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SHEEP CREEK WATER COMPANY, INC.

8 **SUPERIOR COURT OF THE STATE OF CALIFORNIA**  
9 **IN AND FOR THE COUNTY OF LOS ANGELES**

11 Coordination Proceeding  
Special Title (Rule 1550(b))

) Judicial Council Coordination  
Proceeding No. 4408

12 ANTELOPE VALLEY GROUNDWATER  
13 CASES

) Santa Clara Case No. 1-05-CV-049053  
Assigned to the Honorable Jack Komar

14 Including Actions:

) **SUPPLEMENTAL DECLARATION OF  
DR. RAM ARORA,  
HYDROGEOLOGIST, IN SUPPORT OF  
SHEEP CREEK WATER COMPANY'S  
REPLY TO OPPOSITIONS TO THE  
MOTION TO BE EXCLUDED FROM  
THE ANTELOPE VALLEY  
GROUNDWATER ADJUDICATION,  
OR, IN THE ALTERNATIVE, FOR  
RECOGNITION OF ITS PRIOR  
RIGHTS TO THE WATERS OF SHEEP  
CREEK**

15 Los Angeles County Waterworks District No.  
40 v. Diamond Farming Co.  
16 Superior Court of California, County of Los  
Angeles, Case No. BC 325 201

17 Los Angeles County Waterworks District No.  
18 40 v. Diamond Farming Co.  
Superior Court of California, County of Kern,  
19 Case No. S-1500-CV-254-348

20 Wm. Bolthouse Farms, Inc. v. City of  
Lancaster  
21 Diamond Farming Co. v. City of Lancaster  
Diamond Farming Co. v. Palmdale Water Dist.  
22 Superior Court of California, County of  
Riverside, consolidated actions, Case Nos. RIC  
23 353 840, RIC 344 436, RIC 344 668

) DATE: May 28, 2009  
TIME: 9:00 a.m.  
DEPT: 17C  
JUDGE: Hon. Jack Komar

24 AND RELATED CROSS-ACTIONS.

) [Filed Concurrently with Reply to Opposition  
to Sheep Creek Motion To Be Excluded from  
the Antelope Valley Groundwater  
Adjudication, etc.]

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SUPPLEMENTAL DECLARATION OF DR. RAM ARORA, HYDROGEOLOGIST,  
IN SUPPORT OF SHEEP CREEK WATER COMPANY'S REPLY TO OPPOSITION TO MOTION  
TO BE EXCLUDED FROM THE ANTELOPE VALLEY GROUNDWATER ADJUDICATION, ETC.

1 I, RAM ARORA, PhD, declare as follows:

2 1. I am a registered Professional Geologist in the State of Georgia. I received my  
3 license in March 1984 and have over thirty (30) years of practical experience in the field of  
4 hydrogeology. I have personal knowledge of the matters set forth in this declaration. If called as  
5 a witness, I could, and would, competently testify to all matters set forth in this declaration.

6 2. I have reviewed and am familiar with Sheep Creek Water Company’s Reply and  
7 the Oppositions and supporting Declarations which have been filed regarding Sheep Creek Water  
8 Company’s Motion to be Excluded from the Antelope Valley Groundwater Adjudication, or, in  
9 the Alternative, for Recognition of its Prior Rights to the Waters of Sheep Creek (including all of  
10 the attached Exhibits), the Request for Judicial Notice, and the Declarations of Michael Duane  
11 Davis and Chris Cummings (collectively the “Motion”). I make this Declaration in support of  
12 Sheep Creek Water Company’s Motion and its Reply to Oppositions filed to that Motion. A  
13 copy of my *Curriculum Vitae* is attached to my prior Declaration in support of Sheep Creek  
14 Water Company’s Motion as *Exhibit 1*.

15 3. I have reviewed and am familiar with the following United States Geological  
16 Survey (“U.S. Geological Survey”) publications, respecting the hydrology of the western Mojave  
17 Desert, including Sheep Creek: W. B. Langbein & Kathleen T. Iseri, U.S. Geological Survey,  
18 *General Introduction and Hydrologic Definitions*, Water-Supply Paper 1541-A (1983); John A.  
19 Izbicki & Robert L. Michel, U.S. Geological Survey, *Movement and Age of Ground Water in the*  
20 *Western Part of the Mojave Desert, Southern California, USA*, Water-Resources Investigations  
21 Report 2003-4314 (2004); John A. Izbicki et al., U.S. Geological Survey, *Data From a Thick*  
22 *Unsaturated Zone Underlying Oro Grande and Sheep Creek Washes in the Western Part of the*  
23 *Mojave Desert, near Victorville, San Bernardino County, California*, Open-File Report 2000-262  
24 (2000); John A. Izbicki, U.S. Geological Survey, *Source and Movement of Ground Water in the*  
25 *Western Part of the Mojave Desert, Southern California, USA*, Water-Resources Investigations  
26 Report 2003-4313 (2004); Carl S. Carlson & Steven P. Phillips, U.S. Geological Survey, *Water-*  
27 *level Changes (1975-1998) in the Antelope Valley Ground-Water Basin, California*, Open-File

1 Report 98-561 (1998); and David A. Leighton & Steven P. Phillips, U.S. Geological Survey,  
2 *Simulation of Ground-Water Flow and Land Subsidence, Antelope Valley Ground Water Basin,*  
3 *California*, Water-Resources Investigations Report 2003-4016 (2003).

4 4. I have also reviewed and am familiar with the following documents: California  
5 Department of Water Resources, Bulletin 118, *California's Groundwater* (2003); California  
6 Regional Water Quality Control Board, *Water Quality Control Plan for the Lahontan Region,*  
7 fig. Plate 1B; Joseph C. Scalmanini et al., *Technical Memorandum Ground-Water Basin and*  
8 *Subbasin Boundaries Antelope Valley Ground-Water Basin* (2002), fig. Plate 1; County of San  
9 Bernardino, *Phelan/Pinon Hills Community Plan*, February 2007, p. 35, ¶ 3; Map of Sheep  
10 Creek Water Company's Well Field; *USGS Geological map Data for El Mirage Area, San*  
11 *Bernardino and Los Angeles Counties, California.*

12 5. I have also reviewed the composite of six (6) USGS / National Geographic  
13 1:30,750 scale maps that is appended to the Motion as **Exhibit H**. The map accurately depicts  
14 the portion of the Counties of San Bernardino and Los Angeles from south of Swarthout Creek  
15 (Wrightwood) / Sheep Creek Canyon on the south to approximately 34°31'N on the north, and  
16 from approximately 117°45'W on the west to approximately 117°29'W on the east. The Los  
17 Angeles / San Bernardino County line is printed on the map and highlighted in "red"  
18 approximately one-third (1/3) of the way from the left side. Sheep Creek Water Company's  
19 service area is plotted and marked in orange at the middle right center of the map. Sheep Creek  
20 Water Company's Sheep Creek Canyon (San Bernardino County) well field is plotted and  
21 marked in orange in the lower center of the map, and the "shaft" described in the 1931 Judgment  
22 is printed on the map and highlighted in yellow about one inch (1") below the well field. Sheep  
23 Creek Water Company's Los Angeles County well site is plotted and marked in orange in the  
24 upper center left of the map, just below the highlighting of the County line. The plotted  
25 Antelope Valley Groundwater Basin boundary lines are from Bloyd, 1967 (red), Carlson, et al,  
26 1998 (dashed black) and Carlson & Phillips, 1998 (blue), as depicted on Plate 1 from Luhdorff &  
27 Scalmanini's Technical Memorandum "Ground-Water Basin and Subbasin Boundaries, Antelope  
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1 Valley Ground-Water Basin” January 2002. The Sub-Basin boundary line between the Pearland  
2 and Buttes Sub-Basins, is also from Bloyd, 1967 (green), and is also as depicted on Plate 1 from  
3 Luhdorff & Scalmanini’s Technical Memorandum “Ground-Water Basin and Subbasin  
4 Boundaries, Antelope Valley Ground-Water Basin” January 2002.

5 6. I have also received information from Chris Cummings, Sheep Creek Water  
6 Company’s General Manager, with regard to the location, characteristics and conditions of Sheep  
7 Creek Water Company’s water supply, well fields, service area and wells.

8 7. Based on my professional knowledge, experience, and understanding of the  
9 relevant issues, I have the following opinions and comments with regard to the Declaration of  
10 Joseph C. Scalmanini and the exhibits thereto, which were filed in support of the Public Water  
11 Suppliers’ Opposition to Sheep Creek Water Company’s Motion to be Excluded from the  
12 Antelope Valley Groundwater Adjudication, or, in the alternative, for Recognition of its Prior  
13 Rights to the Waters of Sheep Creek:

14 (a) With regard to Paragraph 9 of the Scalmanini Declaration, I agree that the  
15 easterly and westerly boundaries of El Mirage Basin are “alluvial drainage divides extending  
16 from the San Gabriel Mountains ” as described in Bulletin 118-2003. This is a surface drainage  
17 divide between Antelope Groundwater Basin and El Mirage Groundwater Basin. However,  
18 Groundwater basin represents **groundwater storage** and **flow**. [See prior Declaration of Dr.  
19 Ram Arora filed in support of Sheep Creek’s Motion, dated September 9, 2008, paragraphs 7a  
20 and 7b]. The presence of faults impedes the groundwater flow. There are numerous faults in  
21 Antelope Valley, some of which act as partial barriers to groundwater flow. The Leighton and  
22 Phillips Report (2003) shows several faults that shift groundwater elevation and flow direction.  
23 (See, *Exhibit L* to Sheep Creek Motion, Figure 4, p. 10). Carlson and Phillips (1998, 1975-  
24 1998), Bloyd (1967), and Ikehara and Phillips (1994) collected and interpreted groundwater data  
25 for Antelope Valley Groundwater Basin. Bloyd (1967) interpreted hydrogeological data and  
26 placed the western boundary of the El Mirage Groundwater Basin to the west of the Sheep Creek  
27 property. This boundary is based on hydrogeologic data interpretation, and does not support  
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1 Exhibit 2 to Scalmanini's Declaration.

2 (b) With regard to Paragraph 10 of the Scalmanini Declaration, his Exhibit 3  
3 is a contour map of equal groundwater elevation based on "available data" for the subject area  
4 in and near the El Mirage Valley Groundwater Basin. Mr. Scalmanini has not provided the  
5 source of the data nor the other relevant information necessary to support the map, such as date  
6 of water levels measurements, well construction information, number and location of all wells,  
7 local pumping well location, location of faults, vertical hydraulic gradients, and perched aquifer  
8 conditions in developing the Exhibit 3. Exhibit 3 shows the **bulk** groundwater potential energy  
9 for Antelope Groundwater Basin, El Mirage Groundwater Basin and Upper Mojave River Valley  
10 Basin. Exhibit 3 shows that groundwater flows towards the Sheep Creek Property. The Sheep  
11 Creek property is in the discharge zone and receives groundwater which flows north, north-east,  
12 and north-west. Near the western boundary of Exhibit 3, groundwater diverges and flows  
13 towards north-west, and in eastern boundary of the Exhibit 3 groundwater diverges and flows  
14 towards north-east. Local natural groundwater recharge is from mountain runoff, precipitation  
15 and other features like alluvial fans, Sheep Creek wash and Sheep Creek. Water from the Sheep  
16 Creek moves downward from the streambed to the water table, forming a groundwater mound  
17 which then dissipates laterally (east, northeast, north, north-west and west) away from the  
18 stream. (See, *Figure 1* to prior Declaration of Dr. Ram Arora.) *Figure 3* shows the directional  
19 lines of the water flow based on the contours shown on Exhibit 3. The water that reaches the  
20 Sheep Creek property is substantially from the Sheep Creek wash.

21 (c) With regard to Paragraph 11 of the Scalmanini Declaration, the  
22 **southeastern** boundary of the Antelope Valley Groundwater Basin was modified by Carlson &  
23 Phillips (1998) and Bloyd (1968). The revised boundary shows that Sheep Creek Water  
24 Company's Los Angeles County property lies outside the Antelope Valley Groundwater Basin  
25 (6-44) boundary. This modified boundary is based on hydrogeological data. Groundwater flow  
26 lines drawn on Exhibit 3 indicate that a component of recharge in the vicinity flows from Sheep  
27 Creek towards the Sheep Creek Water Company property (See my above comments to Paragraph  
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1 9 of Scalmanini Declaration).

2 (d) With regard to Paragraph 12 of the Scalmanini Declaration, ground water  
3 beneath the Sheep Creek Water Company is the derivative of the waters from Sheep Creek.

4 (e) With regard to Paragraph 13 of the Scalmanini Declaration, the sources of  
5 recharge to a groundwater system include both natural and human-induced phenomena. Natural  
6 sources include recharge from precipitation, lakes, ponds, and rivers (including perennial,  
7 seasonal, and ephemeral flows), floodplains, stream wash, alluvial fans, and other aquifers.  
8 Sheep Creek Wash flows as a result of runoff from the San Gabriel Mountains and from  
9 precipitation that falls on the desert floor. Human-induced sources of recharge include irrigation  
10 losses from canals and fields, leaking water mains, sewers, septic tanks, and over-irrigation of  
11 parks, gardens, and other public amenities (See prior Declaration of Dr. Ram Arora, paragraph  
12 7g).

13 (f) With regard to Paragraph 14 of the Scalmanini Declaration, Exhibit 3  
14 shows that a component of groundwater flows to the discharge zone from the vicinity of Sheep  
15 Creek recharge zone. Groundwater recharge at the Sheep Creek Water Company Los Angeles  
16 Well Site is a combination of precipitation, perennial mountain runoff, Sheep Creek, Sheep  
17 Creek wash, and alluvial fans (with regard to paragraph 13 of Scalmanini Declaration). Most of  
18 these groundwater recharge components contribute to Sheep Creek Water Company.

19 (g) With regard to Paragraph 15 of the Scalmanini Declaration, boundaries of  
20 groundwater are based on groundwater storage and groundwater flow (Bulletin 118).  
21 Groundwater flow is discussed above with regard to Scalmanini's Declaration in paragraphs 9  
22 and 10. According to the studies of Carlson and Phillips (1998) and Bloyd (1967), Swarthout  
23 Creek and Sheep Creek are contained in El Mirage Groundwater Basin.

24 (h) With regard to Paragraph 16 of the Scalmanini Declaration, the waters of  
25 Swarthout Creek and Sheep Creek are contained in El Mirage Groundwater Basin [Carlson and  
26 Phillips (1998) and Bloyd (1967)]. Sheep Creek Water Company has two properties (one  
27 property in Los Angeles County and a second property in San Bernardino County) and its service  
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1 area is in San Bernardo County. Exhibit 3 to Scalmanini's Declaration shows the groundwater  
2 elevation contour for Antelope Valley Groundwater Basin, El Mirage, and Upper Mojave River  
3 Valley Groundwater Basin. Groundwater is not contained in one basin. Changes in groundwater  
4 storage and flow can move the boundaries by Carlson and Phillips (1998) and Bloyd (1967).  
5 Changes in the level of the water table can affect the direction and rate of the flow. There are  
6 two components of a groundwater basin – one component is groundwater storage, and the other  
7 is flow. Flow means the direction and the rate at which the groundwater flows. If there is any  
8 change in either or both the groundwater storage or the flow component, the hydrogeologic  
9 boundary will shift.

10 (i) With regard to Paragraph 17 of the Scalmanini Declaration, Sheep Creek  
11 is a line groundwater recharge source. Percolation to the water table aquifer from Sheep Creek is  
12 via an unsaturated zone. Water moves downward from the streambed to the water table, forming  
13 a groundwater mound [See, *Figure 1* to prior Declaration of Dr. Ram Arora] which then  
14 dissipates groundwater laterally away from the stream. Groundwater from the recharge mound  
15 flows in the direction of low potential energy areas. These groundwater flow directions include:  
16 (a) north, (b) northeast [USGS Water Resources Investigations Report 03-43-4314; Flow Path 3  
17 includes Sheep Creek area], and (c) northwest (to Sheep Creek Water Company's Los Angeles  
18 County property). *Figure 1* presents line source groundwater recharge and the USGS  
19 investigation listed above supports the northwest groundwater flow towards Sheep Creek  
20 property. These groundwater flows are localized and are part of bulk groundwater flow  
21 directions shown on the attached *Figure 3*. Also, *Figure 3* shows that groundwater flows  
22 toward northwest, north and northeast. Groundwater flows north and northwest from the vicinity  
23 of Sheep Creek towards Sheep Creek Company property.

24 (j) With regard to Paragraph 18 of the Scalmanini Declaration, the drilling  
25 company pumping data was analyzed for one pumping well that is completed in unconfined  
26 aquifer. The **standard equilibrium well equations** (Driscoll, 1986; Sichardt, 1930) were used to  
27 interpret the specific capacity, transmissivity, hydraulic conductivity, pumping rate, and radius of  
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1 influence. Calculated Radius of influence is 1,641 feet (See, paragraph 8i of prior Declaration of  
2 Dr. Ram Arora) for pumping rate of 1,353 gpm. The nearest distance from Sheep Creek Water  
3 Company's Los Angeles County property / well field to the eastern boundary of the Antelope  
4 Valley Groundwater Basin [Carlson & Phillips, 1998] is 4000 feet. Therefore, the extraction of  
5 water from the Sheep Creek Water Company's Los Angeles County property / well field in the  
6 El Mirage Basin would not adversely impact the water supply in Antelope Valley Groundwater  
7 Basin (See, paragraph 8j of prior Declaration of Dr. Ram Arora).

8 (k) With regard to Paragraph 19 of the Scalmanini Declaration, my  
9 calculations consider that the Sheep Creek Water Company property lies within El Mirage  
10 Ground Water Basin as interpreted by Carlson and Phillips (1998) and Bloyd 1967.

11 (l) With regard to Paragraph 20 of the Scalmanini Declaration, please refer to  
12 my comments regarding paragraphs 18 and 19 above.

13 (m) With regard to Paragraph 21 of the Scalmanini Declaration, Equilibrium  
14 Well equations are used to interpret hydraulic parameters for an unconfined aquifer. These  
15 equations are standard interpretation techniques used by hydrogeologist when limited data from  
16 one pumping well is available. Under the conditions with limited data "non-equilibrium"  
17 interpretation techniques are not used and inappropriate. Interpretation results are discussed in  
18 my prior declaration. (See, paragraph 8i of prior Declaration of Dr. Ram Arora).

19 (n) With regard to Paragraph 21 of the Scalmanini Declaration, interpretation  
20 techniques are sound for the available field data. Hydraulic parameters are calculated from the  
21 drillers' data. The amount and areal extent of the interference is directly related to the rate of  
22 pumping of well. The specific yield of an unconfined aquifer is higher and produces a smaller  
23 radius of influence. At a producing rate of 1,353 gpm, the calculated radius of influence for  
24 Sheep Creek Water Company's Los Angeles County well field is 1,641 feet. Preliminary inquiry  
25 shows that there are no other significant producing wells located in close proximity to the Sheep  
26 Creek Water Company's Los Angeles County well field.

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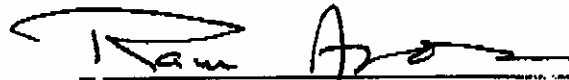


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(o) With regard to Paragraph 23 of the Scalmanini Declaration, the driller is recommending groundwater withdrawal at the rate of 1,200 gpm. Even though test is performed under static and aquifer equilibrium conditions, wells at Sheep Creek Water Company can produce a sustained yield at the rate of 1,200 gpm. In conclusion, groundwater storage, groundwater recharge, and transmissivity of unconfined aquifer can produce the desired groundwater with no adverse impact to the water supply in Antelope Valley Groundwater Basin.

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

Executed on May 20, 2009, at Duluth, Georgia.



RAM ARORA, PhD

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**PROOF OF SERVICE**  
**STATE OF CALIFORNIA, COUNTY OF RIVERSIDE**

Re: *ANTELOPE VALLEY GROUNDWATER CASES*  
Los Angeles County Superior Court Judicial Council Coordinated  
Proceedings No. 4408; Santa Clara County Superior Court Case No. 1-05-CV-049053

I am employed in the County of Riverside, State of California. I am over the age of 18 years and not a party to the within action; my business address is: 3750 University Avenue, Suite 250, Riverside, CA 92501-3335.

On May 20, 2009, I served the foregoing document(s) described as **SUPPLEMENTAL DECLARATION OF DR. RAM ARORA, HYDROGEOLOGIST, IN SUPPORT OF SHEEP CREEK WATER COMPANY'S REPLY TO OPPOSITIONS TO THE MOTION TO BE EXCLUDED FROM THE ANTELOPE VALLEY GROUNDWATER ADJUDICATION, OR, IN THE ALTERNATIVE, FOR RECOGNITION OF ITS PRIOR RIGHTS TO THE WATERS OF SHEEP CREEK** on the interested parties in this action in the following manner:

( X ) **BY ELECTRONIC SERVICE** – I posted the document(s) listed above to the Santa Clara County Superior Court website, <http://www.scefiling.org>, in the action of the Antelope Valley Groundwater Cases,

( X ) **BY EXPRESS MAIL/OVERNIGHT DELIVERY** - I caused such envelope to be delivered by hand to the office of the addressee via overnight delivery pursuant to C.C.P. §1013(c), with delivery fees fully prepaid or provided for.

Honorable Jack Komar  
Santa Clara County Superior Court  
191 North First Street, Dept. 17C  
San Jose, CA 95113

Superior Court of California      **[Original Documents to be filed at this location]**  
County of Los Angeles  
Stanley Mosk Courthouse, Dept. 1, Room 534  
111 North Hill Street  
Los Angeles, CA 90012

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

Executed on May 20, 2009, at Riverside, California.

  
\_\_\_\_\_  
TERI D. GALLAGHER