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7 Attorneys for Defendant and Cross-Complainant
SHADOW MOUNTAIN RANCH, LLC

8
9 SUPERIOR COURT OF THE STATE OF CALIFORNIA

10 COUNTY OF RIVERSIDE

11 Coordination Proceeding Special Title
(Cal. Rules Of Court, Rule 3.550)

JCCP5265
CIV208568 (LEAD CASE NUMBER)

12 MOJAVE BASIN WATER CASES

Dept. 1, Riverside Superior Court
Hon. Harold W. Hopp, Judge Presiding
Case No. CIVSB 2218461

13 THE MOJAVE WATER AGENCY, AS THE
MOJAVE BASIN AREA WATERMASTER,

**SHADOW MOUNTAIN RANCH, LLC'S
SPECIAL INTERROGATORIES, SET
TWO (2) TO THE MOJAVE WATER
AGENCY**

14
15 Plaintiff,

16 v.

17 All persons who are not presently parties to the
comprehensive groundwater adjudication in
18 *City of Barstow, et al., v. City of Adelanto, et*
al., Riverside Superior Court Case No.
CIV208568, and are either producing more
19 than 10 acre-feet of Basin groundwater
annually, or using Basin groundwater for
20 unlawful purposes, and Does 1 through 2,000,

Action Filed: May 30, 1990
Amended Cross-Complaint
Filed: April 30, 2026
Trial Date: January 15, 2027

21 Defendants.

22 SHADOW MOUNTAIN RANCH, LLC,

23 Cross-Complainant,

24 v.

25 MOJAVE WATER AGENCY, The Fasoja
Living Trust, Buddhist-Town LLC, S.E.
26 Combined Services of California, Inc., Shunxing
Weng, and Roes 1 through 10,

27 Cross-Defendants.
28

1 PROPOUNDING PARTY(IES): SHADOW MOUNTAIN RANCH, LLC
2 Defendant and Cross-Complainant
3 RESPONDING PARTY(IES): THE MOJAVE WATER AGENCY, AS THE MOJAVE
4 BASIN AREA WATERMASTER
5 Plaintiff and Cross-Defendant
6 SET NO.: Two

7 Pursuant to Code of Civil Procedure section 2030.010 et seq., Defendant and Cross-
8 Complainant SHADOW MOUNTAIN RANCH, LLC (“Propounding Party” or “SMR”) hereby
9 propounds the following Special Interrogatories, Set Two, on Plaintiff and Cross-Defendant THE
10 MOJAVE WATER AGENCY, AS THE MOJAVE BASIN AREA WATERMASTER
11 (“Responding Party” or “MWA”) to answer the following interrogatories in writing and under
12 oath, within 30 days of service.

13 DEFINITIONS

14 A. “COMMUNICATION” or “COMMUNICATIONS” shall include but is not
15 limited to the following: (a) all forms of electronic communications, including text messages
16 and e-mail messages; (b) any written letter, memorandum, or other DOCUMENT of any kind
17 transmitted from one person or entity to another person or entity by hand, mail, courier, other
18 delivery service, telecopy, facsimile, telegraph, electronic mail, voicemail, or any other means;
19 (c) any telephone call or verbal conversation, whether or not such call was by chance or
20 prearranged, formal or informal, in-person or virtual; and (d) any conversation or meeting
21 between two or more persons, whether or not such contact was by chance or prearranged, formal
22 or informal, in-person or virtual.

23 B. “DEEP AQUIFER” means the deep, lower aquifer underlying the SMR
24 PROPERTY, as described in the Declaration of Tony Morgan filed on November 6, 2023,
25 attached hereto as Exhibit A.

26 C. “DOCUMENT” or “DOCUMENTS” shall include but is not limited to all
27 writings, recordings, and photographs, whether originals or duplicates, as those terms are defined
28 in sections 250 to 260 of the Evidence Code, and includes, but is not limited to: handwritings,
type writings, notes, memoranda, printings, photostats, photocopies, drawings, drafts, charts,

1 photographs, x-rays, phonographic and tape recordings, diaries, calendars, video recordings, and
2 every other means of recording upon any tangible things, any form of communication or
3 representation, including letters, words, pictures, sounds, or symbols, which are in YOUR
4 possession, custody, or control, and from which information can be obtained or translated,
5 including the originals, or if the originals are not available, duplicates of said DOCUMENTS for
6 which originals are not available.

7 D. "FIRST AMENDED COMPLAINT" means the First Amended Complaint for
8 Adjudication of Rights to Produce and Use Groundwater in the Mojave Basin Area; to Implement
9 Provisions of Judgment Previously Entered; and for Injunctive Relief, filed on June 11, 2024, in
10 this action.

11 E. "IDENTIFY" means, in relation to each PERSON and all PERSONS, to state the
12 full name, telephone number and last known street address, including the city, state, and zip code;
13 in relation to DOCUMENTS, IDENTIFY means to provide the name, date, author, signor, sender,
14 addressee, recipient, type, and subject matter of the DOCUMENT.

15 F. "INPUT DATA" means all data, assumptions, parameters, files, reports, maps,
16 cross-sections, well logs, geologic interpretations, hydrogeologic interpretations, and other
17 information used, considered, or intended to be used in the MODEL.

18 G. "JUDGMENT" means the *City of Barstow, et al. v. City of Adelanto, et al.*
19 (Riverside County Superior Court Case No. CIV208568) judgment and physical solution as
20 defined in, and attached as Exhibit 1 to, the FIRST AMENDED COMPLAINT.

21 H. "MODEL" means the groundwater modeling work referenced in the
22 Watermaster's Trial Setting Conference Statement, filed April 2, 2026, along with the supporting
23 declarations of Leland P. McElhaney and David Peterson, including but not limited to any
24 regional groundwater model being performed, developed, calibrated, updated, reviewed, or
25 commissioned by YOU concerning the Mojave Basin Area, Centro Subarea, Harper Dry Lake
26 area, Harper Valley basin, the SMR PROPERTY, the SHALLOW AQUIFER, and/or the DEEP
27 AQUIFER.

28 ///

1 I. "MOJAVE BASIN" means Mojave River Groundwater Basin as defined in the
2 JUDGMENT.

3 J. "PERSON" or "PERSONS" includes a natural person, firm, association,
4 organization, partnership, business, trust, corporation, private entity, or public entity.

5 K. "SHALLOW AQUIFER" means the shallow, upper aquifer underlying the SMR
6 PROPERTY, as described in the Declaration of Tony Morgan filed on November 6, 2023,
7 attached hereto as **Exhibit A**.

8 L. "SMR" means Shadow Mountain Ranch, LLC.

9 M. "SMR AQUIFERS" means both the SHALLOW AQUIFER and the DEEP
10 AQUIFER.

11 N. "SMR PROPERTY" means the 631 acre property encompassing most of Section
12 5, T11N, R3W of the San Bernardino meridian and the surrounding areas north of Harper Dry
13 Lake, a playa, and south of Black Mountain, an outcropping of basalt.

14 O. "YOU" or "YOUR" means Plaintiff and Cross-Defendant THE MOJAVE
15 WATER AGENCY, AS THE MOJAVE BASIN AREA WATERMASTER including but not
16 limited to their members, directors, agents, employees, attorneys, representatives, and any
17 PERSON, as defined herein, acting on behalf of any member of THE MOJAVE WATER
18 AGENCY, AS THE MOJAVE BASIN AREA WATERMASTER, individually and/or
19 collectively and including any predecessor in interest.

20 **INTERROGATORIES**

21 **SPECIAL INTERROGATORY NO. 36:**

22 IDENTIFY each PERSON, including both natural person(s) and entity(ies), involved in
23 preparing, developing, calibrating, updating, reviewing, supervising, or commissioning the
24 MODEL.

25 **SPECIAL INTERROGATORY NO. 37:**

26 Describe the title and role of each PERSON identified in INTERROGATORY NO. 36 as
27 related to the MODEL.

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1 **SPECIAL INTERROGATORY NO. 38:**

2 State the date on which the current MODEL work began.

3 **SPECIAL INTERROGATORY NO. 39:**

4 State the date on which YOU presently expect work on the MODEL to be completed.

5 **SPECIAL INTERROGATORY NO. 40:**

6 IDENTIFY each software program, modeling platform, code, or application used or
7 intended to be used for the MODEL.

8 **SPECIAL INTERROGATORY NO. 41:**

9 Describe the geographic scope of the MODEL, including whether it is a regional model,
10 basin-wide model, subarea model, or local model.

11 **SPECIAL INTERROGATORY NO. 42:**

12 State whether the MODEL includes the Harper Dry Lake area.

13 **SPECIAL INTERROGATORY NO. 43:**

14 IDENTIFY all INPUT DATA pertaining to the Harper Dry Lake area.

15 **SPECIAL INTERROGATORY NO. 44:**

16 State whether the MODEL includes the SMR PROPERTY.

17 **SPECIAL INTERROGATORY NO. 45:**

18 IDENTIFY all INPUT DATA pertaining to the SMR PROPERTY.

19 **SPECIAL INTERROGATORY NO. 46:**

20 State every category or type of INPUT DATA being used, considered, or intended to be
21 used in the MODEL.

22 **SPECIAL INTERROGATORY NO. 47:**

23 Identify all INPUT DATA specific to the SHALLOW AQUIFER that is being used,
24 considered, or intended to be used in the MODEL.

25 **SPECIAL INTERROGATORY NO. 48:**

26 Identify all INPUT DATA specific to the DEEP AQUIFER that is being used, considered,
27 or intended to be used in the MODEL.

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SPECIAL INTERROGATORY NO. 49:


For each item of INPUT DATA identified in response to Special Interrogatories Nos. 45 and 46, state: (a) the source of the data; and (b) the date the data was obtained.

SPECIAL INTERROGATORY NO. 50:

State whether MWA is conducting the MODEL in its capacity as MOJAVE BASIN WATERMASTER.

Dated: June 5, 2026

BEST BEST & KRIEGER LLP

By: 

ERIC L. GARNER
CHRISTOPHER M. PISANO
ALISON K. TOIVOLA

Attorneys for Defendant and Cross-Complainant
SHADOW MOUNTAIN RANCH, LLC

Exhibit A

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7
8 Attorneys for Specially-Appearing Petitioner Shadow
Mountain Ranch, LLC

10 SUPERIOR COURT OF THE STATE OF CALIFORNIA
11 COUNTY OF RIVERSIDE

13 CITY OF BARSTOW, et al.,
14 Plaintiffs,
15 v.
16 CITY OF ADELANTO, et al.,
17 Defendants.

Lead Case No. CIV208568
JCCP5265 MOJAVE BASIN WATER
CASES

Judge: Craig Riemer, Department 1

**DECLARATION OF TONY MORGAN
IN SUPPORT OF MOTION TO
INTERPRET AND CLARIFY THE
JUDGMENT**

*[Filed concurrently with:
1. Motion to Interpret/Clarify;
2. Declaration of Timothy Walsh;
3. Declaration of Christopher Pisano;
4. Request for Judicial Notice;
and,
5. [Proposed] Order.]*

Date: Jan. 8, 2024
Time: 8:30am
Dept: 1

Action Filed: May 30, 1990

BEST BEST & KRIEGER LLP
ATTORNEYS AT LAW
300 SOUTH GRAND AVENUE, 25TH FLOOR
LOS ANGELES, CALIFORNIA 90071

1 **DECLARATION OF TONY MORGAN**

2 I, Tony Morgan, declare as follows:

3 1. I am a Vice President and Principal Hydrogeologist at Daniel B. Stephens &
4 Associates, Inc. (“DBS&A”). I have personal knowledge of the facts set forth in this declaration
5 and, if called as a witness, could competently testify to all matters set forth herein.

6 2. I make this declaration in support of Shadow Mountain Ranch, LLC’s (“SMR”)
7 motion to interpret and clarify the scope of the January 10, 1996 Judgment and Physical Solution
8 (“Motion”).

9 **QUALIFICATIONS AND EXPERIENCE**

10 3. A true and correct copy of my curriculum vitae is attached to this declaration as
11 Exhibit “1.”

12 4. I have nearly 40 years of experience in water supply, water management, and
13 hydrogeological programs for municipal, industrial, and agricultural application.

14 5. I hold a Bachelor of Science in Geology (Specialization in Hydrogeology and
15 Quaternary Geology) from Indiana University. I also hold a Master of Arts (Quaternary Geology
16 Specialization with Hydrogeology and Geotechnical Engineering Minors) from Indiana
17 University.

18 6. I am a Professional Geologist in California (No. 4178).

19 7. I am also a Certified Hydrogeologist in California (No. 159).

20 8. I have taught hydrogeology courses to both undergraduate and graduate students at
21 Indiana University, California State University – Fullerton, and California State University – San
22 Bernardino. I have been on the Professional Advisory Board for California State University –
23 San Bernardino since 2010.

24 9. I am on the Board of Directors for the American Ground Water Trust. I am a
25 member of the National Ground Water Association and the Groundwater Resource Association of
26 California. I am on the Groundwater Committee for the Association of California Water
27 Agencies.

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1 10. Over my career as a consultant, including four years as the Deputy General
2 Manager for Groundwater & Water Resources at United Water Conservation District, I have been
3 involved in a broad range of projects related to groundwater supply development and
4 management, including groundwater resource exploration and production.

5 11. The opinions contained in this declaration are supported by generally-accepted
6 professional hydrogeologic principles and practices.

7 **RETENTION BY SMR AND BEST BEST & KRIEGER LLP**

8 12. In January 2019, SMR contracted DBS&A to conduct a phased comprehensive
9 groundwater study for the SMR Property.¹

10 13. DBS&A prepared several technical reports for SMR which analyzed groundwater
11 production quantities, groundwater quality, groundwater inflow and outflow, groundwater flow
12 gradients, and hydrologic connectivity (a) between the two groundwater aquifers underlying the
13 SMR Property, and (b) between the SMR Property’s groundwater aquifers and the rest of the
14 Mojave Basin.

15 14. I was personally involved in the technical work and drafting of these various
16 reports.

17 15. DBS&A was subsequently retained by Best Best & Krieger LLP on behalf of
18 SMR to provide advice and render opinions in support of the above-referenced Motion in the
19 above-captioned adjudication.

20 16. I am generally familiar with the above-captioned adjudication of the Mojave River
21 Groundwater Basin (“Mojave Basin”) in *City of Barstow, et al. v. City of Adelanto, et al.*
22 (Riverside County Superior Court Case No. CIV208568), which began in 1990. I understand that
23 final judgment was entered on January 10, 1996, through the Stipulated Judgment and Physical
24 Solution, as later amended on December 5, 2002 (“Judgment”). I am aware that the Judgment
25 established five distinct “hydrologic Subareas” in the Mojave Basin—Este, Oeste, Alto, Centro,
26 and Baja—and managed each Subarea separately according to each Subarea’s distinct
27

28 _____
¹ SMR Property is defined below in paragraph 31.

1 groundwater supplies and varying levels of hydrological connectivity to other Subareas.
2 (Judgment at 5-6, § II(A)(3); 21, § II(C)(13); Ex. B.)

3 17. I am aware that each Subarea has different compliance requirements and
4 obligations under the Judgment. (See, e.g., Judgment at 8, § II(A)(4)(f); 16, § II(C)(8)(a)-(c)
5 [addressing Base Annual Production and associated rights in the Baja Subarea]; 9, § II(A)(4)(m)
6 [separately defining the “Harper Lake Basin” in the Centro Subarea]; 13, § II(A)(4)(mm)
7 [identifying the “Transition Zone” of the Alto Subarea].) I am aware that is because pumping in
8 one part of the Mojave Basin may not impact other areas of the Mojave Basin due to the Mojave
9 Basin’s geologic diversity and hydrological variation. (See, e.g., Judgment at 6, § II(A)(3)
10 [“Absent the construction of conveyance facilities, some Subareas may be deprived of an
11 equitable share of the benefits made possible by the Physical Solution.”].)

12 SUMMARY OF OPINIONS

13 18. The SMR Property is located in the Harper Valley basin, which is a closed
14 watershed separated from the Mojave River watershed by faulting and low ridges.

15 19. There are at least two groundwater aquifers underlying the SMR Property: a
16 shallow, upper aquifer (“shallow aquifer”) and a deep, lower aquifer (“deep aquifer”).

17 20. The deep aquifer has little to no hydrologic connectivity with the rest of the
18 Mojave Basin based on, among other things, isotope data, water quality testing, static water level,
19 and current understandings of hydrologic barriers and groundwater flow directions.

20 21. The shallow aquifer has little to no hydrologic connectivity with the rest of the
21 Mojave Basin based on, among other things, water quality testing, static water level, and current
22 understandings of hydrologic barriers and groundwater flow directions.

23 22. Historical pumping of the shallow aquifer by SMR and SMR’s predecessors has
24 had no documented impact on other wells or on the quantity or quality of groundwater in the
25 Mojave Basin, and therefore has had no documented impact on the adjudicated pumping
26 allocations under the Judgment.

27 23. The shallow and deep aquifers have little to no hydrologic connectivity between
28 them based on, among other things, isotope data and water quality testing.

1 encompasses most of Section 5, T11N, R3W of the San Bernardino meridian. A map of the SMR
2 Property and its general vicinity is in Figure 2.

3 32. The general geology of the SMR Property consists of alluvial fan deposits and
4 basalt flows. Depth to basalt under the SMR Property ranges from about 190 feet below ground
5 surface (“bgs”) to 540 feet bgs in 12 wells on the SMR Property.

6 33. Aside from the Black Mountain basalt outcrop to the north of the SMR Property,
7 topography in the area is relatively flat and gently slopes down to the Harper Dry Lake located to
8 the southwest of the SMR Property.

9 34. The Mojave River, flowing southwest to northeast in its nearest reach, is
10 approximately 13 miles southeast of the SMR Property.

11 35. The unincorporated community of Hinkley is located nine miles south of the SMR
12 Property, and Barstow, the nearest city, is approximately 15 miles to the southeast of the SMR
13 Property. The Mojave Solar Project (also known as the Abengoa Mojave Solar Project) is located
14 on the south side of Harper Dry Lake, southwest of the SMR Property. Edwards Air Force Base
15 property is located within 20 miles of the SMR Property to the southwest, west of Kramer
16 Junction. SMR Property is located within Base airspace.

17 36. The SMR Property falls within the jurisdictional boundary of the Centro Subarea
18 of the Mojave Basin. Certain waters within the Centro Subarea have been adjudicated since 1996
19 and are governed by a Watermaster appointed by the Court.

20 37. The Mojave Basin is currently designated as a “very low” priority basin according
21 to the California Department of Water Resources (“DWR”) since the majority of the Mojave
22 Basin is adjudicated and therefore exempt from regulations required by the 2014 Sustainable
23 Groundwater Management Act, commonly known as SGMA.

24 38. The SMR Property was formally known as Oasis Ranch, which contained
25 additional acreage. Oasis Ranch operated as an active alfalfa farm and reported an estimated
26 pumping of approximately 10,000 acre-feet (“AF”) per year (“AFY”) from its on-site wells. Other
27 estimates of SMR Property pumping capacity have varied from 5,300 AFY to 9,300 AFY.
28

1 atmosphere since before the mid-1950s, so tritium presence is commonly
2 used to identify “modern water.”

3 b. DBS&A also performed radiocarbon analyses to age date groundwater
4 samples (which can go back as far back as 24,000 years before present
5 (“YBP”). Radiocarbon analyses are based on the principles of radioactive
6 decay regarding the element carbon, in which residual radioactivity is
7 measured from the breakdown of unstable isotope carbon-14 to stable
8 isotopes carbon-12 and carbon-13. Carbon-14 dating is a primary
9 geochemical tracer for determining groundwater residence time (when the
10 water was last in contact with the atmosphere and went underground).

11 45. DBS&A staff conducted isotope sampling at two well locations on the SMR
12 Property: (1) an existing irrigation well in the southwest quadrant of the SMR Property that was
13 constructed in February 2019, screened in the shallow aquifer from 85 feet bgs to 286 feet bgs
14 (“Well #3”); and (2) a newly-constructed monitoring well in the center of the SMR Property,
15 screened in the deep aquifer from 520 feet bgs to 900 feet bgs (“Test Well”). The Test Well was
16 constructed specifically to isolate the deep aquifer from the shallow aquifer.

17 **SMR PROPERTY IS WITHIN THE HARPER VALLEY BASIN**

18 46. DWR’s Bulletin 118 (as amended) has designated the groundwater basin covering
19 the SMR Property as the Harper Valley Groundwater Basin (“Harper Valley basin”) with the
20 corresponding Basin ID 6-47. The Harper Valley basin contains the Harper Dry Lake playa area.

21 47. The SMR Property is also located within the Centro Subarea of the Mojave Basin,
22 as defined by the Judgment.

23 48. DWR’s mapping of the Harper Valley basin is the more appropriate groundwater
24 basin definition for the SMR Property when compared to the Centro Subarea for at least three
25 reasons.

26 49. First, the Harper Valley basin has a smaller boundary that is more closely aligned
27 with the SMR Property’s boundaries. The Centro Subarea is substantially larger and over-

28

1 inclusive in both land size and geologic diversity, and is not an accurate approximation of the
2 SMR Property's geology.

3 50. Second, there are geologic barriers between the Harper Valley basin and the rest of
4 the Mojave Basin, especially where the Mojave River is located. These barriers limit the
5 underground flow of Mojave River water into the Harper Valley basin. Because such flows are
6 also limited or nonexistent into the SMR Property, the Harper Valley basin is also a better
7 approximation of the SMR Property when assessing groundwater inflow.

8 51. Third, the Harper Valley basin is a closed watershed separated from the Mojave
9 River watershed by faulting and low ridges. As a result, runoff generated from precipitation over
10 the SMR Property does not flow into the Mojave River watershed, but instead flows into the
11 lowest point in its watershed (i.e., Harper Dry Lake).

12 52. The SMR Property and the Harper Valley basin are not, however, synonymous.
13 For example, the SMR Property is smaller than the Harper Valley basin, and the two areas likely
14 have different sources of groundwater inflow.

15 **SMR PROPERTY GROUNDWATER INFLOW AND OUTFLOW**

16 **Mojave River**

17 53. The dominate source of groundwater recharge to upper aquifers in the Harper
18 Valley basin is underflow of percolated Mojave River water that flows through gaps in the low
19 bedrock hills. This opinion is supported by groundwater flow directions and gradients inferred
20 from groundwater level contouring. In addition, lower TDS groundwater is observed along
21 presumed groundwater flow paths extending northwest from beneath the Mojave River through
22 the Red Hill gap and towards the playa. Reasonable underflow recharge estimates range from
23 1,000 AFY to 2,700 AFY.

24 54. Groundwater flow paths are generally down-gradient in the direction of the Harper
25 Dry Lake playa area.

26 55. The SMR Property is located up-gradient from the Harper Dry Lake playa area.
27 The SMR Property therefore is likely out of the direct flow path of percolated Mojave River
28 water.

1 81. Several reports noting transmissivity and conductance values used in USGS
2 groundwater models identify these major faults as partial barriers to groundwater flow.

3 82. The mapped trace of the Harper Lake fault (Waterman fault) trends through the
4 northeast corner of the SMR Property. The fault is not visible and does not have any known
5 surface expressions (such as ridges or hills) on or near the SMR Property. This fault is identified
6 by some investigators as a partial barrier to groundwater flow on the south end of its trace near
7 the Mojave River along the boundary of the Centro and Baja Subareas.

8 83. Another splay, or outward spread, of the Harper Lake fault is mapped to the
9 northwest and southeast of the SMR Property.

10 84. These faults have been mapped in other locations. Near the SMR Property, the
11 locations of these faults have largely been inferred from groundwater flow models wherein a
12 barrier (full or partial) to groundwater flow was needed to ensure that the models balanced out
13 appropriately and replicated documented water level data. Some, but not all, of these inferred
14 faults have been identified in the field.

15 85. A map of the relevant faults is contained in Figure 4.

16 **THE TWO GROUNDWATER AQUIFERS UNDERLYING THE SMR PROPERTY**
17 **HAVE LITTLE TO NO HYDROLOGIC CONNECTIVITY WITH EACH OTHER**

18 86. There are at least two documented groundwater aquifers underlying the SMR
19 Property.

20 87. The shallow aquifer beneath the SMR Property is 190 to 536 feet thick based on
21 the depth to basalt reported for SMR Property wells, and contains fine-grained layers (silts and
22 clays) typically 10-40 feet thick, but as much as 70 feet thick. This shallow aquifer ranges from
23 confined to unconfined and is composed of alluvial sediments from the land surface down to a
24 basalt layer associated with a regional volcanic flow event.

25 88. The shallow aquifer is the principal aquifer that has been used for historical
26 irrigation extractions of groundwater on the SMR Property, as noted in paragraphs 38 to 40.

1 89. All wells monitored on the SMR Property, along with all current known
2 groundwater pumping in the Harper Dry Lake playa area, are all screened in the shallow aquifer,
3 with the exception of the Test Well in the deep aquifer.³

4 90. In 2022, the deep aquifer was first encountered beneath the basalt layer underlying
5 the SMR Property.

6 91. Figure 5 demonstrates the conceptual generalized geology underlying the SMR
7 Property.

8 92. Well water samples taken from the deep aquifer underlying the SMR Property
9 show that the water in the deep aquifer contains TDS at 4,700 mg/L.

10 93. TDS in the shallow aquifer was substantially lower, ranging from 700-800 mg/L,
11 as noted in Figure 1B and paragraph 71, above.

12 94. A summary of the water quality differences between the shallow and deep aquifers
13 is contained in Figures 1A and 1B. They include:

- 14 a. The shallow aquifer contains arsenic at 55 ug/L, whereas the deep aquifer
15 contains arsenic at 22 ug/L.
- 16 b. The shallow aquifer contains boron at 3.2 mg/L, whereas the deep aquifer
17 contains no presence of boron.
- 18 c. The shallow aquifer contains 165 mg/L of sulfate, whereas the deep aquifer
19 contains 530 mg/L of sulfate.
- 20 d. The shallow aquifer contains 204 mg/L of chloride, whereas the deep
21 aquifer contains 1,400 mg/L of chloride.
- 22 e. The shallow aquifer contains 233 mg/L of sodium, whereas the deep
23 aquifer contains 530 mg/L of sodium.

24 95. The difference in TDS, arsenic, boron, sulfate, chloride, and sodium all
25 demonstrate that the water quality varies substantially between the shallow and deep aquifers.
26

27
28 ³ SMR drilled an additional exploratory production well, which was screened in both the shallow
and deep aquifer. That well was not used and is not currently in use.

1 96. Isotope sampling further demonstrates that the water in the deep aquifer and the
2 water in the shallow aquifer are hydrologically disconnected.

3 97. In 1995, USGS collected well water samples and analyzed those samples for,
4 among other things, tritium and carbon-14 to determine the source, movement, and age of
5 groundwater in the Mojave River basin area. The findings for tritium and carbon-14 included:

- 6 a. Groundwater in the Mojave River basin alluvial aquifer, consisting of river
7 deposits along the present channel of the Mojave River, was determined to
8 contain tritium and was recently recharged by the Mojave River.
- 9 b. Groundwater in the regional aquifer, which surrounds the alluvial aquifer
10 and is underlain by older alluvium and fan deposits, near Summit Valley
11 and in several underlying washes, was determined to contain tritium
12 (although most of the water does not), and was recharged less than 2,400
13 years ago.
- 14 c. Groundwater in the regional aquifer even farther down-gradient and away
15 from the Mojave River was recharged more than 20,000 years ago, and no
16 significant recharge occurs under present climactic conditions.

17 98. The USGS concluded that, within the Mojave Basin, deeper aquifers were
18 recharged under climatic conditions different from average conditions today and may be more
19 than 20,000 years old. Shallower aquifers contain indicators of present climatic conditions and
20 were recharged more recently.

21 99. USGS findings are consistent with DBS&A findings under the SMR Property.

22 100. DBS&A took samples from two wells—Well #3 and the Test Well—on the SMR
23 Property and conducted similar tests to those completed by USGS. The results were consistent
24 with the trends identified by USGS. Specifically, laboratory test results demonstrated the
25 following (also depicted in Figure 1B):

- 26 a. The apparent radiocarbon age of the deep aquifer is 20,130 YBP, and the
27 shallow aquifer is 7,220 YBP.

1 b. Tritium content in the deep aquifer is <0.64 TU, and in the shallow aquifer
2 is <0.65 TU (essentially, tritium was not detected in either aquifer).

3 101. Radiocarbon (carbon-14) dating is a laboratory analysis that provides objective age
4 estimates for various materials, including water. Carbon-14 is an isotope of the element carbon; it
5 is unstable and weakly radioactive. Carbon-14 content decreases at a rate determined by the law
6 of radioactive decay, therefore, radiocarbon dating is essentially a method designed to measure
7 residual radioactivity.

8 102. The difference in the apparent radiocarbon ages of the water samples supports the
9 idea that the water in the shallow and deep aquifers are of different ages.

10 103. The apparent radiocarbon ages further suggest that, given the shallow aquifer is
11 dated to over 7,000 YBP and the deep aquifer is dated to over 20,000 YBP, these two aquifers
12 have not received any recharge from the Mojave River for many thousands of years,
13 demonstrating that both aquifers are hydrologically disconnected from the Mojave River and the
14 adjudicated water of the Judgment.

15 104. The dramatically different radiocarbon ages implies little to no connection
16 between the shallow and deep aquifers.

17 105. The absence of tritium in the shallow aquifer supports the conclusion that the
18 shallow aquifer has not been recharged with modern water and therefore is hydrologically
19 disconnected from the Mojave River and the adjudicated water of the Judgment.

20 106. The absence of tritium in the deep aquifer supports the conclusion that the deep
21 aquifer is not being recharged with modern water from the Mojave River.

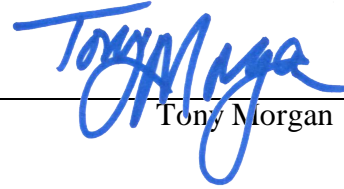
22 107. Based on geologic inference, the water in the deep aquifer is not moving much, if
23 at all, and there is no known extraction of water via pumping from the deep aquifer. Therefore,
24 the absence of tritium, radiocarbon age, and that there is no known outflow from the deep aquifer,
25 support the conclusion that the water in the deep aquifer has an age of more than 20,000 YBP.

26 108. These analytical results support the conclusion that the shallow and deep aquifers
27 are of different ages and are therefore separate aquifers with little to no hydrologic connectivity.
28

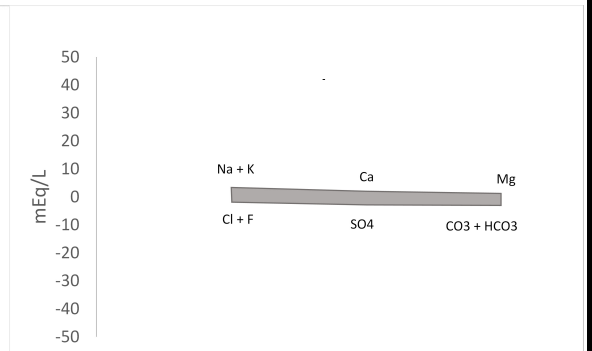
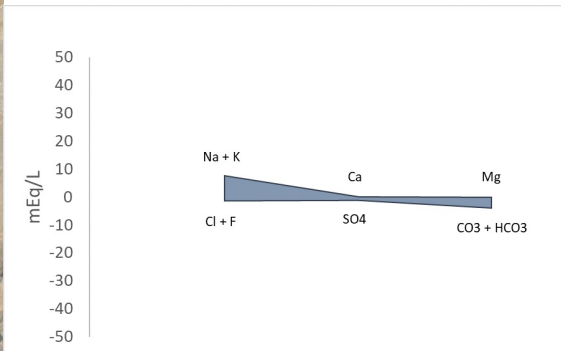
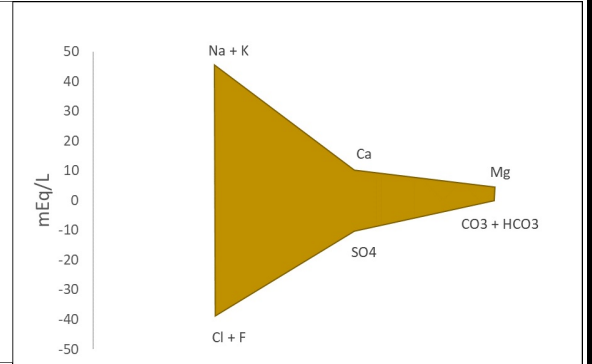
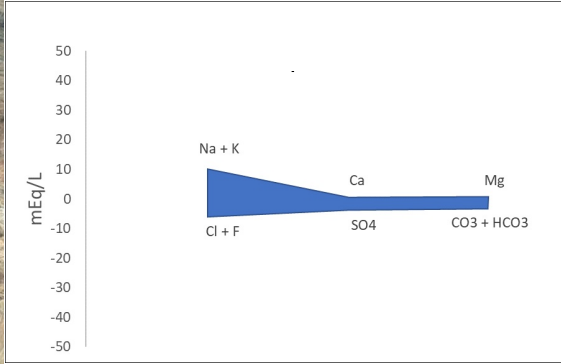
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I declare under penalty of perjury under the laws of the State of California that the forgoing is true and correct.

Executed this 1st day of November, 2023, at Ventura,
California.



Tony Morgan



- Notes:
1. The Test Well is screened in the deep aquifer. Well #3 is screened in the shallow aquifer.
 2. USGS Well 350049117122101 is 250 ft deep. USGS Well 345428117101701 is 122 ft deep.

Source: SMR Isotopic Data, nwis.waterdata.usgs.gov

SHADOW MOUNTAIN RANCH Shallow and Deep Aquifer Comparison

Well ID	Aquifer	Sample Date	Apparent Radiocarbon Age (YBP)	Tritium Content (TU)
Test Well	Deep	9/7/2022	20,130	<0.64
Well #3 New	Shallow	9/7/2022	7,220	<0.65

YBP = years before present

TU = tritium units, where 1 TU is equal to one atom of tritium (3H) per 1018 atoms of hydrogen (H)

	Test Well	Well #3	USGS 350049117122101	USGS 345428117101701
	Deep Aquifer	Shallow Aquifer	Total Depth 250 ft	Total Depth 122 ft
Prevalent Chemical Character	Sodium chloride	Sodium chloride	Sodium/Potassium & Bicarbonate	Sodium/Potassium & Bicarbonate
Total Dissolved Solids (mg/L)	4,700	800	~490	~500
Arsenic (ug/L)	22	55	39.6	0.65
Boron (mg/L)	NA	3.2	641	164
Sulfate (mg/L)	530	165	56.5	143
Chloride (mg/L)	1,400	204	43.1	63
Sodium (mg/L)	530	233	173	74.4
Static Water Level (ft below ground surface)	84.5*	79.75**	125.11***	109.35***

Water Level (WL)

* WL taken from well sounder on 3/17/2023 at 8:47am

** WL taken from Ranch Systems on 3/17/2023 at 08:45am

***WL measured by USGS on 4/19/2017 and 05/04/2017

Notes:

1. The Test Well is screened in the deep aquifer. Well #3 is screened in the shallow aquifer.
2. These analytical results support the hypothesis that the shallow and deep aquifers are of different ages and are therefore separate aquifers. The disparate apparent radiocarbon ages implies the groundwater flux between the aquifers, if any, is likely very small.
3. The chemical data also shows that the shallow and deep aquifers have significantly different chemical composition, suggesting little to no vertical connection between the two aquifers.

Source: SMR Isotopic Data, nwis.waterdata.usgs.gov

**SHADOW MOUNTAIN RANCH
Shallow and Deep Aquifer Comparison**



a Geo-Logic Company
DB19.1031


10/25/2023

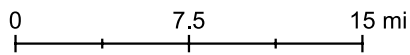
C:\Users\1283\Documents\Projects\Shadow Mountain Ranch\MAPS\SMR_Map.qgz

Figure 1B



Legend

 Centro Subarea



Notes:

1. Location of Shadow Mountain Ranch in the Centro Subarea

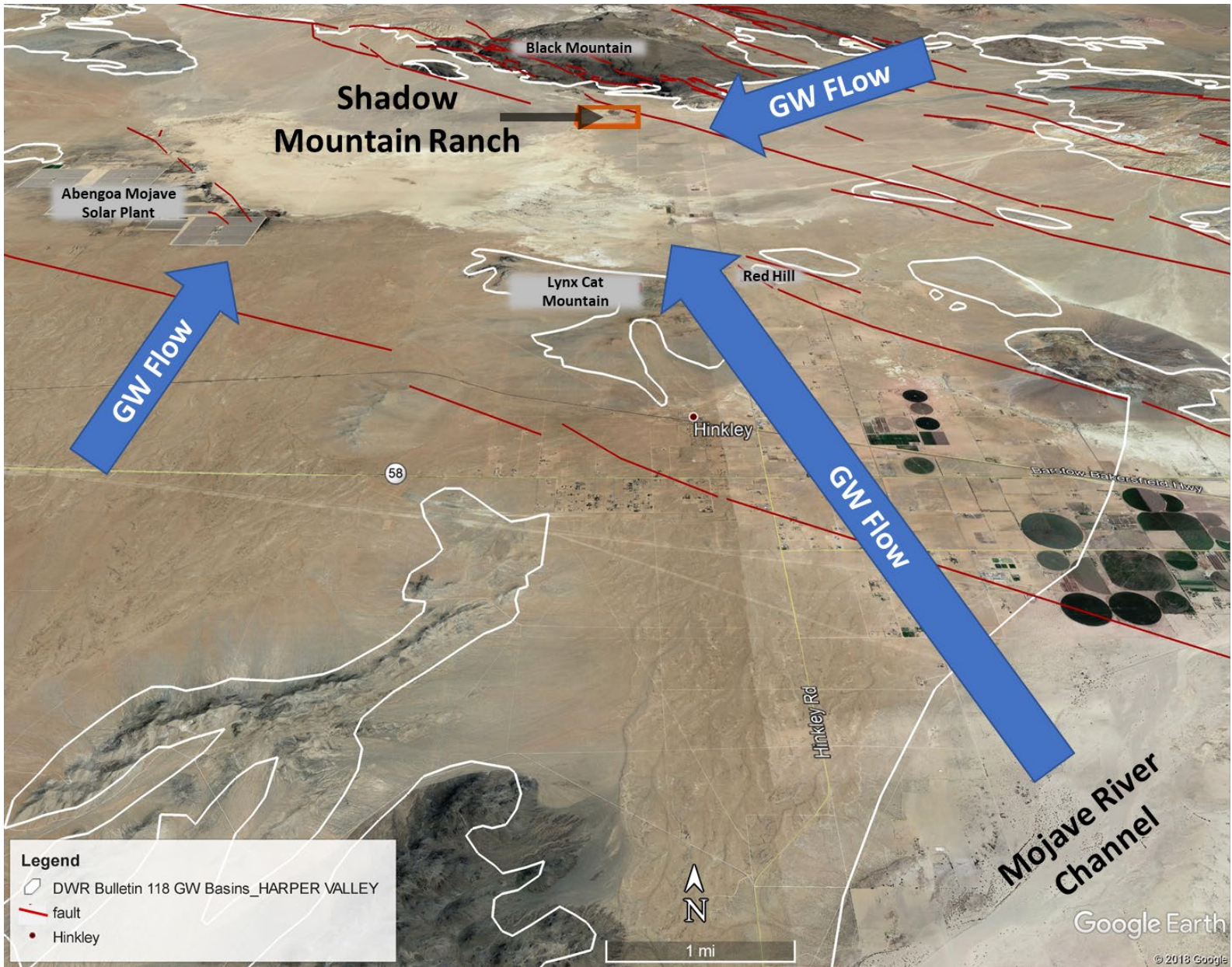


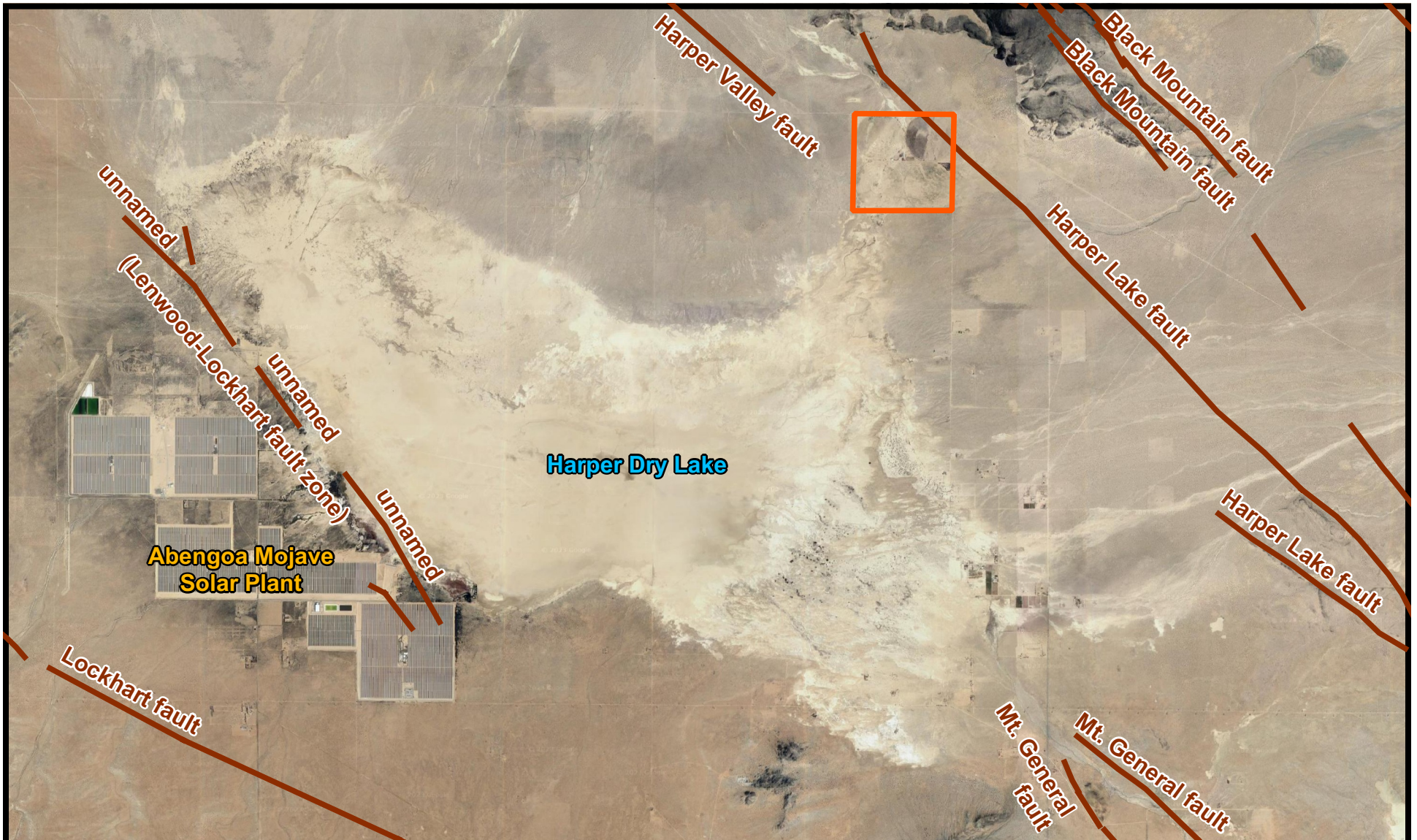
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**SHADOW MOUNTAIN RANCH
Site Location**

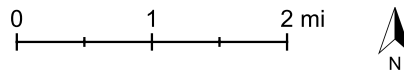
Figure 2





Explanation

-  CA Geological Survey Fault (MWA Region)
-  SMR Property Boundary



Source: Mojave Water Agency (<https://www.mojavewater.org/data-maps/geospatial-library/>)



10/26/2023

a Geo-Logic Company
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**SHADOW MOUNTAIN RANCH
Nearby Faults**

Figure 4

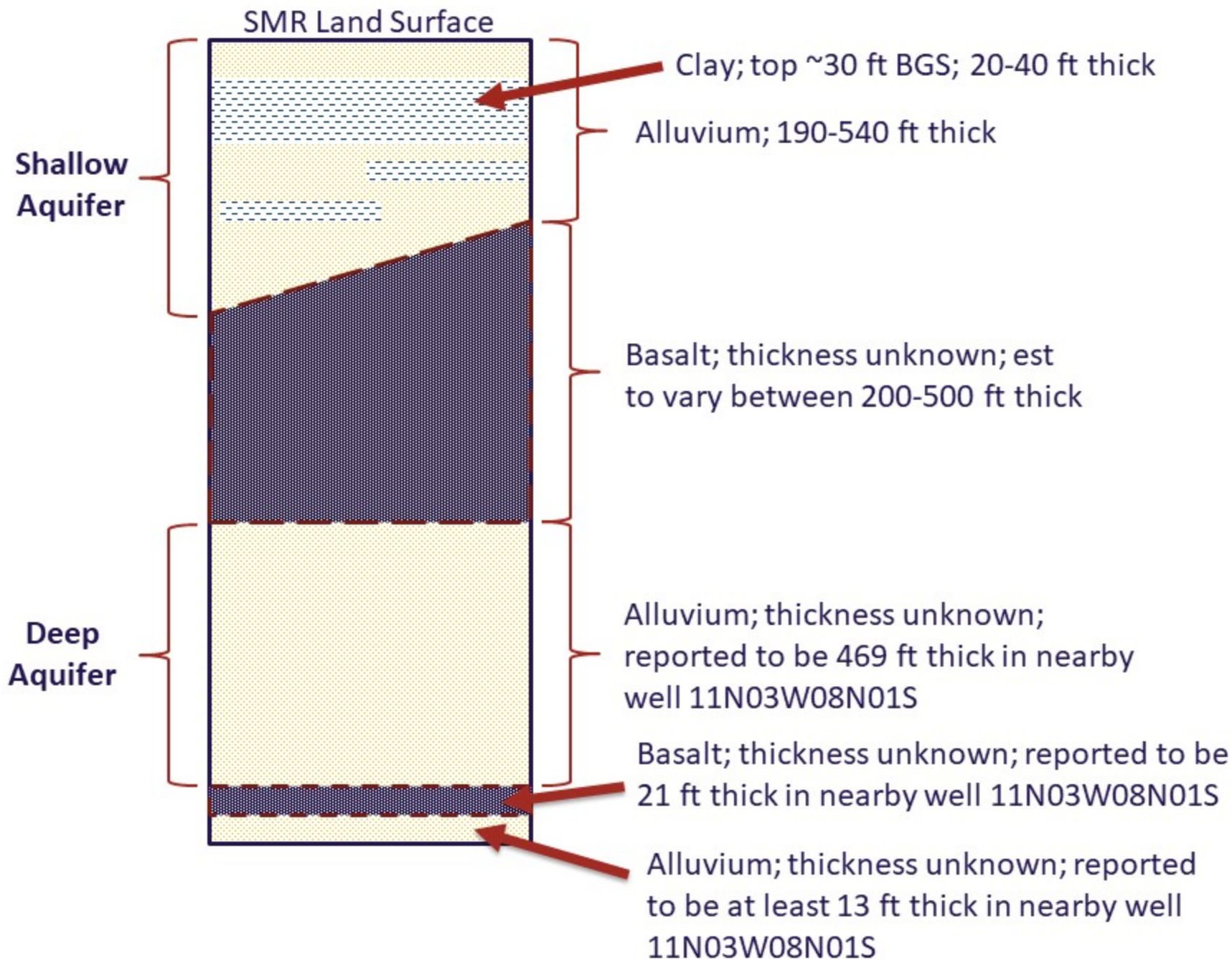


Figure 5

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PROOF OF SERVICE

I, Vanessa Guillen-Becerra, declare:

I am a citizen of the United States and employed in San Bernardino County, California. I am over the age of eighteen years and not a party to the within-entitled action. My business address is 2855 E. Guasti Road, Suite 400, Ontario, California 91761. On June 5, 2026, I served a copy of the within document(s):

**SHADOW MOUNTAIN RANCH, LLC'S SPECIAL INTERROGATORIES,
SET TWO (2) TO THE MOJAVE WATER AGENCY, AS THE MOJAVE
BASIN AREA WATERMASTER**


- by transmitting via facsimile the document(s) listed above to the fax number(s) set forth below on this date before 5:00 p.m.
- by placing the document(s) listed above in a sealed envelope with postage thereon fully prepaid, the United States mail at Ontario, California addressed as set forth below.
- by placing the document(s) listed above in a sealed _____ envelope and affixing a pre-paid air bill, and causing the envelope to be delivered to a _____ agent for delivery.
- by personally delivering the document(s) listed above to the person(s) at the address(es) set forth below.
- by transmitting via e-mail or electronic transmission the document(s) listed above to the person(s) at the e-mail address(es) set forth below.

Please see attached Service List.

I am readily familiar with the firm's practice of collection and processing correspondence for mailing. Under that practice it would be deposited with the U.S. Postal Service on that same day with postage thereon fully prepaid in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on June 5, 2026, at Fontana, California.



Vanessa Guillen-Becerra

Service List

In re The Mojave Water Agency, as the Mojave Basin Area Watermaster v. All Persons Who are not parties to the comprehensive groundwater adjudication in the *City of Barstow, et al. v. City of Adelanto, et al., Riverside Superior Court Case No. CIV208568*, and are either producing more than 10 acre-feet of Basin groundwater annually, or using Basin groundwater for unlawful purposes, and Does 1 through 2,000

Riverside Superior Court Case No.: CIVSB 2218461 (transferred)
Mojave Basin Water Cases JCCP5265

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