

EXHIBIT A

SUPERIOR COURT OF THE STATE OF CALIFORNIA
COUNTY OF SANTA CLARA

ANTELOPE VALLEY)	Judicial Council
GROUNDWATER CASES)	Coordination Proceeding
)	No. 4408
)	
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VIDEOTAPE EXAMINATION AND DEPOSITION OF
 N. THOMAS SHEAHAN
 Volume II
 Pasadena, California
 Tuesday, October 28, 2008

Reported by:
 Janet Bumstead
 CSR No. 5817

1 And I have not made a separate evaluation of that. I
2 have simply assumed that that was correct for the
3 purpose of doing other evaluations. So I don't know how
4 much pumping is going on.

5 Q Okay. And have you been to the Anaverde site?

6 A No, I have not been to the Anaverde site. If
7 you're referring to the specific property, no.

8 Q If we wanted to conduct field work that would
9 substantiate what kinds of impacts existed between
10 pumping in the Anaverde Creek Watershed and the area
11 north of the fault to determine if, in fact, there is a
12 hydraulic connection, if I had hired you to do that
13 work, is there any work you would have done other than
14 the methodology that you have employed in the March 2008
15 report?

16 MR. ZIMMER: That assumes facts, assumes that
17 he could do it now without knowing the pumping in the
18 future.

19 MS. McKEITH: I'm interested -

20 MR. ZIMMER: Misunderstanding of the analysis
21 or misstating of the analysis.

22 BY MS. McKEITH:

23 Q Well I am interested in what perceptible -- the
24 basins, they're either hydraulically connected or
25 they're not. And if they are hydraulically connected,

1 they are hydraulically connected today and they'll be
2 hydraulically connected tomorrow. And if they are not
3 hydraulically connected, isn't it correct that they
4 would not be hydraulically connected today and they
5 would not be hydraulically connected tomorrow?

6 A I think that's a fair assumption.

7 Q Okay. So just focusing on today, since the
8 court today as part of the Phase 2 trial has to make a
9 determination whether or not these are in fact separate
10 basins, and you describe your ability to do that based
11 upon perceptible effects on one basin versus the other
12 basin. What work would you undertake to make that
13 determination, if any, other than the methodology that
14 you've employed in your March 2008 report that's
15 incorporated into the October 2008 report?

16 A Well obviously I have not been asked to scope
17 out that work prior to. You're asking me now so I'm
18 doing this as we sit here.

19 Q I understand.

20 A But there are some things that occur to me that
21 I would be able to do that would allow me to provide
22 some hard field data that would help to determine one
23 way or the other whether or not that hydrogeologic
24 connection occurred. And if you'd like I can describe
25 some of that.

1 Q I'd appreciate that.

2 A All right. As I've indicated before, there's
3 an alluvial channel that follows Anaverde Creek that's
4 hydraulically connected and geologically connected from
5 within the Anaverde Watershed to outside of the Anaverde
6 Watershed into the main part of the Antelope Valley
7 Adjudication Area.

8 Q I understand that's your opinion.

9 MR. ZIMMER: If you could just let him finish
10 the answer without interjecting your own comments.

11 MS. McKEITH: Sorry.

12 THE WITNESS: And I need to respond, it's more
13 than my opinion. It's Mr. Lambie's opinion because it
14 shows up on Mr. Lambie's figure that present
15 Mr. Dibblee's map which shows that continuum of
16 alluvium.

17 MS. McKEITH: And we will --

18 THE WITNESS: It's not just my opinion. It's
19 that information so --

20 MS. McKEITH: I understand.

21 THE WITNESS: -- we could talk about that if
22 you'd like.

23 MR. ZIMMER: Do not interrupt the witness
24 please.

25 MS. McKEITH: Thank you, Mr. Zimmer.

1 BY MS. MCKEITH:

2 Q He's right. I apologize for interrupting you.
3 And we want to make sure we have the clearest possible
4 record. I know that we will be talking about that issue
5 at some point further down the road in terms of the
6 exhibit that you are referring to.

7 A Well you keep asking me what I would do --

8 Q Yeah.

9 A -- to demonstrate that. So I would select that
10 alluvial channel, if you will. I would do test drilling
11 to further define its geometry so that I would have a
12 better understanding of the cross-sectional area and the
13 materials in that. I would install piezometers in the
14 general alignment of the alluvial channel up to and, if
15 possible, just beyond where that channel discharges from
16 the watershed of the Anaverde Creek Watershed.

17 And I would monitor water levels in those
18 piezometers to define the surface, if you will, of the
19 water table so that I could characterize the gradient in
20 terms of the magnitude of the hydraulic gradient and the
21 direction of the hydraulic gradient. I would also take
22 samples of the material for additional testing, either
23 laboratory testing or perhaps field testing, to further
24 define hydraulic characteristics such as hydraulic
25 conductivity of those materials to support the

1 assessment of hydraulic conductivity that I had done
2 with previous data.

3 And I would make an assessment based on those
4 data, which incidentally give me the three factors for
5 the Darcy equation, make an assessment as to how much
6 flow is going out of the area with no pumping
7 conditions. That would allow me to determine if there
8 is flowing -- well I'm sorry. Let me restate that.

9 That would allow me to determine if there is
10 flow leaving the site or not. If I have a gradient and
11 a flow direction leaving the site those data will show
12 me that. If there is no flow leaving the site those
13 data would show me that.

14 I would also then attempt to pump -- I would
15 consult a well and pump the alluvial aquifer some
16 distance up gradient from where it leaves the site to
17 see if that pumping would change the gradient between
18 the pumping well and where it discharges from the site.
19 I would expect the change in gradient to be a lessening
20 of the gradient, if you will, a flattening of the
21 gradient which would in turn reduce the discharge of
22 water going out through that subterranean channel
23 through that alluvial channel.

24 And if that testing did in fact confirm that it
25 reduced the flow that was going out, that would provide

1 evidence that would support the opinion that pumping in
2 the Anaverde Valley Watershed has an impact on the
3 amount of flow going out to the Anaverde -- I'm sorry,
4 to the Antelope Valley Adjudication Area. And if it
5 reduces that flow, that would be a significant impact
6 and certainly a perceptible impact on the Antelope
7 Valley Adjudication Area so --

8 Q Is there anything else that you would want to
9 do with in the field to confirm or refute the
10 conclusions that have been reached in your report?

11 A There probably would be but I don't -- you know
12 I wouldn't pretend to be able to sit here and tell you
13 each and every one of them in just a few minutes. It
14 wouldn't be fair to you. If you were my client, it
15 would only be fair if I were to spend some time thinking
16 about it and maybe consulting with others in my firm.
17 But I think the answer is yes, there probably would be.

18 Q And in the absence of that type of hard data do
19 you -- is it speculative to try to determine what the
20 flow is across an alluvial channel if such a channel in
21 fact exists?

22 A Absolutely not. Speculative is in my mind
23 guessing. What hydrogeologists do consistently is to
24 use whatever data are available to make their best
25 estimates. And that includes calculations. That

1 includes estimates of characteristics. It includes, you
2 know, a number of things that are incorporated as part
3 of professional judgment in our profession. It's -- to
4 call that speculation is diminutizing it I think beyond
5 acceptability. So no, the answer is it's not
6 speculative.

7 Q You know I think that's fair, a fair response.
8 So let me maybe put it this way so I can get a sense of
9 just how much we know at this point in time about the
10 alluvial channel and the flow.

11 You know when we worked together either on the
12 same side or against each other, that's often been in
13 the context of groundwater hydrology when it involves
14 toxic materials, right?

15 A Not always.

16 Q But sometimes. We've done some work together,
17 either you as my expert or on the other side, where we
18 were dealing with groundwater hydrology and the movement
19 of hazardous material through groundwater?

20 A Yes.

21 Q Okay. And is it frequent that we employ a
22 model, something like a MODFLOW model, in order to try
23 to project what is occurring in the groundwater beneath
24 the sites?

25 MR. ZIMMER: Just for sake of clarity, Counsel,

EXHIBIT B

SUPERIOR COURT OF THE STATE OF CALIFORNIA
FOR THE COUNTY OF LOS ANGELES, CENTRAL DISTRICT

Coordination Proceeding, Special)
 Title (Rule 1550(b)))
)
)
 ANTELOPE VALLEY GROUNDWATER)
 CASES)
)Judicial Council
)Coordination Proceeding
)No. 4408
)
)Santa Clara Court Case
)No.: 1-05-CV-049053
)

EXAMINATION OF N. THOMAS SHEAHAN
Pasadena, California
Wednesday, October 29, 2008

Reported by: Dana Christensen
CSR No. 11251

HAHN & BOWERSOCK (800) 660-3187 FAX (714) 662-1398
151 KALMUS DRIVE, SUITE L1 COSTA MESA, CA 92626

1 the witness now or am I?

2 MR. ZIMMER: I was trying to speed it up. He has a
3 slide on that.

4 MS. McKEITH: I understand you are trying to speed it
5 up, but frankly, Mr. Zimmer, in trying to speed it up I
6 think you cause a lot of delay by having a lot of one- or
7 two-minute speaking objections, so let me just ask my
8 questions of Mr. Sheahan who often understands my
9 questions even though you object, he can answer them or
10 correct my mischaracterizations or misunderstanding; that
11 might actually speed it along as opposed to your
12 constantly interrupting because your real goal is to make
13 sure I'm here as long as possible and have as much trouble
14 as I can.

15 THE WITNESS: I recall, in the response, I do have a
16 diagram that might help in explaining some of the basic
17 factors if you would like to see it and use it.

18 BY MS. McKEITH:

19 Q What diagram is that, Mr. Sheahan?

20 A Figure 4 from my mountain-front recharge report
21 from March of 2008.

22 MR. ZIMMER: Perhaps you can hold that up so the
23 camera can get a viewing of that.

24 BY MS. McKEITH:

25 Q Now, as it relates to the Anaverde Creek

1 adjudication area and in that area be available for
2 infiltration into the ground and recharge of the
3 Anaverde -- of the Antelope Valley groundwater basin.

4 Q So in the areas where we have saturation, the
5 runoff does not percolate into the groundwater; is that
6 your understanding?

7 A Generally that's true, yes. If there's no room
8 in the soil for additional water, then there's no way for
9 the water to get into the soil.

10 Q So that would be water that did not end up in
11 the groundwater but it would, through surface waters, flow
12 out into the larger Antelope Valley; is that correct?

13 A Yes.

14 MR. ZIMMER: Vague as to not end up as groundwater.
15 It will end up as groundwater somewhere.

16 MS. McKEITH: Yes, but I think the witness
17 understands that I'm talking about the Anaverde Creek
18 watershed, not somewhere, wherever somewhere is.

19 THE WITNESS: I need to embellish my answer so we
20 understand. The State of California considers the water
21 that flows in the subterranean channels beneath surface
22 creeks as surface water. That is groundwater but it may
23 be that some of the runoff from the mountain-front area
24 that comes down the creek infiltrates into the
25 subterranean channels beneath the creek and is flowing

1 watershed, how have you concluded that surface water
2 runoff penetrates into the groundwater basin or alluvium
3 basin of that watershed?

4 A If I may, we have to different factors in the
5 mountain-front area. We have the runoff factor, which is
6 precipitation that doesn't infiltrate into the ground in
7 the mountain-front area but instead runs off, and we have
8 groundwater recharge, which is precipitation that does
9 infiltrate into the soil.

10 And I'm sorry, your question asks me about the
11 infiltration of the runoff, which I just explained is the
12 portion that does not infiltrate. If I could explain, I
13 could characterize it.

14 Q What happens to the runoff?

15 A The runoff runs off. It runs as surface water
16 off the mountain-front area into the lower areas down
17 gradient from the mountain area.

18 Q What occurs with the surface runoff at that
19 point on average with the watershed?

20 A In Anaverde Creek watershed, I don't know with
21 regard to each and every molecule that it becomes
22 available for infiltration into the soil if there is
23 adequate storage space in the soil. If the soil is
24 already fully saturated, then it would run off through
25 Anaverde Creek and out into the Antelope Valley

1 along with the creek but in the subsurface. Now, that is
2 groundwater as far as I'm concerned. It's groundwater but
3 also considered surface water and many times it is the
4 same water that was the surface water further up gradient
5 in the creek but just infiltrated into the ground and in
6 some cases comes back out of the subterranean channel and
7 flows as surface water.

8 BY MS. McKEITH:

9 Q Have you undertaken any tests to determine if
10 there's a subterranean channel on the Anaverde Creek
11 watershed?

12 A What did you mean by "tests"?

13 Q Have you undertaken any -- have you undertaken
14 any physical tests in the field to determine whether or
15 not there's a subterranean stream?

16 MR. ZIMMER: Assuming facts.

17 BY MS. McKEITH:

18 Q Yes or no. Have you done any physical work?

19 A No. You've asked me many times before and I've
20 told you I've not been on the property.

21 Q Has the Department of Water Resources to your
22 knowledge made a determination as to the Anaverde Creek
23 watershed that there's a subsurface stream as you've just
24 described it on this site?

25 I understand your general concept about what you

1 Key Findings.
 2 A All right. I have that open.
 3 Q And the third bullet point, can you read that
 4 statement, please, sir?
 5 A You want me to read that third bullet. It says
 6 "The geochemistry of the groundwater in the Anaverde Creek
 7 Basin is distinctly different from that in the Antelope
 8 Valley Basin. The former is calcium dominated and the
 9 latter is sodium dominated."
 10 Q Do you agree or disagree with this conclusion,
 11 and if you disagree can you cite to what facts you rely on
 12 in that disagreement?
 13 A I believe I can answer your question but I need
 14 to refer to a figure in Mr. Lambie's report that may or
 15 may not be in this document.
 16 Q I believe you may be looking for Exhibit 18.
 17 A I have that, yes.
 18 Q I did not want to presume but I was --
 19 A You are correct. I have looked for and found
 20 Exhibit 18, and I believe you would like me to
 21 characterize what that is.
 22 Q I would like to know the facts upon which you
 23 disagree with Mr. Lambie's conclusion to the extent you
 24 do. I don't know whether you agree or disagree; maybe you
 25 can let me know that first. And if you do disagree, let

1 the files that were produced and copied in Mr. Lambie's
 2 deposition?
 3 A No.
 4 Q So your attorney did not provide you with
 5 that?
 6 A No.
 7 MR. ZIMMER: Assumes facts the attorney has them.
 8 MS. McKEITH: Well, Counsel, you were at the
 9 deposition. Documents were provided to the attorneys who
 10 were there. Actually you were on the phone.
 11 MR. ZIMMER: Right. I think I got on the phone and
 12 was not provided any documents.
 13 MS. McKEITH: You know as well as I do how to obtain
 14 documents that were provided at depositions where you do
 15 not appear in person.
 16 BY MS. McKEITH:
 17 Q In the fifth bullet on page 12 under Summary of
 18 Key Findings --
 19 A I see that.
 20 Q Can you read that, please, Mr. Sheahan?
 21 A It says "Large volume extraction in the Antelope
 22 Valley basin for the past 40 years has not drawn down the
 23 aquifer in the Anaverde Creek basin."
 24 Q Do you agree or disagree with that statement,
 25 and to the extent that you disagree can you cite the facts

1 me know which facts you rely on.
 2 A Let me say and show for the record, this is
 3 Exhibit 18 called Groundwater Chemistry of Anaverde Creek
 4 and Antelope Valley basins. This is the only information
 5 I have seen on the groundwater chemistry of the Anaverde
 6 Creek area. Again, it refers to chemistry of Anaverde
 7 Creek; I believe it's referring to the groundwater
 8 chemistry. The explanation shows green dots as Anaverde
 9 basin. We still have the problem with what that means,
 10 but for this purpose I understand that to be referring to
 11 the groundwater within the Anaverde Creek watershed, so
 12 those are the green dots and it shows squares called
 13 Antelope Valley, which I understand to be groundwater from
 14 wells in the main portion of the Antelope Valley
 15 groundwater basin, and I believe, if I recall the text,
 16 these are near the Palmdale area. I'm not absolutely sure
 17 of that.
 18 So based on this, the plotted data, assuming
 19 they are plotted right, I see a difference between the
 20 plots for the Anaverde basin data and the data plotted for
 21 Antelope Valley, so based on that I have no disagreement
 22 with the statement, but other than that I have made no
 23 other evaluation of the geochemistry in this area.
 24 I will give you this back.
 25 Q Mr. Sheahan, were you provided with a copy of

1 that you rely on?
 2 A I don't have any reason to disagree with it but
 3 I need to point out that I don't fully understand it
 4 because we still have never defined the Anaverde Creek
 5 basin, so I don't know what it's referring to specifically
 6 so I hesitate to say that I agree or disagree, but I have
 7 no reason to disagree with it because it's not clear.
 8 MS. McKEITH: Now I really do want to go to the
 9 bathroom, Counsel. I will be completing my deposition
 10 this afternoon before 5:30 so I would appreciate the
 11 courtesy of a short break so I can go through my notes and
 12 make sure I've covered everything for the deposition. Do
 13 you have any objection?
 14 MR. ZIMMER: No.
 15 MS. McKEITH: Thank you, sir.
 16 VIDEOGRAPHER STAMBAUGH: Going off the record. The
 17 time is 4:31.
 18 (Break taken from 4:31 p.m. to 4:42 p.m.)
 19 VIDEOGRAPHER STAMBAUGH: We are now back on the
 20 record. The time is 4:42.
 21 BY MS. McKEITH:
 22 Q Mr. Sheahan, other than the pending litigation
 23 have you ever testified in court concerning the hydraulic
 24 connection between two groundwater basins?
 25 A I believe the answer is yes, I have.