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SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF SANTA CLARA

)
) Santa Clara
 ANTELOPE VALLEY GROUNDWATER CASES,) Case No.
) 1-05-CV-049053
) VOLUME IV

TRIAL TESTIMONY OF JOSEPH SCALMANINI
THURSDAY, JANUARY 13, 2011
WALNUT CREEK, CALIFORNIA

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1 "us." Is that referring to you and your engineering
2 firm?

3 A. Yes. I tried to substitute Luhdorff &
4 Scalmanini as I went along, but they are intended
5 to be the same meaning. Us, my office, Luhdorff & 13:39:06
6 Scalmanini.

7 Q. Mr. Scalmanini, could I direct your
8 attention, please, to Exhibit No. 93. This exhibit
9 is entitled "Native Safe Yield."

10 (Whereupon, Scalmanini Exhibit 93 was 13:39:24
11 introduced for identification.)

12 THE WITNESS: Yes.

13 MR. DUNN: I'll give counsel a moment to
14 get the exhibit.

15 BY MR. DUNN: 13:39:41

16 Q. Mr. Scalmanini, who prepared
17 Exhibit No. 93?

18 A. My office did.

19 Q. And what does Exhibit 93 illustrate or
20 depict? 13:39:55

21 And I will add if you need to refer back
22 to earlier exhibits, please do so.

23 A. That's just what I was doing. So
24 referring back to Exhibit 90 --

25 Q. If you'll give us just a moment to get 13:40:14

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1 there.

2 A. Okay. For the four selected periods
3 of cultural conditions, so-called early historical,
4 and then the five-year period, 1995 to 1999; the
5 ten-year period, 1996 to 2005; and the seven-year 13:40:35
6 period for the year 2005, which are enumerated or
7 tabulated down the left side of Exhibit 93.

8 Then there is a second broad column
9 with two subcolumns that show the relative fractions
10 of land use over those time periods devoted to 13:40:59
11 agricultural or municipal and industrial-type land
12 and water uses, the fractions devoted to them.

13 Then as noted in Exhibit 91 --

14 Q. If you'll give us just a moment to get to
15 Exhibit 91. 13:41:22

16 A. Yeah.

17 Q. Thank you.

18 A. Well, the natural recharge was considered
19 to be the same for all those long-term average --

20 Q. And is that -- I'm sorry. Is that 13:41:31
21 60,000 --

22 A. That's 60,000 acre feet which would be
23 in the third column of Exhibit 93.

24 And then from interpretation of applied
25 water and return flows for agricultural land uses 13:41:49

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1 as discussed yesterday I think at great length, but
2 certainly earlier in this overall testimony, and
3 the amounts of water that would ultimately derive
4 from, again, referring back to the second subcolumn,
5 51.9 percent of the land use being dedicated to 13:42:10
6 agriculture, then return flows would be expected to
7 be from the ultimate computed sustainable or safe
8 yield almost 10,700 acre feet per year.

9 And for the blend of sewerred and
10 non-sewerred municipal-type land uses in the basin, 13:42:36
11 the return flows from those would be expected to be
12 a little over 11,000 acre feet per year. Return
13 flows from operation of wastewater treatment plants
14 is a rounded off number of high 400s but we used
15 500 acre feet per year. 13:43:00

16 So for the 1995 to '99 time period we
17 would in effect compute, if we could refer back
18 one exhibit to '92, that that broad double arrow
19 pointing up in the middle of the figure that's
20 called "Sustainable Yield (SY)" would be 82,300 13:43:23
21 acre feet per year and divided 51 --

22 MR. DUNN: Counsel, with your agreement
23 I'd like to adjust the phone. And we'll interrupt
24 Mr. Scalmanini only because the phone is --

25 MS. SCHADT: It's on zero now. 13:43:52

1 THE WITNESS: It's on zero.

2 MR. DUNN: Thank you.

3 MS. SCHADT: Okay.

4 THE WITNESS: And so with -- in that

5 time period 51.9 percent of the land dedicated to 13:44:00

6 agriculture and 48.1 percent of the land dedicated

7 to municipal-type uses, as was the case during that

8 five-year time period on average, then the natural

9 recharge of 60,000 acre feet per year would support

10 with return flows attributable to those fractional 13:44:20

11 uses of water a sustainable or safe yield of 82,300

12 acre feet per year.

13 It works out that -- for practical

14 purposes that for the other time periods

15 investigated, you know, for computation of native 13:44:41

16 sustainable yield under fairly recent conditions,

17 that for the ten-year period from '96 to 2005, that

18 while the fractional uses of land for ag and M&I are

19 slightly different, as was also the case in 2005,

20 they're all sufficiently close to the same. 13:45:05

21 That with natural recharge the return

22 flows from the agricultural portion of safe yield

23 use and the M&I portion of safe yield use are close

24 enough to the same as they were for the 1995 to 1999

25 time period that the native sustainable yield would 13:45:25

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1 work out to be for all practical purposes the same.

2 So 82,300 acre feet per year would be the
3 computed native safe yield for all the conditions
4 that we examined from the mid 1990s to "the
5 present"; the present in that case being at the
6 end of the period of time that was studied which
7 was through 2005.

13:45:42

8 BY MR. DUNN:

9 Q. Mr. Scalmanini, after you estimated the
10 native safe yield for the basin as 82,300 acre feet
11 annually, did you also estimate the supplemental
12 safe yield for the basin?

13:46:04

13 A. Yes.

14 Q. Could I direct your attention, please, to
15 Exhibit No. 95.

13:46:15

16 (Whereupon, Scalmanini Exhibit 95 was
17 introduced for identification.)

18 THE WITNESS: Sure.

19 BY MR. DUNN:

20 Q. Who prepared -- strike that.
21 Exhibit No. 95 is labeled "Supplemental
22 Safe Yield." Who prepared Exhibit No. 95?

13:46:22

23 A. My office did.

24 Q. What does Exhibit No. 95 show?

25 A. Well, Exhibit 95 shows the same land

13:46:36

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1 use periods as were studied for native safe yield
2 purposes with the exception that we did not spend
3 any time analyzing supplemental yield for an early
4 historical period because there was no supplemental
5 water use in the early historical period. 13:47:02

6 So the 1995 to 1999, 1996 to 2005, and
7 the 2005 single year periods are reflected only
8 in Exhibit 95.

9 And tracking then from left to right,
10 there is first in the second column labeled 13:47:20
11 "Supplemental Water Use (acre feet per year)," a
12 tabulation of how much supplemental water was used
13 on average during those respective time periods by
14 agriculture and by -- or for M&I-type purposes.
15 and as you can see, the total use of supplemental 13:47:43
16 water would be the sum of the two numbers in that
17 column.

18 So, for example, in the '95 to '99 time
19 period, you know, the sum of 19,550 and 48,100 would
20 be 67,650 acre feet per year on average. And that 13:48:05
21 increased with time and the total of supplemental
22 water use by the year 2005 had increased to the sum
23 of the two numbers shown there, or 73,500 acre feet
24 in that year, although the relative mix had changed
25 where close to 20,000 acre feet were used by 13:48:33

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1 agriculture on average in the five-year period prior
2 to 1999, and not quite 10,000 acre feet were used in
3 2005. And the municipal industrial-type uses
4 increased from about 48,000 over the '95 to '99
5 period to 64,000 in 2005.

13:48:57

6 Regardless, then as discussed or described
7 schematically in an earlier exhibit also illustrated
8 in Exhibit 94, which we haven't identified yet,
9 but --

10 Q. Let's do that just for the record.

13:49:17

11 Turning your attention to Exhibit No. 94
12 labeled "Supplemental Safe Yield."

13 (Whereupon, Scalmanini Exhibit 94 was
14 introduced for identification.)

15 BY MR. DUNN:

13:49:26

16 Did you prepare that exhibit?

17 A. Yes.

18 Q. And what does it describe?

19 A. Well, I've described it previously, but
20 what we're trying to do now is put numbers on the
21 amount of recharge on the right-hand side that
22 results from the importation of supplemental water
23 or state water, which is abbreviated "SW," delivered
24 to agriculture and delivered to municipal
25 industrial-type use. And they produce respectively

13:49:31

13:49:51

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1 recharge amounts that go into the groundwater basin.

2 And so the third broad column labeled

3 "Supplemental Recharge (in acre feet per year),"

4 those amounts are listed for the three periods of

5 study and, you know, range from close to 5,000 acre 13:50:14

6 feet of supplemental recharge from the use of

7 imported water by agriculture in the 1995 to '99

8 period, and during the same period about 13,500 acre

9 feet from municipal and industrial-type uses of

10 supplemental water. 13:50:34

11 And agricultural use declined and so

12 the supplemental recharge attributable to ag use

13 declined by 2005 to just less than 2,400 acre feet,

14 and the municipal-type use is increased and so the

15 recharge attributable to that increased in just 13:50:53

16 short of 18,000 acre feet per year.

17 Then in a fashion similar to native yield,

18 the pumping and use of that water for the blend of

19 land uses, which are again reflected in Exhibit 93,

20 you know, the percentage of agricultural land use 13:51:19

21 and the percentage of municipal industrial land use,

22 in those respective periods produces return flows

23 from the use of that supplemental recharge which

24 range for agriculture from about 1600 acre feet

25 per year prior to 1999 down to a little more than 13:51:40

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1 800 acre feet per year in 2005 and increased for
2 municipal-type uses because of the increasing use of
3 supplemental water by municipal users from a little
4 over 5,000 acre feet per year to a little over 7,000
5 acre feet per year. 13:52:00

6 So the supplemental yield that's
7 attributable to the importation of supplemental
8 water from the state water project and recharge that
9 results from that contributes to, and depending on
10 the selected time period, somewhere between about 13:52:18
11 25,000, but the calculated number is 25,300 acre
12 feet per year of additional yield up to about a
13 little more than 28,000, or calculated 28,200 acre
14 feet per year of additional yield resulting from the
15 use of supplemental water. 13:52:37

16 Q. And you're referring now to the column on
17 Exhibit No. 95 on the far right-hand column?

18 A. Yes, I am.

19 Q. Okay. Thank you.

20 Mr. Scalmanini, what number -- or excuse 13:52:48
21 me -- what estimate did you use for agricultural
22 return flows in terms of percentage?

23 A. Well, on a crop-by-crop basis we computed
24 the fractions of return flows, and they ranged for
25 the -- I'll call it collection of crops grown in 13:53:07

1 the valley from 22 to 28 percent. Because of the
2 varying crop mix and using periods of time and
3 things of that type we used an average of 25 percent
4 in the midst of that overall range of return flow
5 rates. 13:53:24

6 Q. And that's the average return flows for
7 all crops; is that correct?

8 A. Yes.

9 Q. And a similar question for the --

10 A. Well, I better back up. It's not an 13:53:31
11 average. It's a selected midpoint amongst the
12 collection of crops. We didn't compute an average
13 among them.

14 Q. And for the estimated municipal return
15 flows in terms of a percentage, how was that 13:53:46
16 calculated?

17 A. Well, that's a bit of an exercise to try
18 to describe. But we spent a fair amount of time --
19 well, the answer to the question is 28.1 percent,
20 but I think you also asked how is that determined. 13:54:02

21 Q. Correct.

22 A. And so that's the part that will take
23 a little while. We spent a fair amount of time
24 looking at service areas of municipal purveyors and
25 what you might call service areas of sewer agencies 13:54:15

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1 that would collect domestic wastewater from
2 typically inside water use; meaning inside the
3 house, and routed to a wastewater treatment plant.

4 And then ultimately -- and we also looked
5 at measured deliveries of water supply to M&I 13:54:34
6 entities, or by M&I entities and/or purveyors, and
7 then metered inflows and outflows at wastewater
8 treatment plants to ultimately conclude that
9 approximately 70 percent of the publicly-served
10 areas in the valley are also served by sewer 13:54:57
11 agencies that would route wastewater to treatment
12 plants.

13 So we analyzed looking at water use
14 records on a month-by-month basis how much water is
15 approximately used inside the house versus how much 13:55:15
16 water is used for landscaping or irrigation purposes
17 outside the house and estimated return flows from
18 the irrigation outside of the house. And in the
19 case of sewerred entities, routed all the inside
20 water used to a sewer and to a wastewater treatment 13:55:31
21 plant from which it was then treated, you know, as
22 ultimately recycled water or treated wastewater.

23 For the non-sewered areas then we
24 considered those to be served by so-called onsite
25 waste treatment systems, individual onsite waste 13:55:51

1 treatment systems.

2 Q. Like a septic tank?

3 A. Yeah. In fact, you took the words out
4 of my mouth. Yeah, basically a septic tank and
5 leach field combination. Which means that assuming 13:56:03
6 outside water use is the same as it is in sewered
7 areas, that a fraction of that water would route as
8 deep percolation back to the water table. But the
9 inside water use instead of being routed to a sewer
10 is routed to a septic tank and in turn flows to a 13:56:17
11 leach field which constantly recharges the ground,
12 or the groundwater.

13 And so based on an interpretation of how
14 much water arrives at wastewater treatment plants,
15 et cetera, and looking at monthly distribution of 13:56:32
16 water use, we concluded that about 45 percent of all
17 water use in the Antelope Valley is used inside the
18 house and about 55 percent is used outside the
19 house.

20 And so in the case of onsite waste 13:56:47
21 disposal systems, we took that 45 percent inside
22 water use, in effect routed it to a septic tank and
23 in turn to a leach field and deep percolated it to
24 the ground.

25 So if you take -- or into the ground. 13:57:00

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1 If you take all of that combined and sort
2 of integrate it with how much goes where, the net
3 fraction of water for the sewerred/non-sewered mix of
4 municipal-type uses in the Antelope Valley produces
5 about 28 -- we used the specific number that we 13:57:23
6 calculated -- 28.1 percent return flow; meaning
7 28.1 percent of the water delivered for municipal
8 purposes, deep percolates as return flow to the
9 groundwater basin.

10 Q. And did -- 13:57:41

11 MR. ZIMMER: Hold on just a second.
12 Objection. That goes beyond the scope of his
13 deposition opinions.

14 It also incorporates the wastewater
15 recycled water issue that we were told would not be 13:57:52
16 testified to. We were prevented from taking
17 Mr. Leffler's deposition on those issues. And
18 motion to strike. And potentially cumulative
19 if Mr. Leffler is going to testify or attempt to
20 testify on those issues. 13:58:13

21 BY MR. DUNN:

22 Q. Mr. Scalmanini, do you have any return
23 flow estimates for treatment plant operations?

24 A. Yes.

25 Q. What number did you use for your estimate? 13:58:21

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1 A. We used 500 acre feet per year.

2 MR. ZIMMER: Same objections.

3 MR. DUNN: Did you -- I'm sorry. Did

4 you --

5 MR. ZIMMER: I said "Same objections." 13:58:32

6 MR. DUNN: Okay.

7 BY MR. DUNN:

8 Q. And how did you arrive at the 500 acre

9 foot per year number?

10 A. Basically a balance of how much water was 13:58:44

11 metered into and out of wastewater treatment plants

12 and delivered to those environmental uses that we

13 summarized in an exhibit yesterday, and there was

14 a net, if you will, of deep percolation through

15 treatment plant operations that in aggregate added 13:59:08

16 up to -- if I remember right, it was like 485 but we

17 rounded off to 500 acre feet per year.

18 MR. ZIMMER: Same objections. Motion to

19 strike.

20 BY MR. DUNN: 13:59:19

21 Q. Mr. Scalmanini, using the estimates of

22 both the native and supplemental safe yields, did

23 you arrive at a total safe yield for the basin

24 for each of the land use periods described in the

25 earlier exhibit? 14:00:21

1 A. Yes.

2 Q. If I could direct your attention to
3 the next exhibit marked in order, premarked as
4 Exhibit No. 96.

5 (Whereupon, Scalmanini Exhibit 96 was 14:00:28
6 introduced for identification.)

7 BY MR. DUNN:

8 Q. Do you have Exhibit No. 96 before you?

9 A. Yes.

10 Q. This exhibit is labeled "Total Safe 14:00:33
11 Yield." Did you prepare this exhibit?

12 A. Yes.

13 Q. Does this table in Exhibit No. 96
14 summarize your total safe yield calculations?

15 A. Yes. 14:00:48

16 Q. Would you please explain the total safe
17 yield for each time period shown.

18 A. Sure. As I think I introduced with regard
19 to the land use periods that we picked, we looked
20 at what we called an earlier historic period just 14:01:02
21 for information when the basin was predominated
22 by agricultural land use and computed it in an
23 approximate or estimated native safe yield of 80,000
24 acre feet per year for those conditions. There was
25 no supplemental water use in that era. So the total 14:01:23

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1 yield of the basin would be equal to its native
2 yield, or about 80,000 acre feet per year.

3 In the subsequent time periods; you know,
4 closer to the present but all influenced by the use
5 of supplemental water, as I think we went through 14:01:40
6 yesterday, supplemental water was introduced from
7 the state water project beginning in the 1970s. So
8 everything from the mid '90s to the present is --
9 includes the influence of supplemental water from
10 the state water project. 14:01:58

11 So in simple summary, for each of those
12 three time periods; from '95 to 99, from '96 to
13 2005, and for the single year 2005, the total safe
14 yield of the basin would be the combination of its
15 native yield and supplemental yield. So using '95 14:02:14
16 to '99, for example, the native yield of 82,300
17 and the supplemental yield of 25,300 added together
18 would produce a total safe yield of 107,600 acre
19 feet per year.

20 If you chose the ten-year period on 14:02:36
21 average leading up to the end of this analysis, then
22 the combination of 82,300 of native yield and 27,500
23 of supplemental yield would lead to a total yield of
24 109,800, or close to 110,000.

25 And for the single year 2005 at the end 14:02:58

1 of the overall analysis the combination of, again,
2 82,300 acre feet per year of native yield and 28,200
3 acre feet of supplemental yield would indicate or
4 result in a calculated total safe yield of 110,500
5 acre feet per year. 14:03:21

6 MR. KUHS: I object and move to strike
7 Mr. Scalmanini's last answer on relevance grounds.

8 MR. ZIMMER: Join.

9 BY MR. DUNN:

10 Q. Mr. Scalmanini, based on the experience 14:03:46
11 that you have in analyzing groundwater basins in
12 California, together with your education and
13 training and the work that you have done in this
14 case and the work that you have collaborated with
15 others, and using the work by both Mr. Durbin and 14:04:07
16 Mr. Wildermuth, did you reach any opinions about
17 the safe yield of the Antelope Valley groundwater
18 basin or the Antelope Valley area of adjudication?

19 MR. JOYCE: Asked and answered.

20 MR. KUHS: Vague as to time. 14:04:26

21 THE WITNESS: Yes.

22 BY MR. DUNN:

23 Q. I'd like --

24 A. And I think they're summarized in
25 Exhibit 96. So my opinion would be that the 14:04:32

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1 CERTIFICATE OF REPORTER

2
3 I, JANIS L. JENNINGS, a Certified
4 Shorthand Reporter of the State of California, do
5 hereby certify:

6 That the foregoing proceedings were taken
7 before me at the time and place herein set forth;
8 that any witnesses in the foregoing proceedings,
9 prior to testifying, were placed under oath; that a
10 verbatim record of the proceedings was made by me
11 using machine shorthand which was thereafter
12 transcribed under my direction; further, that the
13 foregoing is an accurate transcription thereof.

14 I further certify that I am neither
15 financially interested in the action nor a relative
16 or employee of any attorney of any of the parties.

17 IN WITNESS WHEREOF, I have this date
18 subscribed my name.

19
20 Dated: January 25, 2011
21
22
23
24

25 _____
JANIS JENNINGS CSR NO. 3942, CLR, CRP

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