Attachment 4

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE STATE OF IDAHO

IN THE MATTER OF DISTRIBUTION OF	)	
WATER TO WATER RIGHTS	)	
NOS. 36-04013A, 36-04013B, AND	)	
36-07148	)	Docket No.
(SNAKE RIVER FARM)	)	CM-MP-2009-004
(Water District Nos. 130 and 140))		
Third Mitigation Plan	)	
_____	)	VOLUME I
		(Pages 1-62)

DEPOSITION OF JOHN RANDOLPH MacMILLAN, PH.D.

NOVEMBER 10, 2009

REPORTED BY:

JEFF LaMAR, C.S.R. No. 640

Notary Public

THE DEPOSITION OF JOHN RANDOLPH MacMILLAN, PH.D., was taken on behalf of North Snake Ground Water District and Magic Valley Ground Water District, at the offices of Barker, Rosholt & Simpson, 1010 West Jefferson Street, Suite 102, Boise, Idaho, commencing at 3:36 p.m. on November 10, 2009, before Jeff LaMar, Certified Shorthand Reporter and Notary Public within and for the State of Idaho, in the above-entitled matter.

APPEARANCES:

For Clear Springs Foods, Inc.:
BARKER, ROSHALT & SIMPSON LLP
BY MR. JOHN K. SIMPSON
1010 West Jefferson Street, Suite 102
P.O. Box 2139
Boise, Idaho 83701-2139

For North Snake Ground Water District and Magic Valley Ground Water District:
RACINE, OLSON, NYE, BUDGE & BAILEY, CHTD.
BY MR. RANDALL C. BUDGE
MS. CANDICE M. McHUGH
101 Capitol Boulevard, Suite 208
Boise, Idaho 83702

///

APPEARANCES (Continued)

Also Present:
Larry W. Cope
TJ Budge

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(Exhibit 24 marked.)

JOHN RANDOLPH MacMILLAN, PH.D., first duly sworn to tell the truth relating to said cause, testified as follows:

MR. BUDGE: Just for the record, before we proceed with the deposition of Dr. MacMillan, Mr. Simpson and I had a discussion off the record relative to Exhibit 19, the notice of taking deposition duces tecum pertaining to Larry W. Cope regarding whether or not those documents, which exist or are available which were not produced for purposes of the deposition would be produced if an IRCP Rule 34 motion to compel were filed.

And as I understand it, Mr. Simpson, it's your position that under no circumstances short of an order from the hearing officer will any of the records requested in Mr. Cope's deposition notice be produced?

MR. SIMPSON: Well, Counsel, as you went through the Notice of Deposition with Mr. Cope, and went through your list of six items, my recollection is that Mr. Cope answered, number one, that he didn't have any documents or data

relied upon --
MR. BUDGE: I'm not here to --
MR. SIMPSON: I understand that. But you had your opportunity to put it on the record, so so do I.
And that you went through the questions with him. And as he answered those questions, he answered them in regards to the documents he had reviewed and relied upon.
MR. BUDGE: I think his testimony is in the record.
MR. SIMPSON: Right.
And that with respect to a party, the normal course of manner if you have a request for production is to go through Rule 34, and there is no duces tecum per se for a party to a proceeding, and instead you go through the formal discovery process under Rule 34 for a request for production of documents.
MR. BUDGE: My question was simply if we filed a Rule 34 request for production that would satisfy your interpretation of the rules and correct the procedural defect that you see, my question was simply whether or not Clear Springs will continue to refuse to produce any of the

documents requested.
And my understanding was off the record that you said "We will not produce any records. You will need to file your motion to compel and obtain an order from the hearing officer."
So is that your position, or not?
MR. SIMPSON: Well, you can file your motion to compel, and you can file your motion for request for production of documents, and we'll respond accordingly. And how we respond --
MR. BUDGE: That's what I plan to do.
MR. SIMPSON: Sure.
MR. BUDGE: I was just asking if you were willing to informally produce the documents requested. And if the answer is no, we'll file a motion to compel. And I wanted to make clear on the record that you are refusing to produce any of the documents here, even if we were to file a Rule 34 request for production of documents?
MR. SIMPSON: Well --
MR. BUDGE: I think that's pretty much a yes-or-no answer. And the answer you gave me in the hall is "No, we will not produce."
MR. SIMPSON: And my answer can be based on

what my perception of your request is. And when I see it in writing, then I can respond to it.
MR. BUDGE: Well, it is in writing on Exhibit 19.
MR. SIMPSON: As a duces tecum, which --
MR. BUDGE: That's right. Assuming that exact same information is requested in a motion to compel, will it be produced, or not? That was a rather simple question.
MR. SIMPSON: Well, file it and find out.
MR. BUDGE: The answer you gave me verbally in the hall was "No, we will not produce it." And on the record I wanted to simply document that so we could proceed accordingly.
Are you not willing to give me an answer on the record that you did informally?
MR. SIMPSON: Outside in the hall I said there was two bases for it not producing those records: One is procedural, and the second was that we didn't believe those documents were relevant to Mr. Cope's testimony.
And whether I meant all of those documents or not, I would simply rely upon his testimony that he provided earlier in response to your questions on each of the items 1 through 6.

And I further would rely upon the previous rulings by the hearing officer in this matter regarding the scope of discovery vis-à-vis tax returns.
MR. BUDGE: You mean in the other proceeding that's on appeal in the court?
MR. SIMPSON: It's the same proceeding. All this is based on the delivery call.
MR. BUDGE: But am I correct to interpret that response as a no, you will not produce any of the documents requested?
MR. SIMPSON: I think, in part, my response is based upon that there aren't any documents pursuant to your request on several of those items.
MR. BUDGE: Well, we'll move on. I'll accept that as a no.

EXAMINATION

BY MR. BUDGE:
Q. Mr. MacMillan, just for the record, would you give us your name and business address.
A. John Randolph MacMillan. And it's Clear Springs Foods, P.O. Box 712, Buhl, Idaho 83316.
Q. Do you have a preference whether I

refer to you as "Dr. MacMillan" or "Mr. MacMillan" or --
A. Randy.
Q. -- "John" or "Randy"?
A. Randy is fine, as long as we don't get confused.
Q. Between you and I?
A. Correct.
Q. Okay. I assume you've had your deposition taken before?
A. Never have.
Q. You were present during the deposition of Mr. Cope earlier this morning?
A. Yes.
Q. And the same comments made to him would certainly apply to you, if you want to take a break for any reason or have any questions, don't hesitate to indicate. And your answers will also have to be audible so the reporter can pick them up.
Have you given sworn testimony in any litigation pertaining to Clear Springs Food, Inc.'s business?
A. Yes.
Q. And what was that testimony?

A. In the appeal of the 2005 water delivery order, there was a hearing in front of Justice Schroeder. And at that time I participated on behalf of Clear Springs and provided testimony, sworn testimony.
Q. That would be administrative, in the administrative hearing?
A. Yes.
Q. In any litigation court case have you provided any sworn testimony?
A. No.
Q. Okay. So that testimony before Justice Schroeder would have been the first sworn testimony that you've given in any court case or in any administrative proceeding?
A. No. I have given sworn testimony before congress --
Q. Okay.
A. -- on hazard analysis critical control points and with regard to congressional proposals to establish a federal program for offshore aquaculture. And I did that twice: once before a house committee and once before a senate committee.
Q. Did you have an opportunity to review

the notice of taking deposition duces tecum that I think now has been marked as Exhibit 24?
A. Yes.
Q. Are there any of the documents that would be responsive to that request that you brought with you today?
A. No. But in response to that, there was an item, item 11, "All documents you reviewed and will review in preparation for this deposition." There is an additional document that I reviewed yesterday -- this morning. Sorry. And that was a question with regard to NPDES permits and requirements for NPDES permits.
Given that the ground water districts are proposing to pump through a pipe and deliver water to us, water that is polluted, I felt a series of questions, or in discovery, so to speak, investigation would be appropriate to see if an NPDES permit would be required for the ground water districts to do that.
That was conducted at about 2:30 this morning. And it was simply a review -- a brief review of 40 CFR 121, I believe, part -- or it's either 121 or 122. And I have no conclusions as a result of that investigation.

Q. So what was the result of that investigation?
A. I have no conclusions.
Q. You haven't reached a conclusion?
A. No. It's -- it's very conceivable that an NPDES permit would be required. Whenever you deliver water through a pipe, you become a point source. And in this case you would be delivering not only water, but polluted water.
And Mr. Eldridge testified in his testimony there, his expert report, that the source of the nitrate was likely agricultural of origin.
And so the next question would be whether or not the owner of wells 4 and 2, could he be polluting, he or she, that business, be polluting the water directly below that farm. So that was my line of investigation.
And at 2:30 in the morning, I wasn't about to spend the entire morning reading 40 CFR 122 or 121 to investigate that.
Q. That would simply be one additional document that you reviewed to prepare for your deposition --
A. That is correct.

Q. -- in addition to --
Did you bring some documents with you that you did review?
A. Other than my expert report. And the other reports that I've reviewed, I made those available on Friday.
Q. Okay.
A. Those were on off-flavor stuff, biofilms, and geosmin and methylisolorneo, g-e-o-s-m-i-n, and methyl, m-e-t-h-y-l, iso, i-s-o, l, l, borneo, b-o-r-n-e-o. Those are two fairly prevalent, common products of algae and bacteria that can taint water and taint fish flesh. So those were documents that I provided Friday afternoon.
But I believe I also provided the document that -- recently published by the Monterey Bay Aquarium -- and right now the name of that document escapes me, but that was the document that established that rainbow trout were best of the best in terms of environmental properties and nutrition.
Q. Did you go through the other items that were requested? Let's just go one at a time down those items requested in the deposition

notice. Tell me first whether or not the requested item exists or not, and if it does exist, whether or not it will be produced.
A. To my knowledge, all of our discharge -- our diversions, spring discharge records, including spot measurements have been provided -- with regard to the Snake River Farm facility had earlier been produced.
And we did get a call from Candice, from Miss McHugh -- Ms. McHugh, sorry, and asking, I think, particularly whether or not we had produced any of -- well, I think maybe it was related to that question. I'm not sure.
But we did ask that if there was something she was aware of that we had not included, we'd certainly be glad to do that. I did inquire of staff whether we had provided all that information. As far as they knew, we had.
Q. So item No. 1, as far as you know, has been produced?
A. That's right.
Q. Item No. 2?
A. I think that's true as well.
Q. Okay. True that that's been produced?
A. What's been provided is all that we

have, certainly to my knowledge.
Q. And No. 3?
A. I think that's all been produced as well. And part of this, of course, would be relative to the administrative hearing we had on the appeal of the 2005 water delivery order in front of Justice Schroeder.
Q. Okay. And item No. 4, I know there's some marketing information that you made exhibits of.
Is there other marketing information that Clear Springs has available that has not been produced?
A. Boy, I'm not in the marketing part of Clear Springs, so I can't say that everything has been produced. I can say that we did rely on legal counsel to answer these questions of these.
Q. It also requests information regarding information on share of the market, sales, profit, revenue, income, expenses, annual fish production records.
I assume those records exist?
A. They do exist.
Q. And I don't believe any of those have been produced?

A. That's correct.
Q. Okay. And is it the intent to produce those, or not?
A. I think that's relative to the discussion you and Mr. Simpson just had.
Q. Okay. 5 requests information relative to fish disposal on a year-to-year basis.
Does that information exist? Do you keep records of fish that die in the facility?
A. Again, I think that is subject to -- to information you and Mr. Simpson just discussed.
Q. Subject to objection?
A. Yes.
Q. Does the information exist?
A. I -- well, the records of disposal of fish by sale. They probably do exist. "Including destruction of fish"? I'm not sure I understand what you mean by "destruction of fish." We do record mortality.
Q. Mortality records exist, and none have been produced, as far as you know?
A. That's correct.
Q. On item No. 6, are there economic, business, or engineering reports that pertain to the construction, improvement, operation, and use

of the water rights at the Snake River Farm facility?
A. Not that I am familiar with.
Q. So none exist, as far as you know?
A. As far as I know. I've never seen anything relative to Snake River Farm.
Q. And as far as No. 7, records and data relating to effluent and influent water quality, quantity, and temperature?
A. We have provided all of that information. That is part of the public record with regard to the EPA and NPDES permitting, and that information is provided by way of the discharge monitoring reports.
Q. So everything we have relative to influent water has been made available? You seem to distinguish between what's part of the public record that's been reported. Are there other records that are not reported?
A. Yes, there are. And we provided the information on nitrate/nitrite nitrogen, and temperature, influent water temperature. And that was part of the records we provided during discovery.
Q. On item No. 8, is there any such

information? Before you respond to that, back on your response to No. 7.
Are there records other than the nitrogen and temperature records that you produced for other chemicals?
A. Well, we provided records in the past of -- well, let me back up. We provided -- from the new NPDES permit, we've provided everything, including -- well, we don't test the water for the pesticides that your experts had tested for.
In years past, starting about 19- -- I want to say 1989, 1990, we did test for those chlorinated hydrocarbons in spring water delivered to Clear Springs' facilities. That information, I don't know if that was provided to you or not.
And that's why we were asking about, with Ms. McHugh, just what she was after that way. So if that is information you would like, we can certainly provide that.
Q. Thank you.
No. 8, does that information exist?
A. I am not aware of -- well, I think some of our other experts have done some work on wells or groups of wells that could impact Clear Springs. I think Dr. Brockway has done some of

that work.
Q. So --
A. And you have his expert report already.
Q. So when you referred to "other experts," it would simply be Dr. Brockway?
A. I would have to get refreshed memorywise as to whether or not people like Mr. Shaw, David Shaw, or others have done that kind of work.
Q. And 9 requests various documents, publications, and literature that was referenced in your testimony on pages 36 and 37.
Do you believe that's all been produced?
A. That has, with some additional ones. And historically or traditionally for scientists, when somebody requests that kind of information or literature, it's customary to write "with compliments." And I neglected to do that. So if you'd like that, I can certainly do that.
Q. So explain exactly how we should do that.
A. Well, you can bring them in or, you know, print them off, and I'll put "With

compliments, Randy MacMillan." That's the historic practice, traditional practice with scientists.
Q. Okay. We'll make a note of that.
Item 10, basically documents that you relied on in the preparation of your expert report?
A. And the literature cited has been -- that's available in the public record. So you should have that. And drafts of documents and prefiled expert reports, I don't have any draft documents.
Q. I don't think we covered No. 11.
A. No. And I don't know what the production -- request for production Nos. 8, 9, 11, 12, and 14. I don't know what those are.
MR. BUDGE: Do you have your copy of that available, John?
MR. SIMPSON: I don't have it with me.
MR. BUDGE: I have it on my computer.
MS. McHUGH: Off the record for a second.
(Discussion.)
Q. (BY MR. BUDGE): I'll just review for you the request for production on those that are listed there in item 12 to the extent they may not

have been covered. I think we've covered previously 8, which was water quality and temperature data, which you indicated had been supplied.

And does the information produced include temperature data at the spring sources?

A. The temperature data that we have has been supplied.

Q. Am I correct to assume from your testimony on I believe it was page 34 that temperature is no longer an issue with respect to water from the proposed wells, based on the information that has been provided?

A. No, that would be an incorrect assumption.

Q. Okay.

A. And the reason for that is in my testimony I state that the temperatures are the same, or something to that effect.

Q. Yes.

A. That doesn't mean that in the delivery process the temperature would be altered. And I've not done an analysis. I think Dr. Brockway is doing that kind of analysis.

Q. So you're saying temperature may still

be an issue to Clear Springs?

A. Could be.

Q. On page 34 of your testimony, you say, "Water temperature measured at the well sites and the Fred Nihart Fountain is consistent with the water temperature delivered to Clear Springs Snake River Farm complex"?

A. That's correct.

Q. So what your concern is is whether or not the actual process of delivery through the pumps and pipes may change that temperature?

A. That's correct. And I'm not an expert to know if that's possible or not.

Q. As long as we're trying to see what remains an issue, on that same page you provided testimony regarding pesticides. And on lines 988 to 989 you stated, quote, "The lack of detection in the well water is reassuring but not surprising given their lack of use," end of quote.

So do you consider the issue of pesticides in the water source that will be pumped to be an unresolved issue?

A. That's correct. It's unresolved.

Q. And do you have any information indicating there are pesticides in the water that

would be pumped from the wells that would contradict the testing done by the ground water users, ground water districts' experts indicating there were none?

A. I do not have any information that would suggest that the testing that was done by your experts, by ground water districts' experts, would -- was adequate to resolve the issue about whether pesticides are present.

In my testimony I do state that there are -- there are herbicides and pesticides that then -- that are used in Idaho that have the potential to be in that -- those ground water -- in that ground water, and then provided reference to the Idaho State Department of Agriculture surveys that they do, and identified some of the herbicides that have been found in ground water.

Additionally, the -- additionally, the testing that has been done by the ground water districts is restricted to just one or -- one and a part of a month.

From a year-round supply standpoint, that's not rigorous enough. That is inadequate, in my judgment.

Q. And is the testing for pesticides

currently a part of the water-quality testing program that Clear Springs does on the inflow to Snake River Farms?

A. Clear Springs currently tests the finished product, the fish, for pesticides. We do not test the water.

Q. And has any been discovered in the fish products?

A. No.

Q. Do you have any reason to believe there are any pesticides in the water source?

A. There could very well be pesticides in the -- in the water source. That's part of our -- part of our great concern about the use of well 4 and well 2 water to deliver to us.

The presence of high nitrate-nitrogen in that ground water is indicative of pollution, of contamination. We do not know, nor do the ground water districts know, what are the pollutants that are there. You know what's not there, but you don't know what is there. You haven't tested for atrazine, for example.

Q. It would seem to me if there are no what you call pollutants in the fish that you do rigorously test, you must not be too concerned or

you would have your own testing of the water supply for pesticides?

A. Until the -- until the recent increase in nitrate/nitrite nitrogen was detected at Clear Springs Snake River Farm, we had high confidence that there were -- that there was sufficient oversight by the State and that the testing we had done over the previous 15 years or so of water was indicative of no contamination.

With the elevation in nitrate, that's changed. And so we will have to start testing for those pesticides and herbicides. And as you know, that is a very expensive proposition.

Q. Okay. Back to the request for production of documents that we were reviewing. And we're looking at item 12. And the request for production No. 9 requested "Records of fish disease, incidents, and pathology records for the Snake River Farm facilities and other facilities that have been identified as production facilities, including the date of the incident, the cause of the incidents, the response, the treatment method, number of fish lost or destroyed, and future corrective action developed as a result of the incident."

Do such records exist?

A. We do have records. Many of those have been provided to you earlier in our previous hearing. Certainly there are new fish diseases and the -- in our view, the request was redundant.

Q. You've made reference to production in the previous hearing.

Are you simply referring to your memory of what was produced in that earlier proceeding in 2007?

A. That's correct.

Q. Okay.

A. But I know for a fact that we did provide the disease information with -- in an active commercial fish farm, disease is an ever-present event, daily we do deal with disease, and we deal with treatments.

So it really becomes very, very redundant and inconsequential. The question ought to be, has anything changed diseasewise?

Q. And has there been any change that you're aware of?

A. Yes. Disease has gone down because we've instituted the use of a vaccine.

Q. On request No. 11, "Produce documents

and records associated with hydrogeological investigation in the vicinity of Snake River Farms."

Are there such studies or records that exist?

A. Dr. Brockway would have any of those studies.

Q. Okay. None that have been independently done by Clear Springs?

A. No. No. We're a commercial fish farm and food company.

Q. Okay. Let's go to item 13. And that relates to the position asserted by Clear Springs in your testimony and Mr. Cope's that fish are only grown in fresh, pure, pristine water that flows from the canyon.

And I believe you'll recall Mr. Cope's testimony that his definition of "pristine" was essentially that the water met water-quality standards for drinking water?

A. I recall that testimony.

Q. Would that be consistent with your definition of what constitutes fresh, pure, pristine water?

A. Well, that is a good -- a good marker.

It is not the only marker that I would use as a scientist.

Q. Are there documents that exist -- referring back to this item 13. Are there documents that exist that would represent some type of a chemical analysis of water that was used by Clear Springs as a basis for making the assertion in marketing material that this is, quote, "pure, pristine water"?

A. I cannot attest to what was used -- what documents, if any, were used in marketing material. I can attest to the studies that we have done, the data of which has been provided to the ground water districts, with regard to nitrate/nitrite nitrogen, the historic concentrations of those -- of that chemical and the temperature data and the total phosphorus data.

Q. Thank you.

Your testimony describes the areas of expertise on page 3, that you're an expert in aquaculture science, fish pathology, health management, minor animal species drug approval, environmental regulation, seafood quality assurance, and aquaculture public policy?

A. That's correct.
Q. And that would be the parameters or sideboards, if you would, of your areas of expertise? Are there others missed?
A. Well, there probably are definitely other areas missed.
Would you like to hear them?
Q. Well, let's just inquire this way: Your formal educational background I gleaned from your testimony was you have a master of science degree from Michigan State and a doctor of philosophy from the University of Washington?
A. That's correct.
Q. Okay. Have you had any teaching positions at any college or university?
A. Yes.
Q. What are those?
A. I was an associate professor of veterinarian and aquatic animal medicine at Mississippi State University.
Q. And when was that?
A. Approximate dates would be 1985 to 1990. And I would just refer you to my CV for the exact dates of that time.
Q. The details of that were attached as

an exhibit, I believe?
A. That's correct.
Q. Okay. Anything regarding your publications or educational training that would not be reflected in your CV that's attached as Exhibit 1?
A. I don't think so.
Q. Okay. You don't claim to have any expertise in the area of geology?
A. No.
Q. What about hydrology?
A. Only what I've learned being in the water wars.
Q. Well drilling expertise?
A. No.
Q. Any expertise in the area of construction or construction design?
A. No.
Q. Any expertise in the engineering field?
A. No.
Q. Do you hold any professional licenses?
A. As a professional engineer or a lawyer or --
Q. Of any type?

A. I did hold a -- it's not a license. It was a certification as a fish pathologist.
Q. Any expertise or training in the field of chemistry?
A. I've had training in chemistry by way of an EPA training-ship at Michigan State University.
Q. Do you claim to have expertise based upon formal education or based upon job or work experience in the field of chemistry or chemical analysis?
A. Yes.
Q. Describe that area of expertise and what you claim it's based upon.
A. Throughout my research career I have looked at the interaction of water quality and fish physiology, fish pathology. During the course of that research, I and my graduate students spent considerable effort to examine the water quality present in catfish ponds and other types of aquaculture environments.
Some of the research that we did involved the impact of the -- the interaction of various environmental conditions, such as temperature and nitrate/nitrite nitrogen, and in a

condition called winter kill with channel catfish.
So -- and then through education at Michigan State University, I had courses in limnology and chemical limnology, and developed some degree of expertise because of that. I do not claim to be, for consulting purposes, a chemical engineer or chemist.
Q. What about as an economist?
A. No, I'm not an economist.
Q. Do you claim to have any expertise as an appraiser in property valuation, business valuation?
A. No. No.
Q. The current position you hold, I believe, according to your testimony, is vice president of research and environmental affairs for Clear Springs?
A. That's correct.
Q. And how long have you held that position?
A. You could refer to the CV. But I think about 1997, '98, '99, something like that. It's not something I think about very often, so I don't know the specific date.
Q. Feel free to refer to that if you

desire. I didn't pick up the date, but I may have missed it.
A. Yeah, it would be in the front. What's that? 1989. 1998.
Q. 1998 to present.
During the course of your attendance of the deposition of Mr. Cope earlier today, was there anything in his answers that you would disagree with or would cause you to pause?
A. My recollection is that I would elaborate further, but not cause me to pause.
Q. Okay.
A. But I would like -- if I'm held to that standard, Randy, I would like to review that testimony.
Q. Okay. There are a number of areas he deferred to you, which I'll inquire of later.
A. Okay.
Q. And if there was something that generally jumped out with you as something that you starkly and clearly disagreed with, I wanted to identify it.
A. Well, the issue of the quality of water that is proposed to be delivered to Clear Springs by the over-the-rim pipeline, I do take

issue that nitrate is a toxin and -- it is a toxin, and that it is an endocrine disrupter. I don't believe Mr. Cope identified that as a concern.
Q. And we'll get into this in greater detail later, but just so I have an understanding going into that line of questioning, when I addressed the nitrate issue with Larry Cope, he was generally of the opinion that the water-quality standard above which there would be an area of concern would be the 10 milligrams per liter.
Would that also be your understanding?
A. No.
Q. And so that is the level at which drinking water standards would be exceeded?
A. That is the maximum contaminant level for drinking water, that's correct.
Q. And based upon your study or analysis, is there a level at which you believe nitrates adversely affect your fish production operation at Snake River Farms?
A. Scientific literature does identify nitrate-nitrogen concentrations less than 10 milligrams per liter that are toxic to the

eggs, the early life stage of rainbow trout.
Q. I've seen some of that literature.
Aside from that literature, based upon your own personal study, analysis, or experience, is there a level at which you believe nitrates would have an adverse effect on Clear Springs' ability to produce marketable commercial rainbow trout at that facility?
A. The answer is yes. And -- but it's not by way of research that I've conducted. The problem -- the problem is from a scientific standpoint, the evidence that nitrate-nitrogen is an endocrine disrupter is very new science.
So scientists, in general, have not had opportunity to look to see what the impact is on animals, in general, as a result of exposure to nitrate -- or nitrate-nitrogen.
Q. Okay.
A. The scientific evidence that is published to date in peer-review journals indicates that virtually all animals will be susceptible to disruption of their hormone system, the endocrine system, following exposure to nitrate-nitrogen, whether it's in the diet, being drunk, or consumed by way of drinking, or whether

it's in water that fish, for example, would be exposed to, is not clear. Those are just -- it's an emerging area of scientific endeavor.
There are some -- there are three publications that I referenced in my expert report that may be all that's out there in the scientific literature with regard to that issue.
One of those studies indicates that nitrate-nitrogen affects the steroid hormones of sturgeon. One of them is a Ph.D. dissertation that was published in August of 2009. And that scientist studied the impact of nitrate-nitrogen on daphnia.
Q. On what?
A. D-a-p-h-n-i-a, daphnia. It's an invertebrate.
Q. Okay.
A. The earliest work that I could find was published, I believe, in 2005, which primarily looked at alligators and changes in sex ratios in alligators as a consequence of exposure to nitrate-nitrogen in some lakes in Florida.
There have been some biochemical studies -- or not biochemical studies, but cell biology studies, so in vitro studies, that start

to identify biological mechanisms for that endocrine disruption.
Q. When you say the in vitro phase, what do you mean? What phase?
A. Lab bench, dealing with cells in tissue culture.
Q. So the in vitro phase in your operation would be at the Soda Springs food facility?
A. No. These are -- no. The in vitro studies would be done by other scientists in the world looking at the biological, the biochemical, and genetic effects of changing, of affecting proteins in cell membranes that might affect.
Q. With all of that --
A. Yeah.
Q. -- scientific background, back to the original question, which was, in your opinion, is there a nitrate level in the water at which you believe there will be a negative effect on Clear Springs' ability to raise commercial rainbow trout at the Snake River Farms facility?
A. I believe there is a nitrate level that eventually could be identified that would not be inimical to our research, our brood stock, and

our production system. But that has not happened yet. We do not know.
Q. So your answer is you do not really know?
A. That's correct.
Q. And do you have an opinion of your own as an expert in this area whether or not the drinking-water-quality standard of 10 milligrams per liter is safe or unsafe for your rainbow trout production?
A. Historically, I think the concentrations of nitrate that Clear Springs has received in the water, in the spring water, those have been acceptable for our system.
Whether the increased levels we're seeing now are bad, we don't know. We have instituted what we can, projects, to try to identify the source of the nitrate-nitrogen and -- and are trying to encourage scientists with far greater expertise and facility than we have to investigate what impact 10 milligrams per liter or 15 or 20 or more milligrams per liter nitrate-nitrogen might have on the entire life cycle of the rainbow trout.
Q. I don't mean to delve too deeply into

this issue initially, which I want to go into when we have some actual records to look at --
A. Well, heck.
Q. In your testimony on page 31, let's look at that quickly, if we could.
A. Let me find that. Page 31?
Q. Yes. Starting at lines 877 through about 882, you discuss some nitrate levels in recent sampling. And starting up on line 874, you state, that "In 2007 Clear Springs Food instituted more detailed sampling to determine if particular springs feeding the complex had higher concentrations than others."
And were you sampling exclusively for nitrates, or were you looking for other chemicals as well?
A. We were exclusively looking at nitrates. We did do some phosphorus sampling.
Q. And so --
A. Total phosphorus.
Q. And you say more detailed sampling in 2007.
What was the sampling that occurred prior to 2007?
A. Well, we have a compliance sample

point that's referred to as SR1. That is where we have historically -- that's where water goes into the Snake River Farm itself. So that's been our traditional point of sampling for nitrate and stuff.
Q. So when did the sampling at SR1 begin for water quality?
A. That's been there since the time of NPDES permitting.
Q. Okay. Can you put that into a year?
A. 1974, perhaps. I could very well be mistaken as to -- you know, those early permits, NPDES permits, I'm not conversant in. Certainly on the current NPDES permit, SR1 is well identified, as are sample points. So much of the nitrate data that we have relative to the Snake River Farm is associated with that sample site.
Q. Okay. And that's right at the intake where it goes into the pipes?
A. No. That is at the discharge from the pipes to -- well, no, it's not on that. Discharge to -- it's fresh use water that is -- that enters into the farm at one of the raceways.
Q. Do you have a map that would show where that is, that would have all of your

sampling sites on it?
A. Yes, I think we did provide that to you. Do I have it? I don't think I have it.
MR. BUDGE: Let's go off the record.
(Discussion.)
MR. BUDGE: Let's go back on the record.
Q. Randy, we were referring to your Exhibit 9, which is the Snake River Farm complex map or schematic. And I think you were identifying this historic sample point that you call SR1.
And the point where the samples were taken were approximately where the fresh line discharges into the SRF raceway?
A. Correct.
Q. And how often were samples taken at that site?
A. Monthly.
Q. Whatever that early date was in '74 or wherever, it would be monthly samples?
A. Well, again, I don't know that we were sampling nitrate in 1974.
Q. Okay.
A. I don't know at all. I do know in our database we do have records from 1999, I

believe -- that information was provided to you -- that identifies probably almost every month.
I know this year some samples were discarded prior to analysis one month. And that was noted on the -- on the report. But I believe it is once a month that we do sample that.
And then so, Mr. Budge, to go on with what is there, we became concerned that nitrate-nitrogen was increasing at SR1. And we started to ask ourselves, "Well, where is this coming from?"
And that's when we instituted the more detailed sampling of the Snake River Farms spring complex. And you end up with the results that are high numbers, from our perspective, that are identified in the testimony here.
Q. Okay. What caused you to have the concern that the nitrate levels were increasing?
A. The concentration was increasing.
Q. At what location? In the fish?
A. SR1.
Q. Okay.
A. So it's in the water.
Q. So that was the basis of your testimony, then, that in 2007 you then initiated a

more detailed sampling?
A. That's correct.
Q. And where were the additional samples taken? What was the frequency of those?
A. Well, the data has been provided to you that identifies the frequency, and as well as I believe we provided -- yes, we have a picture, I believe, that shows the sites that we've been sampling.
Q. And how many of those additional data points are there?
A. Well, they've evolved over time. Okay? So the number has increased. And I'd have to go through and count how many sample sites there are. But it's all -- the increased detail study is within the Snake River Farm spring complex.
So we do sample things like -- there's below the Fred Nihart Fountain, for example, there's a box on the south side of the road, we do -- where water is coming into our facility. We sample that site, for example. And that's -- yeah, that would be Expert Report 8, Exhibit 8 --
Q. Okay.
A. -- identifies the sample sites. Yeah,

I think that's it. And it looks pretty dark on your version here.
Q. Is that the map you were referring to?
A. Yes.
Q. No wonder I couldn't figure those out.
A. So we have "VC" is visitor center. We have 3B, 3A, and 3. RD3. RD3 -- is it all right to take this out, or not?
MR. SIMPSON: Sure.
THE WITNESS: RD3 is this site right here. And these are approximates because it's really -- it's down in this area (indicating).
2A, 2, 1, and then the fountain. Not the Fred Nihart. This is really on -- collected on this side of the road. And so those are our sites.
And there was a legend provided as well, the next page -- no -- oh, yeah, you got it. So those are the sample sites that we've been following for really the past two or so years and getting -- and IDEQ, Idaho Department of Environmental Quality, they have instituted similar studies, although not as intensively sampling all of these sites as we have, attempting to figure out where the nitrate is coming from.

And ultimately if you can identify that, the expectation would be that you would institute something that would stop that from happening, because, again, those concentrations exceed the ground water rule for the State and Safe Drinking Water Act requirements.

MR. BUDGE: Could we be provided a copy of this, John? Can you make a color copy of this?

MR. SIMPSON: Yeah, let's go off the record and see if I can -- yours is too dark?

MR. BUDGE: We can do it later off the record. That was part of my loss on that. And I looked at that, and I didn't see anything.

(Recess.)

Q. (BY MR. BUDGE): So, Randy, back again where we started on your testimony on page 31 discussing the sample site of RD3, and you talk about had the highest concentration of 9.8 milligrams per liter. And then you say that site peaked in 2008 at 13.14 milligrams per liter, and then in October of '09 was 16.9 milligrams per liter.

And then you go on to say that "The concentration in the spring water feeding the visitors center was 18.0 milligrams per liter."

What is the site number for the spring water feeding the visitor center that was 18?

A. VC.

Q. And when I look back at Exhibit 8, which now identifies those sampling sites, the second page, is my understanding correct that the top of the second page is the site identification number or letter?

A. Yes.

Q. And then in the bottom of the page would be the monthly sampling which began January 15th of 2007 and continues through it looks like September 3rd of 2009?

A. (No audible response.)

Q. Okay. Help me correlate, if you could. You said a sample site of RD3 had a nitrate level of 9.8. And at that time I think you were assumingly referring to 2007. And I couldn't see anything at -- okay.

So you're referring to the October 15th, 2007 level for the reach 9.8?

A. Well, the report states in 200- -- 2007.

Q. It said in 2008 RD3 peaked at 13.14?

A. 13.14.

Q. That would have been on October 7th of 2008?

A. Is that what the -- okay. It should be the next page. Should be the next page back. So what -- so what column should we be looking at? RD3. October 7th. Okay. 13.14.

Q. And your testimony didn't make reference to Exhibit 8.

But Exhibit 8 would be the source of the information for that testimony regarding the concentration levels?

A. No, it does refer to Expert Report Exhibit 8 up here (indicating). You'll see line 876.

Q. Okay. Yeah. In looking at that same graph, Exhibit 8, it appears that all of those test locations, with the exception of RD3, are well below the 10 milligram per liter level; is that correct?

A. They are below the 10 milligram per liter, yes.

Q. And do you have explanation for the variations that seem to occur from month to month and from year to year, even though they're relatively slight, other than for RD3?

A. Do I have explanation for why there's slight variation in the concentrations detected?

Q. Yes. One month there will be a 2 and the next month there might be a 5.

Would that be --

A. That would be cause for alarm. If it varies from 2 to 2 1/2 or 1 to 2 1/2, we wouldn't be concerned about that because, you know, there's vagaries of analytical testing, and there's certainly -- there can be minor events, I suppose, in the ground water supply that could account for that limited variation.

If, though, you go from 2 to 5 to 10, that is indicative of something significant going on, in my judgment.

Q. And the levels shown in RD3, particularly those cited in page 31 of your testimony, are all higher than what are even in the highest wells, 2 and 4; correct?

A. That is -- well 2 and 4? On October 2009, that is correct. In 2008, at 13.14, that would not be correct.

Q. If one were to eliminate wells 2 and 4 and simply supply from the other wells, all would be well below what you see in your test site RD3

within the same basic range of the other four test sites; correct?

A. If you were -- if you made the assumption that it didn't change at the other wells, and we don't have any way to judge that because -- any scientific way to judge that because samplings only occurred in September and October of this year of those wells.

Q. All right. Are these elevated nitrate levels at site RD3 shown in Exhibit 8 and discussed on page 31 of your testimony? The levels that range from 9 to 18, those that are above the drinking-water standard of 10, do you consider that to be polluted and contaminated water?

A. Yes.

Q. And so that water is still being delivered to the facilities now and used in that polluted or contaminated state?

A. That's correct.

Q. And does the fact that that water supply is blended with all of the other sources, which would lower the average obviously well below 10, eliminate any concern that you put the fish in any jeopardy?

A. No, I would not eliminate the concern.

Q. Okay.

A. And the reason for that is that water -- well, number one, the concentrations are -- appear to be increasing annually. And we don't know why. So our level of risk is increasing as a consequence.

And we have very limited data on the ground water wells that are proposed for use in the over-the-rim project. We have September -- a couple days in September, I believe, and one or two days in early October. That's the extent of the data we have.

So we cannot -- we cannot judge what is happening year-round in that water, and certainly not judge how that's going to change over the next -- next year it could be even higher concentrations.

Q. So are the nitrate levels depicted at these sites shown in Exhibit 8 what you consider to be within or outside of the control of Clear Springs?

A. The appearance of the -- the presence of the nitrate is beyond our control.

Q. Including --

A. What we do about it is a question that we are debating internally.

Q. And let's say that the over-the-rim delivery system was operational and water was being delivered from any combination of wells that was well within the standard you found to be acceptable, within drinking-water standard of 10 --

A. I didn't say that.

Q. I'm saying that as an assumption.

A. All right.

Q. If the well delivery system was operational and, of course, was being regularly tested similar to your other sites being tested for nitrate and was well within the range of the nitrates of other water supplied and under your 10 criteria, would that cause any concern to Clear Springs? In other words, Mr. Cope says we're delivering the same water and it's obvious it's the same water. So if the same water is coming, is that going to cause you concern over nitrates?

A. Well, I do disagree with Mr. Cope on that, that comment.

Q. Okay.

A. It's certainly not the same water.

All we can say is is what is the chemical makeup of the water. The chemical makeup of the water, several of the wells that you have selected have nitrate-nitrogen concentrations that are well within the range that Clear Springs has historically received. Two of them are not.

Q. Uh-huh.

A. We -- you know, we have -- we think we have high confidence that at nitrate levels of 1 to 2 to 3 we're not going to see any problems that we can measure.

After that, we don't know. So the receipt of that kind of water increases our risk. It increases the potential for upsetting our normal operations at the Snake River brood, the research, and the farm.

Q. If the water being received from the elevated site, RD3, were to continue with the levels that you've identified in this 2007 to 2009 period, would Clear Springs discontinue the use of that source?

A. That would be my proposal.

Q. And continue to use water from the other sources?

A. That's correct.

Q. And your proposal would be out of concern that even blending the RD3 source with the other waters would still pose risk to the fish propagation in the Snake River Farm facility?
A. The Snake River brood stock and the research program.
Q. And what about in the farm production itself?
A. In the farm production itself. If it affects the Snake River brood, then there's no reason to believe it would not affect -- if it is an endocrine disrupter, that it would not affect fish performance on the farms as well.
Q. Would you agree that one difference between the water supplied from the springs and the water supplied from the wells is that you would have control over that supply, in the sense that if there was an elevated level detected in the wells, you could either alter the wells to eliminate the high nitrate delivery or you could shut it off altogether, whereas --
A. No, I haven't considered that as something. We don't have control over the wells.
Q. You would have control over those if they were delivering the water, you could always

say "Shut it off"?
A. Is that, Mr. Budge, sort of like agreeing to convert so many acres of land and it doesn't happen? And we don't have high confidence that way, that if we were to make a request like that, that that would happen.
Q. You don't envision that Clear Springs would have the ultimate say on whether or not to accept or not accept the delivery either up front or during the process of delivery?
A. What we probably could do is turn the water off to our facility --
Q. That's what I mean.
A. -- at our site of delivery. We would have to have some gate or valve to do that. So that -- but then there's no mitigation then, is there?
Q. Correct. But I mean if the water was not delivered of suitable quality, you would always have the remedy of shutting it off?
A. That's true.
Q. And that doesn't exist with respect to your spring sources? You don't have the ability to identify the RD3 source and shut it off and continue to use the other spring sources?

A. Well, no, I -- we may have some capability at this particular site to do that. It appears that RD3 -- our belief is, an unconfirmed belief, that RD3 water is coming out at a higher elevation than some of the other sites.
Q. Okay.
A. So if that's the case, conceivably you could divert that water someplace else. But whether that is possible engineeringwise, we don't know.
Q. I understand.
MR. BUDGE: Okay. Let's break for the day. It's five o'clock.
(Discussion.)
MR. BUDGE: Just one other question and, then we'll break for the day. I apologize.
Q. Back on the discovery requests. We had requested on request for production 14 "All documents that support Clear Springs' objections to the mitigation plan and related applications."
And if I understand it from reading your testimony, as well as Mr. Cope's, part of your objection focused upon the image, the effect on the business, the marketing if you had to use well water as opposed to full spring water;

correct?
A. Right.
Q. And we had a request for production on that that has not been fully responded to.
I think you indicated there was some marketing information that you were not fully familiar with that has not been produced?
A. There could be marketing information.
Q. And what kind of marketing media does Clear Springs use? You have the --
A. Well, we have the postcard from Clear Springs, the video. We have the e-mail teasers. Those were all provided in -- you know, as part of my expert report. We have the brochure, that technology water people or something like that. That was the "Water People Technology" brochure.
Q. Uh-huh.
A. We have the brochure that describes the visitors center. And we have the brochure, the smaller brochure, and I don't recall what the title of that is.
Q. You're referring to --
A. Those are ones that I'm familiar with.
Q. Those are all part of the exhibits that are attached to the testimony?

A. That's right.
Q. Are there any advertising brochures or media that relate to that branding, the image, the marketing, other than what you've identified in exhibits?
A. I do -- I'm not aware of anything else that refers to the use of pure spring water ideal for growing rainbow trout.
Q. Okay.
A. We do have trade journal pictures, advertisements, that show a chef or two. And they're against -- with the backdrop of the Snake River Canyon, perhaps some springs there. I don't -- I'm not conversant in that. We have that. But that's --
Q. In my earlier inquiry with Larry Cope on this issue concerning some of the values that were in the testimony, the value of the company, the current sales, the projected future sales, would that all be information that would be based upon the company records?
A. Could you repeat the question?
Q. In other words, you had testimony here regarding the value of the company. You had testimony regarding the sales revenues this year

that were projected and next year's that were projected. Your testimony was slightly different than Mr. Cope.
Was your testimony based upon financial records of the company?
A. No. My -- my testimony is general knowledge about what --
Q. What's the source of your general knowledge of company value or company revenues, sales revenues?
A. Well, I attend Clear Springs board meetings.
Q. And would it be records that are provided at Clear Springs board meetings?
A. There would be a record of the -- an annual budget that would show a projected expectation for -- for sales.
Q. And so that would be the source of the knowledge that you have that you then relayed and included in your testimony?
A. Ultimately.
Q. So company records are the source of that information, then?
A. That's correct.
Q. But those are part of the records that

haven't been produced under objection?
A. That's correct.
MR. BUDGE: Okay. Let's resume tomorrow morning.
(Deposition adjourned at 5:02 p.m.)
(Signature requested.)
-oOo-

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE STATE OF IDAHO

IN THE MATTER OF DISTRIBUTION OF	)	
WATER TO WATER RIGHTS	)	
NOS. 36-04013A, 36-04013B, AND	)	
36-07148	)	Docket No.
(SNAKE RIVER FARM)	)	CM-MP-2009-004
(Water District Nos. 130 and 140))		
Third Mitigation Plan	)	
_____	)	VOLUME II
		(Pages 63-181)

CONTINUED DEPOSITION OF

JOHN RANDOLPH MacMILLAN, PH.D.

NOVEMBER 11, 2009

REPORTED BY:

JEFF LaMAR, C.S.R. No. 640

Notary Public

THE CONTINUED DEPOSITION OF JOHN RANDOLPH MacMILLAN, PH.D., was taken on behalf of North Snake Ground Water District and Magic Valley Ground Water District, at the offices of Barker, Rosholt & Simpson, 1010 West Jefferson Street, Suite 102, Boise, Idaho, commencing at 8:42 a.m. on November 11, 2009, before Jeff LaMar, Certified Shorthand Reporter and Notary Public within and for the State of Idaho, in the above-entitled matter.

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APPEARANCES (Continued)

Also Present:
TJ Budge
Charles E. Brockway

INDEX

(Exhibit 25 marked.)

JOHN RANDOLPH MacMILLAN, PH.D., having been previously sworn to tell the truth relating to said cause, testified as follows:

EXAMINATION

BY MR. BUDGE:

Q. Good morning.

A. Good morning.

Q. Dr. MacMillan, yesterday we had had some discussion regarding your expert report, Exhibit 8.

And the first page of that was an aerial photograph of the Snake River Farm facility on which you had identified various sites where water sampling had been taken?

A. Yes.

Q. And I believe the second page of that exhibit and third page that we also discussed had a coding system that identified each of those sites by number or letter and also the results by site of the samples taken reflecting nitrate levels over this sampling period of January 15th, 2007, through September 3rd, 2009?

A. Yes.
Q. Okay. We also had some discussions regarding your Exhibit 9. Exhibit 9 consists of a number of pages that describe where the water goes in various lines and where measurements were taken at the Snake River Farm facility.
And the last page of that is a schematic, not to scale, but a schematic that shows the entire Snake River complex; correct?
A. Correct.
Q. And am I correct to understand that Exhibit 9, the text part, the first looks like five pages, references various structures, pipelines, and other facilities identified on that schematic?
A. That's correct.
Q. And so the numbers that are shown on the schematic, the last page of Exhibit 9, tie into the description that you provided in the preceding pages?
A. That's correct.
Q. Okay. And looking at that Exhibit 9, the last page, the schematic, which you have in front of you, which we've identified as Deposition Exhibit No. 25.

And can you confirm Exhibit 25 is a copy of the same schematic that's the last page of Exhibit 9?
A. It is a copy that's been adjusted or amended to reflect the approximate location of our additional nitrate-nitrogen sampling.
Q. And would you just go ahead and describe the handwriting that you have added on Exhibit 25, which would be new or additional to what one would see examining Exhibit 9. And the confusion would be your testimony Exhibit 9, and we're referring to Deposition Exhibit 25.
A. In deposition No. 25, I've located the approximate -- approximate locations of the additional nitrate-nitrogen sampling that we instituted attempting to identify particular springs or spring areas that might be most contributory to the elevated nitrate-nitrogen concentrations that we see -- that we have seen in SR1.
So all of those sites that were in SRM (sic) expert report Exhibit 9, I believe -- 8 or 9, where we identify those concentrations at all those sites, these circled sites on Exhibit -- Deposition Exhibit 25 are intended to represent

those approximate locations.
Q. And when I look at Exhibit 8 that identifies those nine sample sites, there is a shorter period of data relating to sites RD3A, RD3B, and VC, which are only tested for the period January 7th of 2009 through May 6th, 2009?
A. Right.
Q. And then that sampling did not continue on subsequent to that date?
A. That's correct.
Q. Can you just give me an explanation on that?
A. Well, that area is covered by weeds and stinging nettles, and so access to the point was not available. Now that DEQ -- actually, DEQ is coming in to sample those sites next week. And they requested specifically that we make sure that the weeds are cleared away so they can gain access to them.
And the visitor's center -- let's see. We started -- I can't see the date. But that's -- what? -- January of '09? This is an evolving process for us to try to identify where the likely -- which springs that feed that complex are most likely to be the major contributor. And if

we can identify that, then maybe we can do something to divert that water away from our operations.
Q. Okay. Going down looking at Exhibit 25, sample site SR1, which you identified to be at the head of the SRF raceway?
A. Correct.
Q. Would that be located on the fresh line?
A. That is the fresh line.
Q. And so if one traces the fresh line back, the source of the fresh line would be identified as spring No. 3?
A. No.
Q. Or No. 3?
A. No.
Q. What is --
A. The spring -- the springs all are combined together into our collector. The cobble on the map is cobble that -- rock that we put down over a screen to try to prevent breaches in security. So it's an attempt to cover it up and make it less desirable for people to interfere with our water.
So you can't see how all of this water

comes together, then, because it's covered up. But it's -- when you go to the site, you can see a few spots where water flow is coming out.

The RD3 site is that -- there's a particular pipe that you can access up above much of the rest of the bank there or the structures there. And that -- that's -- there's a pipe there that you can see.

Q. Okay. Looking at this Exhibit 5, in the top-left corner there are a number of straight lines that come from what's identified as "spring," and then there's a line, a black line, that has a No. 1 on it, one that has a No. 2, a No. 3, a No. 4.

Those are not identifying pipelines?

A. Well, no, they could be. 1, for example, is a pipeline, I believe, that feeds the country club and the homeowners' association there.

Q. And No. 2?

A. And if you refer to the description, okay -- and I don't know what exhibit this is, but --

Q. That would be your Exhibit 8.

A. Refer to that.

Q. Excuse me. Exhibit 9.

A. Okay. So Exhibit 9 describes those -- those sites. What's -- and I apologize, Randy, that we have -- we have similar numbers for our -- for Exhibit 9, and then similar numbers for Exhibit -- must be 8. And so it does get confusing.

Now that we've put on Exhibit 25, we've put all those numbers together, I tried to separate those out with the circle. Those circled ones are the ones that we sample for the extra nitrate.

And then SR1, as you do your due diligence in analyzing that, the data there, SR1 is a common site that we've used. We use SR1 for influent NPDES compliance, and we use SR1 for the extra nitrate sampling.

There will be differences -- if you compare the data at SR1, there will be differences between -- slight differences in the nitrate-nitrogen concentrations because there's a -- there's a time difference.

So we do the compliance sampling early in the month, and then we do the nitrate -- the additional nitrate sampling a little bit later in the month, still at monthly intervals, though.

Q. Okay. So just so I understand, maybe we should back up and start with the springs themselves. I was of the impression that there were a number of springs that emanated over a distance I think you described as --

A. 300 yards or so.

Q. -- 300 yards.

A. That's right.

Q. Larry Cope described it similarly. And I understood that that water then emanated out of the springs, entered into some ditch or canal, and then went into a collection pipe and was districted out through your facilities.

And Larry Cope gave me the impression when I inquired of him, and it could well be confusion on my part, that there were separate lines, pipelines, into different spring sources. And this Exhibit 25 at least seemed to indicate that those various lines that are identified in black might be separate pipeline.

But you're indicating no, that --

A. Well, I believe 1 -- No. 1, without the circle, is a pipeline.

Q. Okay.

A. And that goes to the country club and homeowners' association.

Q. Okay. What about No. 2?

A. And then 3.

Q. Or excuse me. Go ahead. 3.

A. 2, 2 is a separate line as well. It goes to the -- much of the raceways we have at the research station.

Q. Okay.

A. Okay.

Q. So that is a line from a specific spring outlet or collection point?

A. Collection point.

Q. And --

A. After that it gets a bit confusing, because No. 3 it just indicates that we are delivering water to the fresh line, but that water is -- it's a collection of a bunch of springs --

Q. Okay.

A. -- including RD3, RD3A, and 3B. The visitor's center spring, we're not sure just where that goes. That could go just to the visitor's center pond. For us it's a difficult thing to separate out, to speciate these things, because it's all underground.

And if the people who had constructed this farm, if they had done it and -- with -- and left us with a record, we would know exactly how all that works, but we don't. We don't have that kind of information.

Q. So on No. 1, the pipe that goes to the country club --

A. Uh-huh.

Q. -- there would be no nitrate sampling site on that line?

A. Well, we have an approximate site. RFS site. RFS site, we have a -- there's a blue -- yeah, there's a blue line.

Q. Let me clarify. When you said "RFS," you were meaning site FS?

A. Yes. I was going to say -- yeah, site FS.

Q. Site FS. Go ahead.

A. That is below where I believe your expert sampled -- you sampled the Fred Nihart pipe. There's a spigot there that comes out. And I believe that's where you sampled.

Well, below that on the other side of the road from where the spigot comes out is a box that -- it's a locked box. And we take that water

to deliver to our research building.

Q. And --

A. And there's a blue line.

Q. There's the blue line.

And is that a pipeline?

A. That is a pipe.

Q. And that is line numbered 4?

A. 4, that's correct.

Q. Okay.

A. Well, I don't think that's line 4. That's just another pipe that we -- we deliver to -- specifically to the research building, because we have historically used that water for drinking.

Q. Excuse me for interrupting.

A. Yeah.

Q. So it's not the blue line that's identified by the No. 4 that goes to the research building?

A. The black line. The black line is No. 4 with the arrow.

The blue line, where it says from drinking fountain to research building, that blue line --

Q. That's unnumbered, then?

A. It's unnumbered.

Q. Okay.

A. When the people made this diagram, they were -- they were -- their task was to give a general schematic of the pipes, some of the pipes that we have, that we know about, and then describe how we measure the water going through the system.

Their interest in this design -- in putting this map together was not to specifically identify pipes or specifically identify sites where we might sample water. So we've tried to adapt this schematic to that.

Q. Okay. So some instances the black line numbered represents a pipe, in some instances it simply represents a direction of water flow?

A. That's correct.

Q. Okay. Let's take them one at a time. And I think we've already discussed No. 1 goes to the country club, and that's a pipe.

Is No. 2 a pipeline or simply a direction of flow?

A. Well, I would really need to refer to our -- to this document (indicating) to be sure, because now you've gotten me confused.

Q. Okay. Refer to your Exhibit A. And I read through that and thought I understood it until you described that some lines were not pipes and some were. So that is why I think we need some clarification. And I'm looking at the first page of your -- what says "JMR Expert Report, Exhibit 9."

A. JRM.

Q. "JRM Expert Report, Exhibit 9." And then down the heading "Where does the water go?" And we discussed No. 1 is the black line that goes to the golf course and housing development.

A. Okay.

Q. And then I think you identify there approximately 1.5 cfs?

A. That's correct.

Q. The next one down is No. 2 --

A. That's correct.

Q. -- which goes to the Snake River brood raceway and spawn building?

A. That's correct.

Q. And you're saying No. 2 is not a pipe?

A. Well, it is a pipe. That's what they say here, it is a pipe.

Q. 1 is a pipe. 2 is a pipe. And let's

go to No. 3.
A. 3 they say is a pipe, but that's not exactly correct, because we have a big collector box. And you've been there. You've seen it. And you can see all this water being collected into a cement flume, and then that gets distributed to the Snake River Farm raceways.
So approximately the pipe numbered 3, but there's more than just pipe No. 3 delivering water to that system. So then that -- so that's what the fresh line is. Okay?
Q. Okay.
A. Then we have -- we use the water through the SRB raceways. That becomes a reuse line, what we call a reuse line.
Q. And that is the black line No. 2?
A. That's where the -- that's right.
Q. And that is actually a pipeline coming into the SRBA raceway?
A. The SRB raceway.
Q. SRB raceway. And then it discharges into what you would identify as a reuse line?
A. That's right.
Q. And it ends up into the hatchery building or into the SRF raceway?

A. Into the SRF raceways.
Q. And then in your testimony you have some description we'll go into later of what those quantities are?
A. That's correct.
Q. Okay. Then let's go to No. 4. No. 4 your text describes as water flowing into the visitor's center pond of about .3 when in operation.
A. Yeah. And that's.
Q. And the arrow --
A. That's right.
Q. -- No. 4 --
A. Shows it going into the cobble.
Q. Okay.
A. So the cobble is part of that collection area.
Q. I see.
A. Or it covers the collection area.
Q. Could you just mark on that Exhibit 25 what you call the collection area.
Is it everything with the dotted line that circles the word "Cobble"?
A. Yes. Can I just (indicating).
Q. And just for the record, Dr. MacMillan

highlighted in yellow everything around the word "Cobble" in the top-left corner of Exhibit 25 that is surrounded by the broken line.
And that would be what you call a collection area?
A. Right. But it's not -- that's right.
Q. And if this over-the-rim plan were to be approved, is that collection area where the water from the wells would --
A. That's right.
Q. -- end up?
A. That's right.
Q. And that would be your desire?
A. That's right. That's what our water right is. So that's where it would have to be.
Q. And referring to the next page as you continue on on your Exhibit 9 with the text description under the topic "Reuse water line," you describe in the second sentence that "All the water that runs through the SRB raceway," which is line No. 2, "and from the spawn building is collected into the reuse pipe and is sent to" --
A. Snake River Farms.
Q. -- "SRF."
That would be SRF raceway?

A. That's right.
Q. And when you refer to the word "spawn building" here, would that be the building identified on Exhibit 25 as "Hatchery Building"?
A. Yes.
Q. And just for the record, that would be adjacent to the west of what's described as the "SRF Raceway"?
A. Correct.
Q. Okay. And the next topic down under what's called "Freshwater line," you make the statement "The pipe that runs directly from the spring" -- and when you say "directly from the spring," you're talking about the collection area?
A. That's right.
Q. -- "to SRF is termed the freshwater line. There are four pipes that carry water from this line, intermittent and continuous flows."
Can you explain what the four pipes are you're referring to, where they're located on Exhibit 25 and this intermittent and continuous flow concept?
A. Well, I don't know what they mean by "intermittent." That's something we'd have to get back to you on.

Q. Okay.
A. The spring flow has been consistent. We've always had water coming through the system.
The water tower No. 5 is where we fill up -- we have water going in there. That's where we fill up water into the hauling tanks for fish so we can back up a truck to that with a big tank on it and put water in it. That is first-use water. Okay?
Then we have a -- we do have lawns, so we irrigate the lawns. That is sprinkler box 18, which is located -- okay. Thank you. So that's coming off the -- this diagram would show that that's coming off the fresh line. So then also off the fresh line, water is delivered to the hatchery building.
And then 22 off the fresh line is where the golf course receives water and pumps to their system.
Q. I believe that was the question that Larry Cope referred to you yesterday.
A. Okay.
Q. So that golf course line comes off of the fresh line and then goes on to supply the golf course?

A. That's right.
Q. And is that used for irrigation water by them?
A. That's my understanding. They pump that water. And I think that, you know, early on in our efforts to find a suitable mitigation plan, that could have been what caused some confusion for your folks because you thought maybe we were pumping water. But that's not our pump. That's the golf course's pump.
Q. And they have a well right there in that same location as No. 22?
A. Could be. I don't know what they have there.
Q. Okay. And to the extent of what they take at No. 22, I believe they would only irrigate during the summer golf season and at night, I believe?
A. I don't know. They certainly irrigate at times during the day because I see it.
Q. The fluctuation at 22, when they have water that turns on and off, does that cause any fluctuation that has any adverse impact on your operation of the SRF raceway?
A. We -- not that I know of.

Q. Okay.
A. We check the water flow weekly. Whether we are hitting the water flow, doing the measurement at the same time as the golf course is pulling their water, can't tell you.
Q. Now, if we turn to the recent test sites that are identified here.
SR1 that I think you described was on the fresh line only; correct?
A. SR1 is just the fresh line.
Q. And with respect to the water that goes to the SRF raceway that you characterize as reuse coming from the SRB raceway, is there any water-quality sampling or testing done on that?
A. Not at this point to SRB raceways.
Q. And with respect to the reuse water that goes from the hatchery building at point 19 into the SRF raceway, is there any water-quality testing done on that water?
A. I don't see point 19, but no, there's not any.
Q. (Indicating.)
A. Okay. That's from the hatch house, the hatchery building to the SRF raceways.
Q. Yes.

A. No, there's not.
Q. And what goes on in those two facilities that would have an impact on the quality of water going into those raceways?
A. Well, at both the SRB raceway, the Snake River brood raceways, we have primarily brood stock there. These are our selectively bred brood stocks, and they're part of our selective breeding program, as well as those circulars that says "Brood Circulars," those are all part of that.
But those raceways are about the third the normal size of a farm raceway. And we do fish culture research; we do nutrition research in those raceways. So it's a combination of things happening in the SRB raceways.
The hatchery building is where we have our eggs and early life stage.
Q. Those would be eggs that came from Soda Springs?
A. Or from the Snake River brood operation. And so those are -- that's what goes on there. And the fish are respiring and pooping and, you know, we have traditional waste management practices in place there.

But there's still waste products that get into the water. And so that's why we call that the reuse line. So we don't want the reuse water to go into the hatchery building where the most sensitive life stages are.

Q. Would I be correct to assume that water going into the brood stock raceways, the research building, and the hatchery building are of a greater concern with respect to water quality than what ends up in the SRF raceway?

A. Greater concern?

Q. In other words, it's okay to use reuse water in the SRF raceway, but would you use reuse water in the hatchery building or in your brood stock area?

A. Well, we would prefer to have first-use water all the time, but we don't. And so to try to maximize the use of the water, we've speciated it the way we have.

Clearly for research and brood stock and hatch -- early life stages, which are most sensitive to changes in water quality or to bad water quality or relatively good water quality, the physiology is more sensitive. You do want to use the better of the water if you have that

choice.

Q. On the top-left corner of Exhibit 25 where you've identified the location of the various sample sites, FS, 1, 2A, 3, 3A, 3B, and VC, those all appear to be located in an elevation above the collection area?

A. That's -- well, all the water is above the collection area.

Q. Okay.

A. But including all the 3As, 3, and the VC.

Q. And how and why were those various sites selected?

A. Well, we had, for the most part, good access to it. It's coming from -- instead of from the left of the cobble, it comes from the right of the cobble. So that led us to think, well, maybe it is a different -- I mean there is some difference in where the water is coming from.

And our efforts now to try to -- try to differentiate the source of the water -- the different sources of water, that's what we've come up with today.

As -- it's becoming clear that the nitrate-nitrogen issue is not going to go away for

the springs. So we're going to have to put in more effort, more research effort, to try to identify and determine whether or not it's possible to deflect that water away from not only the fresh line but the reuse line too.

At this point, as we talked about yesterday, we don't know, but there is great suspicion, that nitrate-nitrogen is an endocrine disrupter. And that changes the entire long-term history of production or the process of raising these fish and doing the research and doing the brood stock selection.

And just because the way those disrupters work, you just need a little bit. So that's what the scientific literature says. We don't know what the concentration is you need for nitrate. But scientific literature talks very extensively about how endocrine disrupters can affect all of us, including fish, at very low levels.

And so we're going, "Here we've got the selective breeding program. We've got early life stages, which we know are more sensitive to things. What are we going to do with this nitrate?" So it's a challenge.

Q. At this point you don't know that there's any problem or effect on your operation, but you're concerned that there may be if the nitrate levels increase, or do you have concerns at existing levels?

A. At existing levels.

Q. And the one test site that has the elevated levels is the one that's VC?

A. No. 3, RD3 has elevated concentration. All of the 3's have elevated concentrations.

Q. Okay.

A. Now, I think, you know -- and I'd have to look at the data there, but 2 -- RD2 has what we would call elevated nitrate compared to the history.

Q. Let's look at your Exhibit 8 on that point. I thought yesterday we had identified as RD3 is the only one that has had any exceedance of 10, the drinking-water standard?

A. Right. But we're not just concerned about the drinking-water standard. We're talking about the elevation from our historic 2 to 3, let's say, at -- so at RD2, if you notice, we've had 4 and 5's. It fluctuates a bit over time.

When I say 4 or 5's, I'm referring to milligrams per liter of nitrate-nitrogen. And so that's -- that's a concern.

We've had it looks like almost a 7 milligram per liter at 2A -- or is that RD2? That would be RD2. And so, you know, the messiness of this at this point is we don't -- we don't have a good way to -- to differentiate all the springs that feed into that complex. And so this -- this is our early attempt at trying to do that.

And RD2, while it's a stable point, we always go back to that point to measure, we don't -- we don't know where that water is coming from.

So -- and the same thing, you go back to RD1 or even the -- what we call the FS spring, there is multiple water -- waters going to that -- or springs going to that spot too.

So it is a complicated thing that we're trying to sort through. And we're really just in the pretty early stages of trying to do that sorting.

Q. And on that point, when I look at this page 2 of Exhibit 8 of your testimony we're

looking at, only RD3 has three tests taken over this three-year period -- or excuse me, four tests taken over this three-year period that would exceed the 10 milligram per liter drinking-water standard. And I understood -- and maybe I was wrong. I understood you to say maybe yesterday, or certainly Larry Cope did, that it would only be considered polluted by him if you exceeded the drinking-water standard of 10.

So are you considering water at the Clear Springs facility now, based on these samples, to be polluted or contaminated, other than those four samples that were taken at RD3?

A. Yes. Pollution occurs, according to state law, state regulations, if you exceed the background level of the concentrations in ground water, you are polluting the water. There's pollution.

The way the Safe Drinking Water Act works, they do identify a maximum contaminant level of 10 milligrams per liter nitrate-nitrogen. And the way the -- but that doesn't mean it's not polluted until you get to 10.

Q. Would DEQ look at this sample and say there is any risk or concern for people who are

drinking the water outside of RD3 on those three samples?

A. They would look at 5, DEQ gets into motion to do something about -- try to do something to change practices or if it's a septic system leaking, whatever, try to identify it, because they know that 5 is contamination, and they know that 10 is even worse.

Q. And what point would they say that it shouldn't be used for drinking water?

A. 10 is the -- 10.01 is going to be the limit for drinking water.

Q. Anything under that would be suitable for drinking water?

A. That -- well, that's -- depends on who you ask. If you ask EPA, they won't take action until 10.

Q. With respect to your comment earlier that these testings gave you concern that nitrates were on the increase, do you do that based upon a comparison of what you see in your samples, Exhibit 8, after January of 2007 with some baseline established prior to 2007?

A. That's correct.

Q. And I may have missed this in your

report.

Where is that baseline information reflected in your testimony that would lead to that conclusion?

A. In our material provided to you -- I don't know that I put it in the report itself. But we provided to you from 1999 until current, approximately current, what those levels were.

Q. Okay. So you looked at the others over the period 1999 up until 2007?

A. Uh-huh.

Q. And based on a comparison of the '99 to 2007 and 2007 on it gave you concern?

A. That's right. The other -- the other what I did put in the report was reference to IDEQ's two reports on -- on their investigations of nitrate levels in Thousand Springs area.

And in those two reports they -- the first report they identify some increase in concentrations. And then in the second report they're unsure. And that's -- now they're concerned again, and have been since 2007.

MR. BUDGE: Let's go off the record just a moment.

(Discussion.)

(Mr. Brockway joins the proceedings.)
Q. (BY MR. BUDGE): Dr. MacMillan, we were discussing the sampling prior to 2007 of nitrates that began in 1999?
A. Yes.
Q. And would that have been the first water-quality sampling for nitrates that was done at the Snake River Farms facility, influent water?
A. Well, there was earlier data. I know that Dr. Brockway even did some studies looking at the Snake River itself. He may have sampled those. I don't know.
And it's possible that in the NPDES permits of those days, we sampled nitrate. I don't recall for sure. In our database 1999 is what we have, is where we start.
Q. Okay. And that was a sample that was taken only at SR1?
A. For the Snake River Farm complex, right.
Q. And were those monthly samples?
A. Those were monthly samples.
Q. And were the results of those samples run by an external lab or internally?
A. Internally.

Q. Okay.
A. Using QA/QC procedures and EPA methods.
Q. And that's the database that you think was produced just in the last several days?
A. No. I think that was provided earlier than just the last few days.
Q. Earlier in this particular proceeding --
A. Yes.
Q. -- or one of the prior proceedings?
A. This proceeding.
Q. We'll continue on, see if we can locate that.
A. You know, if -- I have it in my car, if you want to just --
MR. SIMPSON: Cut to the chase?
THE WITNESS: Yeah.
MS. McHUGH: That would be great.
MR. BUDGE: Let's take a break and go do it.
(Recess.)
(Exhibit 26 marked.)
Q. (BY MR. BUDGE): Dr. MacMillan, we've marked as Deposition Exhibit 26 a document

entitled "Nitrate/Nitrate Nitrogen Data on Spring Water at Snake River Farm."
And is that the document that you referred to in your testimony that reflected the data from monthly sampling at sample point SR1 covering the period January 1999 through August of 2007?
A. That's the one, although the title is "Nitrate-Nitrite Nitrogen Data."
Q. Thank you.
And would that Exhibit 26 represent the database of information on nitrates that you were referring to when you compared it to the information depicted in your Exhibit 8, testimony Exhibit 8, which led you to conclude that there was some increases of concern?
A. That's correct.
Q. And those increases would seem to be relatively minor at that SR1 site over that time period?
A. On Exhibit 26, the increases, whether minor or not, we'd have to look at the biological impact of that. But in -- we had raised -- there's other data besides this that you have as well that would indicate -- we started sampling in

that spring complex other than just SR1 to try to track the nitrate-nitrogen concentrations. So that started in -- and we have that January of 2007. We also have SR1, sample --
Q. You're referring to --
A. Exhibit --
Q. -- the second page of your testimony, Exhibit 8?
A. Correct.
Q. So that's the other sampling you were referring to?
A. That's correct. And that's why I said earlier on, you will notice for example -- let's see. We could even look at January 15th, 2007, at SR1, we had 3.42 milligrams per liter of nitrate-nitrogen.
We go to January '02 -- I mean '07, we have -- at SR1 we have 3.67. I would say it's a minor variation between 3.67 and 3.42. It's not a minor variation when you go from, say, a 1 part per million, 1 milligram per liter change.
Q. What is the detection error when the samples are run?
A. Well, there's a method detection limit, and for nitrate/nitrite nitrogen, I'd have

to -- it's much less. I'm thinking that it's .005, but I'd have to look at the method itself in our lab to measure that.

Q. When you look at all the data on Exhibit 26, which was the 1999 to 2007 sampling period, and compare that with the same data for SR1 on the period going forward from 2007 to 2009, which is your Deposition Exhibit 26, there's a lot of numbers there to compare.

Have you done any other statistical analysis or graphing to determine exactly what the percent of change might have been?

A. No. I think you have -- you're referring to some graphs. That certainly depicts fairly well the increase that we've observed, particularly in the months of August, September, November, that time frame, in the last two or three years.

You know, we could certainly go back in time and, you know, take the -- you could even take the average for each year, just as one approach, and see how that's changed.

DEQ has done some analyses, and that's their technical publications 14 and 27, I think. Those were referred to in my report. And they've

done some statistical analyses.

Q. On these particular samples?

A. Yes. Well, on their whole database, Thousand Springs. And part of that data includes this data.

Q. Is that something that was produced as well, the DEQ technical paper you referred to?

A. It was cited. It's available on their website.

Q. Okay. Not part of what was produced here?

A. No.

Q. So insofar as any internal statistical analysis of this data, that hasn't been done by Clear Springs?

A. No.

Q. Does Clear Springs have any empirical data or any studies or analysis underway that would attempt to determine the impact on the certain nitrate levels on the fish that you raise there at Snake River Farms?

A. No.

Q. Is that something that you anticipate undertaking --

A. Yes.

Q. -- now that this is identified as a concern?

A. Yes. And the difficulty is that if this is an -- not "if." It is an endocrine disrupter. The disrupters can be life stage -- the disruption can be life-stage dependent. You know, I'm certainly not an expert on endocrine disrupters. I'm just repeating what the scientific literature says.

And so, you know, whether we can -- we can try to do those kind of studies. But if it affects brood stock, and apparently it can affect even the germ line -- okay? -- so the DNA of the animals, that becomes very, very difficult to do those studies. I don't know if we're equipped to do that.

So at this point that's where we are. We're trying to get some universities to take a look at that. But so far we've not been successful.

Q. So as a scientist and expert, would it be accurate to say the nitrate levels that you currently have at your facilities is currently a level of concern that you're watching?

A. Well, it's an area of concern that

we're investigating.

Q. Correct. You don't have any data or information or studies internally or seen data externally that would indicate the levels of nitrates that are currently at the facility springs, those that are under 10, would cause any difficulties or problems with respect to ability to raise commercial rainbow trout?

A. Yes, there is a scientific publication that identifies nitrate-nitrogen at levels of 2 to 6 or 7 as being lethal to rainbow trout eggs.

Q. Is that the one that was cited in your testimony?

A. That's correct. That's correct.

Q. And what about some of those other studies that suggest that levels of up to 57 continue to be safe?

A. I'm not sure which studies you're referring to.

Q. Well, one of those that was cited, I think you produced, was the Hamlin report?

A. Did they look at rainbow trout?

Q. No. This says, "A nitrate concentration of 57 milligrams per liter was chose as an upper limit in this study, because this is

the maximum concentration deemed safe." And they also looked at a lower concentration and say, "The lower concentration of 11.5 milligrams per liter of nitrate was chosen as the lower limit as it was considered extremely safe, yet realistically achievable under normal aquaculture practices."

This is one of your --

A. I'm familiar with that.

Q. -- articles that was cited in your testimony, I believe?

A. It was. And I would just offer that that's not rainbow trout. It's not the early life stage of the trout. So it's not germane, other than to identify that in those particular experimental conditions the nitrate-nitrogen appeared to have some adverse effect to the sturgeon.

And it's clear that -- and I did, I think, address this in my report that it is clear that species vary in their sensitivity and life stage too. Nitrate/nitrite nitrogen and to -- we know that's probably true for endocrine disruption as well.

Q. Refer to your testimony if you need to. Identify the study in your testimony you're

referring to which suggested that 2 to 6 milligram level.

A. That would be Kincheloe, et al.

Q. Can you identify where that's referred to in your testimony? Is it this one?

A. That's correct.

Q. Okay. And I think that's on your testimony at page 29, lines 839 to line 841?

A. Okay.

Q. And where did the first page of that go? We haven't marked this as an exhibit.

But this is the study you referred to and I think was produced as a part of the data to support your testimony?

A. That's correct.

MR. SIMPSON: Why don't we just at least identify it when you hand it to him, so that we --

MR. BUDGE: I plan on it.

MR. SIMPSON: Okay.

Q. (BY MR. BUDGE): And the Kincheloe study that you referred to that found impact at those levels pertained only to a study of egg and fry mortality; is that correct?

A. That's my understanding.

MR. BUDGE: Let's identify that as

Deposition Exhibit 27.

(Exhibit 27 marked.)

MR. BUDGE: We also discussed the Hamlin study entitled "Aquaculture."

And let's mark that as Exhibit 28.

(Exhibit 28 marked.)

MR. BUDGE: So for the record, we have marked as Deposition Exhibit 27 the Kincheloe paper referred to on page 29, line 839 through 841 of the MacMillan testimony. And there is some highlighted information located on pages 576 and 578 of that document, which have been added by us and were not part of the copy of that document provided by Dr. MacMillan.

Also, Exhibit 28, which is the Hamlin "Aquaculture" article that was referenced on lines 855 through 856 of Dr. MacMillan's testimony, and it also has some highlighting in yellow on some pages that was added by us.

Q. Looking back at our Exhibit 25, that's Deposition Exhibit 25, the Snake River Farms complex schematic, the ten sampling sites that are identified there, do you know what percent of the water intake to the facility would be represented by those?

A. Do not. We would like to be able to do that, certainly. But there's not a -- you know, it's a messy, messy area in terms of its geography. So you can't get measurements of that one.

Q. And when we have looked at the total water rights here at the Snake River Farms complex of 117 cfs based on the partial decree, and I think we have an Exhibit 22 that reflects some of the discharge from the facility that averages somewhere in the 85 to 90 second-feet of water being discharged from that facility, would that be all of the water associated with the uses that we've been discussing here at Snake River Farm?

A. All of the uses?

Q. Are there other water rights?

A. No, I think -- my recollection is that you correctly listed all of our water rights. So as far as I know, that's all the water rights that we have.

Q. So when you look at Exhibit 22 that has some period of record -- and I'm not going to be exactly accurate on this, but it looks like flows range somewhere in the 85 to 90, on average.

That would be the total supply coming

in through these various spring sources into the facility that we've been discussing more specifically?
A. In this time frame, that's correct.
Q. Okay. Looking at that same Exhibit 25, is the SR1 measurement indicative of the water quality used in the hatchery building?
A. SR1 would be indicative of that. That's the fresh water.
Q. Okay. And the yellow stars that are located on Exhibit 25 on the top-right corner, one on the fresh line and one on the reuse line that are labeled "Flow meter access," would that be the location at which water-quantity measurements are taken and reported?
A. The primary locations, that's correct.
Q. And the other locations would be --
A. Well, we have some smaller uses, like the research building, sprinkler. Those are all identified in I think it's Exhibit 8 or 9.
Q. The location marked "FS" --
A. Uh-huh.
Q. -- I think did you say earlier that was located below that Fred Nihart pipe?
A. That's correct.

Q. How far below?
A. Probably -- my guess would be 10 feet.
Q. Okay. And --
A. 10, 15 feet.
Q. Is that location from the FS site, does that water go to the research building?
A. It does. That's our drinking water.
Q. It doesn't go to the research building?
A. It does go to the research building.
Q. Drinking water of the research building?
A. Yeah.
Q. And is that site below the road?
A. Yes.
Q. Okay. And is it in a locked box area?
A. There is a lockbox there.
Q. Okay. So for purposes of the brood circulars that are identified here on the top-left corner of Exhibit 25, what measurement point would be indicative of the water quality in that area?
A. SR1 is the most representative that we have.
Q. And would the same apply to the spawn building?

A. Correct.
Q. And what's identified as the hatchery building, that would be the SR1 site would be most indicative of the quality there?
A. Correct.
Q. Okay. And so when we look at the quality sites for 3, 3A, 3B, and VC, do they all flow into that collection area that's been identified?
A. That's our thinking, that it does. And that's why SR1 -- our thinking is that SR1 has been increasing in nitrate because the spring flow is coming -- the primary sources of contaminated water are from the 3A -- or 3, 3A, 3B spring area.
Q. In your testimony you also had raised some concern over the nitrate testing and reporting that was done?
A. Yes.
Q. And would those concerns be satisfied if a statement were provided from the lab confirming what methods were utilized?
A. Yeah, I think the concern -- well, there were two concerns that I identified. One, it was a reference to just nitrate, rather than nitrate-nitrogen. And that -- it's a minor point.

I think in a later document, in Mr. Eldridge's supplemental testimony or direct testimony, whatever you call it, some -- he did start referring to -- the measurements that I assume ESC were making was nitrate-nitrogen.
There's a difference between nitrate and nitrate-nitrogen. And so many places, for consistency, used the nitrate-nitrogen.
The other question was in your ESC lab reports you identified a method, and I couldn't find what that method was. So my assumption is that it's probably a valid method, but I could not verify that because they just didn't identify what the method was. Well, they put a number to it, but it was not listed in EPA's list of approved methods. So a simple statement that says what it is, you know, would allow verification that it was as an accurate method.
Q. That would be a statement that would need to come from the lab that did the testing?
A. Yeah, they would be the ones that you'd ask for that.
Q. Okay. I've got some questions going through your testimony, if you have a copy of that available, that I'd like to go through first, and

then we'll come back to a few of the issues that Larry Cope put on your plate if we miss any of them in the process.

The first question I have has to do with an attachment to your expert report as Exhibit 2.

As I review that and understand your testimony, I believe that was a report that you had filed in conjunction with one of the prior mitigation plans?

A. That's correct. Well, yes, I think so. Yes.

Q. And your intent here is to present that entire report in this case as an exhibit to the testimony that you filed?

A. That was correct.

Q. And that report was filed -- I'm referring to your Exhibit 2, would have been a report that was submitted under date of December 3rd, 2008, I believe?

A. Sounds right.

Well, December 3rd?

Q. Yes.

A. Okay.

Q. Looking at that exhibit, and given its

length, some 83 pages, I'm not going to wade through the entire document, but --

A. Thank you.

Q. -- but on page 3 and continuing on to page 4 you summarize the opinions that you express, and then you later go into those opinions in some considerable detail.

If you would look at page 3 of that exhibit where you summarize your opinions, it appeared that a number of those would relate to opinions that were specific to that mitigation plan that involved recirculation of water and other things --

A. Yes.

Q. -- that would not seem to be material to this plan?

A. That's correct.

Q. And so if you could go through those opinions that are shown there on 3 and 4, and perhaps identify which ones there you consider to be of relevance to the issues that we have presented on the over-the-rim plan.

A. Okay. On line 101 --

Q. Okay.

A. -- referring to "Physiological stress

reduces fish adaptability and ability to withstand additional stress, increases susceptibility to disease, both infectious and noninfectious, and reduces fish performance capacity." Arguably, endocrine disrupters could do something like that.

Q. Okay. So that would be an issue that is relevant to this proceeding?

A. Yes.

Q. Okay.

A. "Stress shifts the bioenergetic flow of feed resources, energy, and protein away from somatic growth toward maintenance of" --

THE COURT REPORTER: I need you to read that a little slower.

THE WITNESS: What?

Q. (BY MR. BUDGE): Maybe we could refer to that as the issue that is summarized on lines 104 through 106 located on page 4 of the JRM expert report, Exhibit 2.

Okay?

A. Okay. 107, line 107 through 110 would be a factor. Line 111 would be. Potentially line 112.

And then line 114 through 116 would not be an element because that was directly

focused on the proposed recirculation of effluent water.

And potentially 117 through 119 could be issues. And those that I've identified could be issues because of nitrate -- nitrate-nitrogen, for example, endocrine disruption, for example, and in the construction of the pipeline, if it were to go near the raceways, that could create stress on the fish.

Q. Thank you.

So summing up on that Exhibit 2, the opinions expressed in the matter beginning on page 3, lines 87 through 100, you would acknowledge are not relevant --

A. Well --

Q. -- and also the opinions associated with the summary on lines 114 through 116 are not relevant, and all of the rest of those that you've identified, which are basically lines 101 through 113, and also lines 117 through 119, either are considered relevant by you or arguably relevant?

A. Well, the earlier ones on page 3, line 87 through 100, are potentially relevant because they're statements about rainbow trout aquaculture under intensive conditions.

And under those circumstances various elements in the over-the-rim project could be relevant to those issues identified as opinions in this matter.

So for example, "Rainbow trout are complex, physiologically integrated vertebrate animals." That is relevant because they are -- it's a statement that they are vertebrates, and they are subject to endocrine disrupters such as nitrate-nitrogen.

Q. Okay. Thank you.

Going back through your testimony, I just have a number of questions that I think we can walk through from front to back.

Beginning on page 5 --

MR. SIMPSON: Excuse me. That's not this exhibit, but on his main testimony?

MR. BUDGE: Correct, yes. On his original JRM expert report.

Q. You make the statement that the plan would be inconsistent with former Director Dreher's requirement that the mitigation be "in time, in place, and in kind." You put in bold the words "in kind."

So if the water is the same water,

according to Dr. Brockway's testimony and Mr. Cope's testimony, are we not delivering water in kind?

A. Well, I don't know what Dr. Brockway's testimony is. Larry Cope's testimony is it's not the same water because it's not spring water. Chemically, it could be. It's certainly very similar to the water that can be delivered to the Snake River Farm.

Q. So when you say it's not in kind, meaning because the water came from the well source versus a spring source?

A. That's correct.

Q. And "in place" would be because the facilities are not yet in place and delivering? Is that what you'd be referring to?

A. I was referring to Director Dreher's comment. "In place," yeah, it needs to be at the -- where our spring diversions are.

And "in time," that's fairly explanatory, I guess. But that would mean that the mitigation should be provided in time.

Q. Okay. On the top of the next page, 6, I had some questions regarding your testimony on lines 96 through 100. And you state on the second

line that the plan also "...would not be consistent with Clear Springs Foods' decreed water rights that identify spring water as the source."

That wouldn't be accurate relative to the Box Canyon right that identifies Box Canyon Creek as the source; correct?

A. That's correct. But it would be accurate for the Snake River Farm.

Q. And you go on to talk about there would be a damage to the physical property of Clear Springs and a taking of the property.

Are you referring to that pipeline layout that would go through the property that was depicted in Exhibit 2205?

A. That's correct.

Q. And that layout was basically where you directed the ground water districts to put the pipe if it had to go on your property, which you don't agree to?

A. No, that's incorrect. I did not direct Mr. Eldridge to do that. What I -- he said when we met that he would prefer to put it the way that you described.

And I said, "No, that is not acceptable to us."

And that's why we objected to any survey of that property at first.

Q. Did you or someone at Clear Springs give direction if the pipe were to go through your property where it would go, that it would have to avoid the landscaped areas, the raceways, and the like?

A. Not that had any authority. If they did, they didn't have authority to say so.

Q. So if the pipe were located somewhere outside of your property, such as down the highway, would that alleviate these concerns that you describe here, that there would be a taking of property and --

A. That's correct.

Q. Okay.

A. And I believe Mr. Cope testified to that as well, in essence.

Q. That's my recollection. I was simply trying to identify if you had a different view of that than Mr. Cope expressed.

On page 7, lines 131 through 133, you make the statement, "The Ground Water Districts' over-the-rim plan fails to deliver the same water as currently received at the Snake River Farm

spring complex."
That seemed to be in conflict with Mr. Cope's testimony on page 6 and 7 and Dr. Brockway's testimony on page 7 of his testimony that indicated that it was the same water.
So is your complaint based on the fact that the water is being delivered again by well versus by spring?
A. Well, there's two -- two issues there. One is that it's not spring water. Number two, the data that you have provided is only based on one month, basically, of data collection. That hardly is -- provides any rigor to an analysis of what water would be delivered throughout the year. So from a scientific standpoint, it fails in that respect.
Q. At the time you wrote this testimony, had you seen the supplemental testimony of Mr. Eldridge where he did the chemical analysis?
A. Had not seen that.
Q. I correct that. I think I said Eldridge. Mr. Scanlan.
A. I have seen Mr. Scanlan's.
Q. And do you have any reason to question

the conclusions in that chemical analysis that chemically the water is basically the same?
A. Well, as far as his analysis could go, I had no reason to question the validity of his analysis.
Q. Okay. And just for the record, I believe we're both discussing Deposition Exhibit 13, if you want to check that. And that is the same as was presented by Terry Scanlan in his supplemental direct testimony dated October 21, 2009, as an attached exhibit, which I don't see was numbered. Excuse me. It was numbered as Exhibit 2024.
A. Well, then, Mr. Scanlan's -- in Exhibit No. 13, Mr. Scanlan's technical memorandum to Mr. Eldridge, he does, in his table, identify significant differences in nitrate-nitrogen at well No. 2 and well No. 4.
Q. Uh-huh.
MR. SIMPSON: Counsel, let's take a break for a minute and use the restroom, and maybe knowing Dr. MacMillan, maybe he does too.
MR. BUDGE: Okay.
(Recess.)
MR. BUDGE: Back on the record.

Q. Continuing on page 7, on lines 131 through 133, and again on 136 through 138 in your testimony, Dr. MacMillan, you find fault with the plan claiming it doesn't deliver, quote, "usable water" and that several wells are contaminated.
Would those concerns relate primarily to the nitrate levels in wells 2 and 4?
A. From a chemical standpoint it relates to that issue in 2 and 4. It's not spring water, though.
Q. Correct. And so recognizing that there's an overall fundamental objection to any nonspring water delivered by the wells that you expressed and so has Mr. Cope repeatedly yesterday, from a chemical standpoint if wells 2 and 4 were eliminated from the mix, it would address the concerns you express here that the water is unusable or contaminated?
A. Well, Mr. Budge, eliminating well 2 and 4 would be helpful. What we don't -- do not have is a long term-history of -- water-chemical history from the other wells, and certainly not for well 2 and 4.
And I know in -- I think in Mr. Eldridge's supplemental testimony he got into

looking at some other wells outside the area, or outside that well field as you guys call it, and that's not germane, from my perspective, because it doesn't -- it's not a long-term history of those wells, and they're far removed.
Clearly, just looking at your own -- the ground water districts' data, there are differences close by amongst wells. So that remains a concern at this point, that we don't have the rigor of analysis of data collection that -- you know, and it's very similar to, you know, Clear Springs collected the data from 1999 until present on nitrate at SR1. That's the kind of data that you need to make an informed decision about -- about that water quality from a chemical standpoint.
Q. And the only way one might obtain a greater database is to operate for a while and to take additional samples?
A. No. The only way to really do it is to have been collecting that data all along. But you're now asking us to accept additional risk with your mitigation plan. And that's --
Q. But we can't go back and re-create data --

A. You cannot.
Q. -- in previous years; right?
A. That's right.
Q. So all we can do is go forward with what we have.
But wouldn't you agree that the risk can be mitigated by having the ability to shut off any delivery from the plan in the event there becomes a delivery of nitrates, or any other chemical for that matter, that exceeds the water-quality levels that you have from your other sources?
A. No, I don't agree with that. And the reason is once you've introduced a chemical, depending on the chemical, you can have catastrophic effects on the fish. It could contaminate the fish flesh. So no, that's not -- that's not an acceptable thing.
Q. Well, let's be realistic here. You have a drinking-water standard of 10 milligrams of nitrate per liter. If you eliminate wells 2 and 4 you're not anywhere close to that limit, and you're basically nearly a mirror image of the quality of water, as far as nitrates go, that is currently being received. And whether you

disagree or not, chemically, the water, according to Mr. Cope and Mr. Brockway, both have filed testimony in this case that the water is the same water, other than for the fact that one comes from the well and one comes from the springs.
So if there were an ongoing change in either the water that you receive at Clear Springs or what's being delivered from the same source by the ground water districts, you would have ample advance time to observe those changes over time, would you not, and be able to make appropriate changes? You can't control your source, but you can control the well delivery source?
A. If there is a monitoring program in place, you could probably identify changes in the chemistry at those other wells in a timely way. That is very feasible.
Q. But don't you have -- excuse me.
A. Whether you can do that, whether the ground water districts would do that is another question.
Q. Don't you anticipate an ongoing monitoring program on your spring sources, as you have now?
A. We would have an ongoing monitoring

program at our wells.
Q. Wouldn't you think there would be a similar ongoing monitoring program with water you receive from the over-the-rim plan if it were approved and constructed?
A. Why would we be responsible for that?
Q. I didn't say responsible. I said wouldn't you expect to have one for Clear Springs to protect the integrity of your water supply from potential risks?
A. We would expect, in this type of plan, that the districts would have to sample the water and report timely to us.
Q. Okay. That's what I meant. So wouldn't that give you ample opportunity to detect any problem and give you an opportunity to say "This water is different than ours. The nitrate levels have increased. We're not willing to accept it"?
A. That's feasible. We'd have to think about how that would work. But that's feasible. It seems feasible on the first blush.
Q. On lines 148 and 149 of page 7, you make the statement that the plan will adversely impact nearby Clear Springs' supplies.

Is that an opinion you're rendering based on something that Dr. Brockway told you as your hydrologist?
A. That is an opinion based on my knowledge, not as an expert hydrologist, but of the spring complex there and the proximity of those wells to our facilities downstream from that.
And so it's based on the thinking that current use of those wells is damaging the water flow to the spring river -- or Clear Lake spring complex. So that's an assumption on my part.
Q. And is the assumption you're making that supports this conclusion based on the same assumption that Mr. Cope was making yesterday that to the extent these wells, which total 15.79 cfs, were not being delivered to Clear Springs, they would continue to be pumped for irrigation purposes?
A. Could you repeat that?
Q. Yeah, let me re-ask that in a better way.
Prior to the implementation of the plan, the wells associated with the plan, before they were converted to surface water, totaled

15.79 cfs; correct?
A. (No audible response.)
Q. And after they were converted, those wells will no longer be pumped and only 2 to 3 second-feet will be delivered over the rim.
So the testimony that we've submitted through Dr. Brendecke is that there will actually be a benefit to these springs because you're delivering less water from the wells at 2 to 3 second-feet than you historically were pumping for irrigation purposes, the 15.79 cfs?
A. Well, I have not read Mr. Brendecke's -- Dr. Brendecke's report, so I don't know what he has said.
I think I know that many of those -- the question is whether -- how much water are those wells currently using. And they have water rights for 15 or so cfs. Is that how much water they are currently using? And I don't know the answer to that.
Q. That's addressed in his testimony. And he concludes that the amount delivered over the rim on an acre-foot basis, a volumetric basis, would be less than was historically used. And so given that fact, it doesn't make any common sense

that there could be any adverse effect on other springs, as you suggest here.
And so my question was, on what do you base this statement on?
A. Well, I base my statement on what I said earlier. And perhaps I should read Mr. Brendecke's report and Mr. Brockway's report -- rebuttal report to that. Dr. Brockway's certainly our expert on that issue.
Q. You're not claiming to have any --
A. No.
Q. -- expertise for purposes of that statement?
A. No.
Q. Moving on to page 9 of your testimony at the top, lines 194 through 199, you make the statement there that "Traditional row crop and terrestrial animal farming with its use of pesticides, herbicides, antibiotics," so on and so forth, "selective breeding, genetic modification, are of little concern to the consumer, but these are significant concerns for the consumer of seafood."
So are you essentially saying that seafood consumers are pretty concerned about

knowing anything about if your fish products are genetically modified or if they're selectively breeded or if they use antibiotics, but it doesn't apply to the other food industry?
A. It's a general statement that -- for example, the ploidy, p-l-o-i-d-y, the number of duplications of chromosomes, most people don't know that wheat is -- has multiple sets of the same chromosome.
If you try to do that with fish, consumers are -- many consumers are concerned about that. The GMOs of tomatoes are now pretty well accepted by many consumers.
To have a genetically-modified organism, a genetically-modified trout by way of manipulation of the chromosomes, artificial manipulation of the chromosomes, that's -- that's not acceptable to domestic consumers.
And there is indeed a significant fight to block that from happening in the United States. With the use of antibiotics, the salmon industry, the wild salmon industry uses the claim that farm fish -- "Avoid farm salmon -- avoid drugs. Don't eat farm salmon." That's their campaign.

So that's the basis for that -- those comments there. But you don't see that by and large with terrestrial animals that are used for human consumption or plants. Antibiotics, for example, are used in orchards, on apples. You don't see the use of antibiotics as an issue.
Q. So Clear Springs uses selective breeding?
A. Yes.
Q. And you use genetically-modified fish?
A. No.
Q. Do you use vaccines?
A. Yes.
Q. Do you use antibiotics?
A. Yes.
Q. And so you're saying consumers have concerns about the use of those if they're going to consume fish --
A. Yes.
Q. -- but they don't have concerns about that if they consume other grown crops or animals?
A. What they're concerned about if there's an appropriate regulatory system in place and the ability of a company such as Clear Springs to demonstrate to them, to the buyers, that the --

the consumables, consumed fish, are free of antibiotics.

Q. So when you make, then, the comment here that these things are, quote, "a significant concern for consumers of seafood," that seems to suggest that consumers of seafood are pretty knowledgeable and pretty particular?

A. Some consumers of seafood certainly are.

Q. And then I turn to the very next page of your testimony on page 10, at lines 223 to 224, you seem to make a contradictory statement when you say "The lack of consumer knowledge regarding food preparation, handling, nutritional value characteristics, origin, food safety, and species is believed to be considerable."

And then you go on two sentences following on lines 227 and 228, and you continue to elaborate, and it says "They," referring to your consumers, "have little knowledge about where seafood comes from. It's how it's grown."

It seemed to me that that was some indication you don't have a very sophisticated or knowledgeable or concerned consumer, which is exactly the opposite of what you describe on the

previous page.

Could you reconcile that inconsistency?

A. I wouldn't -- I don't agree it's inconsistent.

Q. My perception.

A. Yes, it is your perception. It's a multidimensional entity out there in terms of global seafood consumption. And there are consumers who are well informed, there are consumers who aren't as well informed. By and large, consumers are not well informed about seafood.

The assumption, the consequence is they assume that seafood is very safe to eat, that it is wild seafood.

Now, you have the farm seafood industry coming into play over the past 30, 40 years, and we have to be able to demonstrate -- if you're going to be a company like the food company like Clear Springs Foods, you have to be able to demonstrate by multiple dimensions, multiple ways, that the farmed rainbow trout that you've grown are equivalent to the wild, or better even, than the wild trout that you might consume.

So that's our challenge. And that's the purpose for those different comments there. That's the purpose for including that analysis that I refer to Kirkley, et al., and Anderson and Shamshak.

Q. Further down on page 10 at lines 240 through 241 you make the statement, "A poorly educated or misunderstood consumer appears to be fertile ground for accepting additional misinformation."

So is it your belief that if 2 to 3 second-feet of the water from the East Snake Plain Aquifer is delivered via a well, that that would somehow mandate that Clear Springs change its marketing proposal that all of the fish are produced from pristine spring water?

A. As Mr. Cope said, there's an ethical issue involved. We are very -- we try to be very cautious about fraudulent claims, but it's imperfect.

When we do go to -- we do give lots of tours around the Snake River Farm complex. We would have a pipeline coming out of the ground someplace with a degassing tower. That will be hard for us to explain what that's all about and

be honest about it. So that's a concern.

And I see you turning to our water technology and people. You need to understand, Mr. Budge, that that was written back in the mid-'80s or so. And just as Mr. Cope was quizzical about what your concern was, I am too.

It's not just the Pioneer Mountains. We know that. We also know that the aquifer, the ESPA itself, is not endless. We didn't know that in 1985. We didn't know it very well, anyway.

Q. Well, it's pretty common for businesses to put the most favorable spin they can on their products for marketing purposes that may not be entirely accurate --

A. Factual.

Q. -- correct?

It seems to be consistent with your statement. I wonder if there was a tie-in when you made the statement that we have poorly educated and misinformed consumers that are fertile ground for additional misinformation that --

A. Well, you have to be careful about taking things out of context. That whole section was designed to better educate people about what

the challenges Clear Springs, and companies like Clear Springs Foods, has out in the marketplace. And that's what our sales and marketing people have to deal with.

So if we weaken the image, if we weaken that cachet that we have associated with the use of spring water and the purity of that water or the quality of the fish or the food safety parts of the fish or how they're grown or the service that we provide, if we weaken those things, then we have potential to weaken the image of Clear Springs and diminish our sales.

Q. On the next page, 11, on lines 258 to 259, you make the statement that "The OTR project proposes to strip Clear Springs Food of this critical point of differentiation and diminish its marketing success."

Don't you really think that overstates the case a bit? I mean do you really believe that the delivery of the same water through the well is going to somehow strip Clear Springs of its ability to market its product the way you have been?

A. Well, I asked that question of our marketing people, and they said yes, it would,

sales and marketing people.

Q. And so you think that you would have to change your marketing approach if this plan were approved?

A. That's what I'm being told.

Q. Well, do you believe that personally?

A. I'm not a sales and marketing person. As a scientist, I try to be very, very objective and very honest about things.

Q. Well, when you began a few years ago purchasing and marketing rainbow trout from your Argentine and Chilean partners from a water source out of a river, that didn't result in any adverse effect on your marketing plan or change in any of your materials, did it?

A. Well, it did have an adverse effect. We cannot sell foreign-born product -- we have to provide on our labels country of origin and method of production, whether it's wild capture or farm raised. We have to do that. And so a number of our customers will not accept the Argentine or the Chilean product.

Q. And my question was, did that cause you to change any aspect of any of your marketing plans?

A. It did. It caused us to look at different customers and try to secure those different customers as a consequence.

Q. It didn't cause you to change Exhibit 5. That foreign purchase has been in place for a few years now.

A. Well, Exhibit 5 has been around for a long time. How much it's used, I cannot -- I don't know if it's even used now.

Q. The video that was provided didn't seem to suggest there was any change or indication that had been made pertaining to foreign partners?

A. That's right. And that video, how often that's used, I don't know. I don't know that it's used very much, if at all.

Those exhibits were intended to provide examples throughout our history of how we have emphasized the use of spring water in our marketing efforts.

So you have two heads? Is that better than one? Is that how that works, Candice?

Q. Are you suggesting that the video and the marketing material is relevant in this case or not relevant?

A. It's relevant because it provides

historical evidence of how Clear Springs has created its image, its signature in the marketplace as a premier supplier of farm-raised rainbow trout.

Q. On page 14, on line 355, you indicate here "...there's no fluctuation in optimal growing conditions for the farmed rainbow trout."

Are you referring to temperature or water quality or water volume, or all of those things?

A. Well, the primary emphasis there is on temperature.

Q. Okay.

A. Temperature affects feeding rates and feed conversions. The chemistry, if it fluctuates, on a seasonal basis, depending on what chemical parameter changes, that could be a problem for us.

Historically with the spring water, we haven't seen that -- that kind of fluctuation. The changes going on now with the nitrate-nitrogen at the Snake River Farm, and to some extent at the Crystal Springs, one of the Crystal Springs springs, that is of growing concern. That is a concern. We've talked about that. But in this

case the particular focus is on temperature, yes.
Q. Optimal growing conditions, don't they include temperature, water quality, water quantity, oxygenation?
A. Yes.
Q. Aren't all of those factors of optimal growing conditions?
A. Yes.
Q. When here you said there was no fluctuation, you were only talking about temperature?
A. In the spring water that's supplied to us, as a general statement. And a good example is Box Canyon.
Q. So do these seasonal fluctuations that occur in the quantities, do they have any disruption of your ideal growing conditions?
A. Well, they do in that we have to plan for the low water. That determines the maximum amount of fish that we could put in there. And that's a judgment call that we have to make every year.
Q. Dr. Brendecke's testimony, which I understand you may not have read, came to the conclusion that the over-the-rim plan would,

because water is being pumped on a year-round basis, help to level out those fluctuations and arguably reduce the lows in the summer period when you now experience them, but increase the lows in the winter period.
Would that be a benefit or a burden to Clear Springs' operation if that were true?
A. If that were true, and it had no other impacts in the Clear Lakes spring complex or Crystal Springs or Box Canyon, that would be great. If we can -- if we can stabilize those flows and have them year-round, that's a benefit.
Q. Turning to page 15 -- and I apologize for asking the same or similar questions, but it seems like you have a lot of rather repetitive testimony on the same point.
On lines 390 through 392, you again state here in bold lettering that the "...mitigation plans, if implemented, would jeopardize the marketability of the core business."
Again, I assume you're referring to the fact that it's well water, not spring water, and the two wells that have the higher nitrate problems? Are those the fundamental aspects?

A. That's correct. That's correct.
Q. Okay. Has there been any studies or empirical data that support this concern that you've expressed and Mr. Cope expressed yesterday that somehow Clear Springs' product marketability would be jeopardized?
A. No, there's not been any studies. That kind of quantitative study is -- you have to do it after the fact. And so what -- we have to make the judgment, Mr. Cope has to make the judgment whether or not -- and our marketing people would have to make the judgment what would be the actual implications of that.
Q. Would you have any different opinion than was expressed by Mr. Cope as to whether or not Clear Springs would accept water from the plan if it were approved and constructed? If I recall his testimony, he suggested that would have to be a decision made at a later date.
A. That's the current state of our discussions, that's correct. So I agree with Mr. Cope.
Q. Okay.
A. We obviously would prefer that you do not build that pipeline because we're opposed to

it. And the reason we are in the current conditioned stay, if you'll recall in a different proceeding, is that we think that there are better ways to address things than in the OTR and in the current process we're in.
Q. So Clear Springs obtained that stay order I believe of May 15th, 2009, and I believe it's Clear Springs' position that that stay order remains in effect for a two-year period?
A. That's correct.
Q. And is it your view, I believe consistent with what Mr. Cope testified, that if the plan were approved, that before any capital expenditures were made -- I think that's how he characterized it -- it would be appropriate to have further dialogue on other solutions?
A. That's correct.
Q. Do you have any specific proposals -- I know your testimony and Mr. Cope's suggested that there were other proposals that should be pursued by the ground water districts short of curtailment.
Do you have any elaboration or information you could provide on what other proposals would be acceptable to Clear Springs in

lieu of this delivery plan that would either satisfy the current order that we're living with or give Clear Springs reason to waive compliance of that order?

A. Well, yes, I do. And there is several things that the ground water districts have not considered or put forward if they've considered them.

And first of all, the type of crops that are grown could be altered so that they're less water intensive.

You could consider rotational fallowing. I think Mr. Cope mentioned that.

You could consider an across-the-board reduction of some volume of ground water pumped for all water -- all ground water pumpers, say 10 percent. And I don't have any clue whether that would be sufficient to properly mitigate for Clear Springs.

And then I think you had raised the question, and I think you brought it up from Dr. Brockway's expert report, which I don't know -- I haven't read Dr. Brockway's final report, so I don't know all the details there, but -- if there are any details, but the thought

there is to try to put that the -- when the water has the best value to a particular type of operation, such as aquaculture, so basically your first-use water, let aquaculture use that first, and then take that water and pump it up for other uses such as irrigation agriculture where the chemical quality of the water is not nearly as important. That's the concept.

It -- that type of project would require a collaborative approach with the number of entities, such as Idaho Power, conservation groups, nature conservancy, because you don't want to damage Idaho Power water rights, for example, or downstream water rights.

But they have -- they themselves, Idaho Power, has some needs to increase spring flows, for example, for temperature purposes. So that's what has been kicked around a bit. And -- but just kicked around.

I -- I don't know that that particular thing has any legs to it. We've had some internal discussions about that would be good, and actually, that would -- if you were to take water from, say, the Snake River or Clear Lake itself or effluent, Clear Springs might want to participate

financially in supporting that because that would be a way to address waste load allocations.

Let's suppose we can develop the technology to increase production and it exceeds our ability to offset that increased production and have phosphorus limitations, then, that would be impossible for us to address.

If we were to take the effluent water and pump it up, that would be helpful to Clear Springs, and we would want to participate that way. So those are the thoughts that we have.

Q. Thank you.

Turning to page 16 of your testimony, on lines 417 and 418 is the statement that "Clear Foods also imports other seafood to create value-added products, such as various Splash items."

Is that the mahi mahi product that was referred to by Mr. Cope yesterday?

A. Part of it is.

Q. Are there other imported products?

A. The Argentine product goes into Splash. So it's different than our core fresh fish business with those imported products.

Q. Argentine and Chilean are still trout

products?

A. That's correct. They come in as frozen filets.

Q. Okay.

A. And then we are looking -- I think Mr. Cope referred to swai. That's another item that we would be importing for that Splash in our Seafood Perfection brand that we've just recently launched.

Q. On that same page further down, beginning on line 421 through line 424, you testify concerning the gross sales. And you state, "Clear Springs' annual growth sales for FYE 2009 were close to 50 million and are projected to be 56 million in 2010."

And Mr. Cope had said on page 3 of his testimony that the sales were 56 million in 2009.

Have you had an opportunity to reconcile that difference?

A. I don't know that Mr. Cope said that the sales in 2009 were 56 million. They --

Q. Let me get his exact testimony so we're clear on that.

A. What may be confusing is our fiscal year.

Q. Mr. Cope says on page 3, line 96 of his testimony, "The projected revenue for the current year is approximately $56 million."
A. Right.
Q. And you say, "Annual gross product sales for fiscal year 2009 were close to 50 million and are projected to be 56 million in 2010."
A. We're in our fiscal year 2010 as we speak.
Q. Okay.
A. So the projections --
Q. When he refers to "the current year," you're suggesting he's not referring to 2009, but fiscal year 2010?
A. That's right.
Q. And that would thus be consistent with your projection in 2010 of 56 million?
A. And that's a general number that, as I think I mentioned, maybe we were off record, I'm not sure, the number that I -- I put in here is a number that is generally available to us by way of a board meeting or to the employees.
Q. Also Mr. Cope on the very next sentence says that "The current value of the

employee ownership in the trust as of August 31, 2009, was approximately 30 million."
And on page 16, line 423 of your testimony, you state that the "...employee owners have a beneficial interest of approximately $34 million in the trust."
Do you have an explanation for which number would be correct?
A. Well, again, these are general numbers that, you know, we don't -- these are from memory. I don't have any -- I didn't refer to any documents or anything like that to try to be precise. So it's in that range.
Q. You certainly have no documents produced to enable us to confirm which number might be correct?
A. That's correct.
Q. The source of information that apparently you have in your mind and Mr. Cope had in his mind must have been based upon your review of some financial records of the company?
A. Not -- not in my case. In my case it was what I've heard through conversation at Clear Springs Foods.
Q. Okay.

A. I'm sure we do have financial records. We're a large food company, a midsize food company, and so we would want good records.
Q. On page 19, lines 508 through 510, you state that "Clear Springs Foods does not know what pesticides or herbicides would be delivered in the ground water."
Do you test for any herbicides or pesticides in any of your water-quality testing?
A. Not now. We did for a number of years from about 1989 to 2000 or so, 2001. And at that time the water -- we could not detect any pesticides. So we elected to just test the fish and the feed for pesticides.
With the appearance of -- and the -- or two reasons for that, for stopping that testing: One was we weren't finding anything, and we had pretty good confidence that between the Department of Water Resources and the Idaho State Department of Agriculture and the ground water protection plans that are out there with the State, that if they detected something they would -- they would let us know.
Well, it turns out they did detect things, but they didn't let us know. So that's a

concern to us.
But the other part is that with the nitrates that we picked up, we will have to start testing.
Q. Okay. But from the testing that was done from '89 to 2001 and from the ongoing testing you do on your fish products, is it accurate to say there has not been any detection of pesticides to date?
A. There have been no detection of the organochlorine hydrocarbon type pesticides to date.
Q. And do you see anything in the chemical testing done by the ground water districts that would indicate any pesticides?
A. The data that's been provided is very short term, and you've only looked at pesticides that -- for the most part that are no longer used in Idaho. The pesticides, in particular the herbicides, have not been looked at in your testing.
They have been looked at with the Idaho State Department of Agriculture in their monitoring, and they have detected, in particular, herbicides --

Q. In --
A. -- in some of those wells.
Q. In the wells that we have identified as part of the over-the-rim plan?
A. I'm unable to compare your wells with their wells. I don't have that knowledge about how to cross-reference those.
Q. Okay. You say you don't know. But do you have any knowledge or any evidence that you've seen to suggest there are any pesticides or herbicides of any type in the East Snake Plain Aquifer source that supplies the over-the-rim wells or the Clear Springs spring outlets?
A. There have been pesticides detected in areas above the Snake River Farm in Jerome, various townships there.
Q. I was referring to the water, not -- obviously there's a lot of pesticides --
A. In the water, in the ground water they've sampled, and I've provided that reference site in my report -- did not include specifics in my report, because I'm -- I don't -- I can't tell you where those are, other than section section, that kind of stuff, so...
Q. Okay. Maybe I didn't ask my question

very precisely. But what I was intending to ask is if you have seen any evidence of the detection of pesticides or herbicides in any of the well water proposed for the over-the-rim delivery or in any of the water in the aquifer that is discharged as a part of the Clear Springs source?
A. Well, we've not detected pesticides in the spring water delivered to Snake River Farm.
Q. Okay.
A. But that doesn't mean that water that would impact the wells that you propose to use or in the surrounding area would not have pesticides.
Q. Again, my question was -- we can speculate all you want. But I wanted to ask specifically if you're aware of any information or data indicating there are pesticides or herbicides in any of the spring water, which you say no.
And I also asked, or in the wells?
A. No. There's no data that we've seen that would say the wells are contaminated with pesticides or that the spring water is contaminated with pesticides.
Q. Okay.
A. But you haven't looked properly.
Q. When you say you don't know, you're

attempting to create some kind of an inference that there may be a pesticide problem out there. And so my question was simply to inquire further as to that inference that you want to create here in your testimony, whether it's based upon any scientific data or studies that you've seen on these particular wells.
And your answer, I understand, is no?
A. We're not trying to create an inference, other than we don't know.
Q. Okay. On page 22, lines 608 through 610, you discuss the reuse of water --
A. Uh-huh.
Q. -- to the outdoor raceway.
And if my math is correct, at least based on the numbers you provided here, roughly about 41 percent of the water coming into that grow-out raceway is reuse and about 59 percent would be fresh water?
A. Sounds reasonable.
Q. And if I understand correctly, there isn't water-quality testing that goes on with respect to the reuse water that goes into that raceway?
A. That's correct.

Q. Okay. Over on page 27 of your testimony, on lines 766 through 770, I think this is the nitrate testing concern that you raised earlier and some kind of substantiation or confirmation concerning how the testing was done from the lab would address that concern?
A. That's correct. While the other part, though, was -- and I think this -- and I'm not sure if this is in this part or not, but for the phosphorus testing that you had done, ESC Laboratories used a different methodology -- apparently a different methodology than what we're required to use in our NPDES permit monitoring.
So the phosphorus numbers might be a bit different as a consequence. And they could be the same. But we don't know because I think the ESC method that was used, there's no digestion involved with the water sampling. So you would not necessarily recover all of the phosphorus that might be there, as total phosphorus.
Q. So if I understand your concern, then, our laboratory confirmation should address both nitrate and phosphorus?
A. Well, no. There's two issues here. One is we don't know -- I don't know what method

was used in the nitrate-nitrogen analysis. And it's too late now, unless they've archived the samples -- but that would be too late anyway, because the shelf life of those samples would be expired.

But for the phosphorus, the methodology used was not thorough enough to -- to provide a value for what the real total phosphorus is in the well water. It's -- the phosphorus test that ESC used is an EPA-approved method. It's just not as sensitive as what we use for spring water or effluent water.

Q. On the bottom of page 24 when you discuss the --

A. 24?

Q. Excuse me, on the bottom of page 27, beginning at line 778.

A. Yes.

Q. "Water from well 2 and 4 are contaminated."

Is the basis of that statement based only upon the nitrate --

A. Yes.

Q. -- levels?

A. Well, it's also based on the

phosphorus levels. The ground water shouldn't have phosphorus in it. Shouldn't have maybe more than .02 to .03 milligrams per liter phosphorus.

But those wells, and I believe one other well, had higher concentrations of phosphorus. But -- and that other well, I think I referred to it in the report -- is that well 8? I think something like that.

Q. So if those two wells were eliminated, would you agree that the water from the other wells would be consistent with the chemical nature of water historically received at Clear Springs Foods?

A. Yes. And that should be buffered, again, with the problem we have with the data not being rigorous enough.

Q. On the testing that Clear Springs has been doing since 2007, the more rigorous testing, do you test for phosphorus?

A. We do. And that data was provided to you.

Q. Turning to page 29, beginning at line 830 and continuing on through 836, you comment on Mr. Eldridge, Mr. Scanlan, and Mr. Schuur's conclusion that rainbow can tolerate

and/or thrive up to 100 milligrams per liter of nitrate. And you continue on line 835 and state, "I am unable to confirm the legitimacy of the reference," referring to that Wedemeyer reference.

A. Wedemeyer.

Q. Wedemeyer. Do you disagree with their statement that rainbow can tolerate up to 100 milligrams per liter?

A. Yes.

Q. And your basis for that would be what?

A. Kincheloe.

Q. And --

A. And now the endocrine disruption properties -- apparent disruption properties of nitrate.

Q. Okay. I thought you said earlier you didn't profess to be an expert on endocrine interruption and just had a concern about the impact of higher levels?

A. Well, I think I'm a well-equipped biologist, and so when the scientific literature starts to indicate that nitrate-nitrogen is an endocrine disrupter for all vertebrate animals, and perhaps invertebrates as well, that's an indication that it's -- that it's a problem.

Q. Would eggs in juveniles tend to be more sensitive than adults to elevated nitrate levels?

A. Yes.

Q. When you say you're unable to confirm the legitimacy of the reference, what do you mean by that?

A. Well, I looked at the publication, the book.

Q. Okay.

A. And it all cites from the index that referred to nitrate. And the comments in those chapters are nonspecific. They just say fish can tolerate nitrate.

Q. So when you suggested it was not legitimate, just meaning you couldn't confirm that that particular reference supported the conclusion that they reached?

A. Well, it is a reference. It's a legitimate reference.

Q. You say it doesn't support their conclusion that 100 milliliters would not cause a problem?

A. 100 milligrams per liter.

Q. Uh-huh.

A. Yes, it does not confirm that rainbow trout, early life stages, can tolerate 100 milligrams per liter.

Q. On page 34, lines 978 through 980, you state, "The water temperature measured at the well sites at the Fred Nihart Fountain is all consistent with the water temperature delivered to the Clear Springs Foods Snake River Farm complex."

A. Correct.

Q. So are you basically stating there that based on those measurements water temperature is no longer an issue?

A. No. All I said was that they are consistent. If through to the OTR project water temperature is altered -- and I'm not equipped to make that kind of analysis or prediction, but if it were, then temperature could still be an issue.

But based on this, water temperature in the ground water wells is essentially the same as the temperature of the spring water that we receive.

Q. According to the analysis by Dr. Brendecke -- and I appreciate you may not have read that -- he analyzed the effect of pumping the water. And his testimony, if I recall it

correctly, concluded that if the water was pumped from a number of the wells, the overall temperature would decline minus .3/10ths of a degree Fahrenheit, and I believe he concluded that if there was a single consolidated well, which was part of the proposal --

A. No. 4.

Q. Yes.

-- the overall decline would be a minus .1/10th of a degree Fahrenheit.

Would that reduction in temperature of a tenth to a third of a degree Fahrenheit have any concern upon your ability to use the water at the facility?

A. No.

Q. Okay.

A. Thank you for not smiling when you were saying that.

Q. Would it even be detectable?

A. If it is -- well, we could detect it. We would not detect it impacting production or research or the brood -- selective breeding program.

Q. Is there temperature variation from year to year or seasonally or by site at any of

those testing areas?

A. No. There's -- the water we receive, as best we can tell, does not fluctuate. Now, going out of the farms, it does fluctuate. And during the summer, it's a little bit warmer. During the winter, it's a little bit colder.

But not -- the spring sources themselves, there does not seem to be any temperature variation that is of any concern to us, anyway. And that's one of the things, as we've talked about in this deposition, that's really what distinguishes the rainbow trout produced in the Snake River area from other areas, including our Argentine and Chilean suppliers.

There, the water temperature, the river water temperature, probably does fluctuate. I don't know that for a fact. I haven't been there, and I don't have that data.

But in many other places where rainbow trout are grown in the United States, there is significant temperature fluctuation. And that affects growth rates. It affects survivability of the fish.

Q. On page 35, lines 1006 through 1008, you indicate the Clear Springs proposes the

location of the degassing chamber.

A. No. "The ground water districts propose to place the degassing chamber at the northwest corner. Clear Springs opposes this location."

Q. Okay. That's what I said. You oppose the location of the --

A. I'm sorry. I thought you said we proposed the location.

Q. No.

A. But we oppose it.

Q. So you recognize you need it.

What is a degassing chamber?

A. Well, that's what the chamber is that, I believe, Mr. Eldridge and -- has proposed to construct at that location.

Q. And you're suggesting you need one, just at a different location?

A. Right.

Q. Would a location across the road be suitable?

A. Well, no. We're opposed to the over-the-rim project, so it would not be suitable. But if you had to put something there, that's where, you know -- not on our property, I guess,

is the bottom line.
Q. You wouldn't want to have control of it?
A. No.
Q. Okay. On the bottom of that same page, 35, you seem to be expressing on lines 1023 through 1025 a concern about colonization of bacteria on the inner surface of a pipeline?
A. Yes.
Q. Has that been a problem with any of the existing piping utilized at Clear Springs?
A. Not to our knowledge.
Q. And wouldn't such a concern be reduced even further by use of the plastic pipe proposed by the districts as opposed to the steel pipe?
A. I'm not equipped -- I don't know. We do know that off-flavor can be a significant problem. In the channel catfish industry, for example, in the deep South of the U.S. has a significant problem with off-flavor in their fish.
And I just raise this as a question. And I know I shared some of our literature that I've seen on biofilm information in pipes and off-flavor stuff. But I have no knowledge that the pipeline would be any more or less likely to

be colonized.
Q. Not something you've discussed with Dr. Brockway yet?
A. No.
MR. BUDGE: Let's go off the record.
(Lunch recess.)
Q. (BY MR. BUDGE): Dr. MacMillan, approximately what's the flow-through time of water from the intake to discharge from the Snake River Farm facility?
A. 100 to 120. I know it's something like that. Generally about 20 minutes per raceway.
Q. And would that be the same answer to the question of how long would it take to drain the facilities if the water was shut off all together, it would be roughly 120 minutes, 100 to 120 minutes?
A. That seems logical.
Q. And then would my understanding be correct that all of the uses by Clear Springs at Snake River Farms would be considered nonconsumptive, except for the evaporation that might be associated?
A. I think that's correct.

Q. Carrying capacity for fish in your raceway would be a factor of a number of things, I suppose water supply and flow rate would be one factor.
And would dissolved oxygen level also be a factor?
A. Yes.
Q. And I suppose temperature is a factor?
A. Yes.
Q. Fish size?
A. Yes.
Q. And pH?
A. PH, yes.
Q. Any other things that come to mind?
A. Carbon dioxide, ammonia, un-ionized ammonia. Those are the things that come to mind immediately. I think in my first report it identified a number of things that -- and I think all those were included. I'm not sure if there was anything else.
Q. There may be others?
A. Yeah.
Q. Normally you evaluate productivity in terms of pounds of fish per cfs of water flow?
A. Correct.

Q. That 30,000 pounds of fish per cfs per year which Mr. Cope provided would be a rounded figure that's relatively constant?
A. Yes. It doesn't -- you know, the -- times we can do even better than that. I think we've had times where it has been 35,000 pounds per cfs. But as an average, 30- sounds -- sounds probably about right.
Q. And would that be a factor of how much feed the fish are given?
A. Partly.
Q. Okay. Is feed the largest variable cost of production?
A. It is.
Q. Do you know approximately what percent that would be?
A. Well, I think the rule of thumb is 50, 55 percent. But I don't -- I don't see the -- the operating statements on that to know.
Q. My understanding, there isn't any treatment of the water within the Clear Springs facility?
A. There's no -- well, it depends on what you mean "treatment." We do have settling basins, quiescent zones at the end of each raceway. And

that captures a good bit of the solids that settle out. There's no chemical treatment or filtration, anything like that that would be associated with recirculating aquaculture, for example.

Q. And with feed being the largest variable cost of production, do you have an estimate of the cost of production per pound?

A. I do not. My role at Clear Springs is different than operations. I don't know.

Q. You probably wouldn't know the sales price per pound on average?

A. Only -- no. That is so variable because it depends on the market, the style of fish. And you should have asked Mr. Cope that if you really needed that. But I bet even he wouldn't know.

Q. I think you testified obviously that maintaining the existing water source is a major business challenge going forward?

A. Yes.

Q. Would the increasing amount of low-cost import products also be a substantial business challenge you're facing?

A. It is. It is. Not only imported products, but domestically-raised products can --

you can raise trout cheaper than Clear Springs does. And they're out in the market.

And our marketing people, salespeople tell me that while there is cheaper product out there, they still have a hard time competing with us because price isn't the only consideration in the marketplace.

And that gets back to why the image of Clear Springs, our cachet, so to speak, our perception out there is so important for Clear Springs to protect. We do demand, we command probably the higher prices out there for our products of rainbow trout.

And so -- so that's the dynamic that we deal with. Not only is there -- there is some import of rainbow trout into the United States. There's some production in -- aside from Idaho, out -- you know, that we're competing against as well for rainbow trout.

Q. I rather had the impression from Mr. Cope's testimony that Clear Springs was the least-cost producer of any of the large-volume producers, but you're suggesting that isn't necessarily the case?

A. Well, there's no way to tell who's the

least cost, because those kinds of numbers are not collected by any agencies that I know of. The -- we would like to think, because we think we're very good at producing rainbow trout, that we figured it out, how to do it.

And I think he mentioned in his testimony that he thinks that -- he'd like to think we are the least cost. But we have no way to quantitate that.

MR. BUDGE: Let's mark that as 29.

(Exhibit 29 marked.)

Q. (BY MR. BUDGE): I have a few questions regarding some information in this Exhibit 29 that's entitled "A Profile of the Aquaculture of Trout in the United States."

I suppose you've probably seen this before?

A. Awhile ago.

Q. On page 25 they talked about some drought losses that occurred in 2002 of 29 percent in Utah, 35 percent in Colorado, and only 4.1 percent in Idaho, all higher than in previous years.

Do you have any explanation on the differences between the trout operations in Idaho

and Utah that would explain that?

A. I don't have any specific information, but I would imagine that the source of water is a factor, reliability of the water being delivered, but I don't know on what basis they -- they came up with these numbers or anything like that.

Q. On page --

A. And drought, incidentally, could also be manifested in elevated water temperatures to these facilities, which would make, you know, just the viability of the trout very difficult if the temperature got too high.

Q. Does your production go up or down much in these years of severe drought versus a good water year? Do you notice much change year to year?

A. Well, again, we have to -- we have to predict what our low water flows are going to be, and base our stocking on that basis. And I think Mr. Cope spoke to that as well.

So the good thing for us with the way the springs work, a drought may impact the region. We don't see the impact of that drought unless there's an increase in pumping. And we don't see the impact for a year to two or three years.

So -- so that's good. But we also don't see the impact of improved water conditions for that same length of time.

Q. At the bottom of page 28, this paper makes a comment that "38 percent of all trout producers in the region pump at least part of their water and 19 percent pump all of their water used."

A. I --

Q. Would that indicate that pumping alone is not necessarily an impediment to raising trout?

A. Pumping alone is not an impediment to raising trout, that's true. It is an impediment to Clear Springs because of all the reasons we've been talking about.

Q. Okay. But not the fact that the water goes through some pump mechanism that causes the impediment?

A. No. And just the question to ask -- and, you know, I don't know if this publication addresses the issue, but how do you sell the fish? Are you a generic producer, or are you a branded premier producer? That's at play. That's an issue at play here.

And, you know, my experience with the

U.S. trout farmers is that you pump water for awhile, but unless you can command an elevated price for that product -- and it's typically probably the small family farm that might try to do that. Unless you can command a high price, you can't continually pump water. And that's the challenge.

So then you're competing with the Clear Springs of the world that don't pump water, and you're also competing with the lower cost types of fish, of seafoods that are out there, such as swai.

Q. As we've discussed the operation of Clear Springs, it seems that there's four basic areas of your business where you work to manage to assure quality and also avoid contaminants and disease: One obviously is the water supply that we've been focusing on, another would be the fish feed, a third would be the actual fish production, a fourth would be the processing of the fish, and I suppose a fifth would be the packaging and distribution of the fish?

A. And marketing.

Q. Do you have active plans in place that deal with the management of these risks of

contaminant and/or disease of each of these levels?

A. The disease, we have a biosecurity program in place and continue to revise that as -- disease health management is not an exact science. So we continue to try new things.

I think I mentioned yesterday we have a vaccine that appears to have been fairly effective at reducing some mortality. And that's a vaccine that we've produced, invented and produced. So that's a very active program.

Our monitoring program for pesticides, for example, now has shifted just to the finished product and the feed, because our history with the water-quality aspects of pesticides is that there aren't any pesticides in the spring water that we were looking at.

Again, because of the nitrate presence, we just -- you have to wonder if -- because there's clearly contamination of that water with nitrates, is there anything else with it?

And periodically in the ISDA data on ground water quality, they do identify pesticides, in particular the herbicides, as being present.

So -- so no, we're -- there's a really good chance we're going to have to increase our scrutiny of the water, but also the fish, for some of these other pesticides that apparently are occurring in the ground water. Even if we don't identify it in the spring water, we still are obligated to test for them.

So we haven't -- but we haven't started that yet. You know, we have to find a laboratory -- we don't have the capability of testing internally for those -- for the meat, for the flesh. And so we have to find a laboratory that can do it and see what kind of pricing we can get and that kind of stuff.

Q. What food-safety issues exist, if any, that occur because of the use of well water under this plan, if you excluded the wells that have the two nitrate issues, wells 2 and 4 that you have previously expressed concern about?

A. Well, we don't know of any food-safety issues simply because -- and we can't say for sure, because we only have limited data on the ground water quality. And you can argue until you're blue in the face, so to speak, about, "Well, we have other wells in the periphery, and

the Department of Water Resources has data" on and on. You can select wells that have really good data, or you can select wells that maybe don't have as good of data to create your argument.

And so that's the -- one of the problems with the OTR is that we don't have a long history of information.

Q. Give me just a moment, and I'll see if there are any issues that Mr. Cope referred to you that we haven't covered.

A. So I assume we're done with this one?

Q. Yes.

On the Box Canyon Creek source that supplies Box Canyon, Mr. Cope was unaware of any concern about ag runoff into that creek.

Are you aware of any ag runoff concerns about that?

A. I'm not aware of any ag runoff. We do monitor the influent quality for nitrate-nitrite and for total phosphorus. And we've not seen any real change in nitrate-nitrite, and the phosphorus has stayed very constant over the period of time that we've been looking at it.

So we don't have any evidence that there's contamination or there's ag runoff into

that Box Canyon Creek, which again, we believe is spring flow.

Q. Mr. Cope also deferred to you on this discussion about oxygen. And I think you testified that oxygen levels is a major factor in production.

Are there ways to increase the efficiency of the use of the water by increasing oxygen levels?

A. There are ways to increase the amount of oxygen. Whether you can do it economically is a question. Clear Springs has over the years put in a lot of research effort into using low-head oxygenators and things like that to see if we could materially impact the amount of oxygen in later-use raceways. And we could increase it, but not economically.

Q. Okay.

A. So that's -- you know, one of the things you learn fairly quickly in the aquaculture business, at least if you're a scientist, and that is that there's lots of engineering things that you can do, but you can't afford to do them.

Q. Since those raceway facilities were constructed at Snake River Farms, has there been

any changes in the mechanics or facilities or operation to increase the dissolved oxygen levels, or are they pretty much the same as they were when they were built?

A. Well, I cannot address how they were when they were built. We did go through a period of time looking at different ways to increase the oxygen as it -- the water goes from one raceway to the next. So right at that weir, so to speak, that drop off, we've looked at different brush devices and ways to splash the water so that you can decrease the size of water -- droplets of water to have oxygen diffuse in.

And we have landed on a place that seems to work. We can put about 1 -- roughly speaking, 1 part per million, 1 milligram per liter of oxygen between each drop of water, you know, from one elevation to the next elevation.

Q. So that's some changes that have been done?

A. While I've been there, that's what we've done. Whether that was -- so yes.

MR. BUDGE: That's all I have. Thank you very much.

THE WITNESS: Are you sure?

MR. BUDGE: Off the record.

(Deposition concluded at 1:48 p.m.)

(Signature requested.)

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