SUPERIOR COURT FOR THE STATE OF CALIFORNIA
COUNTY OF LOS ANGELES

Coordination Proceeding Special Title (Rule 1550(b))	
ANTELOPE VALLEY GROUNDWATER CASES	Judicial Council Coordination Proceeding No. 4408
RICHARD A. WOOD, an individual, on behalf of himself and all others similarly situated,	Lead Case No. BC325201
Plaintiff,	No. BC391869
vs.	
LOS ANGELES COUNTY WATERWORKS DISTRICT NO. 40; et al.,	
Defendants.	

DEPOSITION OF DENNIS E. WILLIAMS, Ph.D.
Los Angeles, California
Thursday, January 16, 2014
Volume I

Reported by:
ANNE D. BEVERIDGE
CSR No. 10077
Job No. 1791460
PAGES 1 - 234

Los Angeles, California, Thursday, January 16, 2014

10:10 a.m.

DENNIS E. WILLIAMS, Ph.D.,

having been administered an oath, was examined and testified as follows:

EXAMINATION

BY MR. McLACHLAN:

Q All right. Could you please state and spell your full name for the record.

A Dennis Williams, D-e-n-n-i-s W-i-l-l-i-a-m-s.

Q I understand, am I correct, you have a Ph.D.?

A Yes.

Q So I can refer to you as Dr. Williams?

A That's fine, yes.

Q All right. And you understand that you are being produced today as an expert witness in the Antelope Valley groundwater litigation matters?

A Yes.

Q Okay. Approximately how many times have you been deposed?

A Probably 30.

Q And have you been deposed in the last year?

A Yes.

Q Do you feel sufficiently familiar with the standard admonitions that I may dispense with those, or would you like me to go through those?

A I think you can dispense with them.

Q Okay. At any point in time during the course of the deposition that it becomes an issue, we can deal with those admonitions or if you have questions, by all means, you can address them to me or your counsel.

Do I understand correctly that Mr. Dunn is representing you here today?

A Yes.

Q Okay. And what is your understanding as to whom you are representing by way of expert testimony in this litigation?

A Well, L.A. County Waterworks 40, and the clients of Mr. Dunn's firm.

Q Who else besides Waterworks District 40 have you been retained by?

A I'm retained by Best Best & Krieger.

Q Okay. And you mentioned other clients of Best Best & Krieger. Do you have an understanding as to whether or not you have been retained to represent anyone other than Los Angeles County Waterworks District No. 40?

A I think there is others. I don't recall exactly.

Q You don't recall any names of the other entities?
A No.
Q So I'll mark, as Exhibit 1, the deposition notice, which you have in the pocket of your binder.
(Exhibit 1 was marked for identification by the court reporter and is attached hereto.)
BY MR. McLACHLAN:
Q I'm not sure if you'll immediately need it, but we'll start there. I think since it was handed to me just as I walked into the room, that we may logically start with this binder that you presented to us and cover some basics on that, and then we'll get into some substantive questions.
Before we get into the binder, I would like to generally ask you, when were you first retained to do work for Waterworks District 40 or any of these other defendant water supplier entities in conjunction with this litigation?
A In approximately 2008, Phase 2 trial.
Q And at that time what were you tasked to do?
A I was asked to look at the hydraulic -- the geology, hydrology and basically the hydraulic continuity between the different regions in the Antelope Valley.
Q And did you perform that work?

A I did. I gave a deposition in 2008, but I was ready to testify at the Phase 2 trial, but Judge Komar decided he didn't want to hear the numbers and so on.

Q Okay. Subsequent to the work you just described, were you tasked by Best Best & Krieger to do any further work in this matter?

A Yes. I was involved in looking at the -- the expert report which originally was the problem statement and involved in looking at -- reviewing that material and then also developing a groundwater flow model.

Q All right. Could you give me a general time frame for the work you just described?

A Well, all of this was probably in the last maybe three years or so.

Q All right. So the work that you did on the -- I believe you referred to it as the problem statement?

A Yes.

Q And I have what I believe to be the final draft of it.

A Right.

Q That was prepared by a group that it looks like was referred to as the technical committee?

A Correct.

Q Okay. And were you a member of the technical committee?

A No, I was not.

Q All right. So then could you describe a little more in detail what it was that you did relative to the problem statement report that was generated by the technical committee?

A Well, I -- I was just asked by the attorneys to look at it and just review it and provide just a -- you know, be familiar with the materials that were going into it.

Q Okay. So were you asked to make any comments to it or was it just presented to you for your own edification?

A Well, it was just -- there was no official comments made.

Q I see. Okay. And did you have any input into any of the various drafts of the problem statement during its development?

A No.

Q Okay. During the work of the technical committee in developing this problem statement, were you interfacing with any of the members of the technical committee about this project?

A Yes.

Q Okay. Who?

A Joe Scalmanini primarily.

Q Okay. And on what issues, if you recall, were you interfacing with Joe Scalmanini in reference to the problem statement?

A Pretty much the work that had to do with the geology, the hydrology and some of the understanding of the safe yield concepts.

Q Okay. So subsequent to your review of the problem statement report generated by the technical committee, have you performed any other work related to this litigation?

A Yes.

Q All right. If you could, sequentially, going from back in time to the current time, I would like to walk through that. So after your review of the technical committee report, what project would come next in time?

A Well, we were asked to look at the groundwater model that was developed of the area by the United States Geological Survey and we were -- met with the United States Geological Survey and the others after they did an update, which I call Modification 1 or Mod 1.

And then we were asked to then recalibrate this model, which I call Mod 2, basically to the Phase 3 value of the total sustainable yield of

110,000 acre-feet a year.

Q Okay. I appreciate the answer. I'm going to go through and follow up. I have a few follow-up questions on that answer.

A Sure.

Q The first one will be who was it that asked you to do that work?

A Best Best & Krieger asked me to do the work.

Q And was that Mr. Dunn or somebody else at his office?

A Mr. Dunn.

Q Okay. And could you give me a starting time frame as to when you commenced that work?

A I have, in my documents that I brought here, invoices that have that exactly, but if I could switch to one of the tabs in my deposition folder --

Q By all means. Go ahead.

A -- which is called groundwater model. This model -- we -- we met with them prior to that -- met with the U.S. Geological Survey prior to that.

Q I'm sorry. Prior to what?

A Well -- well, prior to now. In 2012 we met with them and discussed their first modification, and then we were tasked with looking at the -- trying to recalibrate it because the -- we felt that the pumping that the U.S.

Geological Survey model had was too low compared to what we thought and Mr. Scalmanini's firm thought was too low. So we -- that work began in approximately 2012.

Q Okay. And when you -- you have used, several times in your answers, the word "we." Could you elaborate on who you are referring to. If it's somebody other than staff people at Geoscience, I would like you to elaborate on who the "we" is.

A Certainly. We generally refers to myself and my staff at Geoscience, but with this precalibration, we were working closely with Ludorff & Scalmanini, consulting engineers, and they redid the pumping distribution and the return flows that we used in the Mod 2 model.

Q Okay. So they redid which components? The pumping?

A The pumping, distribution, and the return flows.

Q All right. So let's -- do you remember, in 2012, whether it was the first half of the year that you met with the USGS initially or was it in the second half of the year?

A I would have to refer to my invoices, probably, to do that.

Q Could you pull them?

A Yeah. Give me a minute.

Q Sure.
A There are in a binder labeled "Invoices."
Q Very good. Organization is important.
A Let me thumb through here a minute. There is -- in June of 2012 I had discussions with Joe Scalmanini regarding Antelope Valley modeling -- I'm sorry. In May 2012 -- in preparation for a meeting with -- internal meetings with the U.S. Geological Survey. We met in May 2012.
Q So you met with the USGS in the month of May 2012; is that right?
A Yes, yes.
Q Okay. And that initial meeting with the USGS relative to this project you have previously described, who was in attendance?
A Oh, I don't remember, other than with the U.S. Geological Survey. I think Tracy Ishikawa and Adam -- I forget his name -- and people from L.A. County and the attorneys, and I'm not sure if Mr. Scalmanini was in there or not or on the phone.
Q Okay. Which attorneys were present?
A I think Mr. Dunn and I'm not sure who else.
Q All right. And could you describe for me, generally, the purpose of that meeting?
A The purpose of the meeting was there was an

original model developed in 2003, the U.S. Geological Survey model, and this model was refined by the USGS, and we wanted to have a briefing of the refinement of the model, and that was really the purpose of the meeting. So they made a presentation to us about what they did, what their results were.

Q Okay. Do you know who set that meeting up?

A I don't know.

Q Was it Geoscience?

A We didn't set it up. I think it was set up jointly by probably Los Angeles County and Best Best & Krieger.

Q All right. And approximately how long did that meeting last?

A Maybe a couple of hours, maybe.

Q Did the USGS provide you folks with any information during that meeting that you didn't already have going into it? I mean, by information, something other than the verbal communications, such as data, electronic copies of the model, handouts, anything of that nature?

A I'm not sure whether we got any handouts at the time but, subsequently, we received electronic copies of the model files.

Q So going into the meeting, you didn't have access

to the electronic copies of the model files?

A Did not.

Q Okay. But you had some reports on the outputs of the model?

A We were presented with their results at that meeting. We didn't have anything prior to that on this modification, which I call Mod 1.

Q Okay. How long after the meeting did you receive the USGS's electronic copy of the model?

A I'm not sure exactly.

Q Was it in 2012?

A Yes, I believe. Let me see if it's recorded in here. Yes. We have -- I have a note here in the September 2012 invoice that prepare model data to rerun the USGS model and review the model parameters set up by USGS, set up model calibration, analyze the results for calibration, and so on.

Q All right. Stepping back up a little bit out of the detail, other than the work you described over the last five or ten minutes relative to the recalibration of the USGS model in general and all that that entailed, have you been tasked with any other projects related to this litigation?

A No. My work was looking at the technical committee's work, basically, which led up to the expert

report, taking the U.S. Geological Survey model and recalibrating the model and then running a scenario with 110,000 total pumping, and then preparing for this Phase V.

Q All right. That is helpful. Then let's go back to the details, a little bit of the timeline of the work. Between May of 2012 when the USGS meeting occurred and September of 2012 when you received the electronic copy of the model, could you describe, generally, any work that you did in that period of time?

A I had -- I was in close contact with Joe Scalmanini on the modeling and the preparation of the model. As I said, we worked closely with his firm regarding the reanalysis of the pumping that was used and the return flows which were used as input to the model.

And then various conference calls. I think there was a conference call in June with the Antelope Valley users group. I was involved in that. There was more discussions with Mr. Scalmanini and then a lot of just model preparation, maps and input data, calibrating the model. That went on in August. And pretty much the same for September, which was a lot of the model calibration work.

Q And so all this work was done before you actually

had the electronic --

A No, no. We had the electronic files.

Q Okay. Well, I must have misunderstood. I thought earlier you had mentioned that you received the electronic version of the USGS model in September 2012?

A Maybe I --

Q Let's just clarify that.

A Just let me back -- oh, I'm sorry. Here is one note in a July invoice that says for the period June, model input files for the USGS model calibration were provided by the USGS.

Q Okay. So does that mean you received the model in June --

A Yes.

Q -- sometime?

A It would be in June, yes. Let me go back, just to double-check here, see what happened in May. I think that is it.

Q All right. And the billing file that you have in front of you, is it current as of the last billing month?

A It's through December.

Q Okay. You would not have billed any time for the month of January yet; is that correct?

A Not yet.

Q And through the end of December -- I see the phase sheet -- it gives us a total of total billed. What is that number?

A Between August 2008 and January 2014 is $540,241.

Q Do you have any understanding as to why you were not involved in the technical committee?

A No.

Q Do you know whether any of the members of the technical committee used USGS model in its own form or any other derivation thereof in their work?

A I don't believe so, no.

Q Okay. Would it be, then, fair to say that your work on the revising USGS 2003 model was independent of the technical committee work?

A Yes, it was.

Q Okay. What was your understanding as to why your client wanted you to perform this work?

A Well, models, in general, are the tools that we use in groundwater management and the USGS model, once it was recalibrated to the core accepted value of the total sustainable yield, as of 2005, could be used as a predictive tool to help manage the basin.

And it could answer a lot of questions because the models are simply just a hydrologic balance, but we can do that for any specific areas. If you want to know

how much pumping or the return flows by purveyor, for example, that can be done quite easily with the model. So the reason that we were asked to bring this model up so it could be used as a tool going forward, but in order to do, that we had to recalibrate the model between 1915 and 2005.

Q And why did you have to recalibrate?

A Well, to make a model believable you have to force the model to match what actually happened in the past, both as far as the water level changes and subsidence.

Q So do I understand correctly that you -- what is the proper term? Recalibration?

A Recalibration, yes.

Q All right. Am I correct that you calibrated the model to the available data between the period of 2015 --

A 1915.

Q I'm sorry. 1915. And what was the ending year?

A 2005.

Q Okay. And was there a particular reason why you cut it off at 2005?

A Well, that was kind of the end of the data that we were using. We didn't update it. I'm sure if they would find a problem with it, they could probably bring

it up to 2013.

Q All right. So before I get into more of the nitty-gritty of actually what you did, I want to cover your file and a couple of other questions.

Prefatory to your file --

A Sure.

Q -- I would like to ask whether or not you have been asked by your client to prepare any opinions for what we were calling the Phase V trial, which is dealing with return flows and the federal reserve, right?

A I have been asked to look at return flows.

Q Okay.

A I haven't looked specifically -- I'm not sure what you mean specifically on the federal reserve right issue.

Q Right. Then you can ignore that. I didn't expect that you had done any, but I had to ask, just in case. So we'll focus on the return flow issue. What specifically were you tasked with doing relative to return flows?

A Well, I was asked to go through the final 2010 expert report and all the return flows that were used in there because those return flow percentages are key to, you know, the model because those were the same percentages that Mr. Scalmanini's firm used when they

reapportioned and updated the pumping amounts that we used in the Mod 2 model that we ran with 110,000. So I was asked to look at those and make sure that I thought that they were reasonable, which I do.

Q The run flow percentages?

A Yes.

Q And do I understand correctly that the Mod 2 model used the return flow percentages generated by the Scalmanini firm and the others on the technical committee?

A Yes.

Q Okay. Generally, in the most general sense, could you describe for me what it means to say that you looked at those percentages?

A Well, I went through the expert report, in quite some detail, primarily Appendix C which was done by Tim Durbin on the independent natural recharge analyses, which then complemented the work that was being done by Mr. Wildermuth's firm in Appendix E, which had to do with determining the native safe yield.

And then in Appendix D, which was the work that Mr. Scalmanini did on return flow percentages, all these three appendices worked together, which led into, pretty much, the summary of all of the native safe yields and supplemental safe yields that are summarized in Appendix

F, and the sum of those two for the current cultural conditions in 2005 was the 110,000 which was stated in the judge's statement in Phase 3.

Q Okay. Other than the materials contained in the summary expert report, sometimes referred as the problem statement, did you review anything else in this evaluation of the return flow percentages?

A Other than personal discussions with Mr. Scalmanini over the last several years. I think everything that was done, it was presented in the 2010 expert report.

Q Everything that you evaluated came out of the expert report, other than your discussions with Mr. Scalmanini?

A Well, I looked at -- yes, that is true. You know, I looked at the testimony and trial exhibit. Everything, pretty much, refers back to the work that was done in the expert report.

Q Okay. So would it be fair to say that in terms of the return flow percentages that you looked at, your work was largely derivative of the Ludorff & Scalmanini firm work on return flows?

A It was a combination of everything, really. Basically, this concept of total sustainable yield, which is two components, the native or the natural

recharge plus the amount of water that comes from imported water supplies or supplemental yield, so all those, you know, make up the total value, so -- of the 110,000. So, yeah, everything -- everything was summarized very nicely, I think, in the expert report on how that happened. And -- but we did -- we used the model for that, and then we did a model -- we did another simulation run where we looked at the issue of the Phelan Community Services District.

Q All right. So before we get into more detail, I think maybe I'm going to segue into cataloguing what we'll refer to as your expert file. And peeking over your shoulder, I see a trolley with a couple of large Bankers boxes.

Are the materials that are behind Mr. Wellen and Mr. Dunn all parts of your file?

A Yes, they are.

Q All right. Then I'm going to, if it's okay with you, I think -- I think I'm going to step around over there to try to speed the process so we can identify what's over there, rather than have to put it up on this small table --

A Yes.

Q -- and perhaps disconnect the people on the phone, but we'll come back to the binder, maybe, in a

so we don't make a mess. If you can just identify that first document I'm handing you.

A This is Mr. Hendrickx' deposition testimony and exhibits.

Q Okay. And the date on that is what?

A November 3rd, 2010.

Q All right. Thank you. And the next in order?

A This was the pumping distribution for incorporation into the model, used in Mod 2. This was the work -- summary of the work that Mr. Scalmanini's firm did in updating the pumping and the return flow distribution.

Q All right. So will it be safe for me to assume that this document you just identified is something that is particularly germane to your Phase V opinions?

A Yes.

Q Now, regarding this 2010 John Hendrickx deposition testimony, is that something that you have relied on in forming your opinions?

A No.

Q So next in order is a document entitled "Expert Witness Declaration for Phelan Pinon Hills Community Services District for Phase V Trial," and it's got a number on the top, 46. Is that something you reviewed in conjunction with what you referenced earlier

to be some work you did on Phelan Pinon Hills?

A Yes, it is.

Q Okay. And do you know what the significance of that number 46 is, on the top?

A I don't know. I guess we were starting a numbering system. I don't know.

Q Did that come to you with the number 46?

A No, I think we added that somewhere.

Q That is a Geoscience internal --

A Yes.

Q Okay. The next document is titled "Tejon Ranch Corp's Exchange of Expert Witness Information;" is that correct?

A Yes.

Q And is that something that you reviewed in anticipation of providing your Phase V opinions?

A Not really. It was a John List report when we were doing the Phase 2 work.

Q Oh, I didn't look at the date on this. Oh, I'm sorry, the date on this is October 6, 2008.

I'm going to hand you two stapled documents that are bound, and if you could look at those and tell me what those are.

A Here again this looks like the --

Q The List report?

A -- exhibits from a List report on the Tejon Ranch area.

Q Okay. And are these relevant to your Phase V opinions?

A Not directly, but all of these provide, you know, original information relied on or reviewed with regard to the geologic and hydrologic framework, but that was Phase 2 documents.

Q Okay. And then, finally, out of box 2, we have a reporter's transcript, pages 1 through 109, for a date of October 10, 2008. This appears to be a trial transcript. Could you -- there is notes on the front of it. Are those your notes?

A Yeah, it just said List, cross-examination and redirect, I think.

Q All right.

A But I think I was reviewing that in preparation for Phase 2.

Q Right. Okay. And those materials that are on the ground here, are these part of your file?

A Let me see.

Q The binder.

A I think -- I think this is something to do with --

MR. DUNN: Oh, this stuff over here?

THE WITNESS: Oh, this is yours.

MR. DUNN: Yes, it's mine.

THE WITNESS: It didn't look familiar. Sorry.

MR. McLACHLAN: The problem is it's got the same --

Q Okay. That is not part of your file?

A No.

MR. DUNN: You can ask me about it later.

MR. McLACHLAN: I'll review that later, after you are sworn in.

Q Okay. So then we have covered all of your file but for what I'm calling -- well, you have called it deposition folder, so we'll call it deposition folder. And all the -- it's your understanding that all of the materials in the binders are found on this disk, but a few of the loose materials are not?

A That's correct.

Q And the model, is it also found on this disk?

A No.

Q Okay. So other than the few loose materials and the model, what else that you have produced in terms of work product relative to the Antelope Valley groundwater litigation is not on the disk, if anything?

A No, the -- the Tab 2 groundwater model summary and maps and so on is on that disk.

Q Okay.
A But the actual model input files are not.
Q Too large to be on that disk, I would guess?
A Well, they are, but they are not -- you know, they are L.A. County's property, so --
Q What, exactly, does that mean?
A Well, the input files are -- the groundwater model was given to Los Angeles County, so --
Q And yourself?
A Well, we got them from L.A. County, yes.
Q All right. So do you have an understanding that the USGS produced the -- its model to L.A. County under some sort of a restriction?
A I assume so. I don't know.
Q Okay.
A The U.S. Geological Survey -- I'm not sure what the details of that was, but we got that through Los Angeles County.
Q Okay. So if I were to ask you to produce to us electronic copies of this model, would you be able to do that?
A The model code is standard. It's industry standard, it's Mod Flow and it's available anywhere. The input files -- the way I understand is Los Angeles County was working closely with the U.S. Geological

Survey in developing the model for what they call the Mod 1 version. So we obtained those files, so those are the property of Los Angeles County.

Q Okay. And do I understand you correctly that these Mod 1 input files you obtained from L.A. County, you then, with the assistance of some others, modified those?

A Yes, we did.

Q And you modified those to conform with the available data during that time frame you previously identified?

A Well, two things. One, as I mentioned, the pumping distribution and amounts used by the U.S. Geological Survey when they did Mod 1, Joe Scalmanini -- Joe Scalmanini felt it was not right, it was too small, and so we had his firm update those. And then we recalibrated the Mod 1 model and then recalibrated that to the 110,000 acre-feet a year.

Q Now, why did Mr. Scalmanini have the opinion that the pumping was too small in USGS Mod 1?

A Well, I can jump ahead and show you if you want. There is a chart that shows the pumping that was used by the USGS and the pumping that Mr. Scalmanini's firm actually happened.

Q Okay. So then I think -- why don't we answer

that question, and then I'll go back to finishing off your file generally, and then we can dig into some of the specific opinions.

Could we start at the back, just because I see it's your C.V.?

A Oh, yes.

Q That C.V. at the back is current?

A Yes, it is.

Q Okay. And for those in the phone, the binder is fairly voluminous, but do we have an extra copy of this. I would rather --

A I made four copies.

Q Well, we have -- the contents of this binder, are they all on the disk?

A I don't think so. No, because they are -- I don't think so because there are some parts that are and then some parts that are not. I don't -- to answer that, I would have to look at the disk.

Q All right. So for those on the phone, we'll think about, over the next few minutes or the next break, whether and to what extent we attach these as exhibits to the actual transcript, as opposed to some other options, like perhaps posting a copy of the primary materials to the court website in the discovery section, which I think is probably my preference because

we have a lot of -- a number of oversized enlargements in color that would need to be scanned and so forth.

Okay. So let's -- so we have your CV in the back, and then, moving to the front, the collection of exhibits in the first tab is titled "Total Sustainable Yield." Could you describe for me what we find in that tab?

A Yes. Before I answer that, if I could, I believe that there are -- there should be an electronic copy of this because the way this was produced was that some of the -- some of the exhibits were generated electronically, and some of them were just copied from like trial testimony or expert report or whatever, and then all of this was scanned, so I think there should be an electronic copy of the whole thing.

Q The materials in the total sustainable yield tab of your deposition folder, are any of them your own work product?

A Yes, they are. We can -- the first three -- the first three pages in here, which is Mr. Scalmanini's trial Exhibit 2, I wanted to have some maps handy that kind of show the Antelope Valley area of adjudication and what was testified in Phase 3 as to the native safe yield and supplemental safe yield.

And then all of these figures that are kind of

the blue cartoons that -- I generated all of those to try to explain simply the concepts that I was asked to testify on.

Q Okay. So if we go to the third page -- I'm sorry -- the fourth page under that first tab entitled "Total Sustainable Yield," we see a somewhat generic drawing there, and the page number at the bottom corner is page No. 1, and it bears the date of January 15th, 2014. Do you see that?

A That's correct.

Q Okay. So is this the first page of your work product?

A Well, I added these cartoons to try to explain the concept.

Q But in other words --

A Yes, yes.

Q -- this page -- the prior three pages were all somebody else's work product --

A Right.

Q -- and this fourth page in that tab is yours?

A Yes, it is.

Q Okay. So going through the next two pages, which are also labeled pages 2 and 3, those are also your work product?

A Yes.

Q And generally the -- the first page just gives us what is sometimes referred to as, I guess, a water balance equation?

A Yes, that is exactly what it is.

Q Okay. And then there is some subcomponents of that equation on the following pages?

A Yes.

Q Well, following -- looks like one page. Then on the page 3, it's titled "Natural Recharge Estimates." Could you explain what this page is meant to tell us?

A Yes. The natural recharge component of the native safe yield was estimated using, you know, a number of different methods. Mr. Durbin, in Appendix C of the expert report, made three independent estimates and then Mr. Wildermuth, in Appendix E, using a water balance approach, and change in storage is calculated by measuring the difference between water level maps times the effective porosity or specific yield.

He made another estimate but, in total, the expert report stated that, on average, the average natural recharge estimate would be 60,000 acre-feet a year. And this just summarizes that, and the subsequent pages go through this --

Q In more detail?

A -- in more detail.

Q Okay. So, now, this page summarizes the prior work of this gentleman you mentioned. How does it relate to your opinions, if it does, to Phase V?

A It does relate because, first of all, I wanted to explain all the components, basically, of native sustainable yield, supplemental sustainable yield and total sustainable yield and all the components of that, which natural recharge is one, as well as the return flow components which then went into the Mod 2 groundwater model.

In other words, the Mod 2 groundwater model has a native safe yield of 82,300 acre-feet a year, which basically summarizes this.

The return flows that the Mod 2 model used that were calculated by Mr. Scalmanini's firm, based on an updated pumping, were the percentages developed in the expert report, which is laid out in here. Basically, the return flow on agricultural land of 25 percent and M&I was 28.1 percent. And it goes into this -- all of these tables and everything, I can walk through, if you are interested in how I actually --

Q Yes, we may get into more detail on that in a moment. So then I want to jump ahead just to finish the general overview of your binder. The second tab is entitled "GW Model," and I'm assuming that means

groundwater model?

A Yes, it does.

Q Okay. And what is generally contained behind that tab?

A The first thing is the section -- it talks about the evolution of the USGS model from its original date in 2003, and then talks about the first modification under Section 2 which was done in 2012, and then it talks about the Modification 2, which we did, Geoscience, after we got the computer code, in which we recalibrated the model. We updated the pumping and the return flows. Mr. Scalmanini's firm worked with Geoscience on that.

And then we reran the model to the -- did a number run, but we reran the model to the sustainable yield of 110,000 acre-feet a year. And then we looked at the water balance from that, and it seemed reasonable.

And within that 110,000 -- getting back to the original question. The 80,000 natural recharge was in there, as well as the return flow percentages developed in the expert report, so all of those factored in. And this model, then, was intended, I think, to be used as a management tool in the future, and it could be used as one.

Q All right.

A So the first step, of course, is to recalibrate the model and then the second step would be to do some management scenarios. We really only ran one, you know, the 110,000.

Q Okay. How does the model relate to your Phase V testimony?

A Well, my Phase V testimony had to do with return flows. So the return flows that were developed in the expert report, primarily, in general the 25 percent for ag land and 28.1 on M&I, so it's a little more detailed than that, but those percentages were put into the USGS model. They were run with the 110,000 acre-feet a year, and the water balance shows pretty much a very small change in storage which means the basin is in balance which, pretty much, validates that number. That is how they were used.

Q Right. So let's go through the remaining tabs. We have, next in order, the maps.

A These are just maps that I wanted to have in case we wanted to talk and I didn't have to dig through the expert report. The geologic maps showing areas of subsidence and so on, and then the last one is just a map showing purveyor areas.

Q Okay. All right. So then those maps, they

appear they are -- there was one in the back that is a Geoscience map; is that right?

A That's right.

Q And are all the rest of those the work product of Ludorff & Scalmanini?

A No, they are -- for example, starting from the back, the two maps, which I just wanted to show the area, kind of had a good outline of the basin plus a cross section. This is from the 2003 Leighton & Phillips U.S. Geological Survey model report.

And then the other ones, moving forward, the 11-by-17 figures, 3.5, these are Scalmanini exhibits, although I copied them from the expert report. They are the same figures, but they are a little clearer. Some of the exhibits from the trial testimony weren't very clear.

Q All right. So could you, before we maybe take a short break -- are you doing okay over there?

A Sure.

Q All right. If at any point in time you need to take a break to stretch your legs or use the rest room, just raise your hand.

Could you summarize for us the opinions that you are planning to provide at the Phase V trial?

A The opinions I plan to provide, basically, have

to do with the total sustainable yield and the various components. In other words, starting with a natural recharge of 60,000 and then the calculation of the return flow percentages for both agricultural lands and municipal and industrial, and then the use of those percentages and natural recharge in the refined groundwater model which I ran using 2005 cultural conditions projected about 50 years into the future so we get rid of the time lag -- and we'll talk about that later -- that the sustainable yield, as reported in Phase 3, the 110,000, is pretty much validated by the model. In other words, there are no adverse impacts from pumping that amount.

Q Okay. Is that the sum total of your opinions, in a broad brush sense?

A What I have been asked to do so far. If I'm asked to do something else, there may be -- in addition, I may testify on the impact to Phelan Community Services District's well pumping and so on.

Q All right. Just so we can maybe get that one out of the way, could you summarize for us the work that you were asked to do relative to Phelan?

A Yeah. We were asked to look at the Harder report. And if you look at Figure 7, which is the first -- first figure behind the map tab, the lower

for a little bit more time and then break for lunch. We are going to take a little bit of an early lunch. We are going to ask a few more questions.

(Discussion off the record.)

MR. McLACHLAN: Then I think, perhaps, since the lunch is already here, if it's okay with everybody, we'll take a break.

How much time do we need?

Off the record.

(Recess.)

MR. McLACHLAN: So we are back on the record.

Q And I would like to ask you a couple of foundational questions, Dr. Williams.

A Sure.

Q The input data that you used to rework the USGS 2003 model, do I understand correctly that all of that came from work of members of the technical committee?

A The modification to the pumping amounts and distribution, as well as the return flow amounts and distribution came from Ludorff & Scalmanini.

Q Did you or your firm do any independent work or analysis to try to verify any of those input numbers?

A No. As far as the pumping, no, that was their task.

Q All right. Well, in terms of any of the other

numbers that you used to modify the USGS model, did you or your firm do any -- did you or your firm do any independent work or analysis to verify the accuracy of, let's say, for example, the return flow percentages?

A I went through the return flow percentages as presented in the expert report, but I didn't do any independent analysis, other than they seemed a reasonable -- for example, the things that I'm familiar with. You know, the percentage of water that is inside and outside, those seemed reasonable. And, also, the return flow percentages are pretty much in line with what we use in other models, 25 or 30 percent for irrigation, return flow or M&I, that are coming out of the collaborative group in other models.

We are involved in at least three other collaborative groups in groundwater models in the Temecula area and San Bernardino area and Rialto, Colton, and these are -- you know, the percentages seemed inline with what we are using. And we have people from, you know, USGS on those committees and other people also.

Q In those other locations, generally, what is the range of return flow you are using?

A Well, I mean, on average, you know, 25 or 30 percent is a rule of thumb. It varies somewhat, too,

depending on the use. You know, the M&I is usually less than the agricultural. Or, sorry, it's the other way around.

Q With any of the other inputs that you made or data that you have used to modify the 2003 USGS model, did you or your firm do any independent work to evaluate the accuracy of those inputs?

A Well, I think the answer would be yes, because Scalmanini's firm was subcontracted to us to improve the accuracy of the pumping and, as a result, they also improved the return flows, but they used the same percentages that their firm developed in the expert report.

Q Okay. But if I understood your prior testimony, you and Geoscience just took the work of Ludorff & Scalmanini for granted and you didn't do any independent analysis or verification of their pumping work?

A No, we did not.

MR. DUNN: Hi, this is Jeff Dunn. Hey, folks on the line, if you could hit the mute button that would be appreciated. We are getting some background noise in the room.

BY MR. McLACHLAN:

Q How many times did you run the model?

A I don't know exactly, but I would say with all of

A Yes, it was just to identify it.
Q Why is that?
A It was just what we called it because it was -- it could have just said Mod 2, but it just makes it a little clearer what was done.
Q In terms of the work that was done by Ludorff & Scalmanini for this modeling process, did they do anything other than the groundwater work? And I believe you said that you believed they did the return flow percentage work?
A Yeah. They did the return flow percentages in the expert report, and they applied that to an updated pumping that we used for the Mod 2 model.
Q Did that -- did the Ludorff firm actually do any of the recalibration work?
A No, no. We did all the modeling work.
Q Okay. So all the modeling work was done by Geoscience?
A Yeah.
Q Who is the -- during this period of time, who was the primary contact at the Ludorff & Scalmanini firm?
A Her name was Lisa. I'm not sure of the exact last name.
Q And were you -- you yourself were, early on, interfacing with Joe Scalmanini?

A Yeah, I have been interfacing with him regularly since -- even before '08 up until just a few months ago.

Q So when was the last time you interfaced with him?

A I think maybe six months ago or something.

Q So about six months ago?

A I think so.

Q And in that last communication you had with him, what was the topic, the subject matter?

A This updated pumping and so on.

Q So were the pumping numbers changed or modified again six months ago?

A No, no, no, but, I mean, we talked about the model, we talked about, you know, maybe some of the management strategies that would have to be done.

Q Has Mr. Scalmanini ever given you his general opinion on modeling?

A Well, he is -- you know, we have done a number of models with their firm. I mean, he is like everyone else, you know, it's a function of the data that goes into it. That is why he suggested that they need to update, and they were the most qualified to update the pumping and the return flows.

Q Does he -- do you know whether he generally approves of the use of the modeling in basic management?