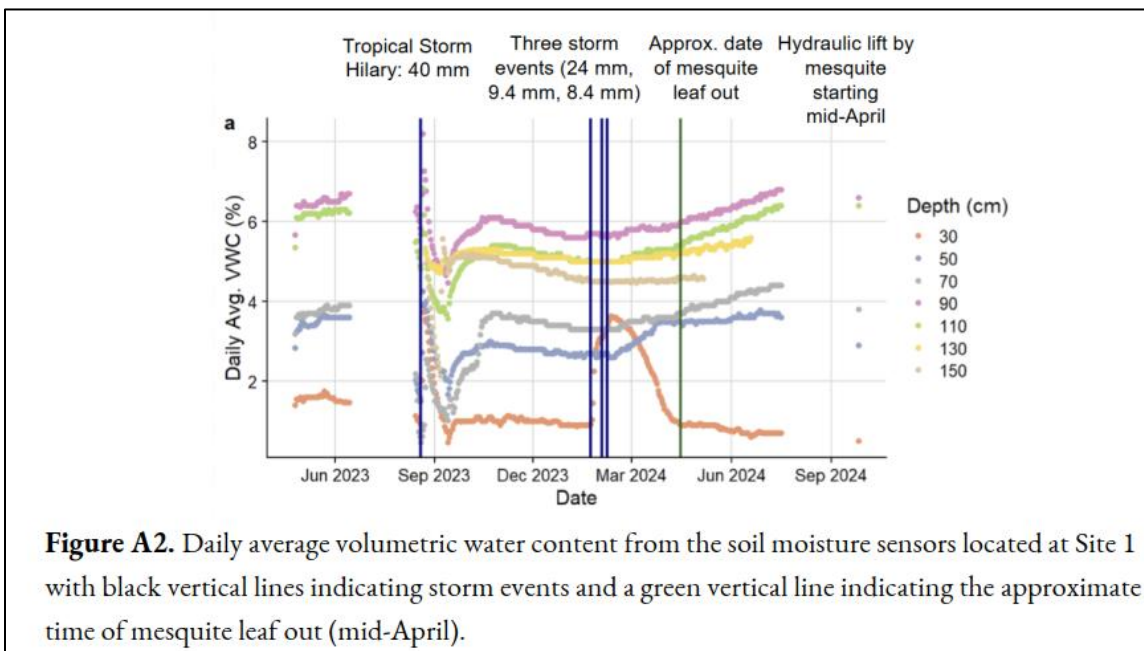
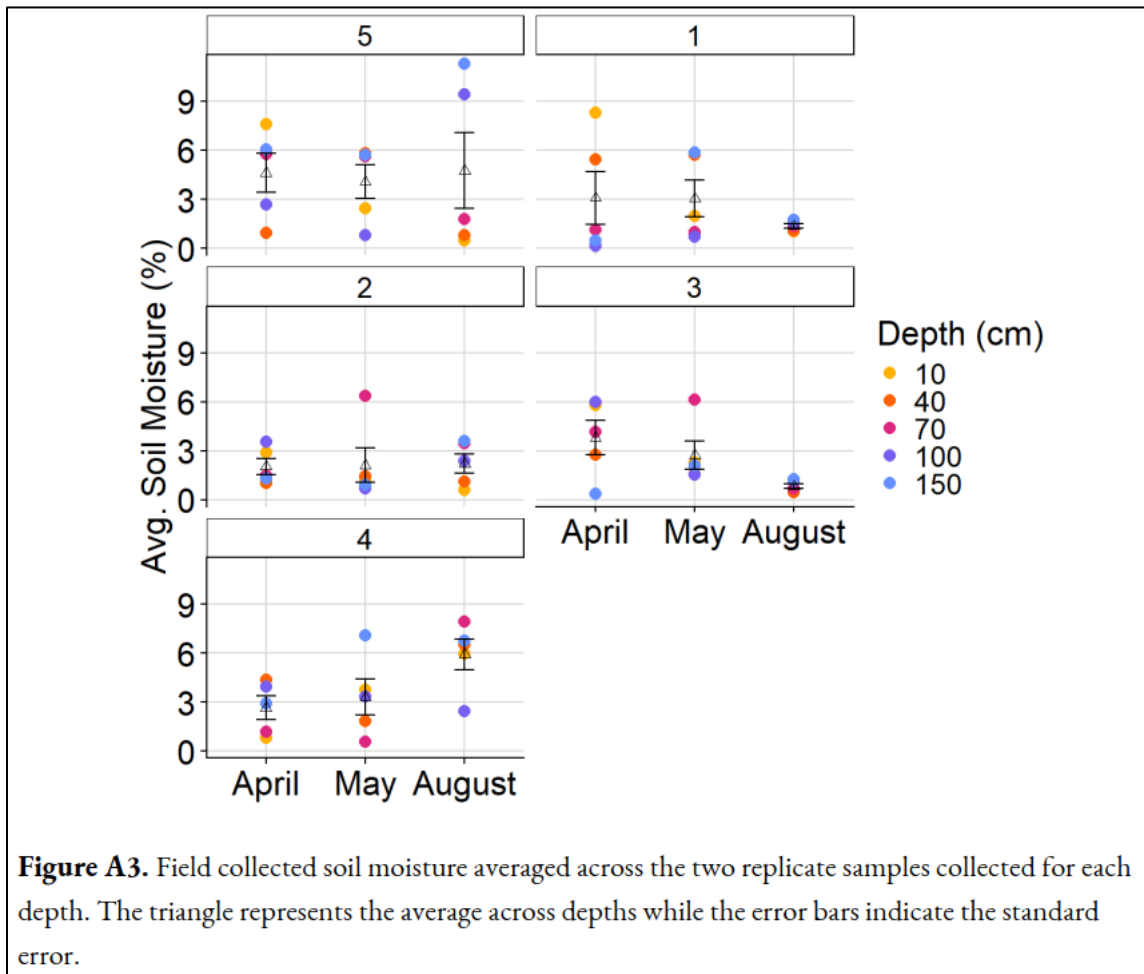
Sampling events for water potential and isotopic analyses in the UCI GDE Study were preferentially conducted during the “dry” season to increase the likelihood that groundwater use was captured. The study used nearby weather stations, soil moisture sensors, and field soil moisture data to characterize soil moisture conditions to 5 ft-bgs during “sampling” events.

Field soil samples were collected during April 2024 to August 2024 at 22 locations within all five study sites and were “homogenized” before subsampling for a range of depths: 0–10 cm (0–3.9 in), 10–40 cm (3.9–15.7 in), 40–70 cm (15.7–27.6 in), 70–100 cm (27.6–39.4 in), and 100–150 cm (39.4–59.1 in). Soil wet weight and soil dry weight were measured to assess gravimetric soil moisture using the following equation:  $[(\text{soil wet weight} - \text{soil dry weight}) / \text{soil dry weight}]$ . Soil dry weight was determined by drying soils at 105°C for 48 hours. See Figure A3 from the report below.

Continuous soil moisture sensors were installed at the primary Borrego Springs site (Site 1) from June 2023 to September 2024 at depths of 30 cm (11.8 in), 50 cm (19.7 in), 70 cm (27.6 in), 90 cm (35.4 in), 110 cm (43.3 in), 130 cm (51.2 in), and 150 cm (59.1 in). These sensors measure soil moisture by average volumetric water content. See Figure A2 from the report below.

The main results and interpretations from the soil moisture analyses were:

- The top 5 ft of soil profile was relatively dry (<10 percent soil moisture) throughout the dry season. Sandy, well-drained soils were consistently observed across all depths and sites with no signs of clay layers, water-logged soils, or any impermeable layers indicative of a perched aquifer.
- The continuous sensors recorded a steady increase in soil moisture following the leaf-out period (mid-April) suggesting a role of “hydraulic lift” in increasing soil moisture at deeper depths (>50 cm or 19.7 in).



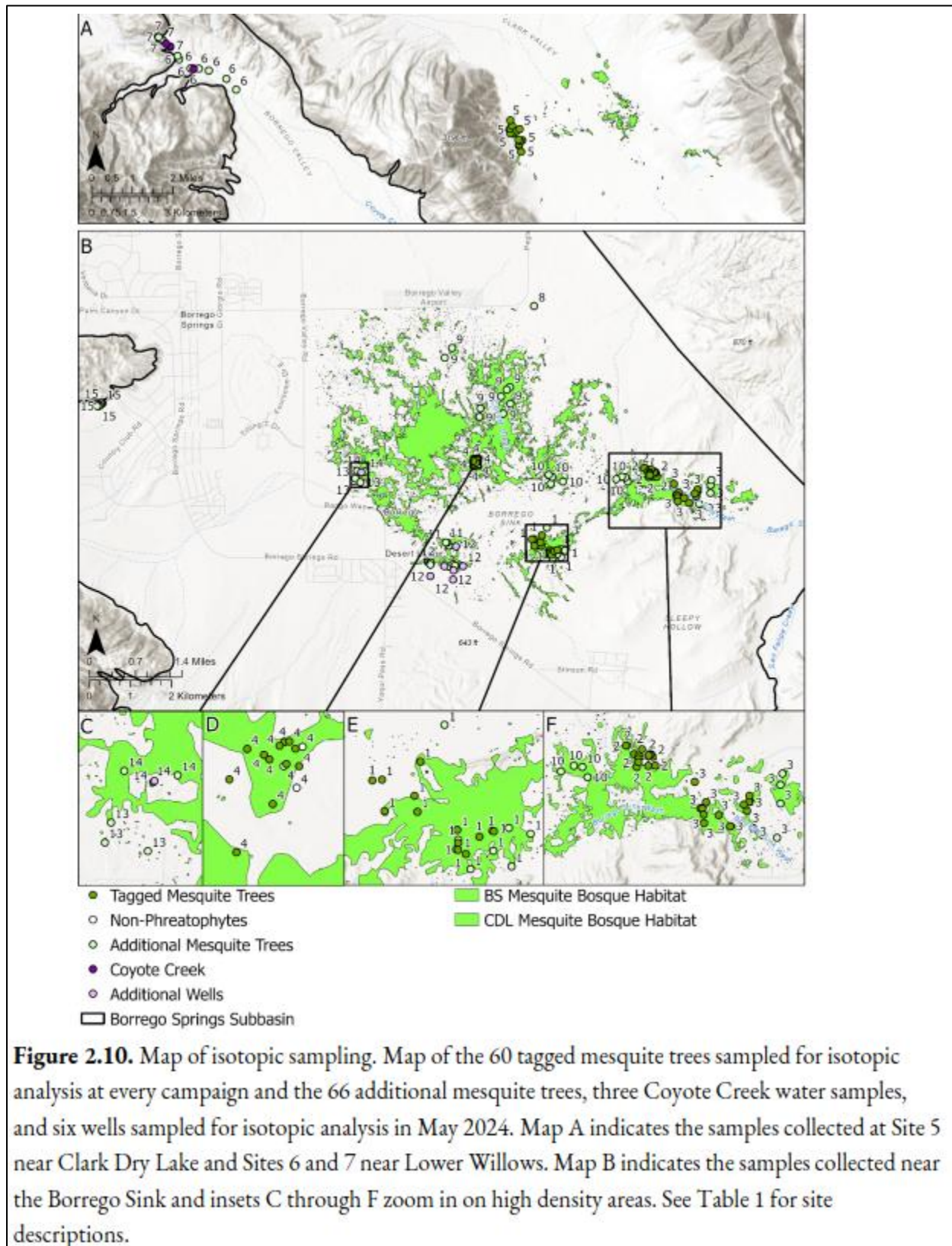
**Technical Consultant Assessment and Recommendations:**

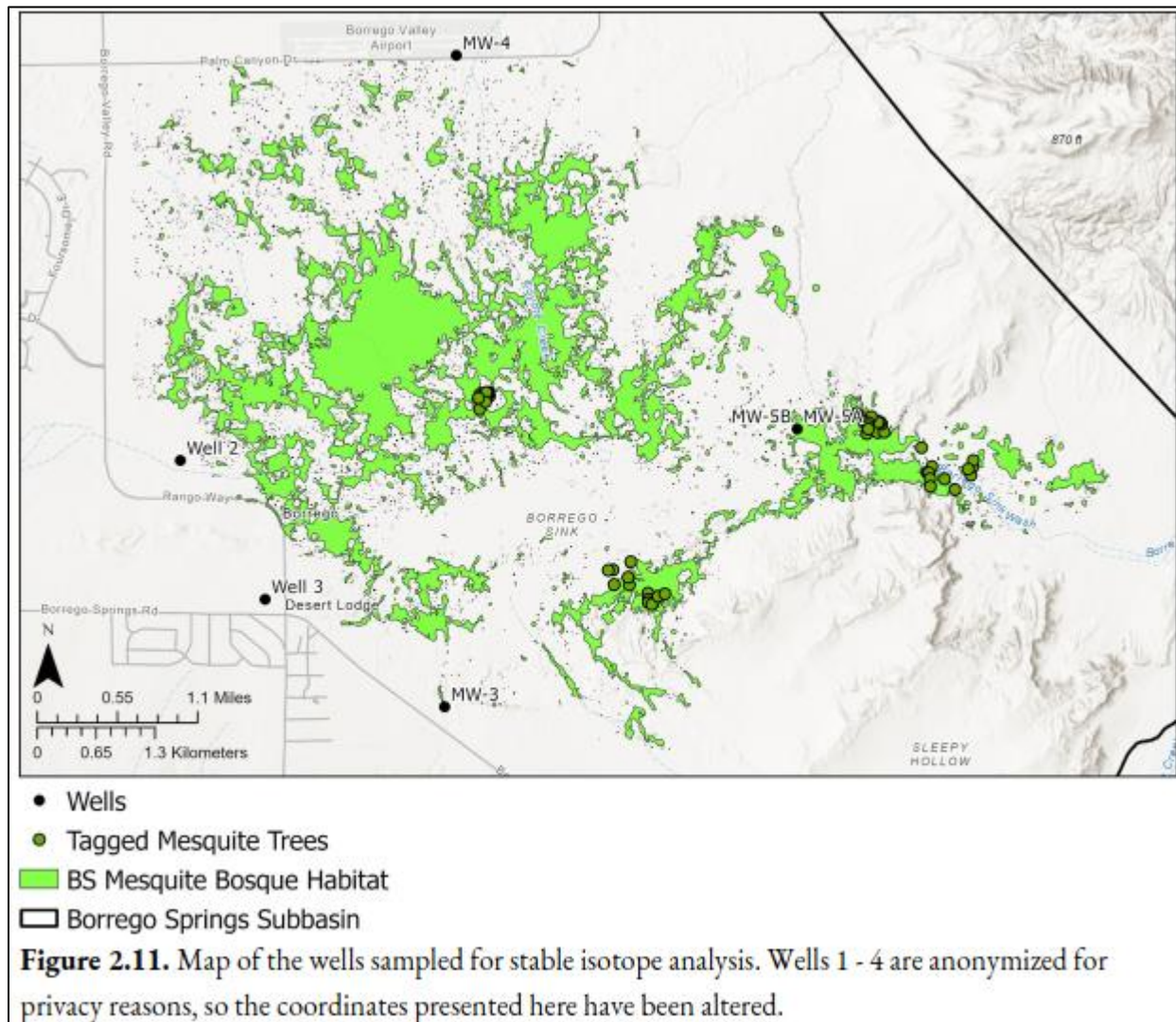
- *BAS determination: Not Met*
  - Soil moisture measured by volume (Figure A.2) is mathematically greater than soil moisture measured by weight (Figure A.3), so the two soil moisture time-series charts in the report (and shown above) cannot be directly compared. Nevertheless, soil moisture less than 10 percent, by weight or by volume, is representative of relatively dry soil conditions, as stated in the report.
  - Mesquite trees are adapted to arid desert environments, and their roots can access soil moisture that is less than 10 percent by weight or by volume.
  - Observations of progressively declining soil moisture throughout the dry season could be caused by soil moisture evaporation, evapotranspiration by the shallow plant roots, or both.
  - Observations of increasing soil moisture after rainfall and Mesquite leaf-out events could be caused by “hydraulic lift,” the downward percolation of infiltrated surface water, or both.
  - The hypothesis of “hydraulic lift” suggests the existence of a soil moisture reservoir deeper than 5 ft-bgs.
  - *Data Gap:* The sampling and analysis of soil conditions to depths of only 5 ft-bgs leaves a gap in understanding of soil conditions from 5 ft-bgs to the saturated zone (i.e., >100ft-bgs). Soil moisture within this depth interval could be a source of water for the Mesquite tree roots.
  - The soil moisture data described in the UCI GDE Study Report (i.e., relatively dry soil conditions in the upper 5 ft of soil) by itself is not indicative of GDE behavior.
  - In summary, Mesquite trees are adapted to arid desert environments, and their roots can access soil moisture of <10 percent. The sampling and analysis of soil conditions to depths of only 5 ft-bgs leaves a gap in understanding of soil conditions from 5 ft-bgs to the saturated zone (i.e., >100 ft-bgs). Soil moisture within this depth interval could be a source of water for the Mesquite tree roots but was not analyzed in the study.
- *Recommendation:*
  - Fill the gap in understanding of the texture, moisture content, and isotopic water chemistry of the soil profile from 5 ft-bgs to the saturated zone.

## Isotopic Analysis

The UCI GDE Study employed an analysis of hydrogen and oxygen isotopes in Mesquite tree tissue in comparison to hydrogen and oxygen isotopes in groundwater and shallow soil water to assess the contribution of these two-source waters to the Mesquite trees. The isotopic analysis is summarized below:

- Lighter isotopes in water (e.g.,  $^{16}\text{O}$ ) evaporate more readily than heavier isotopes (e.g.,  $^{18}\text{O}$ ) and diffuse through similar media at higher rates.
- Different levels of exposure to evaporation will result in different isotopic signatures for different water sources (e.g., shallow soil water, which is exposed to evaporation, will preferentially lose its “light” isotopes (e.g.,  $^{16}\text{O}$ ) and retain its “heavy” isotopes (e.g.,  $^{18}\text{O}$ )).
- The results of isotopic analysis are represented as a delta value relative to the heavier isotope (e.g.,  $\delta^{18}\text{O}$ ) where larger values indicate enrichment in heavy isotopes, demonstrating the signature of evaporation. The isotopic composition data can be used to calculate **deuterium-excess**, a useful indicator of the effects of evaporation.
- Values of  $\delta^{18}\text{O}$  and deuterium-excess from soil water, aquifer water, and plant tissue water were used to test for the presence of groundwater in the Mesquite plant tissue.
- Repeated sampling of leaf water was performed at 60 trees across Sites 1 through 5 in 2023 and 2024, as well as an additional 66 trees during the May 2024 sampling campaign to better assess spatial variability. See Figure 2.10 from the report (below).
- Creosote and Saltbush (shallow roots) were also sampled in May 2024 as a comparison for plants that are relatively shallow-rooted and are not expected to access the deeper regional aquifer system.
- Sampling occurred over the dry season (April – November) in 2023 and 2024.
- Soil water sampling and analysis occurred at one location at Sites 1 through 5 three times per year during the spring/summer months. Isotopic values of soil water from were averaged across the sampling depths and used in the mixing models.
- Groundwater was sampled at various wells less frequently (in many cases, only one sample). See Figure 2.11 from the report (below).
- Perched groundwater was not sampled because there was no evidence to suggest it existed beneath the Mesquite Bosque habitats.
- Water isotopes were analyzed by the University of Wyoming Stable Isotope Facility.

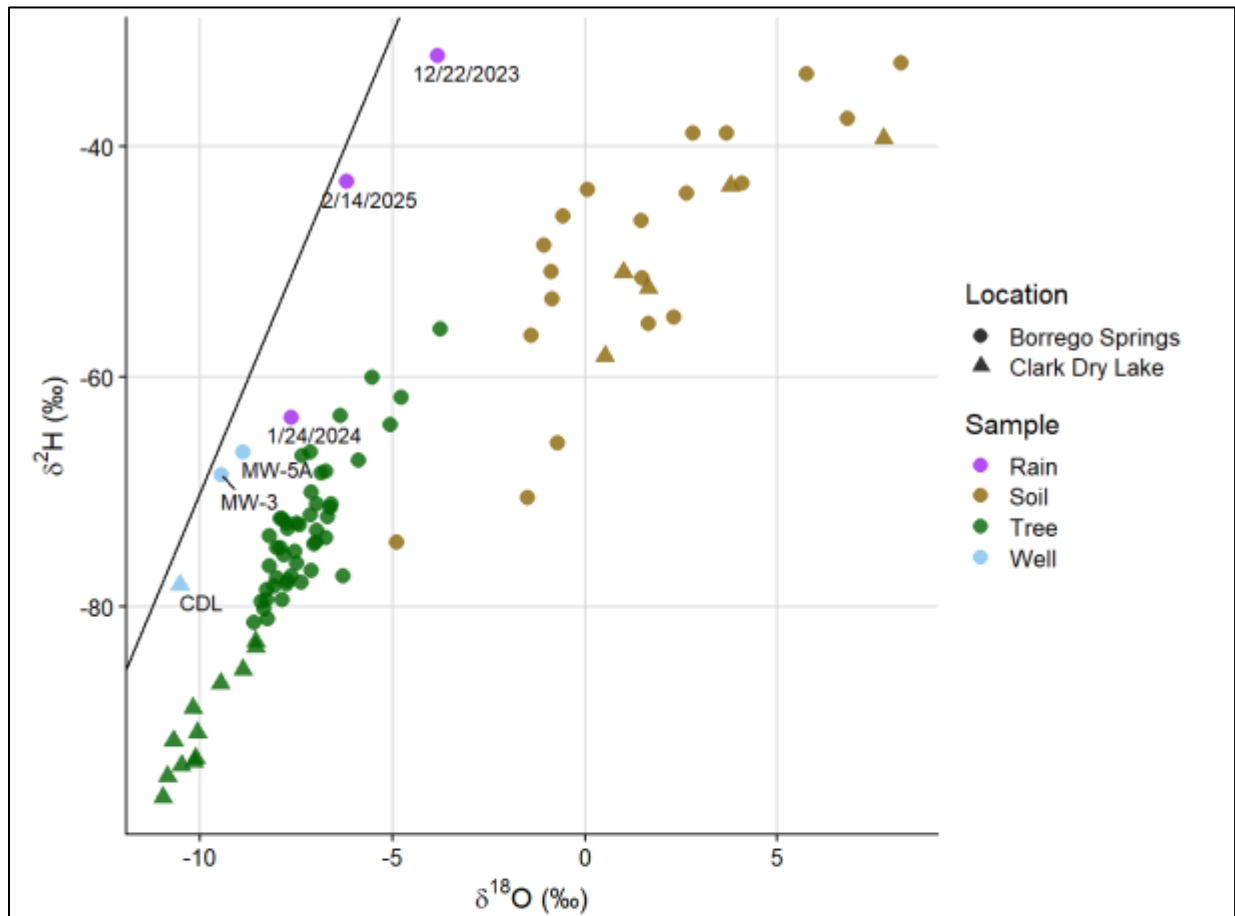




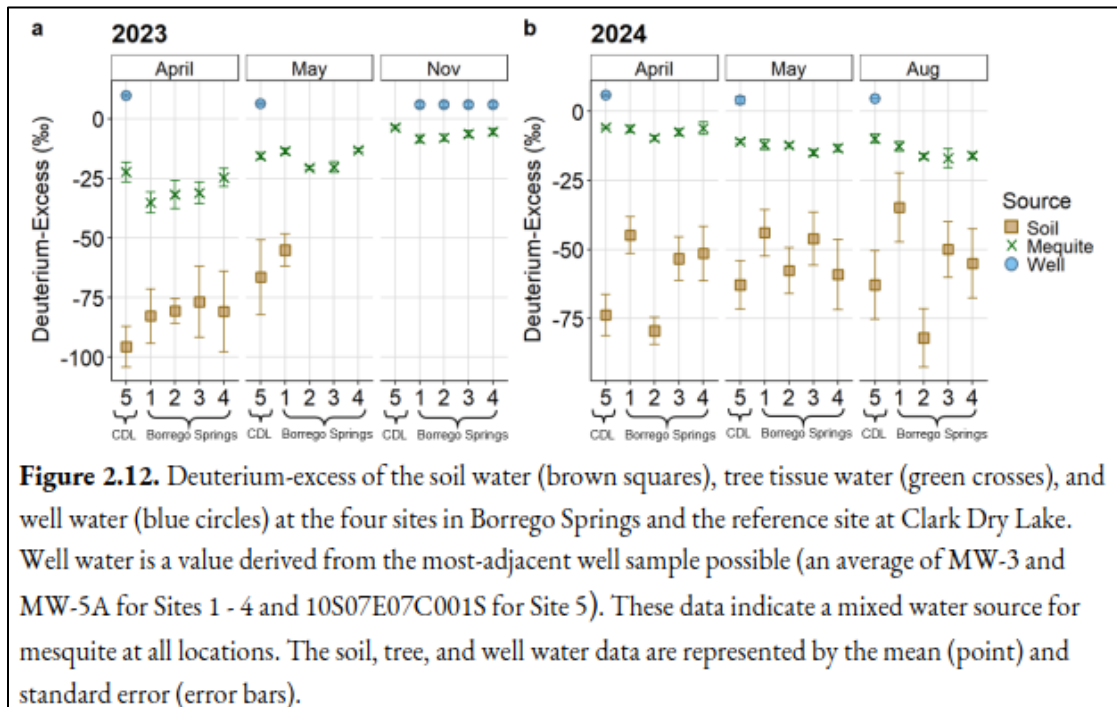
The main results and conclusions from the isotopic analyses are that the Mesquite trees draw water from both shallow soil water and the regional aquifer system, which is consistent with other research showing that Mesquite trees are facultative phreatophytes that can utilize both surface water and groundwater depending on availability. See Figures A6 and 2.12 from the report (below).

The data also were used to estimate the percentage of groundwater in Mesquite tree tissue: 54 percent to 82 percent across the four BS Mesquite Bosque (Sites 1 through 4) and between 70 percent and 86 percent at the CDL Mesquite Bosque (Site 5). See Figure 2.15 from the report (below).

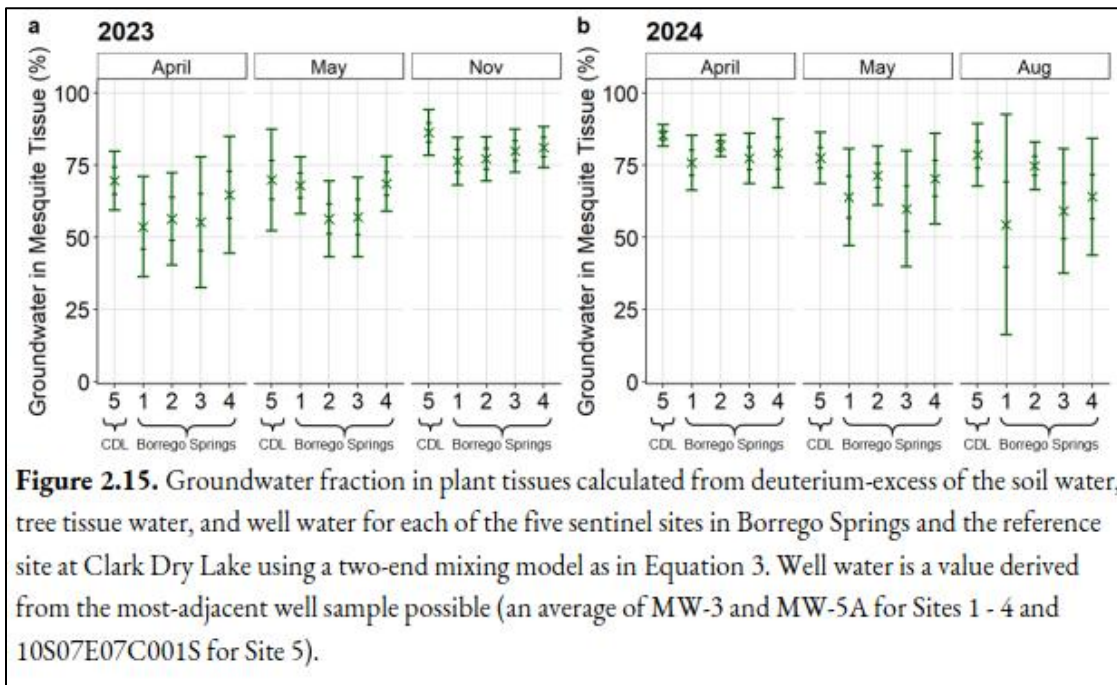
Due to the low sample size of the Creosote and Saltbush, the study did not conduct statistical tests or run the two-source mixing model. It did, however, compare the deuterium-excess values and found that the Creosote and Saltbush had deuterium-excess values ( $-23.0 \pm 9.1\text{‰}$ ) closer to the soil profile ( $-57.2 \pm 23.6\text{‰}$ ) than did the Mesquite ( $-11.4 \pm 6.4\text{‰}$ ).



**Figure A6.** The relationship between  $\delta^{18}\text{O}$  and  $\delta^2\text{H}$  across all sample types across all six sampling campaigns for Sites 1 through 5 averaged at the level of the individual. The well labeled CDL is State Well ID 10S07E07C001S). The black line indicates the Global Meteoric Water Line (GMWL), which is described by the equation:  $\delta^2\text{H} = 8 \cdot \delta^{18}\text{O} + 10$ , and represents the mean global relationship between  $\delta^2\text{H}$  and  $\delta^{18}\text{O}$  in precipitation. The alignment of the well water samples (blue) and the precipitation samples (purple) on the GMWL line indicates groundwater that originated as precipitation through recharge processes. Points to the right of this line indicate the influence of evaporation. The brown points representing soil water are farther to the right and of a lower slope than the GMWL, indicating a stronger effect of evaporation on their isotopic signature relative to the green points. The green points representing mesquite water are also to the right of the line but show little overlap with the brown points, indicating an isotopic signature that can only be explained by the mixing of soil water and well water sources.



**Figure 2.12.** Deuterium-excess of the soil water (brown squares), tree tissue water (green crosses), and well water (blue circles) at the four sites in Borrego Springs and the reference site at Clark Dry Lake. Well water is a value derived from the most-adjacent well sample possible (an average of MW-3 and MW-5A for Sites 1 - 4 and 10S07E07C001S for Site 5). These data indicate a mixed water source for mesquite at all locations. The soil, tree, and well water data are represented by the mean (point) and standard error (error bars).



**Figure 2.15.** Groundwater fraction in plant tissues calculated from deuterium-excess of the soil water, tree tissue water, and well water for each of the five sentinel sites in Borrego Springs and the reference site at Clark Dry Lake using a two-end mixing model as in Equation 3. Well water is a value derived from the most-adjacent well sample possible (an average of MW-3 and MW-5A for Sites 1 - 4 and 10S07E07C001S for Site 5).

#### Technical Consultant Assessment and Recommendations:

- **BAS determination: Partially Met**
  - We agree that the available isotopic data indicate that the ET demands of the Mesquite trees are not being 100 percent satisfied by the shallow soil moisture (<5 ft-bgs) nor 100 percent satisfied by the regional aquifer system. Instead, there appears to be a mixed water source that supplies the ET demands of the Mesquite trees.
  - The isotopic analysis of Creosote and Saltbush tissue also indicates a mixed water source, but with deuterium-excess values ( $-23.0 \pm 9.1\%$ ) closer to the soil profile ( $-57.2 \pm 23.6\%$ ) than the Mesquite trees ( $-11.4 \pm 6.4\%$ ). However, Creosote and Saltbush have shallow roots compared to Mesquite trees, which are not expected to reach and access the deeper regional aquifer. Therefore, the isotopic data suggest there must be another water source for the Creosote and Saltbush that is deeper than 5 ft-bgs with an isotopic signature like the regional aquifer. This source water could be the soil moisture within the vadose zone below 5 ft-bgs. This hypothesis makes sense if the origin of the deeper soil moisture is episodic infiltration of surface water after large storm events that percolates past the upper 5 feet of soil, and hence, escapes the evaporative stresses that influence the isotopic composition of soil moisture in the upper 5 ft of soil during the subsequent hot, dry months.
  - The isotopic analysis in the UCI GDE Study did not include sampling, analysis, and consideration of soil moisture deeper than 5 ft-bgs as a potential source water for the vegetation (i.e., Mesquite, Creosote, Saltbush). Soil moisture within this depth interval could be a source of water for the vegetation but was not analyzed. This data gap prohibits arriving at the *definitive* conclusion of the UCI GDE Study that the BS Mesquite Bosque is a GDE.
- **Recommendation:**
  - Fill the gap in understanding of the isotopic composition of soil moisture from 5 ft-bgs to the saturated zone. These data could more definitively describe and quantify the relative roles of shallow soil moisture (<5 ft-bgs), deeper soil moisture (>5 ft-bgs) and/or the regional aquifer in supplying the ET demands of the Mesquite trees.

## Water Potential

The UCI GDE Study used leaf water potential as an indicator of water availability and moisture stress, reflecting the balance between soil moisture supply, atmospheric demand, and plant water uptake:

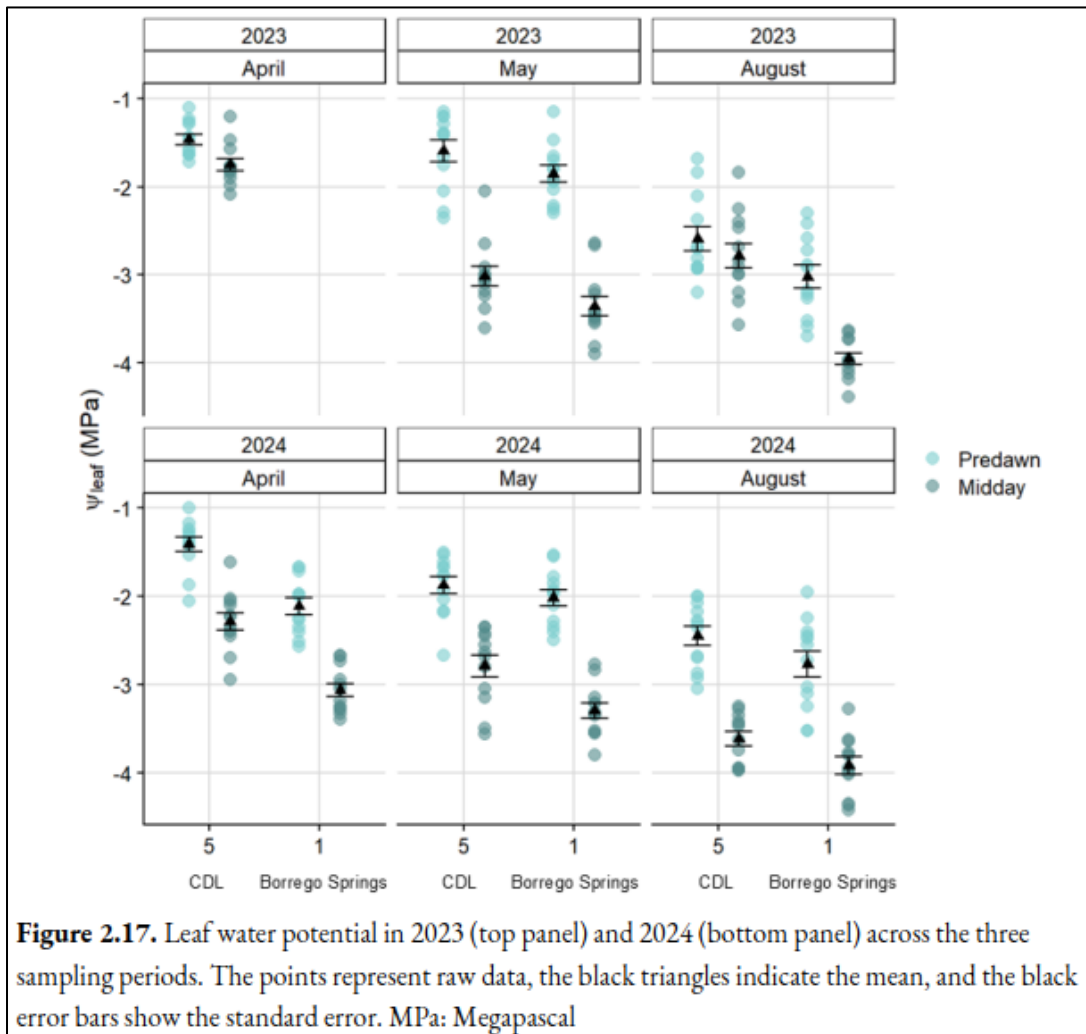
- “At predawn, when transpiration is minimal and water flow is equilibrated within the plant-soil system, leaf water potential is closely aligned with soil water potential, offering a baseline measure of water availability for plants. Lower, or more negative, predawn leaf water potential values indicate lower water availability.
- At midday, when transpiration is highest, leaf water potential approximates a measure of water stress. Lower, or more negative, midday leaf water potential values indicate greater water stress.
- Similar values between conditions, sites, or plants reflect similar water availability in the soil-plant system.”

The study measured predawn and midday leaf water potential of Mesquite trees across the growing season to assess differences in water availability and water stress between Mesquite trees in the BS Mesquite Bosque and CDL Mesquite Bosque (the comparison site with comparatively shallow groundwater levels). Sampling was conducted at Sites 1 (BS) and 5 (CDL) over the spring/summer months of 2023 and 2024.

Additionally, in 2024 only, the study compared leaf water potential for Mesquite trees to a comparatively shallow-rooted plant species (Creosote) to compare water availability and water stress as the dry season progressed.

The results of the water potential analysis in the report show:

- The Mesquite trees at the BS Site and the CDL Site exhibited similar water availability and water stress, with the BS Site showed slightly less water availability and greater water stress than the CDL Site. The report suggests that this observation was likely due to higher groundwater levels at the CDL Site. See Figure 2.17 from the report (below).
- As expected, water stress increased from pre-day to mid-day and from April to August. See Figure 2.17 from the report (below).
- The Creosote showed less water availability and greater water stress than Mesquite. The report suggests that this observation was likely due to groundwater availability for the Mesquite.



**Figure 2.17.** Leaf water potential in 2023 (top panel) and 2024 (bottom panel) across the three sampling periods. The points represent raw data, the black triangles indicate the mean, and the black error bars show the standard error. MPa: Megapascal

**Technical Consultant Assessment and Recommendations:**

- *BAS determination: Partially Met*
  - The water potential data and analyses produce reasonable results which indicate:
    - Leaf water stress in Mesquite increased from pre-day to mid-day and from April to August, indicating greater water stress as temperature and sunlight increase.
    - Mesquite trees at CDL have greater water potential than at the BS Site, indicating greater water availability at the CDL Site.
    - Deeper-rooted Mesquite trees have greater water potential than the shallow-rooted Creosote shrubs, indicating greater water availability.
  - However, we disagree with the conclusion of the study that these data necessarily indicate that the Mesquite trees are using the regional aquifer. An alternative explanation is that the Mesquite trees at the BS Site are using deeper soil moisture (>5 ft-bgs) which could explain:
    - Lower water potential for Mesquite at the BS Site versus the CDL Site.
    - Lower water potential for the shallow-rooted Creosote vs. the deeper-rooted Mesquite.

## Remote-Sensing Analysis (NDVI)

The UCI GDE Study used the remote-sensing metric Normalized Difference Vegetation Index (NDVI) as a proxy for vegetation health and greenness. In short, the UCI interpretation was that areas with relatively high or increasing NDVI over dry periods indicate that the vegetation has access to groundwater.

The study methods called for NDVI analysis in three areas of interest:

- *Potential GDE*: Borrego Springs Mesquite Habitat Polygons (BS)
- *Known GDE*: Clark Dry Lake Mesquite Habitat Polygons (CDL)
- *Non-GDE*: A polygon of non-GDE community near Coyote Creek (non-GDE)

The study methods used three separate approaches for the NDVI analyses:

- *Approach 1* used NDVI data from 25 May - 24 June 2024 (a dry period after Mesquite leaf-out that typically occurs in April) and identified pixels with increasing Mann-Kendall trends ( $\tau > 0$ ) to identify areas where vegetation has access to groundwater sources that are supporting the increasing “greenness” of the vegetation.
- *Approach 2* used NDVI data from 24 June - 3 August 2024 and identified pixels with maximum NDVI  $> 0.19$  to identify areas of relatively high “greenness” over the growing season drought, which would indicate access to groundwater sources that are supporting the “greenness” of the vegetation.
- *Approach 3* used cumulative NDVI over WY 2024 (NDVI  $> 16$ ) to identify areas of relatively high “greenness” over the water year, which would indicate access to groundwater sources that are supporting the “greenness” of the vegetation.

The conclusion of the NDVI analyses was that various areas within the BS Mesquite Bosque have NDVI signals that indicate access to groundwater, similar to the CDL Site, with the strongest indicators of groundwater use concentrated around the Borrego Sink where groundwater is shallowest.

### Technical Consultant Assessment and Recommendations:

- *BAS determination: Partially Met*
  - The results of Approach 1 identified areas in the BS Mesquite Bosque with increasing NDVI trends during May-June to indicate “GDE behavior.” We agree that increasing NDVI during springtime could be an indication of a groundwater source. However, this is the typical time of year when Mesquite trees develop peak canopy and produce flowers and seed pods after the winter rains. Could the increasing NDVI trends identified in Approach 1 be a result of the normal annual cycle of Mesquite leaf-out, flowering, and pod development after the winter rains, even without access to groundwater? If so, Approach 1 should not be used as a conclusive indicator of groundwater dependency for the Mesquite trees.
  - The results of Approach 2 identified areas in the BS Mesquite Bosque with maximum NDVI  $> 0.19$  to indicate “GDE behavior.” We agree that relatively high NDVI values during hot, dry summer months are an indication of a source of groundwater for the Mesquite trees. However, other scientific literature state that NDVI ranging from 0.20-0.30 are indicative of partial canopy loss or drought stress and that NDVI values  $> 0.30$  are indicative of healthy Mesquite canopy at peak leaf-out. Therefore, it seems

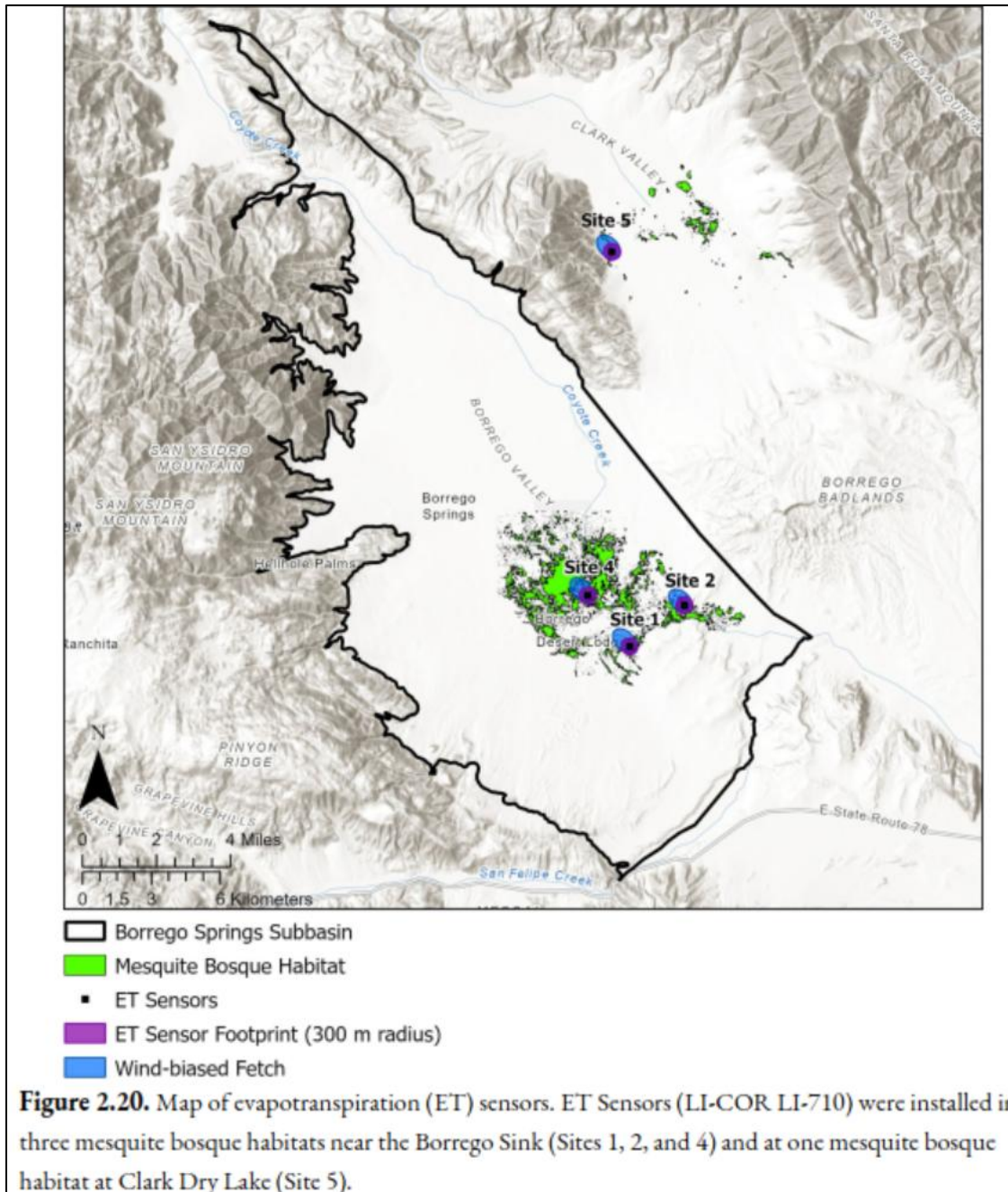
possible that NDVI values in the range of 0.19-0.30 could be indicative of moderately stressed Mesquite trees without access to groundwater but instead are dependent on semi-saturated soil moisture above the capillary fringe. If so, Approach 2 should not be used as a conclusive indicator of groundwater dependency for the Mesquite trees.

- The results of Approach 3 identified areas in the BS Mesquite Bosque with cumulative NDVI >16 during WY 2024 to illustrate the areas of highest “greenness” as an indicator of “GDE behavior.” We agree that relatively high cumulative NDVI values over a water year is an indication of a source of groundwater for the Mesquite trees. However, the report does not justify why NDVI >16 is an important threshold for indicating GDE behavior. It also seems possible that relatively high cumulative NDVI could be indicating Mesquite trees with greater access to surface water during the winter rains/floods and soil moisture that is fed by percolating surface water (instead of access to deeper regional aquifer). If so, Approach 3 should not be used as a conclusive indicator of groundwater dependency for the Mesquite trees.
  - The report focuses on an NDVI analysis of the BS Mesquite Bosque but does not include explicit comparisons of NDVI in the BS Mesquite Bosque to the other two areas of interest (i.e., the CDL Mesquite Bosque and the non-GDE community near Coyote Creek).
  - In summary, we agree that NDVI can be used to assess the greenness (health) of vegetation, and that the NDVI analyses in the study could be indicating that groundwater is supporting the healthy stands of Mesquite near the Borrego Sink. However, the analyses in the study do not represent conclusive proof of groundwater dependency. An alternative explanation is that these areas of lowest land surface elevation also receive the highest accumulation of surface water runoff and infiltration, which could be supporting the Mesquite trees. In our experience, we believe there are more scientifically-defensible methods to use NDVI data to better understand the water sources available to the Mesquite and the stresses that have (or are currently) affecting the health of the Mesquite trees. See the Recommendation below.
- *Recommendation:*
    - NDVI data from the mid-1980s to the present should be analyzed for site-specific areas of the BS Mesquite Bosque on time-series charts and compared against all potential stresses to the Mesquite trees (e.g., changes in groundwater levels, precipitation, surface water availability, temperature, human disturbance, etc.) to better understand: how the health of the Mesquite trees has changed over time in different areas of the BS Mesquite Bosque, and how the various stresses may have influenced the observed changes in Mesquite health over time. This type of analysis may reveal more information about which water sources were most important for Mesquite tree survival and health in different areas of the BS Mesquite Bosque since the mid-1980s.

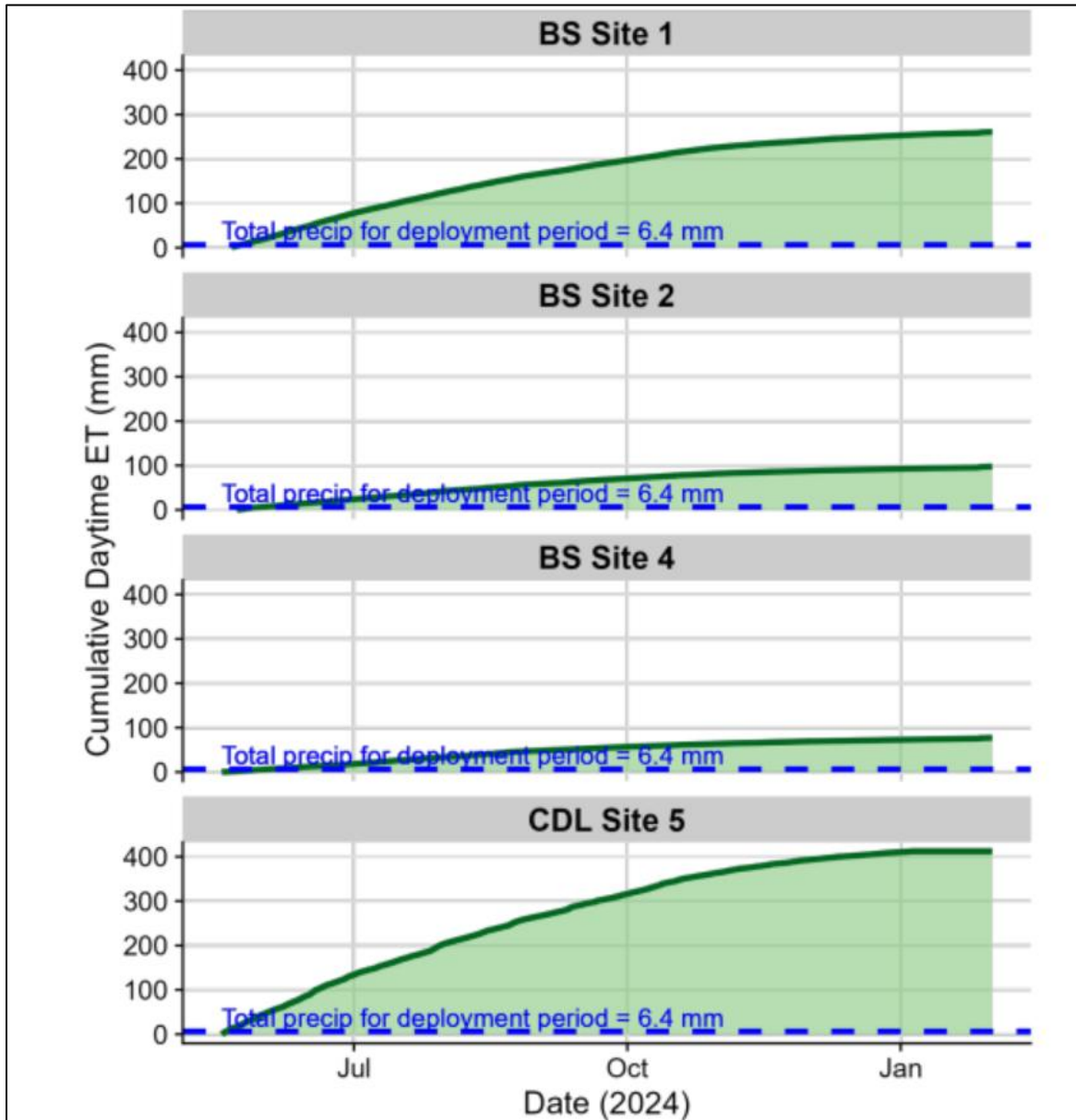
### Dry Period Evapotranspiration in the GDE

The UCI GDE Study installed instrumentation to directly measure ET in the BS and CDL Mesquite Bosques to see if ET rates exceed precipitation or remain stable or even increase during seasonal drought, which would confirm that the Mesquite trees are utilizing groundwater.

LI-COR LI-710 ET sensors were installed at four sites: Sites 1, 2, and 4 (BS Mesquite Bosque) and Site 5 (CDL Mesquite Bosque). See Figure 2.20 from the report (below). Monitoring of ET was performed from May 2024 - January 2025.



All sites maintained consistent and sustained ET rates throughout the deployment period that exceeded precipitation totals. Site 1 at CDL recorded the highest total monthly ET in June, indicating peak water use in early summer. BS Sites 2 and 4 exhibited peak ET in July, further reinforcing the pattern of active Mesquite water use throughout the dry summer months. Across all sites, ET began to decline in November, signaling the end of the Mesquite growing season as cooler winter temperatures set in.



**Figure 2.23.** Cumulative Total Evapotranspiration (ET) from each site. The dotted lines show the total precipitation for the deployment period (6.4 mm or 0.25 in). All sites transpired far more than the total precipitation that fell during the deployment period, confirming groundwater use across the dry deployment period. BS: Borrego Springs; CDL: Clark Dry Lake.

The UCI GDE Study Report noted that despite extremely low rainfall from May 2024 to January 2025, ET rates remained consistently high across all monitored sites, well beyond the amount of available rainfall, which confirms that Mesquite trees rely on groundwater to support growth and transpiration. The study concluded that the ET sensors provide direct evidence of groundwater use by Mesquite trees, and hence, the BS Mesquite Bosque should be recognized as a GDE within the Subbasin's water budget. The study also recommended that monitoring of ET should continue to calculate total annual ET, and to detect potential shifts in groundwater availability or Mesquite health to minimize undesirable impacts.

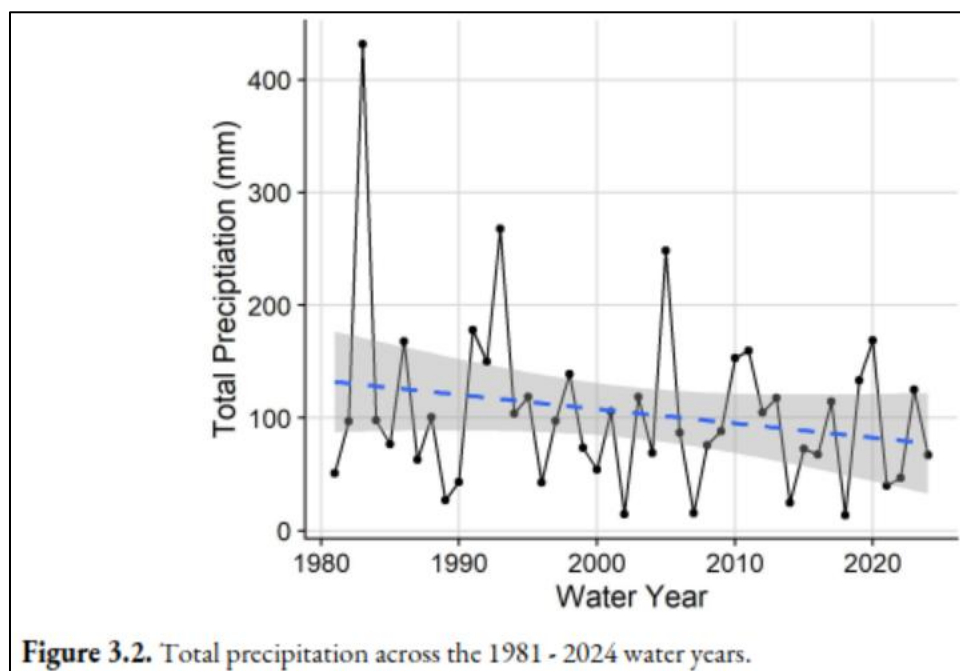
#### Technical Consultant Assessment and Recommendations:

- **BAS determination: Partially Met**
  - We agree that the ET rates measured by the sensors are greater than the rates of direct precipitation; and hence, other source(s) of water must be necessary to satisfy the measured ET rates in the BS Mesquite Bosque over the dry, hot growing season.
  - However, we disagree with study conclusion that the ET sensors provide direct evidence of groundwater use by Mesquite trees. The other source(s) of water could be:
    - The deep regional aquifer.
    - Soil moisture within the unsaturated zone that is fed by infiltration of precipitation and stormwater runoff that flows through and accumulates in the BS Mesquite Bosque.
    - Both above.
  - The cumulative ET at the CDL site is significantly greater than at the BS sites – particularly compared to Sites 2 and 4. This could be indicating that the Mesquite trees at the BS sites are using soil moisture from the unsaturated zone, which is not as abundant compared to the shallow groundwater at the CDL site.
  - The report does not describe the accuracy of the ET sensors, considering that: (i) other plant species are present; (ii) atmospheric turbulence and mixing from other areas; (iii) lack of match with other ET monitoring methods (OpenET, CIMIS, etc.).
  - The study did not employ an ET sensor in a non-GDE area as a comparison.
- **Recommendations:**
  - This method of ET monitoring generates site-specific estimates of ET, which could be used to better constrain the BVHM estimates of groundwater ET. The ET estimates from the ET sensors should be compared more thoroughly to other ET estimation methods (e.g. OpenET, CIMIS, etc.). Uncertainty in the ET estimates should be described and quantified, as well as the uncertainty in the type of water being utilized by the Mesquite trees (e.g., soil moisture vs. aquifer).

## Historical Precipitation Trends

The UCI GDE Study states that Mesquite trees are facultative phreatophytes meaning that they can utilize both surface water and groundwater. To better understand how surface water availability to the BS Mesquite Bosque has changed over time, the study assessed historical trends in precipitation using monthly data downloaded from PRISM over the period September 1981 to December 2024.

Between 1981 and 2024, total WY precipitation in the Borrego Springs study area averaged 102.5 mm (4.03 in) with about 70 percent falling during the December - March winter rainy season. Much of the remaining rainfall occurs during the July - September summer growing season. The rainy seasons are separated by dry periods, with the May - June dry period typically the driest. See Figure 3.2 from the report (below).

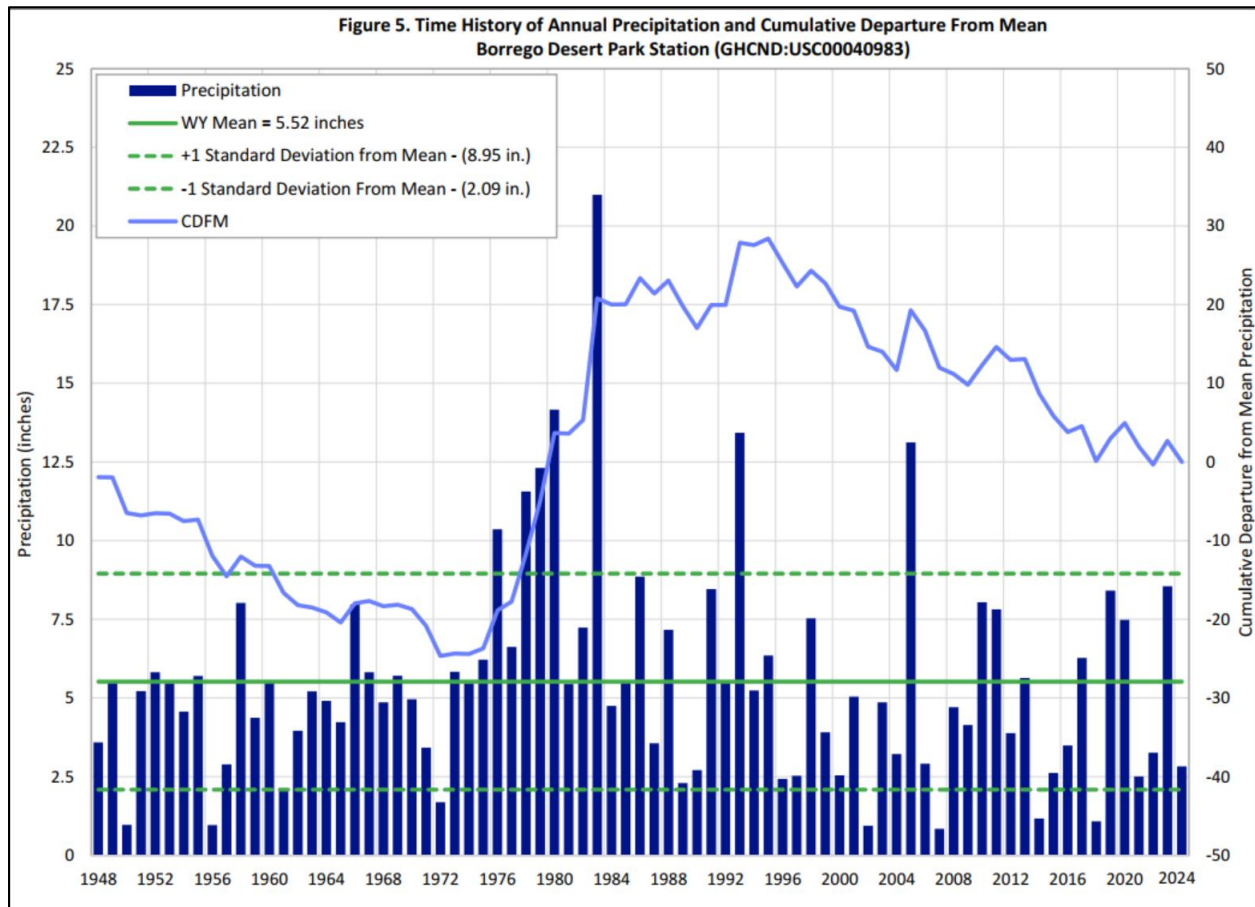


The UCI GDE Study concluded that there have not been dramatic declines in precipitation which might explain the decline in the extent and health of the BS Mesquite Bosque, and that the trend towards lower water year precipitation is not statistically significant.

### Technical Consultant Assessment and Recommendations:

- **BAS determination: Not Met**
  - We disagree that the declining trend in precipitation over the last few decades is not statistically significant. Figure 5 (below) is a plot from the Watermaster's most recent annual report, which illustrates WY precipitation totals, the long-term annual mean precipitation and standard deviation from the mean, and the cumulative departure from mean (CDFM) precipitation for WYs 1948 to 2025. The CDFM plot is a useful way to characterize the occurrence and magnitude of wet and dry periods (relative to the mean): positive sloping segments (trending upward from left to right) indicate wet periods, and negative sloping segments (trending downward from left to right) indicate dry periods. As shown by the CDFM curve on Figure 5, the region has been experiencing a 30-year dry period since 1995, punctuated by a few wet years.

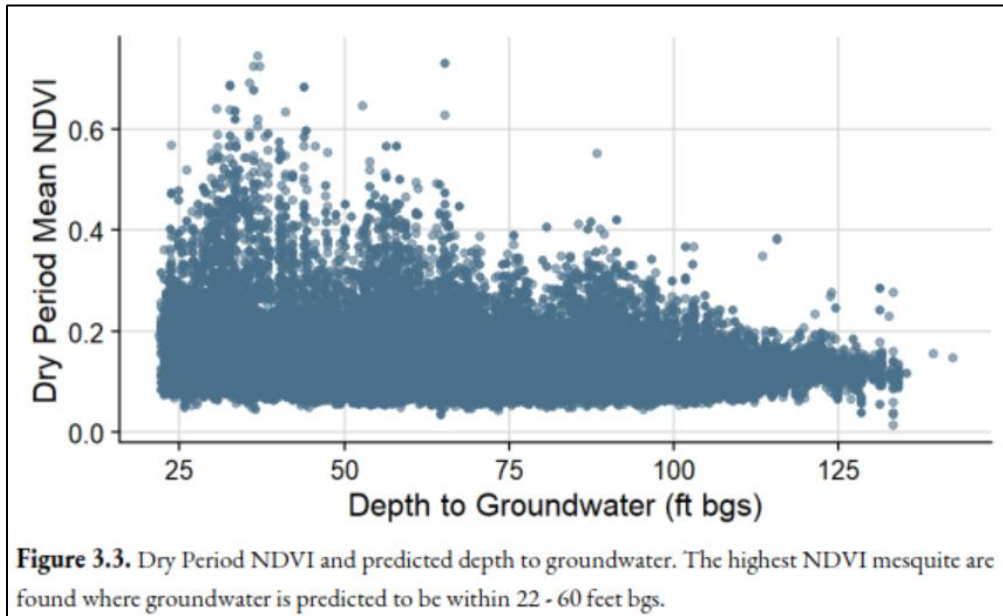
- In our experience of monitoring GDEs in other groundwater basins, annual precipitation can influence NDVI signatures of the vegetated areas.
- *Recommendation:*
  - Climatic data (e.g., precipitation and temperature) should be compared against NDVI data over time to better understand the relationship between climate and the health/extent of the BS Mesquite Bosque.

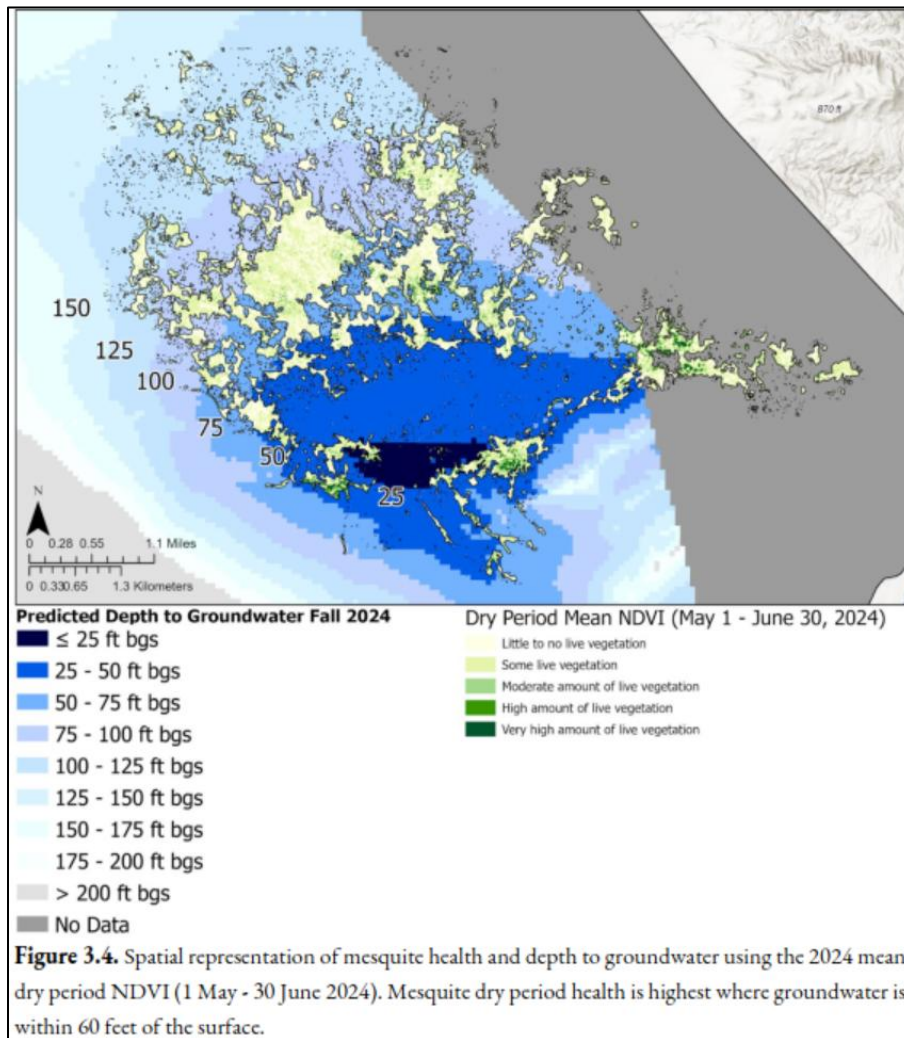


### Considering GDEs in Minimum Thresholds

The UCI GDE Study explored a “thought experiment” for setting minimum thresholds for groundwater levels near the BS Mesquite Bosque to protect its access to groundwater, and hence, its extent/health. The study calculated the mean NDVI across the BS Mesquite Bosque during the dry season (1 May – 30 June 2024) and analyzed its relationship to depth-to-groundwater in 2024.

The study results indicated that the highest NDVI values occurred where groundwater depths ranged from approximately 22 to 60 ft-bgs. In contrast, NDVI values declined substantially at depths greater than 60-75 feet bgs, suggesting that Mesquite tree health is impaired beyond this range—likely due to reduced access to groundwater. See Figures 3.3 and 3.4 from the report (below).





**Technical Consultant Assessment and Recommendations:**

- **BAS determination: Not Met**
  - Figure 3.4 indicates that the more healthy, dense stands of Mesquite trees occur directly surrounding the Borrego Sink. This spatial pattern of healthy Mesquite trees is likely due to greater access to the various water sources in these areas, including:
    - Relatively shallow depth to the regional groundwater table and its capillary fringe.
    - Relatively abundant stormwater runoff that preferentially accumulates in the Borrego Sink area and percolates to the underlying soils.
    - Both above.
  - **Data Gaps:** Currently, there are too many data gaps to establish numeric minimum thresholds for groundwater levels, including:
    - *A paucity of measured depth to the groundwater table and its capillary fringe.* As noted earlier in this memorandum, depth to the regional groundwater table is not accurately known in some areas of Figure 3.4. This is particularly true in the areas of the healthiest stands of Mesquite trees surrounding the Borrego Sink due to a lack of monitoring wells. In addition, the thickness of the capillary fringe above the

groundwater table is unknown, which the report claims is the primary water source available for root uptake.

- *Knowledge of the maximum depth and growth rates for Mesquite tree tap roots.* The evidence strongly indicates that the historical rates and magnitudes of groundwater-level declines caused widespread Mesquite tree mortality. However, the current rates of groundwater-level declines have slowed due to the pumping Rampdown and are anticipated to stabilize in the future. If the Mesquite trees in this area are indeed still a GDE, certain information is not currently known with the necessary certainty to establish numeric minimum thresholds for groundwater levels, including:
  - The rate of decline in groundwater levels that the tap roots can follow downward without compromising Mesquite tree health.
  - The maximum depth that the Mesquite trees can extend their tap roots to access the capillary fringe of the regional aquifer.
- *The role of soil moisture as a water source for the Mesquite trees.* As noted earlier in this memorandum, the study did not explore or document the soil texture, moisture content, and isotopic water chemistry in the soil profile below 5 ft-bgs. This source of water could be supporting the remaining healthy stands of Mesquite trees regardless of the depth to the regional aquifer.
- *Recommendation:*
  - Minimum thresholds for groundwater levels are not recommended at this time until the data gaps described above are sufficiently filled.

### Mesquite Bosque Health and Ecological Condition Assessment

The UCI GDE Study used NDVI as an indicator of Mesquite tree health and gross primary productivity (GPP). The study calculated cumulative annual NDVI for all pixels in the BS Mesquite Bosque polygon (~1,850 acres) and compared it with the cumulative annual NDVI for pixels in the CDL Mesquite Bosque (~227 acres) as a reference to a likely GDE over the period WY 2019-2024.

The results of the NDVI analysis were categorized into areas of high, medium, and low vegetative productivity by year. See Table 3.2 of the report (below).

**Table 3.2.** Mesquite productivity acreage. Summary of total acreage found in each productivity category for Borrego Springs (BS) and Clark Dry Lake (CDL) for the 2019 - 2024 water years.

Year	High Productivity (Acres)	Moderate Productivity (Acres)	Low Productivity (Acres)
<b>Borrego Springs</b>			
2019	329.34	998.28	889.94
2020	302.92	1,037.42	877.22
2021	117.03	1,134.47	966.06
2022	94.30	760.48	1,362.77
2023	99.29	829.82	1,288.45
2024	82.23	589.61	1,545.73
<b>Clark Dry Lake</b>			
2019	138.47	107.57	26.06
2020	143.58	105.99	22.53
2021	136.30	110.16	25.64
2022	132.24	103.15	36.70
2023	132.34	99.98	39.77
2024	136.81	99.71	35.57

The main conclusions of the analysis were:

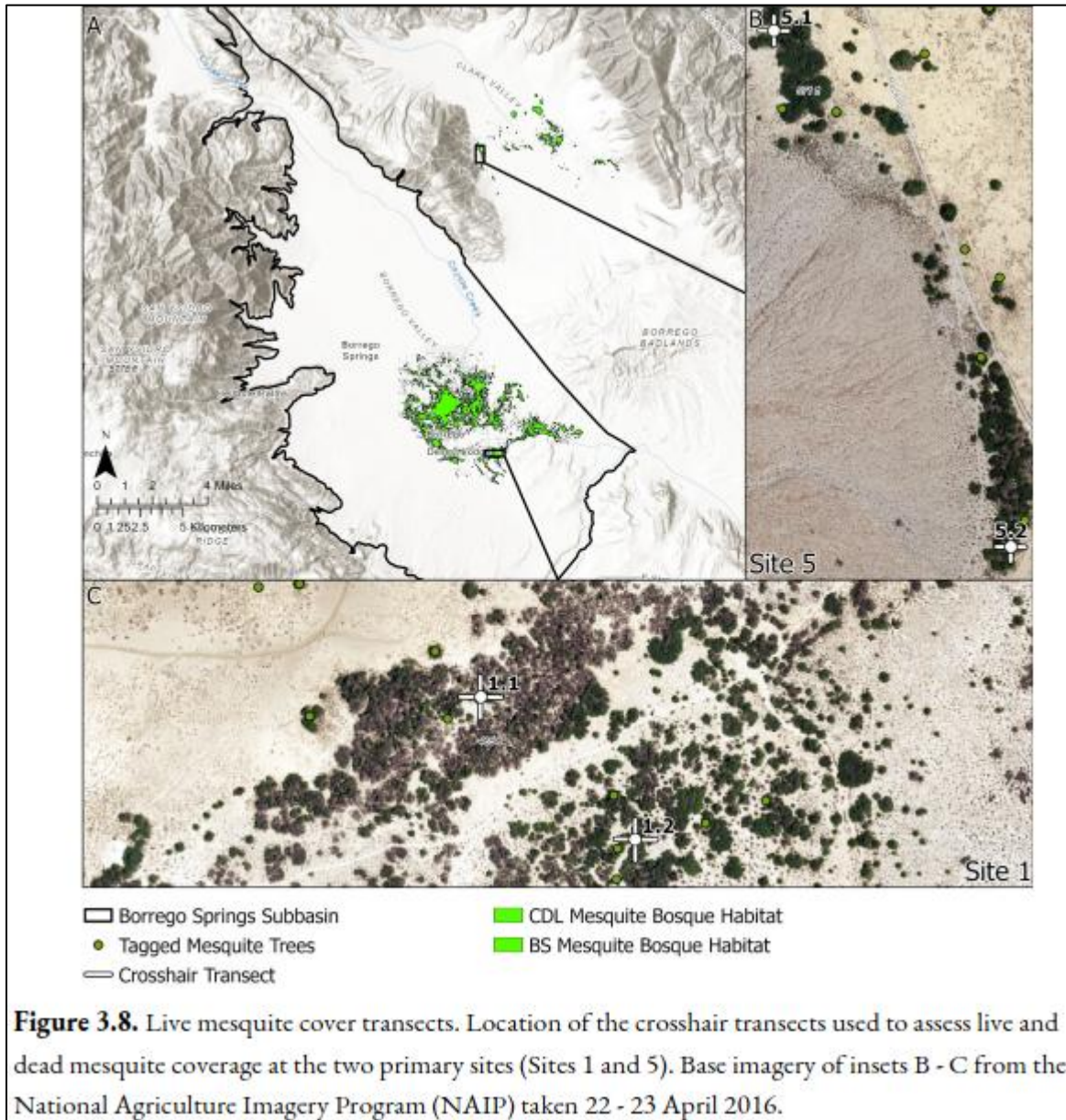
- In 2023, the BS Mesquite Bosque was relatively less productive than CLD Mesquite Bosque.
- In 2024, an extremely dry year, the BS Mesquite Bosque experienced significant declines in productivity. In contrast, CDL Mesquite Bosque showed relatively stable productivity.
- Across 2019-2024, the BS Mesquite Bosque exhibited a consistent decline in the acreage of high and moderate productivity vegetation, aligning with reports of widespread Mesquite decline and mortality, while the CDL Mesquite Bosque remained stable.
- The decline in the BS Mesquite Bosque productivity reflects its high susceptibility to decreasing groundwater levels and suggests a corresponding reduction in the ecosystem services provided.

#### Technical Consultant Assessment and Recommendations:

- *BAS determination: Partially Met*
  - We agree that the NDVI data from 2019-2024 indicate:
    - A degrading trend in the productivity of the BS Mesquite Bosque (in aggregate), while groundwater levels gradually declined.
    - A stable trend in the productivity of the CDL Mesquite Bosque (in aggregate), while groundwater levels remained relatively stable.
  - However, we disagree with the study's conclusion that declining groundwater levels are necessarily the cause of the declines in NDVI for the following reasons:
    - Climatic factors were not considered in the analysis. Water years 2021, 2022, and 2024 were relatively dry years in the Basin.
    - The declines in NDVI could be explained by:
      - The gradual declines in groundwater levels are reducing BS Mesquite Bosque access to the regional groundwater table.
      - The tap roots of the BS Mesquite trees are already detached from the regional aquifer and are surviving on comparatively less abundant soil moisture during the "dry" years from 2019-2024.
      - Or, both processes are occurring in various locations to various degrees.
    - The significant declines in NDVI in the BS Mesquite Bosque during dry years (2021, 2022, and 2024), while the NDVI of the CDL Mesquite Bosque remained stable, may be indicating the reliance of the BS Mesquite Bosque on surface water to replenish soil moisture, which was low in these dry years.
- *Recommendations:*
  - NDVI analyses should be performed over space and time and then be compared against all the stressors that can affect the BS Mesquite Bosque (e.g., changes in groundwater levels, precipitation, temperature, pests, etc.).

### Field Assessments of Live and Dead Trees

The UCI GDE Study surveyed live and dead Mesquite trees at BS Site 1 and CDL Site 5. See Figure 3.8 of the report (below).



The results of the surveys were:

- At BS Site (Site 1.1): ten living trees and nine dead trees.
- At BS Site (Site 1.2): ten living trees and zero dead trees.
- At CDL sites (Site 5.1 and 5.2): nine and twelve living trees at the two sampling and zero dead trees.

The report claims that these findings highlight the negative effects of declining groundwater levels on the BS Mesquite Bosque near the Borrego Sink. However, the report notes that there is spatial variability in the health of Mesquite trees across the BS Mesquite Bosque, with some remaining healthy stands, but that these trees may be subject to future stress if groundwater levels continue to decline.

**Technical Consultant Assessment and Recommendations:**

- *BAS determination: Partially Met*
  - Figure 3.8 from the report (above) illustrates the presence of dead Mesquite trees at BS Site 1. And we agree that the available evidence indicates that historical widespread Mesquite tree mortality across the BS Mesquite Bosque was due, at least in part, to historical overdraft of the Basin and the associated declines in groundwater levels.
  - However, Figure 3.8 from the report (above) shows stands of dead Mesquite trees directly adjacent to stands of live Mesquite trees. This observation raises challenges with the study conclusions that the BS Mesquite Bosque is a GDE that is being adversely impacted by declining groundwater levels:
    - If Site 1 of the BS Mesquite Bosque is a GDE with access to the regional aquifer, should we expect to see continuous stands of live Mesquite trees, rather than the “patchwork” of live and dead trees shown on Figure 3.8? Or,
    - Does the “patchwork” of live and dead trees indicate that the Mesquite trees are disconnected from the regional aquifer and instead are accessing surface water and soil moisture that is only available in certain areas of surface water flow and/or the requisite underlying hydrogeology that preferentially retains soil moisture?
- *Recommendations:*
  - Periodic field monitoring of Mesquite tree health is a useful method to spot check and verify the results from remote-sensing methods of vegetation monitoring (e.g., NDVI, air photos, etc.).

### Quantification of Mesquite Groundwater Transpiration

The UCI GDE Study included an effort to understand the volumes of groundwater ET (ET<sub>gw</sub>) that support the BS Mesquite Bosque, so that it can be appropriately included in the water budget of the Borrego Springs Subbasin. The report describes estimates of ET<sub>gw</sub> derived from OpenET, followed by a validation of OpenET estimates using available data from ET sensors that were installed during the study.

Annual ET<sub>gw</sub> for the BS Mesquite Bosque was estimated using OpenET data from 2015 to 2023 using a simplified water balance equation:

$$ET_{gw} = Total\ ET - Precipitation\ (P)$$

OpenET integrates remote-sensing data, such as vegetation indices (e.g., NDVI) and land surface temperature, with climate variables, including temperature, humidity, and solar radiation, to estimate ET. OpenET was used to estimate monthly ET for both the BS and CDL Mesquite Bosque areas over WY 2015 to 2023. See Table 3.6 from the report (below).

**Table 3.6.** Groundwater transpiration estimates. Estimates of groundwater transpiration (ET<sub>gw</sub>) for the Borrego Springs and Clark Dry Lake mesquite bosque habitats, as calculated by each OpenET model from 2015-2023. See <https://ctdata.org/methodologies/> for more information about each model.

	Model	Ensemble-mean	DisALEXI	ceMETRIC	geeSEBAL	PT-JPL	SIMS	SSEBop	Model Averages
Site	Water Year	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)
Borrego Springs	2015	547.22	349.84	198.09	1,072.90	1,028.81	29.20	434.34	522.91
	2016	339.55	197.32	136.17	565.89	1,100.21	14.72	259.15	373.29
	2017	446.97	408.98	94.83	870.27	1,252.09	3.71	286.86	480.53
	2018	770.49	455.24	320.57	1,099.89	1,332.75	12.03	667.94	665.56
	2019	175.47	167.74	39.12	301.43	1,096.31	5.63	188.00	281.96
	2020	261.52	219.58	88.56	379.61	767.27	9.90	459.42	312.27
	2021	597.53	354.57	238.76	896.17	1,081.24	14.53	605.59	541.20
	2022	490.31	174.09	273.14	761.65	1,076.15	7.41	397.87	454.37
	2023	130.34	64.29	39.30	564.62	752.61	5.86	136.45	241.92
								All-year Average	430.45
	Model	Ensemble-mean	DisALEXI	ceMETRIC	geeSEBAL	PT-JPL	SIMS	SSEBop	Model Averages
Site	Water Year	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)	Total ET <sub>gw</sub> (ac-ft/yr)
Clark Dry Lake	2015	70.37	54.97	32.96	115.32	186.80	0.64	20.06	68.73
	2016	48.70	36.74	20.90	78.53	194.02	1.02	10.35	55.75
	2017	58.13	59.65	23.01	100.81	215.96	1.11	10.59	67.04
	2018	104.23	71.07	37.62	133.20	241.93	6.29	43.92	91.18
	2019	28.81	19.73	10.40	56.73	194.81	0.76	9.28	45.79
	2020	56.10	60.32	27.42	81.83	188.10	0.89	34.32	64.14
	2021	84.70	43.37	41.74	117.77	214.27	2.19	49.43	79.07
	2022	61.15	30.05	34.42	76.74	220.20	2.14	18.94	63.38
	2023	23.81	13.50	9.16	57.77	165.47	1.53	5.16	39.49
								All-year Average	63.84

To validate the OpenET estimates of ET<sub>gw</sub>, the study used direct measurements from ET sensors installed in both the BS and CDL Mesquite Bosque areas from May 2024 to April 2025, and using the same water balance equation above, the study calculated ET<sub>gw</sub> using the ET sensor data and PRISM precipitation records.

The main results and conclusions of this effort were:

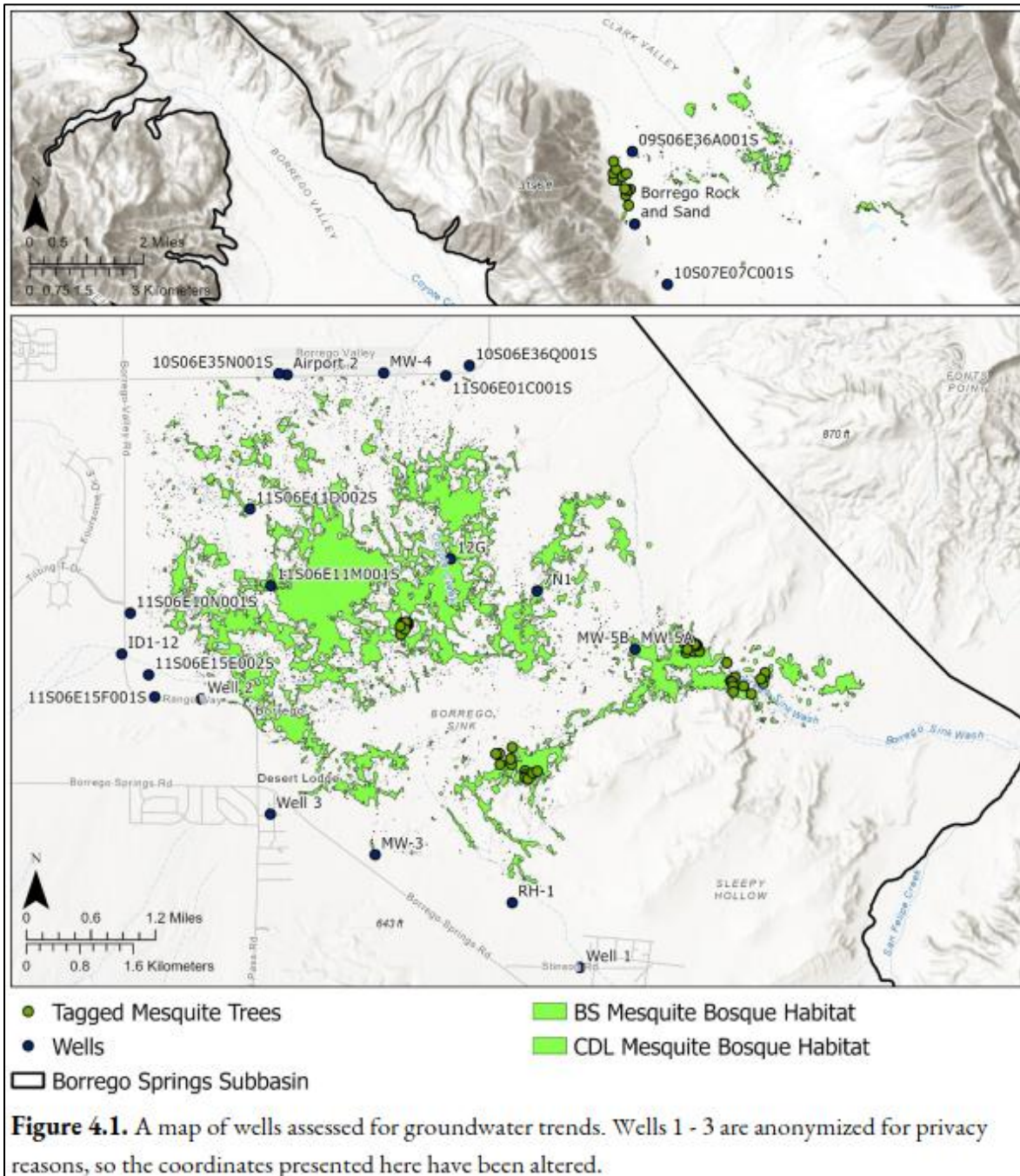
- *BS Mesquite Bosque*: OpenET estimated 242 to 666 afy of  $ET_{gw}$ , with an average of 430 afy. The ET sensor method estimated 719 afy which indicates that OpenET is substantially underestimating ET for the BS Mesquite Bosque.
- *CDL Mesquite Bosque*: OpenET estimated 39 to 91 afy of  $ET_{gw}$ , with an average of 64 afy. The ET sensor method estimated 365 afy which indicates that OpenET is substantially underestimating ET for the CDL Mesquite Bosque.
- The study recommends allocating at least 645 afy of groundwater use to the BS Mesquite Bosque in the Subbasin water budget, and potentially more, as improved data become available. This estimate is based on the all-year, all-model average (430.45 afy) plus a 50 percent error margin (215.23 afy), resulting in a total of 645.68 afy, rounded to 645 afy for simplicity.

#### Technical Consultant Assessment and Recommendations:

- *BAS determination: Partially Met*
  - We agree that the estimates of total ET in the study indicate that the BS and CDL Mesquite Bosques are using significantly more water than is provided by direct precipitation, and that the main source of water needed to support the ET demands of the Mesquite trees is stored in the subsurface.
  - The study methods employed to estimate  $ET_{gw}$  ignored the potential role of soil moisture in the vadose zone as a water source that is satisfying at least a portion of the  $ET_{gw}$  demands of the Mesquite trees. Soil moisture could be fed by the infiltration of precipitation and stormwater runoff that accumulates within the BS Mesquite Bosque area. Hence, the estimates of  $ET_{gw}$  in the study likely represent a maximum upper limit of what the BS Mesquite Bosque is using from the regional aquifer system.
  - The study methods ignore the ET demands of other non-Mesquite vegetation within the Mesquite Bosque areas.
- *Recommendations:*
  - Continue the monitoring and estimation of ET of the BS Mesquite Bosque. Estimates of ET of the BS Mesquite Bosque (including the estimates in this study and future estimates) are valuable to the Watermaster because they can be used to constrain future BVHM updates and recalibrations and more accurately simulate the BS Mesquite Bosque area and the water budget of the Basin. However, additional consideration and analyses should be performed to address the following:
    - OpenET estimates of ET are derived from six different OpenET models plus an “ensemble mean.” More expert analysis is necessary to choose the OpenET models best suited for estimating ET in natural desert environments.
    - Consideration should be given for the potential role of soil moisture in satisfying at least a portion of the ET demands of the Mesquite Bosque areas.
    - Consideration should be given to the ET demands of other non-Mesquite vegetation within the Mesquite Bosque areas.

### Chronic Lowering of Groundwater Levels

The UCI GDE Study assessed rates/trends in historical changes in groundwater levels at wells near the BS Mesquite Bosque and CDL Mesquite Bosque for pre- and post-SGMA periods. See Figure 4.1 from the report (below) for the well locations where historical groundwater-level data were analyzed. See Table 4.2 from the report (below) which describes the results of the analysis.



**Table 4.2.** Groundwater depth rate of change. For those wells with greater than 10 data points, we ran linear regressions assessing the change in depth to groundwater over time. The slope in feet/day (Slope ft/day) column indicates the slope derived from the linear regression while the slope in feet per year and feet per decade have been calculated. A bolded p-value indicates a significant relationship between the depth to groundwater and time at a significance level of 0.05.

State Well Number	Local Well Name	Slope (ft/day)	Slope (ft/year)	Slope (ft/decade)	P-value	R <sup>2</sup>
<b>Borrego Springs</b>						
Long-Term Trends (mid-1950s to mid-2000s)						
10S06E35N001S	10S06E35N001S	-0.0032	-1.18	-11.85	> <b>0.001</b>	0.35
10S06E36Q001S	10S06E36Q001S	-0.0019	-0.70	-7.00	> <b>0.001</b>	0.45
11S06E10N001S	11S06E10N001S	-0.0032	-1.18	-11.79	> <b>0.001</b>	0.91
11S06E11D002S	11S06E11D002S	-0.0012	-0.42	-4.23	> <b>0.001</b>	0.18
11S06E11M001S	11S06E11M001S	-0.0034	-1.23	-12.35	> <b>0.001</b>	0.87
11S07E07N001S	7N1	-0.0020	-0.72	-7.20	> <b>0.001</b>	0.92
SMGA-Period Trends (2015 to 2024)						
11S06E01C001S	11S06E01C001S	-0.0043	-1.57	-15.66	> <b>0.001</b>	0.993
11S06E23J002S	MW-3	-0.0053	-1.94	-19.37	> <b>0.001</b>	0.594
10S06E35Q001S	MW-4	-0.0037	-1.37	-13.68	> <b>0.001</b>	0.999
11S07E07R001S	MW-5A	-0.0016	-0.59	-5.94	> <b>0.001</b>	0.879
11S07E07R002S	MW-5B	-0.0015	-0.55	-5.54	> <b>0.001</b>	0.976
NA	Well 1	-0.0011	-0.41	-4.09	0.21	0.974
NA	Well 2	-0.0014	-0.51	-5.06	> <b>0.001</b>	0.976
NA	Well 3	-0.0005	-0.20	-1.97	0.94	0.0004
<b>Clark Dry Lake</b>						
Long-Term Trends (mid-1950s to mid-2000s)						
09S06E36A001S	09S06E36A001S	0.000227800	0.08314700	0.8314700	> <b>0.001</b>	0.87

The main results and conclusions of the analysis were:

- Historical declines in groundwater levels were greatest near the BS Mesquite Bosque, primarily due to over-pumping of the Borrego Springs Subbasin.
- Historical declines in groundwater levels were much less near the CDL Mesquite Bosque and were likely due to periods of relatively dry hydrology.
- The high rates and magnitudes of groundwater declines indicate a high likelihood that these declines are responsible for the past and current adverse impacts on the BS Mesquite Bosque.
- The adverse impacts to the BS Mesquite Bosque will continue in the absence of actions to reduce groundwater declines.

#### Technical Consultant Assessment and Recommendations:

- **BAS determination: Partially Met**
  - We agree with the observations that historical groundwater-level declines have been substantial, and that these declines have been responsible for adverse impacts to the BS Mesquite Bosque which was once a thriving GDE.
  - We disagree with conclusion of the study that current declines in groundwater levels are responsible for current trends in degradation of the BS Mesquite Bosque. There are other alternative explanations, such as the recent relatively dry climate that could be adversely affect Mesquite trees that do not have access to the regional aquifer system.
- **Data Gap:**
  - There are not enough monitoring wells and groundwater-level data for a current assessment of the effects of ongoing/future groundwater-level declines on the extent/health of the BS Mesquite Bosque—particularly in the focused areas of study (Sites 1, 3, 4).
- **Recommendations:**
  - The Watermaster is already implementing the pumping rampdown (and is substantially ahead of schedule) to stabilize groundwater levels across the Basin. The Watermaster should continue these efforts to stabilize groundwater levels and continue its current groundwater-level monitoring program to track its progress towards groundwater-level stabilization.
  - Construct new monitoring wells near Sites 1, 3, and 4 and conduct a monitoring program to fill the Data Gap described above. A monitoring well at Site 4 would be the highest priority because depth-to-groundwater is likely the deepest at Site 4, hence, if groundwater dependency is demonstrated at Site 4, then it is also likely demonstrated at Sites 1 and 3. In addition, Site 4 is closer to the main areas of pumping in the Basin. Drilling, construction, and subsequent monitoring of the monitoring wells could be used to:
    - Characterize the soil profile from the ground surface to/through the saturated zone, including the presence or absence of “perched” groundwater conditions.
    - Characterize soil moisture and isotopic water chemistry across the vadose zone.
    - Inspect the vadose zone and saturated zone for evidence of live Mesquite tree roots.
    - Track seasonal and long-term changes in soil moisture (using installed sensors) across the entire thickness of the vadose zone.
    - Collect groundwater samples from the water table to characterize its isotopic chemistry for comparison to the isotopic chemistry of the Mesquite trees and soil moisture, which could better describe the source waters that support the Mesquite trees.
    - Track changes in groundwater levels over time compared to Mesquite tree health. Such data would be useful at the site level, as well as at the regional level, to:
    - Assist in preparing more accurate rasters of depth-to-groundwater across the BS Mesquite Bosque.
    - Assist in understanding the current and ongoing cause-and-effect relationship between groundwater-level changes and Mesquite tree health.

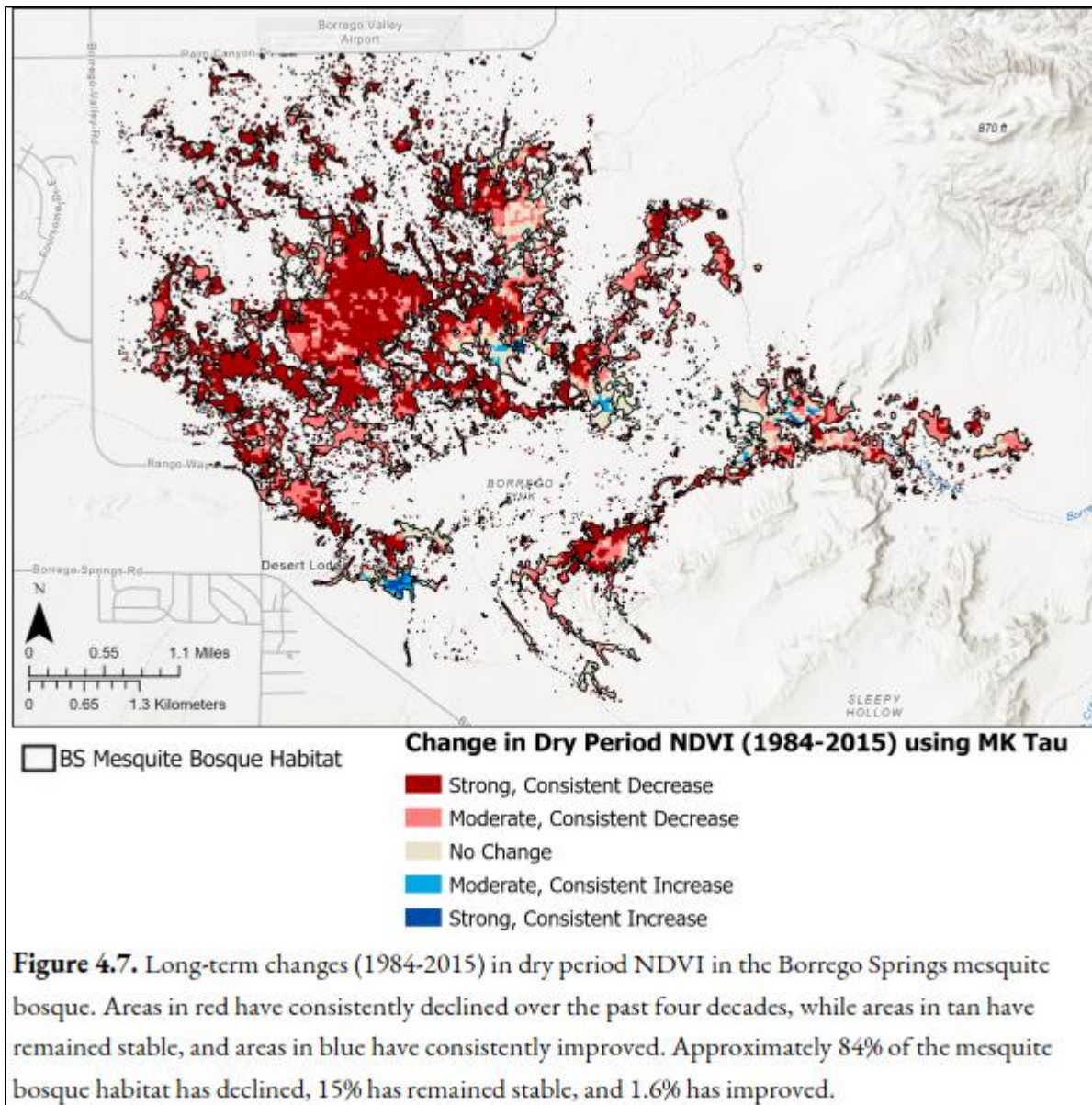
## Changes in Mesquite Bosque Health

The UCI GDE Study assessed long-term trends in Mesquite Bosque health in relation to groundwater levels by analyzing annual average NDVI over the dry season (May 1-June 30) for (i) the pre-SGMA period of 1984-2015 and (ii) the post-SGMA period of 2015-2024. The dry season was chosen for the analysis because surface water is not typically available during these months, and hence, groundwater availability will be detected.

Trends in NDVI over each period were calculated/analyzed using the Mann-Kendall's Tau (MK Tau) statistical test to detect gradual, persistent shifts in vegetation health that could be obscured by short-term fluctuations in climate or other environmental factors.

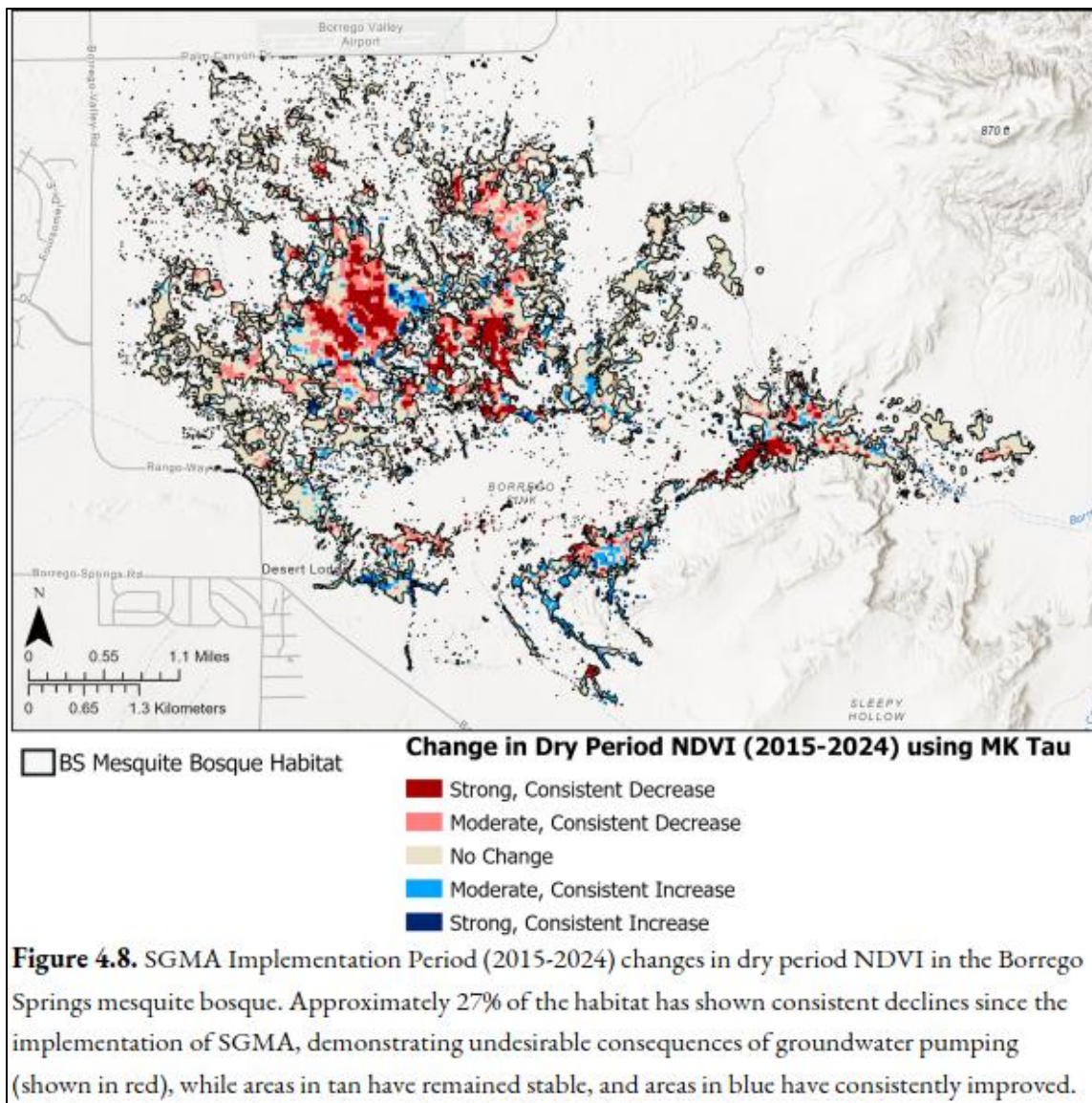
The main results and conclusions of the analysis were:

- **For the pre-SGMA period of 1984-2015:**
  - 1.6 percent of the BS Mesquite Bosque improved, 15 percent remained stable, and 83 percent declined, while groundwater levels declined by about 45 ft (~1.5 ft/yr). See Figure 4.7 from the report (below).
  - Across most of the BS Mesquite Bosque, NDVI declines were widespread and aligned with declining groundwater levels and documented reports of Mesquite die-off, particularly in areas affected by human disturbance.
  - The areas of NDVI stability and improvement in the BS Mesquite Bosque coincide with current strongholds of healthy Mesquite habitat, particularly around the Borrego Sink, where groundwater is closer to the surface, and near the WWTP percolation ponds.
  - In comparison, 19 percent of the CDL Mesquite Bosque improved, 47 percent remained stable, and 34 percent declined, while groundwater levels declined by about 3 ft (~0.1 ft/yr).



- **For the post-SGMA period of 2015-2024:**
  - 12 percent of the BS Mesquite Bosque improved, 61 percent remained stable, and 27 percent declined, while groundwater levels continued to decline but at reduced rates. See Figure 4.8 from the report (below).
  - The NDVI decline was widespread and aligned with declining groundwater levels.
  - The areas of NDVI stability and improvement coincide with current strongholds of healthy mesquite habitat, particularly around the Borrego Sink, where groundwater is closer to the surface, and near the percolation ponds of the WWTP.
  - In comparison, 64 percent of the CDL Mesquite Bosque improved, 33 percent remained stable, and 3 percent declined, while groundwater levels continued to gradually decline.
  - Other factors also contributed to the NDVI declines: human development, Mesquite removal, soil disturbances/erosion, off-road traffic, climate change, disease, and pests.

- The most significant NDVI declines align with areas of substantial human disturbance and groundwater-level reductions, indicating that many Mesquite trees may have lost access to groundwater over the past 40 years.
- While sustainable groundwater management is critical, mesquite bosque conservation is also needed to address broader environmental threats.
- To mitigate further groundwater disconnection and address the compounding threats, the study recommends establishing minimum thresholds for groundwater levels at wells near the BS Mesquite Bosque and implementing conservation measures to protect healthy, stable Mesquite areas.



### Technical Consultant Assessment and Recommendations:

- **BAS determination: Partially Met**
  - We agree that this analysis indicates that groundwater-level declines during the pre-SGMA period (1984-2015) were largely responsible for the declines in NDVI and widespread die-off of Mesquite trees, based on the following:
    - Historically, groundwater levels were much closer to the ground surface, and hence, likely available to Mesquite tree roots.
    - 1978-83 and the 1990s were relatively wet periods, such that the BS Mesquite Bosque had greater access to precipitation and runoff, yet the BS Mesquite Bosque still experienced degradation.
    - The rates and magnitudes of groundwater-level declines were relatively high (~1.5 ft/yr), which may have been too fast for the tap roots to follow.
    - NDVI decreases were widespread, except in areas of surface water availability, such as the WWTP ponds and the Coyote Creek floodplain.
  - The analysis does not necessarily confirm that groundwater-level declines during the post-SGMA period (2015-2024) were responsible for the concurrent declines in NDVI, based on the following:
    - The high rates/magnitudes of historical groundwater-level declines in the pre-SGMA period (1945-2015) may have detached most of the Mesquite tree roots from the regional groundwater table.
    - The patterns of NDVI increases and decreases are “patchy” across the BS Mesquite Bosque, which is inconsistent with the proposed cause of regional declines in regional groundwater levels.
    - The “patchy” patterns of change in NDVI may be more consistent with site-specific availability (or lack thereof) of surface water, soil moisture, and/or perched groundwater, which all would be controlled by the surface water flow patterns and the underlying hydrogeology.
    - 2015-2024 was a relatively dry period, which could be responsible for stressing the Mesquite trees (and other non-Mesquite vegetation within the bosque) that cannot readily access regional groundwater table (i.e., areas of decreasing NDVI).
  - It is premature to establish minimum thresholds for groundwater levels at wells for the following reasons:
    - The current state of knowledge does not conclusively prove that the Mesquite tree roots are accessing the regional groundwater table. There are other plausible sources of water that could be supporting the remaining Mesquite trees (percolating surface water runoff, deep soil moisture, and perched groundwater). These other potential sources of water should be better characterized and understood before setting minimum thresholds for groundwater levels.
    - The current rates of groundwater-level decline are slowing due to the pumping Rampdown. If the BS Mesquite Bosque is indeed a GDE, it is possible that the tap roots could follow the declining groundwater table and its capillary fringe under the reduced rates of decline.

- Implementing other conservation efforts is logical, as outlined in the study. Irrigation with wastewater and/or groundwater is a viable mitigation measure that could be explored.
- *Recommendations:*
  - NDVI analysis using Landsat-derived NDVI data (1984-2025) should be performed at specific cells (or groups of cells) where the Mesquite trees in BS Mesquite Bosque were once or are currently dense, so that other non-mesquite vegetation is screened out. Time-series charts should be prepared for these focused areas to compare the changes in NDVI vs. all factors that could influence the health of the Mesquite trees, such as: changes in groundwater levels; temperature; precipitation; surface water inflows; etc. This analysis may better describe the most relevant factors that have affected the BS Mesquite Bosque over time.
  - Other factors that could have also contributed to the decline of BS Mesquite Bosque need to be better characterized and mapped relative to the changes in NDVI, such as: areas of human development; areas where Mesquite trees were removed; areas of soil disturbances, erosion, and off-road traffic; diseases; and pests.

## Perched Aquifer Evaluation

The UCI GDE Study evaluated the hypothesis that that “perched groundwater” conditions beneath the BS Mesquite Bosque support its ET demands, rather than the deeper regional aquifer system. The evidence evaluated included: well driller’s logs, AEM surveys, soil moisture data of the top 5 ft of soil profile, and historical groundwater-level monitoring data. The study concluded that perched groundwater conditions do not exist beneath the BS Mesquite Bosque.

### Technical Consultant Assessment and Recommendations:

- **BAS determination: Not Met**
  - Perched groundwater conditions have been documented to exist in the vicinity of the BS Mesquite Bosque—specifically, in the vicinity of the BWD WWTP percolation ponds as demonstrated by the geologic and water-level data derived from BWD monitoring wells.
  - The interpretations of the AEM survey resistivity profiles were incorrect. The report incorrectly states that high-resistivity zones in the AEM survey profiles indicate clay-rich layers, when in practice, clay-rich layers have low-resistivity signals. As such, the AEM surveys support the existence of fine-grained layers beneath the BS Mesquite Bosque.
  - The soil moisture data provided in the report is only relevant for the upper 5 ft of soil profile. The depth interval from 5 ft-bgs to the capillary fringe above the regional aquifer has not been physically explored for the existence of perched groundwater conditions, except in the vicinity of the BWD WWTP percolation ponds.
  - Well driller’s logs are sparse across the MS Mesquite Bosque, and the borehole sediment descriptions on such logs are typically of low resolution and poor quality.
  - Water-level data measured at wells are typically not capable of indicating the presence/absence of perched groundwater conditions because these wells are screened across the saturated zone (not vadose zone where perched groundwater conditions can develop).
- **Data Gap:**
  - The soil profile (texture, moisture content and chemistry) from 5 ft-bgs to the capillary fringe has not been explored, monitored, or characterized as a potential water source that supports the BS Mesquite Bosque. Monitoring of this potential water source has been virtually absent, except for at the BWD WWTP wells and the soil moisture monitoring in the study to a depth of 5 ft-bgs. This represents a significant gap in understanding that should be filled before making groundwater management decisions.
- **Recommendations:**
  - The Data Gap described above could be filled through the installation of a new monitoring well(s) in the BS Mesquite Bosque. This work could include:
    - Characterization of the soil profile from the ground surface to/through the saturated zone, including the presence or absence of “perched” groundwater conditions.
    - Collection of soil samples to analyze for soil moisture and isotopic water chemistry across the vadose zone.
    - Inspection of the vadose zone for evidence of live Mesquite tree roots.
    - Installation and monitoring of soil moisture sensors across the entire thickness of the vadose zone to track seasonal and long-term changes in soil moisture.

## Monitoring Recommendations

The UCI GDE Study Report included various recommendations for future hydrologic and biologic monitoring of the BS Mesquite Bosque, including:

- Monitoring of groundwater levels at key wells within the BS Mesquite Bosque:
  - MW-5A/B
  - 11S06E12G001S (last measured in 2009)
  - 11S06E11D002S (last measured in 2009)
  - 11S06E11M001S (last unsuccessful attempt to measure was 2009)
- Tracking groundwater-level changes by preparing annual depth-to-groundwater rasters, which could be used to inform adaptive management responses if declining trends are observed near the BS Mesquite Bosque.
- Monitoring of the vegetation health in the BS Mesquite Bosque via remote-sensing:
  - Cumulative NDVI across the water year will provide the most accurate depiction of overall productivity and health of the BS Mesquite Bosque.
  - Mean NDVI across the dry season (May 1 - June 30) will provide the most accurate depiction of Mesquite health during peak groundwater use.
  - Evaluating Mesquite performance alongside changes in groundwater depth is essential for adaptive management of the system.
- Monitoring of live and dead Mesquite tree cover by field surveys:
  - Conduct surveys every 2-3 years
  - Use survey results to validate NDVI
- Monitoring ET demands of the BS Mesquite Bosque with ET sensors:
  - Collect data every 3-5 months
  - Use results to track changes in water uptake over time
- Monitoring of biodiversity within the BS Mesquite Bosque to track the secondary effects of Mesquite degradation.
- Monitoring of Mesquite age class distributions and recruitment to assist in developing restoration priorities.

### Technical Consultant Assessment and Recommendations:

- *BAS determination: Partially Met*
  - We believe the totality of the study indicates that the BS Mesquite Bosque could, at least in part, be dependent on the regional aquifer system. Hence, we believe that hydrologic/biologic monitoring of the BS Mesquite Bosque over time should be performed for the following reasons:
    - The monitoring results will improve the understanding the relationship (or lack thereof) between changes in groundwater levels and the health of the BS Mesquite Bosque.
    - The monitoring results could inform adaptive management strategies to protect the BS Mesquite Bosque, if necessary.
  - However, we suggest monitoring methods that are somewhat different than those recommended in the UCI GDE Study Report (see Recommendations below).

- *Recommendations:*
  - The Watermaster should consider the development of a *Monitoring Work Plan for the BS Mesquite Bosque*. The monitoring work plan could include the following:
    - The Watermaster has identified BS Mesquite Bosque area of the Basin as a “gap” in its groundwater monitoring program and has made efforts to identify existing wells in this area to add to its groundwater monitoring network. Most of these efforts have been unsuccessful; however, the Watermaster recently added a private domestic well to the monitoring network just west of the Borrego Sink in Old Borrego (Broom Well). Depth to groundwater at Broom Well was about 80 ft-bgs in October 2025. Additional existing wells could be identified and monitored—particularly in areas near the healthy stands of Mesquite trees surrounding the Borrego Sink where depth-to-groundwater is the shallowest and groundwater dependency of the Mesquite trees is most possible.
    - New monitoring wells could be constructed near Sites 1, 3, and 4 with a subsequent monitoring program. Site 4 would be the highest priority because depth-to-groundwater at Site 4 is likely deeper than at Sites 1 and 3, and Site 4 is closer to the main areas of pumping in the Basin. Drilling, construction, and subsequent monitoring of the monitoring wells could be designed and used to:
      - Characterize the sedimentary composition and texture of the soil profile from the ground surface to/through the saturated zone.
      - Check for the presence or absence of “perched” groundwater conditions.
      - Collect soil samples and analyze soil moisture and isotopic water chemistry across the vadose zone and capillary fringe.
      - Inspect the borehole sediments through the vadose zone and capillary fringe for evidence of live mesquite tree roots.
      - Install soil moisture sensors across the vadose zone and capillary fringe to track seasonal and long-term changes in soil moisture.
      - Collect groundwater samples from the saturated zone to characterize its isotopic chemistry for comparison to the isotopic chemistry of the Mesquite trees and soil moisture, which could better describe the source waters that support the Mesquite trees.
    - Maps of annual changes in groundwater levels could be prepared to illustrate where groundwater levels are declining relative to the BS Mesquite Bosque. These maps are already prepared as interim work products for the annual change-in-storage calculations for the SGMA annual report. That said, monitoring wells are sparse within the BS Mesquite Bosque, so such maps should be classified as rough approximations. The new monitoring well(s) recommended above would improve the accuracy and resolution of such mapping efforts. The maps of changes in groundwater levels could be compared to the changes in BS Mesquite Bosque health to better understand the cause-and-effect relationship, if any.
    - Other factors that can affect Mesquite tree health (besides changes in groundwater levels) could be monitored, mapped, and described (e.g., changes in temperature; precipitation; surface water inflows; pests; human disturbance; Mesquite tree removal; etc.).

- The role of soil moisture within the vadose zone as a potential water source that supports the BS Mesquite Bosque has not been sufficiently characterized in the report. Monitoring of this potential water source is virtually absent, except for the soil moisture monitoring in the study to a depth of 5 ft-bgs. A study could be performed to better characterize the role of soil moisture within the vadose zone as a source water for the Mesquite trees. Such a study could include:
  - *Quantification of the total storage capacity and the current volume of soil moisture in the vadose zone that could be available to the Mesquite tree roots.* These storage estimates could be compared to the ET demands of the BS Mesquite Bosque to better understand the capacity of the vadose zone to supply water to the Mesquite tree roots. The drilling of the new monitoring well(s) recommended above, including the characterization of the sediment and soil moisture profile of the vadose zone, could support this effort.
  - *Quantification of the water budget of vadose zone underlying the BS Mesquite Bosque.* Rainfall and flood events that occur within the BS Mesquite Bosque can percolate to become soil moisture in the vadose zone that subsequently can become a source water that supports the Mesquite trees within the bosque. Mapping of the flood events after large storms could potentially be performed using video/photo monitoring by drones to document: (i) surface water run-on within the bosque and (ii) reservoir development, extent, and depth within the bosque. Analysis of this type of monitoring data, along with other data, not only could help characterize the potential role of soil moisture as a water source that supports the BS Mesquite Bosque, but also could be used to update the BVHM and its ability to simulate the water budget of the Basin.
- NDVI analysis using Landsat-derived NDVI data (1984-2025) could be performed at specific cells (or groups of cells) where the Mesquite trees in BS Mesquite Bosque were once or are currently dense, so that other non-mesquite vegetation is screened out. Time-series charts should be prepared for these focused areas to compare the changes in NDVI vs. all factors that could influence the health of the Mesquite trees, such as: changes in groundwater levels; temperature; precipitation; surface water inflows; pests; human disturbance; Mesquite tree removal; etc.). This analysis may better describe the most relevant factors that are affecting the BS Mesquite Bosque over time.
- Annual air photos could be collected by drone during the peak growing season across the entire BS Mesquite Bosque and at the specific NDVI analysis sites (described in the bullet above). The air photos can be used to track changes in the extent, density, and health of the Mesquite trees over time, as well as to validate the interpretations from the NDVI analysis.
- Field surveys of live/dead Mesquite trees at the specific NDVI analysis sites could be performed once every three years to validate the interpretations derived from NDVI and air photo analyses.
- Monitoring of ET could be performed over time to better understand water use within the BS Mesquite Bosque. The monitoring techniques should be evaluated and recommended by the TAC and EWG with input and advice from UCI. Currently, there is not enough information to know what portion of total ET is satisfied by the regional aquifer system, if any. Therefore, estimates of total ET of the BS Mesquite Bosque should be considered an upper limit for  $ET_{gw}$ . This information could be useful to the Watermaster in future BVHM updates and recalibrations for the simulation of  $ET_{gw}$ .

## Management Recommendations

The UCI GDE Study Report included recommendations for management actions to protect the BS Mesquite Bosque, including:

- Designate the BS Mesquite Bosque as a beneficial user of groundwater (GDE).
- Establish minimum thresholds for groundwater levels at wells MW-5A/B and MW-3. The study suggests Mesquite tree productivity and/or viability declines when groundwater levels decline below the zone of 60-75 ft-bgs, which could be used to set minimum thresholds for groundwater levels.
- Establishing minimum thresholds for the rate of groundwater-level decline.
- Allocate at least 645 afy of  $ET_{gw}$  to the BS Mesquite Bosque in the Subbasin water budget.
- Explore potential strategies to improve groundwater conditions:
  - Removal of invasive species that use groundwater.
  - BVHM runs to explore different Basin-wide pumping patterns to control groundwater levels within the BS Mesquite Bosque.
- Conservation of high and moderate productivity BS Mesquite Bosque habitat.
- Minimize soil surface disturbance in BS Mesquite Bosque habitats.
- Restore BS Mesquite Bosque habitat in areas with strong potential for Mesquite regeneration (e.g., in the vicinity of the WWTP percolation ponds).

### Technical Consultant Assessment and Recommendations:

- **BAS determination: Partially Met**
  - We agree that the available data and information (including the new data and information provided in the UCI GDE Study Report) indicate that long-term groundwater-level declines due to pumping-induced overdraft of the Borrego Springs Subbasin during the pre-SGMA period (pre-2015) were largely responsible for the widespread die-off and degradation in the health of Mesquite trees in the BS Mesquite Bosque.
  - The available data/information suggest that the existing BS Mesquite Bosque could be a beneficial user of the regional aquifer system, at least in part, particularly in areas surrounding the Borrego Sink where the healthiest stands of vegetation exist and the depth to the regional groundwater table is presumably the shallowest. However, not enough data/information are currently available to confirm that this is the case, as asserted in the UCI GDE Study Report.
  - There are important gaps in understanding (that the report does not acknowledge) that must be filled before a *definitive* conclusion can be reached regarding the groundwater dependency, or lack thereof, of the BS Mesquite Bosque, including:
    - The role of stormwater runoff that could flow to the BS Mesquite Bosque during large storms and percolate through the vadose zone was not considered or quantified in the report. This source of water, although highly episodic and variable in magnitude over time, could be an important component of the water budget of the BS Mesquite Bosque, in that it could periodically replenish soil moisture across

- the depths of the vadose zone, and hence, be available to the deep roots of Mesquite trees.
- The soil texture, soil moisture content, and isotopic chemistry of the soil moisture within the vadose below 5 ft-bgs were not sufficiently characterized in the report to understand its role as a source water that supports Mesquite trees.
  - Depth to groundwater is generally understood beneath the BS Mesquite Bosque but is based on sparse data (both spatially and temporally), particularly in areas in the vicinity of the Borrego Sink, where groundwater levels are likely shallowest and could be supporting relatively health stands of Mesquite trees.
  - Other factors that can affect Mesquite tree health were not sufficiently characterized in the report to understand their potential influence on the health of the Mesquite trees (e.g., changes in temperature; precipitation; surface water inflows; pests; human disturbance; Mesquite tree removal; etc.).
  - If portions of the BS Mesquite Bosque are still using the regional aquifer, little is known about the rates at which the Mesquite tree tap roots may be able to follow the declining groundwater table during the pumping rampdown period.
- Therefore, we believe it is premature to establish minimum thresholds for groundwater levels at wells and/or rates of groundwater-level decline with the specific purpose to protect the BS Mesquite Bosque.
- The proposed allocation of 645 afy of  $ET_{gw}$  to the BS Mesquite Bosque in the Subbasin water budget is also not supportable, mainly because the study methods employed to estimate  $ET_{gw}$  ignored the potential role of soil moisture in the vadose zone as a water source that is satisfying at least a portion of the  $ET_{gw}$  demands of the Mesquite trees. Hence, the estimates of  $ET_{gw}$  in the study likely represent a maximum upper limit of what the BS Mesquite Bosque is using from the regional aquifer system.
- If deemed necessary in the future, we agree that the BVHM is the appropriate tool to explore different Basin-wide pumping patterns to control groundwater levels within the BS Mesquite Bosque.

## CONCLUSIONS AND RECOMMENDATIONS

This section provides the Watermaster Board with the Technical Consultant's main conclusions from its assessment of the UCI GDE Study Report to determine if it is BAS pursuant to the Watermaster's policy; provides recommendations for various monitoring and analysis activities that are needed to fill the gaps in understanding identified in this recommendation report and provide the science needed to adapt the Watermaster's current management framework, if the monitoring and analysis activities indicate a need to protect the BS Mesquite Bosque from declining groundwater levels during the Rampdown period; provides recommendations for the evaluation and potential update of the BVHM to improve its ability to simulate the water budget of the Basin; provides recommendations on how to identify if Watermaster's management program satisfies SGMA requirements regarding potential GDEs; and lists options for adaptive groundwater management if it is deemed necessary in the future to protect the Mesquite Bosque as a GDE.

### Conclusions

Based on the assessment presented herein, we conclude that the UCI GDE Study Report does not meet the Watermaster's criteria for BAS as stated in its policy regarding the use of BAS. Specifically, the report did not sufficiently recognize the gaps and limitations in the currently available data and did not appropriately consider/analyze the alternative sources of water that could be satisfying the current ET demands of the BS Mesquite Bosque. Therefore, the unqualified and definitive conclusions of the UCI Study Report, and the accompanying management recommendations, are not "consistent with scientific and engineering professional standards of practice;" and hence, should not be considered BAS that, by itself, should be relied upon by the Watermaster to take action or make policy decisions.

This conclusion is based on the following:

- The report reached a *definitive* conclusion that the BS Mesquite Bosque is a GDE without acknowledging the limitations and uncertainty in the data and their interpretations, and based on this conclusion, offered several recommendations to manage the Mesquite Bosque as a GDE, such as: establish minimum thresholds for depth-to-groundwater and acceptable rates of groundwater-level decline; assign at least 645 afy of ET<sub>gw</sub> to the BS Mesquite Bosque in the Basin water budget; ecological restoration activities; and others. This definitive conclusion and the associated recommendations are not supported by the available data.
- We identified several data gaps and/or gaps in understanding that call into question UCI's ability to interpret the data and arrive at its *definitive* conclusion, with no limitations cited, that the BS Mesquite Bosque is a GDE. The most important gaps in understanding include:
  - The UCI GDE Study Report indicates that soil moisture within the vadose zone is a water source that supports the Mesquite Bosque. However, the report contained virtually no data on the soil profile from 5 ft-bgs to the saturated zone, such as: soil texture; moisture content, isotopic chemistry of moisture content, existence of perched groundwater conditions, total volume of soil moisture stored in the vadose zone, or the water budget of vadose zone. These data (and subsequent analyses of these data) are necessary to *definitively* conclude that the BS Mesquite Bosque is a GDE.
  - The role of stormwater runoff that could flow into the BS Mesquite Bosque area during large storms and percolate to become soil moisture in the vadose zone was not considered, estimated, or quantified in the UCI GDE Study Report. This source of water, although highly episodic and variable in magnitude over time, could be an important

component of the water budget of the BS Mesquite Bosque. In other words, stormwater runoff could periodically replenish soil moisture across the depths of the vadose zone beneath the BS Mesquite Bosque, and hence, could supply some (or all) of the  $ET_{gw}$  demands of the Mesquite trees.

- There is a paucity of wells and measured depth-to-groundwater within the BS Mesquite Bosque area—particularly in the focused areas of study (Sites 1, 3, 4). These data are necessary to increase confidence in the estimation of depth-to-groundwater and the assessment of the BS Mesquite Bosque as a GDE.
- Besides Jenkins et al. (1988), which recorded Mesquite tree roots extending at least 39.4 ft-bgs, there is no direct evidence in the report of Mesquite tree roots reaching the current depths to the saturated zone beneath much of the BS Mesquite Bosque (up to 134 ft-bgs).
- The maximum rate of groundwater-level decline that Mesquite tree tap roots can follow downward without compromising Mesquite tree health was not addressed in the study. This rate should be compared against current and predicted future rates of groundwater-level decline to better understand the potential impact of the pumping Rampdown on the BS Mesquite Bosque, if it is a GDE.
- Lack of these data and understanding creates sufficient uncertainty that should prohibit the report authors from arriving at their *definitive* conclusions that the current BS Mesquite Bosque is a GDE and the extent and health of the BS Mesquite Bosque will experience degradation caused by the Rampdown as groundwater levels gradually stabilize. Hence, the report’s recommendations to set groundwater management criteria to protect the BS Mesquite Bosque as a GDE, such as minimum thresholds for groundwater levels at monitoring wells, are not yet supportable.

That said, our opinion is that the UCI GDE Study Report represents an advancement in the scientific understanding of the BS Mesquite Bosque and provides compelling evidence that historical over-pumping of the Basin, and the associated declines in groundwater levels, led to widespread mortality of Mesquite trees in the BS Mesquite Bosque during the pre-SGMA period (prior to 2015). SGMA does not require mitigation of pre-SGMA impacts.

The available data/information in the post-SGMA period (2015-2024) suggest that the BS Mesquite Bosque could be an environmental beneficial user of Basin groundwater, at least in part, particularly in areas surrounding the Borrego Sink where NDVI, air photos, and field data indicate the healthiest stands of vegetation and the shallowest depths to the regional groundwater table. Therefore, we recommend the Watermaster consider the BS Mesquite Bosque a “potential GDE” and implement an adaptive management framework to first determine if declining groundwater levels caused by the pumping Rampdown are causing or could cause significant and unreasonable degradation of the BS Mesquite Bosque, and if shown to be necessary, implement adaptive management actions to protect the environmental beneficial uses in the Basin. These recommendations are described in detail below.

## Recommendations to Address the Gaps in Understanding

Various monitoring and analysis activities are needed to fill the gaps in understanding identified in this recommendation report and provide the science needed to adapt the Watermaster’s current management framework, if the monitoring and analysis activities indicate a need to protect the BS Mesquite Bosque from significant and unreasonable degradation caused by declining groundwater levels associated with the pumping Rampdown. The activities should focus on developing a better

understanding of: changes in the extent and health of the BS Mesquite Bosque over time; the water sources that supply the ET demands of the BS Mesquite Bosque; and the relative impact of all factors that could be affecting the extent and health of the BS Mesquite Bosque since the mid-1980s and going forward through the Rampdown period (e.g., changes in groundwater levels; temperature; precipitation; surface water inflows; pests; human disturbance; etc.).

In consideration of our assessment of the UCI GDE Study Report and our prior experience conducting monitoring and mitigation programs for GDEs in other groundwater basins, the following activities are recommended for consideration by the Watermaster:

- The Watermaster has identified the area of the Basin in the vicinity of the BS Mesquite Bosque as a “gap” in its groundwater monitoring program and has made efforts to identify existing wells in this area to add to its groundwater monitoring network. Most of these efforts have been unsuccessful; however, the Watermaster recently added a private domestic well to the monitoring network just west of the Borrego Sink in Old Borrego (Broom Well). Depth to groundwater at Broom Well was about 80 ft-bgs in October 2025. Potentially, additional existing wells could be identified and monitored—particularly in areas near the healthy stands of Mesquite trees surrounding the Borrego Sink where depth to the regional aquifer system is presumably the shallowest.
- Maps of annual changes in groundwater levels could be prepared to illustrate where groundwater levels are declining relative to the BS Mesquite Bosque. These maps are already prepared as interim work products for the annual change-in-storage calculations for the SGMA annual report. That said, monitoring wells are sparse within the BS Mesquite Bosque, so such maps should be classified as rough approximations. The new monitoring well(s) recommended above would improve the accuracy and resolution of such mapping efforts. The maps of changes in groundwater levels could be compared to the changes in BS Mesquite Bosque health to better understand the cause-and-effect relationship, if any.
- Other factors that can affect Mesquite tree health (besides changes in groundwater levels) could be monitored and described (e.g., changes in temperature; precipitation; surface water inflows; pests; human disturbance; Mesquite tree removal; etc.).
- NDVI analysis using Landsat-derived NDVI data (1984-2025) could be performed at specific cells (or groups of cells) where the Mesquite trees in BS Mesquite Bosque were once or are currently dense, so that other non-mesquite vegetation are screened out. Time-series charts could be prepared for these focused areas to compare the changes in NDVI vs. all factors that could influence the health of the Mesquite trees, such as: changes in groundwater levels; temperature; precipitation; surface water inflows; pests; human disturbance; Mesquite tree removal; etc.). This analysis may better describe the most relevant factors that are affecting the BS Mesquite Bosque over time.
- Monitoring and analysis of ET data could be performed over time to better understand water use within the BS Mesquite Bosque. The monitoring/analysis techniques should be evaluated and recommended by the TAC and EWG with input and advice from UCI (since UCI is currently conducting ET monitoring within the BS Mesquite Bosque). Currently, there is not enough information to know what portion of total ET is satisfied by the regional aquifer system, if any. Therefore, estimates of total ET of the BS Mesquite Bosque should be considered an upper limit for  $ET_{gw}$ . This information could be useful to the Watermaster in future BVHM updates and recalibrations for the simulation of  $ET_{gw}$ . Additional consideration for the monitoring/analysis techniques should be given to the following:

- OpenET estimates of ET are derived from six different OpenET models plus and “ensemble mean.” More expert analysis is necessary to choose the OpenET models best suited for estimating ET in natural desert environments.
- Consideration should be given for the potential role of soil moisture in satisfying at least a portion of the ET demands of the BS Mesquite Bosque.
- Consideration should be given to the ET demands of other non-Mesquite vegetation within the Mesquite Bosque areas.
- The role of soil moisture within the vadose zone as a potential water source that supports the BS Mesquite Bosque has not been sufficiently characterized in the UCI GDE Study Report. Monitoring of this potential water source is virtually absent, except for the soil moisture monitoring in the study to a depth of 5 ft-bgs. A study could be performed to better characterize the role of soil moisture within the vadose zone as a source water for the Mesquite trees. Such a study could include:
  - *Quantification of the total storage capacity and the current volume of soil moisture in the vadose zone that could be available to the Mesquite tree roots.* These storage estimates could be compared to the ET demands of the BS Mesquite Bosque to better understand the capacity of the vadose zone to supply water to the Mesquite tree roots. The drilling of the new monitoring well(s) recommended above, including the characterization of the sediment and soil moisture profile of the vadose zone, could support this effort.
  - *Quantification of the water budget of vadose zone underlying the BS Mesquite Bosque.* Rainfall and flood events that occur within the BS Mesquite Bosque can percolate to become soil moisture in the vadose zone that subsequently can become a source water that supports the Mesquite trees within the Bosque. Mapping of the flood events after large storms could potentially be performed using video/photo monitoring by drones to document: (i) surface water run-on within the Bosque and (ii) reservoir development, extent, and depth within the Bosque. Analysis of this type of monitoring data, along with other data, not only could help characterize the potential role of soil moisture as a water source that supports the BS Mesquite Bosque but also could be used to update the BVHM and its ability to simulate the water budget of the Basin.
- New monitoring wells could be constructed near Sites 1, 3, and 4 with a subsequent monitoring program. Site 4 would be the highest priority because depth-to-groundwater at Site 4 is likely deeper than at Sites 1 and 3, and Site 4 is closer to the main areas of pumping in the Basin. Drilling, construction, and subsequent monitoring of the monitoring wells could be designed and used to:
  - Characterize the sedimentary composition and texture of the soil profile from the ground surface to/through the saturated zone.
  - Check for the presence or absence of “perched” groundwater conditions.
  - Collect soil samples and analyze for soil moisture content and soil-water isotopic chemistry across the vadose zone and capillary fringe.
  - Inspect the borehole sediments through the vadose zone and capillary fringe for evidence of live mesquite tree roots.
  - Install soil moisture sensors across the vadose zone and capillary fringe to track seasonal and long-term changes in soil moisture.

- Collect groundwater samples from the saturated zone to characterize its isotopic chemistry for comparison to the isotopic chemistry of the Mesquite trees and soil moisture, which could better describe the source waters that support the Mesquite trees.
- Annual air photos could be collected by drone during the peak growing season across the entire BS Mesquite Bosque and at the specific NDVI analysis sites. The air photos can be used to track changes in the extent, density, and health of the Mesquite trees over time, as well as to validate the interpretations from the NDVI analysis.
- Field surveys of live/dead Mesquite trees at the specific NDVI analysis sites could be performed once every three years to validate the interpretations derived from NDVI and air photo analyses.

A programmatic approach to prioritizing and performing these activities could be accomplished through the development of a “Monitoring Work Plan for the BS Mesquite Bosque.” We recognize that it is not economically feasible for Watermaster to implement all elements of such a workplan without supplemental funding from grants and/or academic or other partnerships. Having a comprehensive monitoring workplan would serve as a useful document for seeking funding through grants and partnerships and would be a logical next step for the Watermaster.

## Evaluation and Use of the BVHM

The BVHM includes functionality to simulate  $ET_{gw}$  as part of the water budget of the groundwater basin. For example, the BVHM estimated about 9,000 afy of  $ET_{gw}$  in the late 1940s before the onset of significant pumping, which progressively declined to about 331 afy of  $ET_{gw}$  in WY 2022, presumably due to the pumping-induced overdraft of the Basin and the associated decline in groundwater levels. This functionality of the BVHM could be evaluated against what is currently known about the BS Mesquite Bosque, which could lead to recommendations to update the BVHM and improve its ability to estimate the water budget of the Basin, including the 5-year redeterminations of the Sustainable Yield. The BVHM could also be used to predict future changes in groundwater levels beneath the BS Mesquite Bosque and  $ET_{gw}$  during the SGMA planning horizon (through 2070) under various assumptions for future pumping and climate.

## Adaptive Management Framework

Since its inception in 2020, the Borrego Springs Watermaster has been implementing groundwater management actions to slow and eventually halt groundwater-level declines in the Basin, which should be beneficial to the BS Mesquite Bosque, if and where it is still a GDE. The main management action is the Rampdown of groundwater pumping to the Sustainable Yield of the Basin by 2040. Currently, the pumpers in the Basin have reduced pumping to rates that are significantly ahead of the prescribed Rampdown schedule.

If it were demonstrated through the monitoring/modeling studies recommended above that the declining groundwater levels caused by the Rampdown through 2040 would cause (or is causing) significant and unreasonable degradation of the BS Mesquite Bosque, then adaptive management options could include:

- Acceleration of the Rampdown schedule
- Reduction of the Sustainable Yield
- A shift in the location of groundwater pumping away from the BS Mesquite Bosque
- A mitigation program to provide an alternative water source for the BS Mesquite Bosque

Technical Consultant Recommendation Report

*Technical Review of the UCI GDE Study Report and Recommendations for Next Steps*

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As stated above, not enough information and understanding is currently available to warrant these actions at this time.

To validate this management approach for the BS Mesquite Bosque as a potential GDE, the Watermaster should prepare a memorandum that describes:

- The history and current understanding of the BS Mesquite Bosque as a potential GDE.
- The Watermaster's current management program to achieve sustainability (e.g., pumping Rampdown, stabilization of groundwater levels, implementation of monitoring programs, etc.).
- Any monitoring and/or modeling efforts proposed for the BS Mesquite Bosque area.
- SGMA statutory and regulatory provisions governing sustainable groundwater management, including consideration of potential GDEs.

The memorandum should be prepared by Watermaster legal counsel to evaluate whether the Watermaster's management and monitoring programs satisfy SGMA requirements regarding potential GDEs.

**Borrego Springs Watermaster  
Board of Directors Meeting  
May 20, 2026  
AGENDA ITEM IV.B**

**To:** Board of Directors  
**From:** Andy Malone, Technical Consultant  
**Date:** May 15, 2026  
**Subject:** TAC Recommendations on Technical Scope-of-Work to Redetermine the Sustainable Yield by 2030

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<input type="checkbox"/> Recommended Action	<input checked="" type="checkbox"/> Provide Direction to Staff	<input type="checkbox"/> Information and Discussion
<input type="checkbox"/> Fiscal Impact	<input type="checkbox"/> Cost Estimate: \$	

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**Recommended Action**

Provide direction to staff on any additional input needed from the Technical Advisory Committee (TAC) to finalize the WY 2027 budget as it related to the technical scope-of-work to redetermine the Sustainable Yield by 2030.

**Judgment Context**

- Judgment Section III.F requires the Watermaster to obtain TAC input and recommendations on the technical scope of work and budget for Sustainable Yield work. Section III.F.9 requires that “By January 1, 2025, the Watermaster will also determine a scope of work and budget for further technical work through September 30, 2029.”
- At its December 2024 Board meeting, the Board approved the initial scope of work and budget to redetermine the Sustainable Yield by January 1, 2030 based on recommendations from the TAC (discussed further below).

**Agenda Item Purpose**

At the request of the Board, the TAC met on May 4, 2026 to review the scope of work and budget options discussed over the last year and provide recommendations for the Board on a technical scope-of-work to Redetermine the Sustainable Yield by 2030 and what work should be performed in water year (WY) 2027, 2028, and 2029. This memorandum describes the TAC input and recommendations on the technical scope-of-work to Redetermine the Sustainable Yield by 2030.

At the May 4<sup>th</sup> meeting, the TAC also discussed development of a technical-review framework for evaluating applications for transfers of water rights. TAC input and recommendations on the technical-review framework for evaluating applications for water-rights transfers are discussed in Agenda Item IV.D of this agenda package.

### **Background and Previously Related Actions by the Board**

In December 2024, the Watermaster Board approved a multi-year scope-of-work to redetermine the 2030 Sustainable Yield in consideration of recommendations from its Technical Consultant and the TAC. The scope-of-work entailed a phased approach (workflow) to further validate the Borrego Valley Hydrologic Model (BVHM) and/or improve its ability to simulate the water budget of the Borrego Springs Subbasin (Basin) and estimate the Sustainable Yield. Figure 1 illustrates the workflow as five steps with “off-ramps” that would allow the TAC/Board to recommend whether the next step in the workflow needs to be performed. The Board ultimately approved scope of work and budget for Step 1 of the workflow to review/evaluate the following new data and information:

1. **Evaluate Monitoring Program Data** – Analyze measured groundwater levels and metered pumping data to determine if improvements should be made to the BVHM to improve its ability to estimate pumping and/or simulate groundwater levels.
2. **Evaluate Groundwater Evapotranspiration ( $ET_{gw}$ )** – Review new information obtained through the recent evaluation of the UCI GDE Study Report on the potential for  $ET_{gw}$  to occur in the Basin and the current BVHM process to simulate groundwater evapotranspiration ( $ET_{gw}$ ) to determine if improvements should be made to the BVHM to improve its ability to simulate  $ET_{gw}$  as part of the Basin water budget.

This work was planned to begin in WY 2027.

Since the Board’s approval of the scope of work in December 2024, additional technical work was performed to complete the 5-year assessment of the Groundwater Management Plan. This work led to the identification of BVHM discrepancies and certain limitations in its ability to evaluate long-term sustainability in some areas of the Basin. The BVHM discrepancies caused several wells in the South Management Area (SMA) to “under-pump” their assigned pumping rates. The discrepancy likely reveals that the complex geology in this area of the Basin (i.e., the hydrogeologic conceptual model [HCM]) is not well represented in the BVHM, nor is the BVHM well calibrated in this area.<sup>1</sup> Based on these findings, the TAC identified two additional technical tasks that could address the BVHM discrepancies:<sup>2</sup>

3. **Evaluate the HCM.** Using new and readily available information, evaluate and potentially update the HCM, particularly in the southern portion of the Basin. The TAC members acknowledged that updates to the HCM would most likely require recalibration of the BVHM as a follow-on task.

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<sup>1</sup> These findings are documented in a technical memorandum (TM) entitled *Use of the BVHM to Evaluate Sustainability of Future Pumping in the Borrego Springs Subbasin* Available on the Watermaster’s website at:

<https://borregospringswatermaster.com/wp-content/uploads/2026/04/TM-BVHM-Future-Projection-Scenario-1A.pdf>

<sup>2</sup> Refer to meeting minutes from the May 1, 2025 TAC meeting, available at: [https://borregospringswatermaster.com/wp-content/uploads/2025/05/20250501-TAC-Meeting-Minutes\\_final.pdf](https://borregospringswatermaster.com/wp-content/uploads/2025/05/20250501-TAC-Meeting-Minutes_final.pdf)

4. **Upgrade to Latest Model Platform.** Evaluate whether the current BVHM platform and grid resolution are sufficient to represent Basin conditions, and if not, consider migrating the BVHM to a different model platform.

### **TAC Discussion and Recommendations**

At the May 4, 2026 TAC meeting, the TAC was informed of the Board priorities for future technical work:

- Focus on compliance with the Judgment requirements
- Recognize that a “perfect” model is not necessary
- Focus on performing the minimum scope of work needed to:
  - Develop a defensible estimate of the 2030 Sustainable Yield
  - Evaluate the projected impacts of pumping under the 2030 Sustainable Yield

The TAC was presented with the four potential technical tasks listed above, and each member provided verbal and/or written feedback for the Board to consider. Table 1 (attached) summarizes each task, the approximate cost estimate to perform the task, and the TAC input on whether the task should be performed in the workflow to redetermine the 2030 Sustainable Yield.

The TAC input is summarized as follows for each task:

1. **Evaluate Monitoring Program Data** – Unanimous recommendation to proceed to perform this Board-approved task in WY 2028, after all pumping and groundwater level data have been collected through WY 2027.
2. **Evaluate Groundwater Evapotranspiration** – Unanimous recommendation to proceed to perform this Board-approved task in WY 2027 to understand where and how the BVHM simulates  $ET_{gw}$ .
3. **Evaluate the HCM.** Two TAC members recommended this task be performed. Two TAC members recommended this task ***not be*** performed. One TAC member did not provide an opinion.
4. **Upgrade to Latest Model Platform.** Four TAC members recommended this task ***not be*** performed. One TAC member recommended this task be performed.

### **Next Steps**

The Board should consider these TAC recommendations in its deliberation on a technical scope-of-work for WY 2027, 2028, and 2029. The draft WY 2027 Budget is the subject of Agenda Item IV.C. To support your understanding of the difference in costs to include or exclude the task to Evaluate the HCM, Staff has presented an Option A budget that includes the HCM evaluation in WY 2027 and an Option B that excludes the HCM evaluation from the scope of work entirely. The task to migrate the BVHM to the latest model platform is not presented in the budget for consideration.

If the Board requests additional TAC input, this can be collected by email correspondence with the TAC or at a TAC meeting. Item IV.E of the agenda package includes an option to set a TAC agenda for the next meeting that is tentatively scheduled for 9:00 am on Wednesday, June 10, 2026.

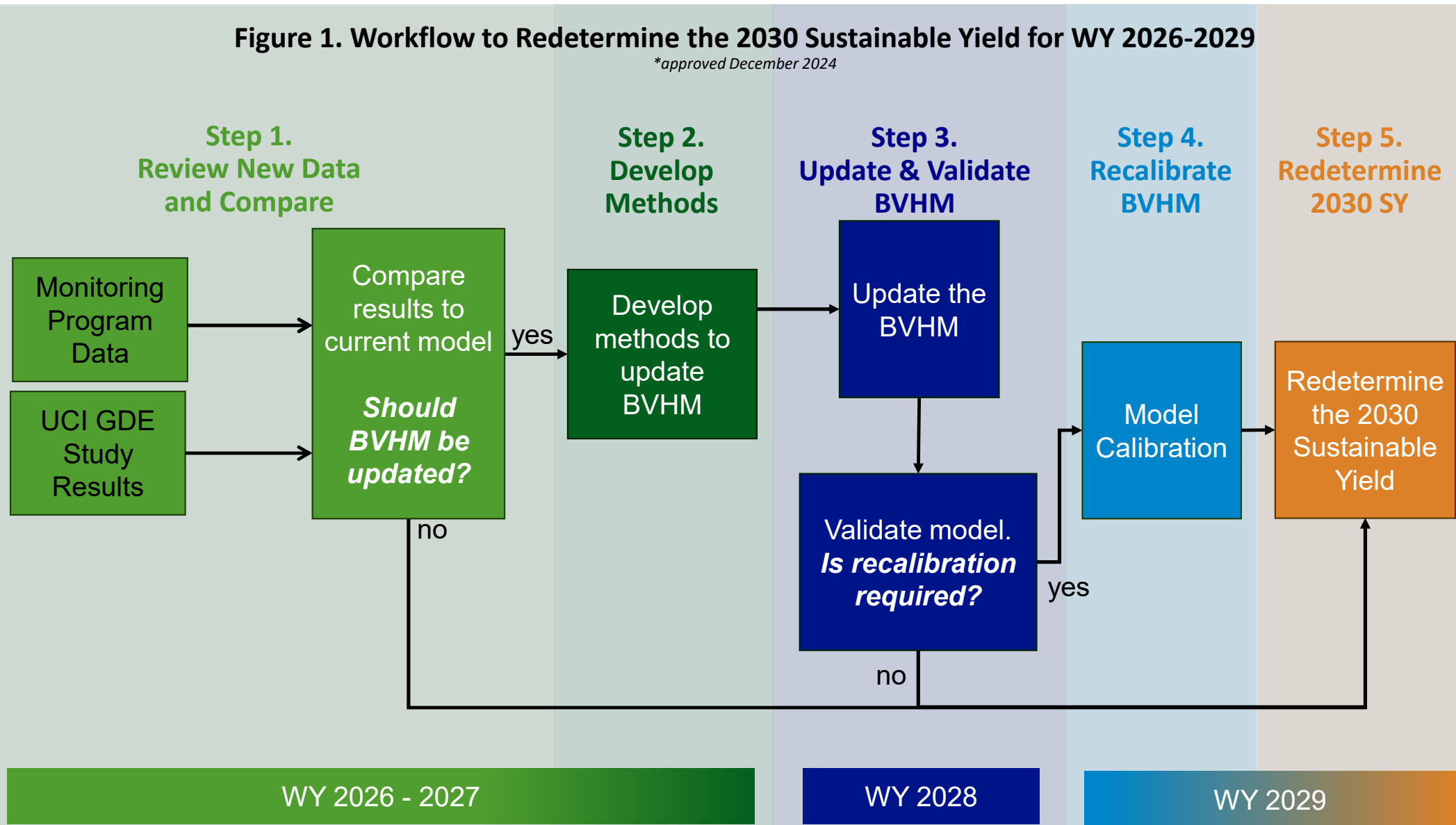
**Enclosures**

Figure 1. Workflow to Redetermine the 2030 Sustainable Yield

Table 1. TAC Input on the Technical Scope-of-Work to Redetermine the 2030 Sustainable Yield

Figure 1. Workflow to Redetermine the 2030 Sustainable Yield for WY 2026-2029

*\*approved December 2024*



**Table 1. TAC Input on the Technical Scope-of-Work to Redetermine the 2030 Sustainable Yield**

Task Name	Task Description	Cost Estimate to Perform Task 1 of the Workflow	If Task was previously considered by the Board (and when)	TAC Input				
				San Diego County (Bennett)	BWD (Driscoll)	Rams Hill (Watson)	AAWARE (Wagner)	Community (Detwiler)
<b>Evaluate Monitoring Program Data</b>	The BVHM is extended from WY 2022 to 2027 and run over the historical period of WY 1930 through 2027. The model results are compared to the metered groundwater pumping data and measured groundwater-levels. Based on the comparison, the TAC may recommend to the Board that either (i) the differences are significant and methods should be developed to improve the BVHM (proceed to Step 2) or, (ii) the differences are not significant, no changes to the model are recommended (skip to Workflow Step 5).	<b>\$35,246</b>	Approved at the December 19, 2024 Special Board meeting as part of scope-of-work to Redetermine the 2030 Sustainable Yield. <b>(Has not yet been performed)</b>	<b>Yes</b> Perform task in WY 2028 (using data through WY 2027)				
<b>Evaluate Groundwater Evapotranspiration (ET)</b>	The recent review and evaluation of the UCI GDE Study Report by the TAC/EWG/TC has generated new information on the potential for groundwater evapotranspiration in the Basin. In this task, the new information are compared against the current BVHM to determine if there are significant differences and, therefore, if model updates are recommended. Based on the comparison, the TAC may recommend to the Board that either (i) the differences between the new information and the current BVHM are significant and methods should be developed to update the BVHM (proceed to Step 2) or, (ii) the differences are not significant, no changes to the model are recommended (skip to Workflow Step 5).	<b>\$26,762</b>	Approved at the December 19, 2024 Special Board meeting as part of scope-of-work to Redetermine the 2030 Sustainable Yield. <b>(Has not yet been performed)</b>	<b>Yes</b> Perform task in WY 2027				
<b>Upgrade to Latest Model Platform</b>	Potential new modeling platforms are researched and a “white paper” is prepared that evaluates and compares the different modeling platforms and the level of effort to convert the BVHM to these platforms. The white paper may also evaluate structural changes to the existing BVHM, such as removing the FMP. The white paper will be reviewed by the TAC and the TAC will have the opportunity to recommend to the Board that either (i) the model platform should be upgraded/migrated to another platform, and hence, methods should be developed for this migration (proceed to Step 2) or, (ii) the model platform should not be upgraded/migrated and the BVHM can be used to redetermine the 2030 Sustainable Yield (skip to Step 5).	<b>\$60,000</b>	<b>Not</b> approved at the December 19, 2024 Special Board meeting as part of scope-of-work to Redetermine the 2030 Sustainable Yield.	<b>No.</b> Mainly cost concerns with no near-term planning benefit	<b>Yes</b> Update BVHM to MODFLOW-OWHM (v2.2.0) from the current v1.0.0	<b>No</b>	<b>No</b> Mainly cost concerns and lack of need	<b>No</b>
<b>Evaluate the HCM</b>	New information/data are reviewed and compared against the current HCM, particularly in CMA and SMA where the under-pumping discrepancy is located, to determine if there are significant differences and, therefore, model updates are recommended. New information and data could include: AEM survey data, groundwater-level contour maps, groundwater levels, and sonic boring logs of the Rams Hill wastewater treatment facility monitoring wells. This task may also include an optional task to perform a site-specific investigation to obtain new hydrogeologic information if data gaps are determined. Based on the comparison, the TAC will likely recommend to the Board that the differences between the data and the current HCM are significant and methods should be developed to update the HCM (proceed to Step 2).	<b>\$62,694</b>	<b>Not</b> approved at the June 18, 2025 Board meeting as part of next steps to use the BVHM to evaluate sustainability of future pumping and complete the 5-Year Assessment Report.	<b>No</b> Mainly cost concerns. Possibly reconsider after more data become available in the future.	<b>Yes</b> Perform task in WY 2027	<b>Yes</b> Perform task in WY 2027	<b>No</b> Mainly cost concerns. Possibly reconsider after more data become available in the future.	Input not provided

**Borrego Springs Watermaster  
Board of Directors Meeting  
May 20, 2026  
AGENDA ITEM IV.C**

**To:** Board of Directors  
**From:** Samantha Adams, Executive Director  
**Date:** May 15, 2026  
**Subject:** Draft WY 2027 Budget

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<input type="checkbox"/> Recommended Action	<input checked="" type="checkbox"/> Provide Direction to Staff	<input type="checkbox"/> Information and Discussion
<input type="checkbox"/> Fiscal Impact	<input type="checkbox"/> Cost Estimate: \$	

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**Recommended Action**

Provide direction to staff on changes to the draft WY 2027 scope of work and budget

Fiscal Impact: TBD upon finalization of the draft budget

**Judgment Context**

- Judgment Section IV.E.3 provides for a process and schedule for developing the Watermaster’s annual budget and establishing assessments to fund it by July 1<sup>st</sup> of each year. The Judgment requires a supermajority vote (4 of 5 Board members) to establish (or change) a budget.
- Judgment Section III.F requires the Watermaster to obtain TAC input and recommendations on the technical scope of work and budget for Sustainable Yield work. Section III.F.9 requires that “By January 1, 2025, the Watermaster will also determine a scope of work and budget for further technical work through September 30, 2029.”
  - At its December 2024 Board meeting, the Board approved the initial scope of work and budget to redetermine the Sustainable Yield by January 1, 2030 based on recommendations from the TAC
- Judgment Section III.G.4 requires the Watermaster to establish an Overproduction Penalty Assessment, which will be no less than \$500 per acre-foot. Establishment of the Overproduction Penalty Assessment rate is also a supermajority subject matter.

**Agenda Item Purpose**

The purpose of this memo is to present the draft WY 2027 scope of work and budget and receive additional feedback on modifications that should be made for the final budget scheduled for consideration of approval in June 2026 (there are two meetings schedule at which the action could be taken: June 3<sup>rd</sup> and June 25<sup>th</sup>).

### **Related Actions and Direction**

- At its April 2026 meeting, the Board provided Staff with input on the scope of work for WY 2027. The feedback was particularly focused on reducing the scope of work to achieve cost savings and reduce the Pumping Assessment.
- As described in Agenda Item IV.B, the TAC met on May 4<sup>th</sup> to review the previously approved scope of work and budget to redetermine the 2030 Sustainable Yield and provide updated recommendations to the Board for WYs 2027 through 2029. The draft budget presented herein includes two scope-of-work options for consideration based on the TAC input (Option A and Option B, described further below).
- As described in Agenda Item IV.A, Staff is recommending follow-on work in WY 2027 based on the review of the UCI GDE Study Report. This follow-on work to prepare a monitoring work plan related to the Mesquite Bosque is included in the draft budget.

### **Budgeting Approach**

As with past budget packages, the WY 2027 budget table shows revenues, expenditures, and cash reserves for WY 2027, and includes a projection for four additional years into the future (WY 2028 through WY 2031). The projection is prepared on Staff's best professional judgement about the effort to perform various tasks, inflation rates, and consideration of future technical scope items that are required by the Judgment or SGMA, or have been discussed with the Board.

The projection of cash reserves was prepared using the Watermaster's financial planning model, and supports determination of the level of Pumping Assessments required to maintain cash reserves at target levels. For the draft WY 2027 budget, the financial model included the following assumptions:

- Staff's best judgement as to the approximate monthly schedule of:
  - Accrued expenditures on all Watermaster administrative and technical tasks
  - Assessment invoicing and receipt of payments from the Parties
  - Payments on vendor invoices (accounts payable)
- Parties will continue to make payment on Assessment invoices, with only about \$1,000 assumed to go unpaid each year (this is higher than unpaid invoices in WY 2025 and anticipated for 2026).
- For each WY, a monthly and average reserve balance target was established that generally represents a balance that is equal to about nine months of operating expenses.
- Costs of services across all vendor types will increase by 4.5% per year through WY 2031.

The draft budget presented herein assigns a constant Pumping Assessment rate over the five-year period of WY 2027 to WY 2031. This constant assessment is implemented to establish an expectation of the funding required to maintain a cash reserve equal to nine months of operating expenditures through the project period if all the projected work is performed. An alternative approach would be to vary the Pumping Assessment from year to year to match the cash reserve required in that year.

### **Scope of Work and Budget for WY 2027**

Tables 1A and 1B (attached) summarize the draft line-item operating budget, including revenues, expenditures, and reserves for WY 2027 and the projected budgets in these categories for WYs 2028 through 2031. The table also shows the approved, amended WY 2026 Budget and the projected actual WY 2026 year-end balances for each category. The budget will be adjusted based on Board feedback and presented again at the June 3, 2026 Special Board Meeting. The tables include:

- **Revenues.** This section shows all sources of revenue collected by the Watermaster.
- **Expenditures.** This section shows the expenditures by category and line-item. The categories are Administrative Services, Legal Services, Technical/Engineering Services, Environmental Working Group, and Services to Parties with Manual-Read Meters
- **Cash Reserves.** This section summarizes the projected cash reserve balances and targets based on the monthly financial model. The reserve targets represent the average reserve needed during the year to maintain a balance that would be needed to support nine months of operating expenses, per the Watermaster’s reserve policy. For each WY, the table shows the beginning cash reserves, the average reserve target for the year, the minimum month-end reserve balance projected during the year, the average month-end reserve balance over the year, and the variance of the average month-end reserve balance from the desired average reserve balance.

Two draft WY 2027 tables are provided to characterize the difference in costs and assessments between the scope of work recommendations from the TAC. Aside from the WY 2027 through 2029 budget line-item technical work to redetermine the 2030 Sustainable Yield, all other expenditures are identical between Table 1A and 1B. The differences in scope between Options A and B impact the required pumping assessment to fund the work.

The two workflow options for the technical work to redetermine the 2030 Sustainable Yield are (refer to Agenda Item IV.B for details):

- Option A – Evaluate HCM, ET, and new monitoring data as part of the workflow to redetermine the 2030 Sustainable Yield
- Option B -- Evaluate only ET and new monitoring data as part of the workflow to redetermine the 2030 Sustainable Yield

A summary of the draft WY 2027 Budget components and scope assumptions follows the two tables. The following assumptions were applied in developing the draft budget options shown in Tables 1A and 1B:

### Revenue Assumptions

- As noted above, set to a constant rate in both Option A and B from WY 2027 through 2031:
  - Option A - \$625,000

- Option B - \$600,000
- Up to \$1,000 in pumping assessments is assumed not collected and written off as bad debt.
- No Overproduction penalty assessments are collected. The amount of Overproduction that will incur penalty assessments in WY 2027, if any, will not be known until the start of WY 2027 when the Water Rights Accounting for WY 2026 is completed. Per past Board direction, the Overproduction Penalty Assessment Rate has been set at \$500 per acre-foot (the minimum allowed by the Judgment).
- Revenues from pass-through expenses are equal to the pass-through expenditures of requestor-funded RFIs, well permit application processing, and manual-read meter services.

### Expenditure Assumptions

- Administrative Services (same scope of work in Options A and B):
  - Board Meetings: 6 meetings per year, 3 hours per meeting, up to four business items per meeting, in addition to standard meeting items. 5 meetings are virtual, 1 is held in person. Assumes ED meets with legal counsel and Chairperson (or other Sub Committees) ahead of and between meetings to maintain momentum and align expectations.
  - TAC Meetings: 2 meetings (minimum required by Judgment), 2 hour meetings, up to three topics per meeting, no additional items handled via email other than brief follow-up to requests for input following meetings.
  - Stakeholder Outreach: No meetings, switch to developing content to be published in local media up to two times per year, such as in the Borrego Sun.
  - Administration and Management: No significant change in scope, but some reduction in services such as bimonthly reporting of financials instead of monthly reporting.
- Legal Services (same scope of work in Options A and B)
  - Reduced level of service by 42% due to holding half the number of meetings per year.
- Routine Technical and Engineering Services (same scope of work in Options A and B):
  - No changes to the scope of work from WY 2026 for the meter reading program, groundwater monitoring program, data management and reporting, or as needed technical services. Where efficiencies in work have been achieved, these are reflected in cost savings relative to WY 2026 (compare for example the WY 2026 and 2027 budget for the metering program)
  - The scope of work for WY 2026 Water Rights Accounting and Annual Report was reduced to eliminate all non-required information from the Annual Report. The cost breakdown for the revised reporting process is:
    - Prepare Water Rights Accounting by November 2026: \$12,221
    - Prepare Annual Report to Court and DWR by April 2027: \$23,507
- Non-Routine Technical Consulting Services

- Technical Work to Support the Sustainable Yield Updates
  - Option A: Evaluate HCM, ET, and new monitoring data
    - WY 2027 cost is \$89,456
    - Total Cost over WY 2027 to 2029 is \$329,876
      - Future years work in WY 2028 and 2029 includes model updates, recalibration, determination of SY, and evaluation of pumping projections under the revised SY value.
  - Option B: Evaluate ET and new monitoring data
    - WY 2027 cost is \$26,762
    - Total Cost over WY 2027 to 2029 is \$237,900
      - Future years' work WY 2028 and 2029 includes model updates, recalibration, determination of SY, and evaluation of pumping projections under the revised SY value. Recalibration may not be necessary in this workflow, but it is included herein to set upper-end cost expectations.
- Develop Scope and Budget for future SY Updates (Due January 1, 2030)
  - Work will be performed following completion of the 2030 Sustainable Yield in October 2029 through December 2029.
- Future 5-Year Assessment and Update of GMP (Due June 2031)
  - Work will be scoped in WY 2029 and performed in WY 2030 and 2031.
- Environmental Working Group
  - WY 2027 assumes two items addressed:
    - Technical Consultant's recommended scope of work and budget estimate to prepare a workplan in WY 2027 (as described in Agenda Item IV.A)
    - Complete process to recommend next steps to the Board based on the Biological Restoration of Fallowed Lands study completed in WY 2025. This process was deferred in WY 2026 to focus on the review of the UCI GDE Study.
  - Assumes the level of work will remain at the agreed upon EWG funding level of \$20,000 per year absent grant funding in WY 2028 through WY 2031 (from the Settlement Agreement).
- Services to Parties with Manual Read Meters (pass-through expense)
  - Assumes reduced level of official Watermaster Reads of 2x per year, performed by BWD. Cost escalation is based on revised service agreement between Watermaster and BWD, approved in WY 2026.
  - Assumes similar level of effort as past year for consulting services to coordinate with Pumpers on self-reporting and with BWD for official reads.

**Cash Reserve Assumptions.**

- Reserve target remains equal to nine-months of operating expenses
- Pumping Assessment level is set to maintain average variance from desired reserve across the five-year budget projection period

Table 1. DRAFT Estimated Budget for Water Year 2027 with  
Option A - Evaluate HCM, ET, and new monitoring data as part of the workflow to Redetermine the 2030 Sustainable Yield

Revenues, Expenditures, and Reserves	Actual WY 2025	Amended Budget WY 2026	Projected WY 2026	WY 2027 Budget	Projected Budget <sup>1</sup>				Notes
					WY 2028	WY 2029	WY 2030	WY 2031	
<b>Revenues</b>	<b>\$ 1,256,474</b>	<b>\$ 361,020</b>	<b>\$ 360,544</b>	<b>\$ 636,442</b>	<b>\$ 636,989</b>	<b>\$ 637,506</b>	<b>\$ 638,046</b>	<b>\$ 638,610</b>	
Pumping Assessments <sup>2</sup>	\$ 338,532	\$ 350,000	\$ 350,049	\$ 625,000	\$ 625,000	\$ 625,000	\$ 625,000	\$ 625,000	
Bad Debt (assumed non-payment on Assessments)	\$ -	\$ (1,000)	\$ -	\$ (1,000)	\$ (1,000)	\$ (1,000)	\$ (1,000)	\$ (1,000)	
Overproduction Penalty Assessments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Revenues Collected for Pass-Through Expenses	\$ 16,713	\$ 12,020	\$ 10,495	\$ 12,442	\$ 12,989	\$ 13,506	\$ 14,046	\$ 14,610	
DWR Prop 68 Grant Reimbursements	\$ 901,228	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
<b>Total Expenditures</b>	<b>\$ 1,449,651</b>	<b>\$ 773,259</b>	<b>\$ 736,688</b>	<b>\$ 640,833</b>	<b>\$ 659,221</b>	<b>\$ 713,726</b>	<b>\$ 637,995</b>	<b>\$ 649,010</b>	
<b>Administrative Services</b>	<b>\$ 422,961</b>	<b>\$ 301,671</b>	<b>\$ 291,201</b>	<b>\$ 225,115</b>	<b>\$ 236,094</b>	<b>\$ 244,752</b>	<b>\$ 253,745</b>	<b>\$ 263,086</b>	
<b>Watermaster Staff Admin Services</b>	<b>\$ 291,199</b>	<b>\$ 237,254</b>	<b>\$ 239,994</b>	<b>\$ 185,407</b>	<b>\$ 194,677</b>	<b>\$ 201,967</b>	<b>\$ 209,540</b>	<b>\$ 217,408</b>	
Board Meetings	\$ 108,657	\$ 104,752	\$ 107,253	\$ 73,560	\$ 77,238	\$ 80,714	\$ 84,346	\$ 88,141	2027 30% savings = 6 meetings (5 virtual; 1 in-person)
Technical Advisory Committee Meetings	\$ 53,445	\$ 32,950	\$ 30,774	\$ 17,288	\$ 18,152	\$ 18,969	\$ 19,823	\$ 20,715	2027 48% savings = 2 meetings (both virtual)
Court Hearings	\$ 679	\$ 1,512	\$ 1,512	\$ 1,152	\$ 1,210	\$ 1,264	\$ 1,321	\$ 1,380	
Stakeholder Outreach/Workshops	\$ 11,976	\$ 12,846	\$ 12,846	\$ 8,581	\$ 9,010	\$ 9,280	\$ 9,559	\$ 9,846	2027 33% savings = public outreach via media (no meetings)
Administration and Management	\$ 79,855	\$ 85,194	\$ 87,609	\$ 84,826	\$ 89,067	\$ 91,739	\$ 94,491	\$ 97,326	
Prop 68 Project Admin and Grant Reporting	\$ 36,587	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
<b>Other Administrative or Vendor Services</b>	<b>\$ 124,760</b>	<b>\$ 64,417</b>	<b>\$ 50,881</b>	<b>\$ 38,208</b>	<b>\$ 39,916</b>	<b>\$ 41,285</b>	<b>\$ 42,705</b>	<b>\$ 44,177</b>	
Financial Audit	\$ 8,098	\$ 8,812	\$ 8,537	\$ 9,064	\$ 9,340	\$ 9,807	\$ 10,297	\$ 10,812	
Insurance	\$ 44,420	\$ 48,142	\$ 41,149	\$ 28,644	\$ 30,076	\$ 30,978	\$ 31,908	\$ 32,865	2027 41% savings = approved reduced premium
Misc. Expenses	\$ 131	\$ 2,000	\$ 150	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	2027 75% savings = reflection of actual potential costs
Meter Accuracy Testing Vendors	\$ 14,430	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Interest on Vendor Terms During Prop 68 Grant Period	\$ 57,681	\$ 5,463	\$ 1,045	\$ -	\$ -	\$ -	\$ -	\$ -	
<b>Pass-Through Expenses</b>	<b>\$ 7,002</b>	<b>\$ -</b>	<b>\$ 326</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	
Reimbursement to BWD for GSP	\$ 5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Requestor Funded Request for Information	\$ 6,996	\$ -	\$ 326	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	Pass through: Collect retainer up-front
Well Permit Application Processing	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Pass through: Approach and pass through cost TBD
<b>Legal Services</b>	<b>\$ 98,000</b>	<b>\$ 110,000</b>	<b>\$ 100,000</b>	<b>\$ 63,500</b>	<b>\$ 65,405</b>	<b>\$ 67,367</b>	<b>\$ 69,388</b>	<b>\$ 71,470</b>	2027 42% savings = Reduced number of meetings

**Table 1. DRAFT Estimated Budget for Water Year 2027 with  
Option A - Evaluate HCM, ET, and new monitoring data as part of the workflow to Redetermine the 2030 Sustainable Yield**

Revenues, Expenditures, and Reserves	Actual WY 2025	Amended Budget WY 2026	Projected WY 2026	WY 2027 Budget	Projected Budget <sup>1</sup>				Notes
					WY 2028	WY 2029	WY 2030	WY 2031	
<b>Technical/Engineering Services</b>	\$ 683,746	\$ 311,928	\$ 297,678	\$ 299,220	\$ 326,234	\$ 369,601	\$ 282,316	\$ 281,344	
<b>Routine Annual Technical Consultant Services</b>	\$ 204,220	\$ 224,870	\$ 210,620	\$ 209,764	\$ 220,252	\$ 230,163	\$ 240,521	\$ 251,344	
Coordinate/Implement meter reading program	\$ 27,179	\$ 33,584	\$ 27,363	\$ 30,084	\$ 31,588	\$ 33,010	\$ 34,495	\$ 36,047	
Groundwater Monitoring Program	\$ 97,468	\$ 116,969	\$ 113,950	\$ 119,742	\$ 125,729	\$ 131,387	\$ 137,299	\$ 143,478	
Data Management and Data Reporting	\$ 14,628	\$ 12,276	\$ 12,276	\$ 12,850	\$ 13,493	\$ 14,100	\$ 14,734	\$ 15,397	
Annual Report to the Court and DWR	\$ 51,553	\$ 51,221	\$ 46,370	\$ 35,727	\$ 37,513	\$ 39,201	\$ 40,966	\$ 42,809	30% savings = Eliminate non-required information
As-needed technical services	\$ 13,392	\$ 10,820	\$ 10,662	\$ 11,361	\$ 11,929	\$ 12,466	\$ 13,027	\$ 13,613	
<b>Technical Consultant Services - Non-Routine</b>	\$ 479,526	\$ 87,058	\$ 87,058	\$ 89,456	\$ 105,982	\$ 139,438	\$ 41,795	\$ 30,000	
Address Inactive Wells via Abandonment/Conversion	\$ 222,406	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
5-Year Assessment and Update of the GMP (includes addressing DWR RCAs)	\$ 156,826	\$ 71,316	\$ 71,316	\$ -	\$ -	\$ 5,000	\$ 25,000	\$ 30,000	Next assessment and GMP Update due June 2031
Develop Scope and Budget for future SY Updates	\$ 15,444	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 16,795	\$ -	
Technical Work to Support SY Updates	\$ 84,851	\$ 15,742	\$ 15,742	\$ 89,456	\$ 105,982	\$ 134,438	\$ -	\$ -	Based on TAC recommendation Option A
As-needed GMP Implementation Actions	\$ -	\$ -	\$ -						Recommended for unanticipated work
<b>Environmental Working Group</b>	\$ 236,063	\$ 37,640	\$ 37,640	\$ 42,057	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	
Biological Restoration of Fallowed Lands	\$ 225,118	\$ -	\$ -	\$ 6,552	\$ -	\$ -	\$ -	\$ -	For EWG to complete recommendation based on study
Ad Hoc Requests and EWG Meetings	\$ 10,946	\$ 37,640	\$ 37,640	\$ 35,505	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	TC recommended scope for workplan
<b>Services to Parties with Manual Read Meters</b>	\$ 8,880	\$ 12,020	\$ 10,169	\$ 10,942	\$ 11,489	\$ 12,006	\$ 12,546	\$ 13,110	9% savings reflects BWD reading meters 2x per year
<b>Cash Reserves<sup>3</sup></b>									
Beginning Cash Reserves	\$ 839,254	\$ 560,559		\$ 617,228	\$ 625,166	\$ 633,967	\$ 573,939	\$ 499,108	
Year-End Cash Reserve Balance	\$ 560,559	\$ 617,228	\$ 617,228	\$ 625,166	\$ 633,967	\$ 573,939	\$ 499,108	\$ 448,691	
Average Reserve to Maintain Target Balance Equal to 9 Months of Operating Expenses		\$ 530,284		\$ 477,052	\$ 494,416	\$ 535,295	\$ 478,496	\$ 486,758	
Minimum Month-End Reserve Balance		\$ 617,228		\$ 542,331	\$ 521,830	\$ 461,761	\$ 404,095	\$ 391,298	
Average Month-End Reserve Balance		\$ 762,352		\$ 621,694	\$ 591,593	\$ 537,648	\$ 499,487	\$ 486,287	
Average Variance from Desired Reserve		\$ 232,068		\$ 144,642	\$ 97,177	\$ 2,353	\$ 20,990	\$ (471)	

Notes

1 -- Line-items in blue highlight show tasks where changes in scope have been implemented to reduce costs.

2 -- Assessment set at constant value needed from WY 2027 through WY 2030 to maintain target reserve balance through WY 2030.

3 -- Cash Reserve projections are developed with the financial model prepared by Watermaster Staff and are based on expected timing of receipt of payment of Watermaster assessments and timing of payments to vendors.

**Table 1B. DRAFT Estimated Budget for Water Year 2027**  
**Option B - Evaluate ET and new monitoring data as part of the workflow to Redetermine the 2030 Sustainable Yield**

Revenues, Expenditures, and Reserves	Actual WY 2025	Amended Budget WY 2026	Projected WY 2026	WY 2027 Budget	Projected Budget <sup>1</sup>				Notes
					WY 2028	WY 2029	WY 2030	WY 2031	
<b>Revenues</b>	<b>\$ 1,256,474</b>	<b>\$ 361,020</b>	<b>\$ 360,544</b>	<b>\$ 611,442</b>	<b>\$ 611,989</b>	<b>\$ 612,506</b>	<b>\$ 613,046</b>	<b>\$ 613,610</b>	
Pumping Assessments <sup>2</sup>	\$ 338,532	\$ 350,000	\$ 350,049	\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000	
Bad Debt (assumed non-payment on Assessments)	\$ -	\$ (1,000)	\$ -	\$ (1,000)	\$ (1,000)	\$ (1,000)	\$ (1,000)	\$ (1,000)	
Overproduction Penalty Assessments	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Revenues Collected for Pass-Through Expenses	\$ 16,713	\$ 12,020	\$ 10,495	\$ 12,442	\$ 12,989	\$ 13,506	\$ 14,046	\$ 14,610	
DWR Prop 68 Grant Reimbursements	\$ 901,228	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
<b>Total Expenditures</b>	<b>\$ 1,449,651</b>	<b>\$ 773,259</b>	<b>\$ 736,688</b>	<b>\$ 578,139</b>	<b>\$ 629,939</b>	<b>\$ 713,726</b>	<b>\$ 637,995</b>	<b>\$ 649,010</b>	
<b>Administrative Services</b>	<b>\$ 422,961</b>	<b>\$ 301,671</b>	<b>\$ 291,201</b>	<b>\$ 225,115</b>	<b>\$ 236,094</b>	<b>\$ 244,752</b>	<b>\$ 253,745</b>	<b>\$ 263,086</b>	
<b>Watermaster Staff Admin Services</b>	<b>\$ 291,199</b>	<b>\$ 237,254</b>	<b>\$ 239,994</b>	<b>\$ 185,407</b>	<b>\$ 194,677</b>	<b>\$ 201,967</b>	<b>\$ 209,540</b>	<b>\$ 217,408</b>	
Board Meetings	\$ 108,657	\$ 104,752	\$ 107,253	\$ 73,560	\$ 77,238	\$ 80,714	\$ 84,346	\$ 88,141	2027 30% savings = 6 meetings (5 virtual; 1 in-person)
Technical Advisory Committee Meetings	\$ 53,445	\$ 32,950	\$ 30,774	\$ 17,288	\$ 18,152	\$ 18,969	\$ 19,823	\$ 20,715	2027 48% savings = 2 meetings (both virtual)
Court Hearings	\$ 679	\$ 1,512	\$ 1,512	\$ 1,152	\$ 1,210	\$ 1,264	\$ 1,321	\$ 1,380	
Stakeholder Outreach/Workshops	\$ 11,976	\$ 12,846	\$ 12,846	\$ 8,581	\$ 9,010	\$ 9,280	\$ 9,559	\$ 9,846	2027 33% savings = public outreach via media (no meetings)
Administration and Management	\$ 79,855	\$ 85,194	\$ 87,609	\$ 84,826	\$ 89,067	\$ 91,739	\$ 94,491	\$ 97,326	
Prop 68 Project Admin and Grant Reporting	\$ 36,587	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
<b>Other Administrative or Vendor Services</b>	<b>\$ 124,760</b>	<b>\$ 64,417</b>	<b>\$ 50,881</b>	<b>\$ 38,208</b>	<b>\$ 39,916</b>	<b>\$ 41,285</b>	<b>\$ 42,705</b>	<b>\$ 44,177</b>	
Financial Audit	\$ 8,098	\$ 8,812	\$ 8,537	\$ 9,064	\$ 9,340	\$ 9,807	\$ 10,297	\$ 10,812	
Insurance	\$ 44,420	\$ 48,142	\$ 41,149	\$ 28,644	\$ 30,076	\$ 30,978	\$ 31,908	\$ 32,865	2027 41% savings = approved reduced premium
Misc. Expenses	\$ 131	\$ 2,000	\$ 150	\$ 500	\$ 500	\$ 500	\$ 500	\$ 500	2027 75% savings = reflection of actual potential costs
Meter Accuracy Testing Vendors	\$ 14,430	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Interest on Vendor Terms During Prop 68 Grant Period	\$ 57,681	\$ 5,463	\$ 1,045	\$ -	\$ -	\$ -	\$ -	\$ -	
<b>Pass-Through Expenses</b>	<b>\$ 7,002</b>	<b>\$ -</b>	<b>\$ 326</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	<b>\$ 1,500</b>	
Reimbursement to BWD for GSP	\$ 5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Requestor Funded Request for Information	\$ 6,996	\$ -	\$ 326	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	Pass through: Collect retainer up-front
Well Permit Application Processing	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	Pass through: Approach and pass through cost TBD
<b>Legal Services</b>	<b>\$ 98,000</b>	<b>\$ 110,000</b>	<b>\$ 100,000</b>	<b>\$ 63,500</b>	<b>\$ 65,405</b>	<b>\$ 67,367</b>	<b>\$ 69,388</b>	<b>\$ 71,470</b>	2027 42% savings = Reduced number of meetings

**Table 1B. DRAFT Estimated Budget for Water Year 2027**  
**Option B - Evaluate ET and new monitoring data as part of the workflow to Redetermine the 2030 Sustainable Yield**

Revenues, Expenditures, and Reserves	Actual WY 2025	Amended Budget WY 2026	Projected WY 2026	WY 2027 Budget	Projected Budget <sup>1</sup>				Notes
					WY 2028	WY 2029	WY 2030	WY 2031	
<b>Technical/Engineering Services</b>	\$ 683,746	\$ 311,928	\$ 297,678	\$ 236,526	\$ 296,952	\$ 369,601	\$ 282,316	\$ 281,344	
<i>Routine Annual Technical Consultant Services</i>	\$ 204,220	\$ 224,870	\$ 210,620	\$ 209,764	\$ 220,252	\$ 230,163	\$ 240,521	\$ 251,344	
<i>Coordinate/Implement meter reading program</i>	\$ 27,179	\$ 33,584	\$ 27,363	\$ 30,084	\$ 31,588	\$ 33,010	\$ 34,495	\$ 36,047	
<i>Groundwater Monitoring Program</i>	\$ 97,468	\$ 116,969	\$ 113,950	\$ 119,742	\$ 125,729	\$ 131,387	\$ 137,299	\$ 143,478	
<i>Data Management and Data Reporting</i>	\$ 14,628	\$ 12,276	\$ 12,276	\$ 12,850	\$ 13,493	\$ 14,100	\$ 14,734	\$ 15,397	
<i>Annual Report to the Court and DWR</i>	\$ 51,553	\$ 51,221	\$ 46,370	\$ 35,727	\$ 37,513	\$ 39,201	\$ 40,966	\$ 42,809	30% savings = Eliminate non-required information
<i>As-needed technical services</i>	\$ 13,392	\$ 10,820	\$ 10,662	\$ 11,361	\$ 11,929	\$ 12,466	\$ 13,027	\$ 13,613	
<b>Technical Consultant Services - Non-Routine</b>	\$ 479,526	\$ 87,058	\$ 87,058	\$ 26,762	\$ 76,700	\$ 139,438	\$ 41,795	\$ 30,000	
<i>Address Inactive Wells via Abandonment/Conversion</i>	\$ 222,406	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
<i>5-Year Assessment and Update of the GMP             (includes addressing DWR RCAs)</i>	\$ 156,826	\$ 71,316	\$ 71,316	\$ -	\$ -	\$ 5,000	\$ 25,000	\$ 30,000	Next assessment and GMP Update due June 2031
<i>Develop Scope and Budget for future SY Updates</i>	\$ 15,444	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 16,795	\$ -	
<i>Technical Work to Support SY Updates</i>	\$ 84,851	\$ 15,742	\$ 15,742	\$ 26,762	\$ 76,700	\$ 134,438	\$ -	\$ -	Based on TAC recommendations Option B
<i>As-needed GMP Implementation Actions</i>	\$ -	\$ -	\$ -						Recommended for unanticipated work
<b>Environmental Working Group</b>	\$ 236,063	\$ 37,640	\$ 37,640	\$ 42,057	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	
<i>Biological Restoration of Fallowed Lands</i>	\$ 225,118	\$ -	\$ -	\$ 6,552	\$ -	\$ -	\$ -	\$ -	For EWG to complete recommendation based on study
<i>Ad Hoc Requests and EWG Meetings</i>	\$ 10,946	\$ 37,640	\$ 37,640	\$ 35,505	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	TC recommended scope for workplan
<b>Services to Parties with Manual Read Meters</b>	\$ 8,880	\$ 12,020	\$ 10,169	\$ 10,942	\$ 11,489	\$ 12,006	\$ 12,546	\$ 13,110	9% savings reflects BWD reading meters 2x per year
<b>Cash Reserves<sup>3</sup></b>									
<b>Beginning Cash Reserves</b>	\$ 839,254	\$ 560,559		\$ 617,228	\$ 647,187	\$ 663,398	\$ 598,191	\$ 498,360	
<b>Year-End Cash Reserve Balance</b>	\$ 560,559	\$ 617,228	\$ 617,228	\$ 647,187	\$ 663,398	\$ 598,191	\$ 498,360	\$ 447,943	
<b><u>Average Reserve to Maintain Target Balance Equal             to 9 Months of Operating Expenses</u></b>		\$ 506,774		\$ 440,908	\$ 472,454	\$ 535,295	\$ 478,496	\$ 486,758	
<i>Minimum Month-End Reserve Balance</i>		\$ 617,228		\$ 552,979	\$ 556,441	\$ 486,013	\$ 403,347	\$ 365,550	
<i>Average Month-End Reserve Balance</i>		\$ 762,352		\$ 628,786	\$ 622,311	\$ 561,696	\$ 497,696	\$ 459,497	
<i>Average Variance from Desired Reserve</i>		\$ 255,578		\$ 187,878	\$ 149,857	\$ 26,401	\$ 19,200	\$ (27,261)	

Notes  
1 -- Line-items in blue highlight show tasks where changes in scope have been implemented to reduce costs.  
2 -- Assessment set at constant value needed from WY 2027 through WY 2030 to maintain target reserve balance through WY 2030.  
3 -- Cash Reserve projections are developed with the financial model prepared by Watermaster Staff and are based on expected timing of receipt of payment of Watermaster assessments and timing of payments to vendors.

### **Topics for Discussion**

Staff is seeking Board discussion and input on the draft budget and assumptions in order to prepare a final draft WY 2027 Budget:

- What should be the Overproduction Penalty Assessment Rate? The minimum allowed by the Judgment is \$500 per acre-foot of Overproduction. The Watermaster has always set the rate at this level.
- Confirm which workflow option for the 2030 Sustainable Yield scope of work should be included in the final budget: Option A (includes updating HCM, BVHM ET evaluation, and monitoring data evaluation) or Option B (includes only the BVHM ET and monitoring data evaluations)
- What further changes in scope would you like to see to achieve cost savings?
- Do you need additional TAC input on the technical scope of work to redetermine the Sustainable Yield by 2030?
- Are there any items that have not sufficiently been considered in the budget?
- Assessment Approach:
  - Do you prefer setting the Assessment at value that if held constant over the next 5 years would maintain the target cash reserve?
  - Or do you prefer to set it to the lowest level necessary to maintain target reserves for WY 2027?

### **Next Steps**

Based on review and discussion of the draft WY 2027 Budget, staff will update the budget and present a next draft for further discussion, or consideration of approval, at the June 3, 2026 Special Board Meeting. Recall that approval of the budget requires a Supermajority vote of the Board (4 of 5 members). There will be an additional opportunity to approve the WY 2027 Budget at the June 24, 2026 Special Board meeting and still meet the July 1, 2026 Judgment deadline.

Following Board approval of a budget package, Staff will:

- Publish the WY 2027 budget no later than July 1, 2025 and notify the Parties
- Report to the Board if any challenges to the Budget are noticed to Watermaster by July 31, 2026
- Prepare a “Statement of Work” based on the proposed scope of services and budget to be provided by West Yost during WY 20267 The Statement of Work will be presented to the Board for consideration of approval as an amendment to the existing West Yost Professional Services Agreement (expected August 2026).

### **Enclosures**

Table 1A: DRAFT Estimated Budget for Water Year 2027 with Option A - Evaluate HCM, ET, and new monitoring data as part of the workflow to Redetermine the 2030 Sustainable Yield

Table 1B: Table 1B. DRAFT Estimated Budget for Water Year 2027 with Option B - Evaluate ET and new monitoring data as part of the workflow to Redetermine the 2030 Sustainable Yield

**Borrego Springs Watermaster  
Board of Directors Meeting  
May 20, 2026  
AGENDA ITEM IV.E**

**To:** Board of Directors  
**From:** Andy Malone, Technical Consultant  
**Date:** May 15, 2026  
**Subject:** Consideration of Approval of TAC Meeting Agenda

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**Recommended Action**       **Provide Direction to Staff**       **Information and Discussion**  
 **Fiscal Impact**       **Cost Estimate: \$**

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**Recommended Action**

Approve the agenda for the next TAC meeting, with any recommended changes.

Fiscal Impact: None. TAC meetings were included in the approved Water Year (WY) 2026 budget.

**Background and Previously Related Actions by the Board**

The TAC meets at the direction of the Watermaster Board. The Board approved a specific scope of work and budget for the TAC to perform in WY 2026, which includes periodic meetings to coordinate work and discuss results.

**Recommended Agenda for June 2026 TAC Meeting**

The next TAC meeting will be a virtual meeting scheduled for 9 am on June 10, 2026. The recommended agenda items are:

1. **WY 2027 Budget Discussion.** As described in Item IV.B of this agenda packet, the TAC discussed a recommendation for Watermaster’s technical scope-of-work and budget for WY 2027 (and beyond) at its May 4, 2026 meeting. The TAC recommendations for a technical scope-of-work and budget for WY 2027 were presented to the Watermaster Board as part of Item IV.B of this agenda. At the next TAC meeting, the TAC can consider additional requests from the Board (if any) on the draft scope and budget to refine its recommendation for WY 2027.
2. **Technical Analysis for Water Rights Transfers.** As described in Item IV.D of this agenda packet (supplemental package addendum), the TAC discussed details of developing a technical-review framework for evaluating applications for transfers of water rights at its May 4, 2026 meeting. At the next TAC meeting, the TAC can consider additional requests from the Board (if any) on this topic to refine its recommendations.

**Borrego Springs Watermaster  
Board of Directors Meeting  
May 20, 2026  
AGENDA ITEM IV.F**

**To:** Board of Directors  
**From:** Lauren Salberg, Staff Geologist  
**Date:** May 15, 2026  
**Subject:** Review of Pumping-to-Date in Water Year 2026

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**Background and Previously Related Actions by the Board**

The Judgment requires that all non-de minimis pumpers install Watermaster-approved meters on all active groundwater wells to measure and record groundwater production. Measured production is reported to the Watermaster on a monthly basis for the purpose of performing water rights accounting and technical analyses of the Basin. A description of the Meter Read Program and requirements can be found in Resolution 23-02 of the Borrego Springs Watermaster Establishing a Revised Comprehensive Metering Program<sup>1</sup>.

This memo reports on pumping in the first half of Water Year (WY) 2026 (October 1, 2025 through March 31, 2026). Groundwater pumping that occurred during the first half of WY 2025 was analyzed to:

1. Determine if individual Parties and the Basin are on-track to meet, exceed, or pump less than the Annual Allocation for WY 2026. In WY 2026, the Annual Allocation is 73.27% of the baseline pumping allocation (BPA)<sup>2</sup>.
2. Identify and notify any Parties that may be at risk of pumping in exceedance of their maximum allowable pumping for the Water Year (Annual Allocation plus any available Carryover), based on pumping trends from the first six months of the water year.
3. Compare groundwater pumping during the first six months of the current WY to the same period from prior WYs (WY 2021 through 2025).

As previously approved by the Board, the mid-year report and communications to the Parties have been simplified and reduced to achieve cost savings.

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<sup>1</sup><https://borregospringswatermaster.com/wp-content/uploads/2025/01/Resolution-23-02-Establishing-a-Revised-Metering-Program-Executed.pdf>

<sup>2</sup> The Annual Allocation is the maximum amount of pumping allowed by a Party in a given WY, excluding Carryover or imported water if available. The Annual Allocation for each WY is determined by multiplying the Party's BPA by the Pumping Percentage in effect for that WY. Annual Allocation is rounded to the nearest whole af (Judgment, Section I.A.51). For example, if a Party's BPA right is 415 acre-feet, the WY 2026 Annual Allocation is 311 af (0.7327 X 415 af = 304.07 af).

## Discussion

Meter data is reported for each active well on a monthly basis. The meter data are aggregated by Party and by sector type (agriculture, municipal, recreation, and other Non-De Minimis) for the first six months of WY 2026. Four exhibits were prepared to characterize pumping, including:

- Exhibit 1. *WY 2026 Allowable Pumping and Year-to-Date Total by Actively Pumping Parties*. The table shows the following for each Party:
  - BPA
  - Annual Allocation for WY 2026 (73.27% of the BPA)
  - Carryover Balance at the start of WY 2026
  - Maximum allowable pumping for WY 2026, calculated as the sum of the Party's Annual Allocation and Carryover balance
  - Remaining allowable pumping for WY 2026, calculated as the difference between the maximum allowable pumping and the pumping-to-date in WY 2026
  - Percent of maximum allowable pumping to date, calculated as the fraction of the pumping-to-date relative to the maximum allowable pumping
  - Pumping for the same period (October through March) of prior WYs 2021 through 2025 (note that some Parties were not yet metered in WY 2021 and 2022 and, therefore, no pumping is shown for the comparison)
- Exhibit 2. *Pumping-to-Date (October 2025 – March 2026) Compared to WY 2026 Annual Allocation by Sector Type*. This chart compares total groundwater pumping-to-date in WY 2026 to the Annual Allocation for WY 2026, by sector (Agriculture, Municipal, Recreation, Other Non-De minimis). Groundwater pumping by sector is also compared to pumping-to-date for the same period of the prior WY (WY 2025).
- Exhibit 3. *Comparison of Cumulative Pumping by Month – Water Years 2021 to 2026*. This figure compares the cumulative monthly groundwater pumping for WYs 2021 through WY 2026.
- Exhibit 4. *Total Mid-Year Pumping (October to March) by Sector – WY 2026 vs. WY 2025*. This table summarizes total pumping-to-date for each sector and compares the distribution of pumping in WY 2026 to the same period (October to March) in WY 2025.

The following observations were made for the first six months of WY 2026 based on a review of Exhibits 1 through 4:

- Compared to the same time period in WY 2025, groundwater pumping was 1,551 af less in WY 2026. To-date, total groundwater pumping in WY 2026 is 2,570 acre-feet (af). Over the same period in WY 2025, total groundwater pumping was 4,121 af.
- Three parties are potentially at risk to pump in exceedance of their maximum allowable pumping, with one party having nearly pumped its maximum allowable volume

- Across all parties, total pumping to date is equal to 25% of the WY 2026 Annual Allocation (e.g. not considering that the first water pumped is an exercise of Carryover).
- Groundwater pumping to-date in WY 2026 was less than groundwater pumping for the same period in WY 2025 for all sectors. The greatest decrease in pumping from WY 2025 was in the Agriculture sector, which pumped 1,048 af less in WY 2026 to date compared to the same period in WY 2025.
- Similar to prior years, the Agriculture pumps the most groundwater (approximately 51% of total to date), followed by Recreational, Municipal, and Other Non-De Minimis sectors.
- Pumping in WY 2026 is on track to remain below total pumping in all prior WYs, if WY 2026 pumping trends follow the cumulative pumping trends observed in prior years.

### **Next Steps**

Individual Parties will be receiving Exhibit 1 summarizing their pumping-to-date. The Parties will be notified in July of the Overproduction Penalty Assessment and reminded to address pumping overages to avoid any Penalty Assessments. Parties will have through the end of the water rights accounting period for WY 2026 (October 30, 2026) to resolve Overproduction effective in WY 2026.

### **Enclosures**

Exhibit 1. *WY 2026 Allowable Pumping and Year-to-Date Total by Party*

Exhibit 2. *Pumping-to-Date (October 2025 – March 2026) Compared to WY 2026 Annual Allocation by Sector Type*

Exhibit 3. *Comparison of Cumulative Pumping by Month – Water Years 2021 to 2026*

Exhibit 4. *Total Mid-Year Pumping (October to March) by Sector – WY 2026 vs. WY 2025*

Exhibit 1. WY 2026 Allowable Pumping and Year-to-Date Total by Actively Pumping Parties  
(all values in acre-feet)

Party	BPA as of October 2, 2025 <sup>1,2</sup>	WY 2026 Allocation (73.27% of BPA)	Carryover Account Balance as of October 1, 2025 <sup>3</sup>	Maximum Allowable Pumping in WY 2026	Total Pumping to Date Oct 2025 to March 2026	Remaining Allowable Pumping in WY 2026 <sup>4,5</sup>	Percent of Annual Allocation Pumped	Percent of Maximum Allowable Allocation Pumped	Pumping through March of Prior Water Years <sup>6,7</sup>				
									WY 2025	WY 2024	WY 2023	WY 2022	WY 2021
Agri-Empire	574	421	0	421.00	0.00	421.00	0%	0%	0.00	0.00	0.00	0.00	0.00
Alan & Tracy Asche	5	4	10	14.00	0.39	13.61	10%	3%	0.65	0.53	0.78	0.36	NM
David And Juli Bauer	1,411	1,034	26	1,060.00	20.55	1,039.45	2%	2%	212.69	214.51	327.52	432.90	459.43
Borrego Air Ranch Mutual Water & Improvement Co.	12	9	16	24.64	2.90	21.74	32%	12%	3.48	2.49	2.53	2.51	NM
T2 Tilting T LLC (Purchase from Borrego Nazareth LLC) <sup>8</sup>	1,462	1,071	2,216	3,287.47	12.89	3,274.58	1%	0%	19.60	22.35	16.49	26.61	20.67
Borrego Water District	2,591	1,898	3,500	5,398.39	532.55	4,865.84	28%	10%	676.72	664.99	718.41	719.31	658.36
Desert Farm LLC Crumrine Family Trust 04-19-06	21	15	3	18.32	7.79	10.53	52%	43%	6.55	7.70	5.43	4.56	NM
CWC Casa Del Zorro, LLC	22	16	40	56.05	6.46	49.59	40%	12%	11.97	10.80	11.51	10.69	1.03
De Anza Desert Country Club	957	701	607	1,308.11	195.15	1,112.96	28%	15%	346.07	292.38	296.91	444.28	359.32
John B. & Silvia H. Hogan	8	6	7	13.09	2.65	10.44	44%	20%	2.49	2.33	2.07	2.51	NM
JM Roadrunner, LLC	1,595	1,169	2,856	4,024.88	253.09	3,771.79	22%	6%	265.80	199.63	279.05	259.92	343.09
Gamini D. Weerasekera	103	75	0	75.00	47.61	27.39	63%	63%	51.04	37.64	38.00	52.67	62.09
Ronald Pecoff	114	84	0	84.00	6.40	77.60	8%	8%	29.15	9.84	15.80	NM	NM
The Roadrunner Club At Borrego, LP	520	381	391	772.45	156.08	616.37	41%	20%	202.79	136.43	115.68	174.17	165.50
Seley Ranches, L.P.	2,226	1,631	1,856	3,487.48	412.25	3,075.23	25%	12%	497.36	399.56	317.42	582.79	480.92
Soli Organic Inc.	61	45	0	45.00	31.32	13.68	70%	70%	31.13	28.26	25.17	32.04	35.20
The Springs Rv and Golf Resort, LP	262	192	54	246.15	95.77	150.38	50%	39%	174.97	132.83	103.77	132.35	108.82
T2 Farms LLC	482	353	965	1,317.50	40.12	1,277.38	11%	3%	34.61	33.23	130.38	97.56	135.91
T2 Borrego, LLC (Purchase from Bagdasarian Farms, LLC) <sup>9</sup>	1,142	837	0	837.00	107.48	729.52	13%	13%	366.45	269.13	216.83	306.63	224.39
T2 Borrego LLC (Rams Hill)	2,536	1,858	5,052	6,910.00	214.87	6,695.13	12%	3%	254.21	105.17	68.18	151.71	234.16
Carpenter Family Trust 12-11-07	6	4	0	4.00	3.98	0.02	100%	100%	5.30	5.10	1.42	NM	NM
Gary D. & Darlis A. Bailey	7	5	2	7.32	0.82	6.50	16%	11%	2.40	2.02	2.37	NM	NM
Borrego Unified School District	22	22	NA	22.00	8.62	13.38	39%	39%	9.08	8.78	8.78	20.11	13.28
Anza Borrego Desert State Park	20	20	NA	20.00	3.50	16.50	18%	18%	3.89	3.79	4.70	7.74	4.69
BWD (Purchase From D & J Bauer)	415	304	830	1,134.00	0.00	1,134.00	0%	0%	0.00	0.00	0.00	0.00	0.00
BWD (Purchase From W. Bauer)	670	491	1,340	1,831.00	0.00	1,831.00	0%	0%	0.00	0.00	0.00	NM	NM
T2 Palms, LLC <sup>10</sup>	887	650	1,450	2,100.15	3.28	2,096.87	1%	0%	7.11	6.18	75.64	73.91	82.94
Steven L. Phillips Separate Property Trust (Wright BPA Property)	158	116	176	291.50	9.58	281.92	8%	3%	15.95	16.54	16.54	NM	NM
Steven L. Phillips Separate Property Trust (Ward BPA Property) <sup>11</sup>	82	60	164	224.00	1.65	222.35	3%	1%	7.61	3.19	2.45	3.09	NM
Tenaja Ranch, LP	4,741	3,474	1,362	4,836.14	392.13	4,444.01	11%	8%	881.63	656.05	586.78	1,441.38	1,499.81
<b>Total</b>	<b>23,112</b>	<b>16,946</b>	<b>22,925</b>	<b>39,871</b>	<b>2,570</b>	<b>37,301</b>			<b>4,121</b>	<b>3,271</b>	<b>3,391</b>	<b>4,980</b>	<b>4,890</b>

- Notes:
- 1) The Judgment establishes separate, non-BPA pumping rights for two entities that are not subject to pumping Rampdown, Carryover, or transfer provisions.
  - 2) This table includes only Parties that actively pump. Because not all Parties to the Judgment are listed on this table, total BPA presented here is less than the total BPA of the Basin (24,335 af).
  - 3) NA means that the Party's Water Rights are not subject to the pumping Rampdown and does not have Carryover rights.
  - 4) This number will change if a Party executes a lease or transfer by September 30, 2026.
  - 5) If remaining allowable pumping is a negative number, then a water transfer is needed to avoid Overproduction Penalty Assessments.
  - 6) NA means that the Party was not active during the WY.
  - 7) NM means that the Party was not metered during the WY. Pumping for these Parties was estimated using the water duty method for the annual water rights accounting process.
  - 8) T2 Tilting T LLC acquired Borrego Nazareth's BPA in WY 2026. The pumping shown for WY 2021-2025 was done by Borrego Nazareth LLC.
  - 9) T2 Borrego LLC acquired Bagdasarian Farm's BPA in WY 2025. The pumping shown for WY 2021-2024 was done by Bagdasarian Farms LLC.
  - 10) T2 Palms LLC acquired West Coast Trees - John Dolijanin's BPA in WY 2024. The pumping shown for WY 2021-2023 was done by West Coast Trees - John Dolijanin.
  - 11) Steven L. Phillips Separate Property Trust acquired the Ward BPA in WY 2025. The pumping shown for WY 2021-2024 was done by Ward.

**Exhibit 2. Pumping-to-date (October 2025 - March 2026) Compared to WY 2026 Annual Allocation  
By Sector Type**

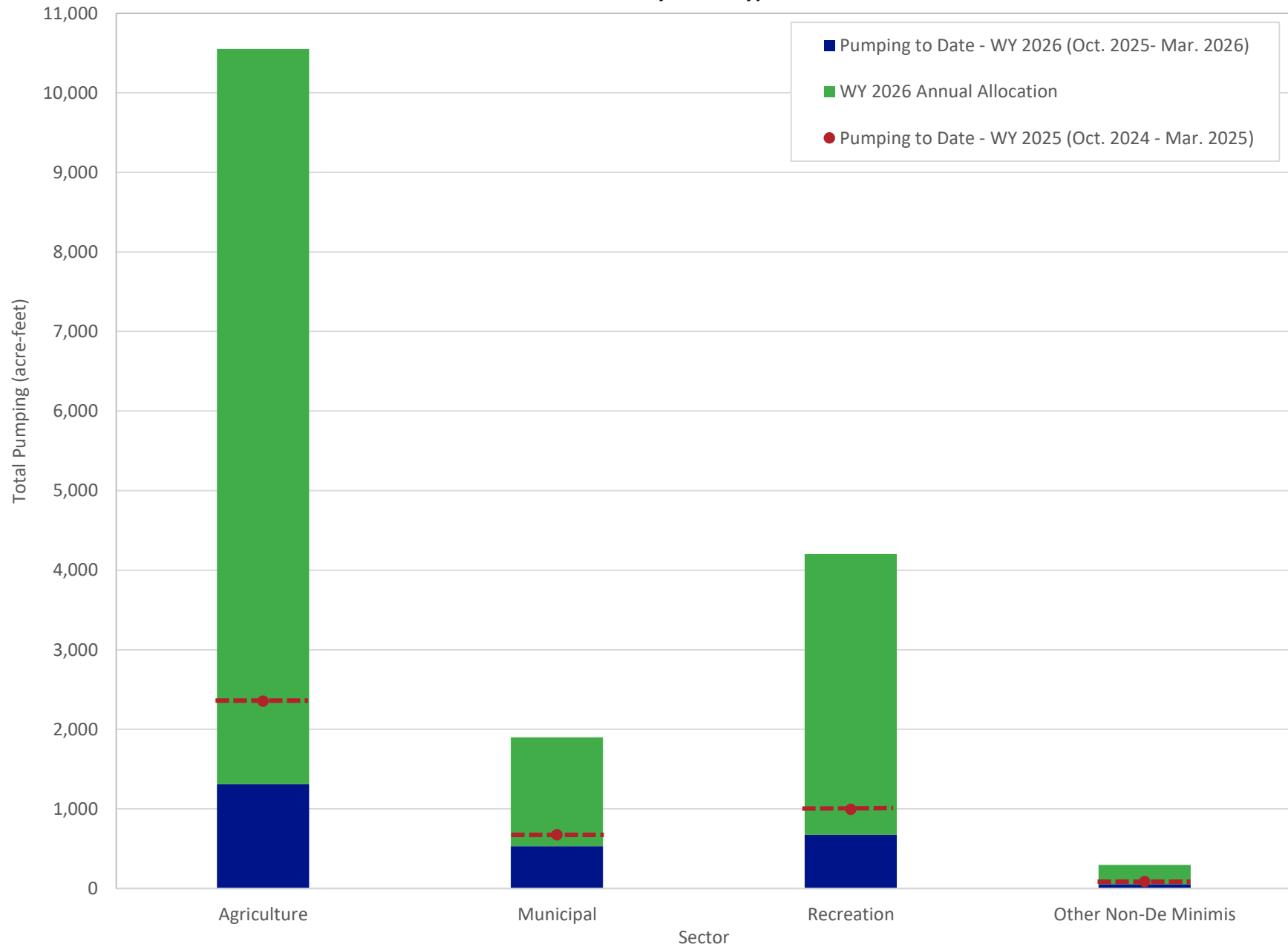
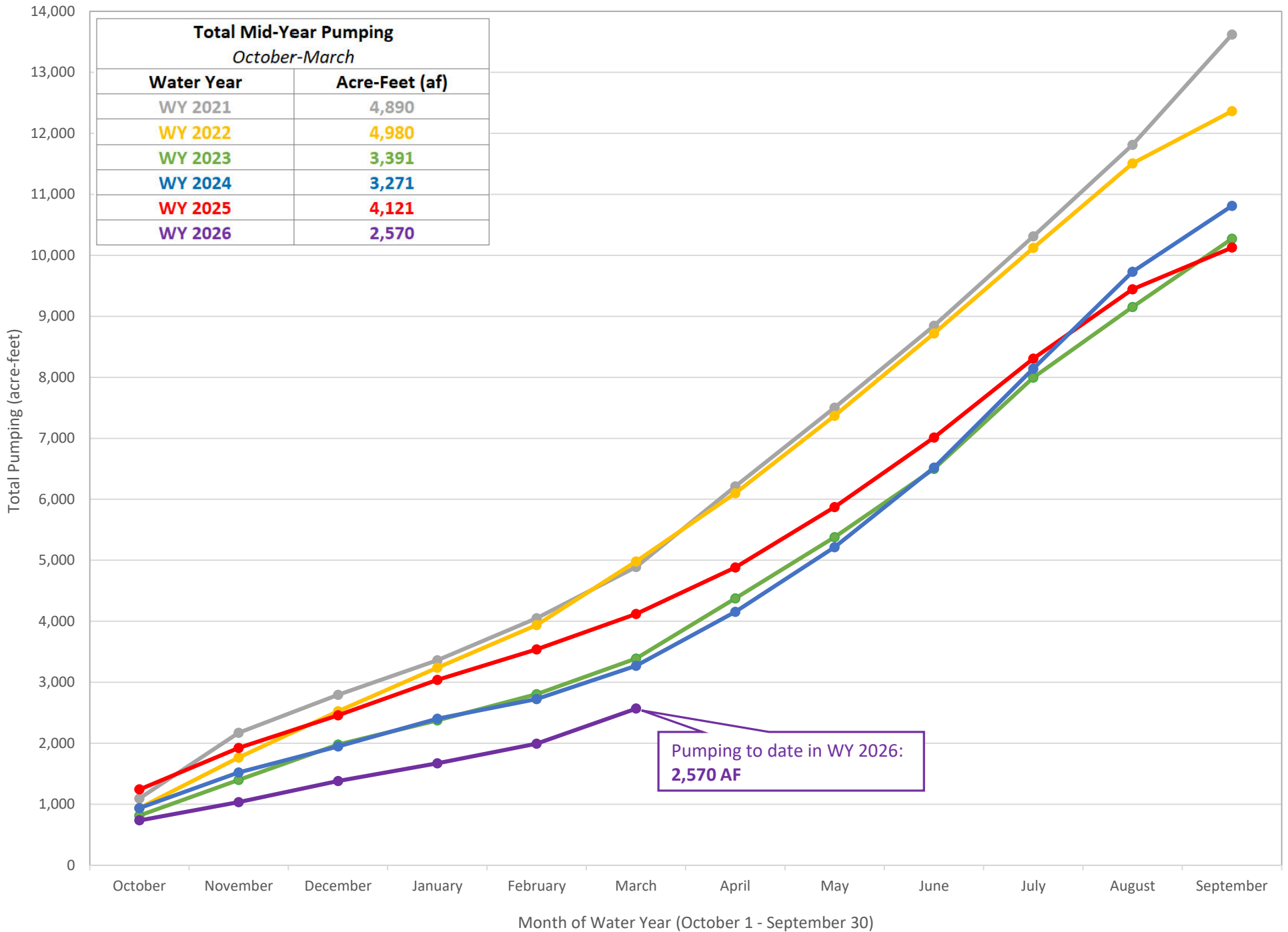


Exhibit 3. Comparison of Cumulative Pumping by Month - Water Years 2021 to 2026



**Exhibit 4. Total Mid-Year Pumping (October to March) by Sector – WY 2026 vs. WY 2025**

Sector	WY 2026		WY 2025	
	Total Mid-Year Pumping <i>(acre-feet)</i>	Percent of Total Mid-Year Pumping	Total Mid-Year Pumping <i>(acre-feet)</i>	Percent of Total Mid-Year Pumping
Agriculture	1,310	51%	2,358	57%
Municipal	533	21%	677	16%
Other Non-De Minimis	52	2%	89	2%
Recreation	675	26%	998	24%
<b>Total</b>	<b>2,570</b>		<b>4,121</b>	

**To:** Board of Directors  
**From:** Andy Malone, Technical Consultant  
**Date:** May 15, 2026  
**Subject:** Technical Consultant Report – May 2026

## OVERVIEW

The purpose of the monthly Technical Consultant (TC) Report is to share information with the Board on the status of technical efforts being performed, including those with guidance and input from the Technical Advisory Committee (TAC) and Environmental Working Group (EWG). Additional details and topics that may arise after publishing this report will be presented during the Board meeting.

At the May 20, 2026 Board meeting, I intend to report on the following topics:

- TAC Member Update
- Report Out: Spring 2026 Groundwater Monitoring Event
- Budget Status: Scope of Work to Review the GDE Study Report

## TAC MEMBER UPDATE

On April 7, 2026, I received an email from John Peterson informing the TAC and myself that he is resigning from the TAC as the representative for Road Runner Club. We extend our thanks to John for his participation. He remains an active member of the Watermaster EWG.

## REPORT OUT: SPRING 2026 GROUNDWATER MONITORING EVENT

In accordance with the Watermaster's Groundwater Monitoring Program, groundwater-quality and groundwater-levels are collected semi-annually from wells in the monitoring network. The Spring 2026 Semi-Annual Monitoring event occurred April 26 through April 30, 2026. In summary:

- Groundwater-level data were collected at 58 of the 59 wells in the network. The only well not measured was Palleson due to property access issues.
- Groundwater-quality data were collected at 38 of the 40 wells in the network. Two wells, NMA-1 and NMA-8, were not sampled because they are currently offline and with no plans to return to service. As such, will likely need to find replacements for these wells in the monitoring network.
- The results of the monitoring event will be presented in the Spring 2026 Semi-Annual Monitoring Report following receipt and analysis of all data.

## BUDGET STATUS: SCOPE OF WORK TO REVIEW THE GDE STUDY REPORT

At its February 18, 2026 meeting, the Watermaster Board requested monthly updates on the budget status to perform the approved scope of work to review the UCI GDE Study Report. The budget status as of May 15, 2026, including the total budget, amount spent to-date, and remaining budget, is shown on the budget tracking table on the following page. As a reminder, the budget is spread across two line items in the budget related to TAC and EWG processes.

**WY 2026 Budget to Perform the Approved Scope of Work to Review the GDE Study Report**

*\*Scope and budget approved by the Board at its November 3, November 19, and December 17, 2025 meetings*

Task	Approved Budget	Billed to-date in WY 2026								
		Oct-25	Nov-25	Dec-25	Jan-26	Feb-26	Mar-26	Apr-26 (DRAFT)	Total Spent	Remaining Budget
<b>Total</b>	<b>\$53,382</b>	<b>\$3,911.50</b>	<b>\$5,977.75</b>	<b>\$8,689.75</b>	<b>\$5,154.50</b>	<b>\$5,911.50</b>	<b>\$5,801.00</b>	<b>\$6,539.00</b>	<b>\$42,244.50</b>	<b><u>\$11,137.50</u></b>
EWG Meetings and Address Ad Hoc Requests: <i>GDE Report Review</i>	<b>\$37,640</b>	\$3,911.50	\$5,977.75	\$8,689.75	\$5,154.50	\$5,911.50	\$5,801.00	\$1,929.00	<b>\$37,634.50</b>	<b><u>\$5.50</u></b>
Technical Work to Redetermine the 2030 Sustainable Yield*	<b>\$15,742</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$4,610.00	<b>\$4,651.00</b>	<b><u>\$11,132.00</u></b>

**To:** Board of Directors  
**From:** Samantha Adams, Executive Director  
**Date:** May 15, 2026  
**Subject:** Executive Director Report – May 2026

#### OVERVIEW

The purpose of the monthly Executive Director (ED) Report is to share information with the Board on the status of key administrative items, including identifying recommended items for future discussion and action. At our May 20, 2026, Board meeting, I intend to report out on the following items. Some information for each item is provided herein, where available. Additional details and topics that arise after publishing this report may be presented during the meeting.

At the May 20, 2026 Board meeting, I intend to report on the following topics:

- Public Information Session on the 5-Year GMP Assessment and Update
- Annual Meter Verifications
- First and Second Installment of Pumping Assessments for WY 2026
- BPA and Party Updates

#### APRIL 30<sup>TH</sup> PUBLIC INFORMATION SESSION ON THE 5-YEAR GMP ASSESSMENT AND UPDATE

Watermaster Staff held a virtual public information session on the 5-Year Assessment of the Groundwater Management Plan (Assessment Report) and the 2026 GMP Update on April 30, 2026 from 1:30 – 3:15 pm. The meeting followed the release of the public drafts of the two reports on April 24, 2026. The release of the public drafts also commenced the public comment period in which the Watermaster will accept written comments for consideration prior to (1) adopting the reports for submittal to the DWR by June 25, 2026 and (2) amending Exhibit 1 of the Judgment to replace the 2020 GMP with the 2026 GMP Update.

The public information session consisted of a presentation by Watermaster Staff that summarized the GMP assessment and update process, key findings from the work performed, and the updates made to the GMP. In total, 21 people attended the meeting. The public asked questions and made comments throughout the presentation on the following topics:

- **UCI Groundwater Dependent Ecosystems (GDE) Study Report.** Several members of the public raised concerns that the results of the UCI GDE Study Report are not presented in the draft document. Multiple commenters emphasized the urgency of incorporating the results from the UCI GDE Study Report in the draft reports and expressed concern that delaying action until the next five-year assessment would result in further impacts to the Basin. There was a perceived disconnect between the optimistic conclusions of the assessment on the Basin's progress towards sustainability compared to the state of the Mesquite Bosque as characterized by UCI. Recommendations were made to explicitly include GDE-related data in the reports and reassess sustainability conclusions accordingly.
- **Groundwater Monitoring Program.** Would a change to the number of monitoring wells in the Watermaster's Groundwater Monitoring Program as presented in the reports affect data quality

and program effectiveness? In a recent Board meeting, this was noted as a potential action to achieve cost savings.

- **Public Review Process.** There was a concern expressed about the adequacy of the review timeline, specifically whether the timeframe allows for meaningful consideration of public comments.
- **Sustainable Yield and Borrego Valley Hydrologic Model.** Members of the public had specific questions about the process to redetermine the 2025 Sustainable Yield and the use of the BVHM, such as i) what was the cause for the increase in the 2025 Sustainable Yield, ii) how future climate conditions are incorporated into the model projections, and iii) if model discrepancies have been resolved.

The April 30<sup>th</sup> meeting recording and presentation are posted on the Watermaster's website at: <https://borregospringswatermaster.com/stakeholder-outreach/>.

#### **ANNUAL METER VERIFICATIONS**

- Results of meter testing were reported in April 2026. 2 additional tests were submitted since this report out and both wells were in compliance with accuracy standards.
- Watermaster is still awaiting results from 5 wells (3 Parties). Watermaster staff continues to follow up with the owners to remind them the wells must be tested and results reported to remain in good standing with the Watermaster.

#### **FIRST AND SECOND INSTALLMENT OF PUMPING ASSESSMENTS FOR WY 2026**

- The first installment invoices for the WY 2026 Pumping Assessments, totaling \$175,024, were issued in November 2025, with payments due by December 31, 2025.
  - As of this writing, a total of \$173,712 has been received and the outstanding balance of payments past-due is \$1,312.
  - Reminders of past-due payments were sent to Parties the week of May 11<sup>th</sup>.
- The second installment invoices for the WY 2026 Pumping Assessments will be generated and sent to the Parties by May 31, 2026, with payment due by June 30, 2026.

#### **BPA AND PARTY UPDATES**

- On April 9, 2026, the Court granted T2 Tilting T LLC's application for Intervention as a Defendant Transferee. T2 Tilting T LLC is now officially a Party to the Judgment with full access to the BPA rights associated with the Permanent BPA Transfer with Land Conveyance. The Notice of Entry of Order is available upon request.
- There remains one Party that out of compliance with the Judgment and is not in contact with the Watermaster:
  - The current outstanding balance owed to Watermaster is now \$392.56.
  - The assumed annual pumping by this party is 1.20 acre-feet per year based on water-duty methods performed during the development of the GMP.

**Borrego Springs Watermaster  
Board of Directors Meeting  
May 20, 2026  
AGENDA ITEM VI**

**To:** Board of Directors  
**From:** Samantha Adams, Executive Director  
**Date:** May 15, 2026  
**Subject:** Establishing Agenda for June 3, 2026 Special Board Meeting

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**Process**

To set the June agenda, the Board will:

1. Review the initial June agenda topics planned by Staff, as listed below
2. Review the future tentative topics planned by Staff and previously requested items by Board members, as listed below
3. List out additional items that have arisen during the May 2026 Board meeting (such as during public comment)
4. Call on Directors to request additional items for consideration of inclusion on the June 3, 2026 or other future agenda
5. Consider motion(s) to approve the agenda (the agenda can be approved in a single motion or multiple motions to cover each item). The Agenda/items are approved by majority vote (3 of 5 directors)

**Staff's Initial Agenda for the June 3, 2026 Special Meeting**

The first of two June 2026 Special Meetings (held virtually) is scheduled for June 3, 2026 at 10:00 am.

The first June Special Meeting will include some of the regular meeting items of: public correspondence and comment, verbal Staff and Chair reports, establishing the agenda for the subsequent meeting, Board member comments, and listing of future meeting dates. In addition to the standard items, the initial agenda planned by Staff for the June 3, 2026 meeting includes the following business items for consideration and possible action:

1. Consideration of Approval of Changes to the 5-Year Assessment Report and 2026 GMP Update
  - a. Review public comments on the reports
  - b. Request approval of any recommended response to comments and/or changes to the reports based on comments received
  - c. Direct Legal Counsel to formally notice intent to consider approval to amend the Judgment at the June 24, 2026 meeting and schedule Court hearing date

2. WY 2027 Draft Budget – opportunity to further review and refine the budget prior to approval

A second special Board meeting will be held June 24, 2026 and will tentative include the topics:

1. Consideration of Approval of the WY 2027 Budget
2. Consideration of Approval of the 5-Yr Assessment Report and 2026 GMP Update, as follows:
  - a. Finalize the 5-Yr Assessment Report and 2026 GMP Update, with any final recommended changes
  - b. Submit the reports to DWR by June 25, 2026
  - c. File a motion with the Court to amend the Judgment to replace Exhibit 1 with the 2026 GMP Update
3. Report out from June 10, 2026 TAC meeting
  - a. Anticipate discussion on next steps with respect to technical review of transfers

### **Staff's Tentative Topics for July and August**

***July Agenda Topics*** – propose to cancel meeting if no urgent topics

### ***August Agenda Topics***

1. Technical Review of Transfers
2. Spring 2026 Groundwater Monitoring Results
3. WY 2026 – Q3 Budget Status Report (as of June 30, 2026)
4. Consideration of Approval of Amendment to West Yost Contract to perform WY 2027 Services
5. WY 2027 Meeting Schedule and Priorities