

BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO

IN THE MATTER OF APPLICATION)
FOR PERMIT NO. 63-32573 IN)
THE NAME OF M3 EAGLE LLC)
_____) VOLUME VIII
(Pages 1741 through 1936)

BEFORE
HEARING OFFICER: GARY SPACKMAN

Date: May 11, 2009 - 9:00 a.m.
Location: Idaho Department of Water Resources
322 East Front Street
Boise, Idaho

REPORTED BY:
JEFF LaMAR, C.S.R. No. 640
Notary Public

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1 APPEARANCES:
 2
 3 For M3 Eagle LLC:
 4 GIVENS PURSLEY LLP
 5 BY MR. JEFFREY C. FEREDAY
 6 MR. MICHAEL P. LAWRENCE
 7 601 West Bannock Street
 8 P.O. Box 2720
 9 Boise, Idaho 83701-2720
 10 For North Ada County Groundwater Users
 11 Association:
 12 BY MR. JOHN THORNTON
 13 5264 North Sky High Lane
 14 Eagle, Idaho 83616
 15 For Eagle Pines Water Users Association and
 16 Individually:
 17 BY MR. ALAN SMITH
 18 3135 Osprey Road
 19 Eagle, Idaho 83616
 20 Appearing Individually:
 21 BY MR. NORMAN L. EDWARDS
 22 884 West Beacon Light Road
 23 Eagle, Idaho 83616
 24 ///
 25 ///

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1 APPEARANCES (Continued):
 2
 3 Also Present:
 4 Jerry Peterson
 5 Jason Smith
 6 Sandy Hemenway
 7 Michele Edl
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1 THE HEARING OFFICER: Okay. We are
 2 recording now. This is a continuation of the
 3 hearing for application for appropriated water
 4 No. 63-32573 in the name of M3 Eagle, and the date
 5 is May 11th. The hour is approximately 9:15 a.m.
 6 We've talked about rescheduling or at
 7 least scheduling some additional days for this
 8 hearing, and we've identified June 5th and
 9 June 23rd as days that we'll schedule in case we
 10 need to go longer. And hopefully we can finish
 11 more quickly than that.
 12 And, Mr. Fereday, you had a
 13 preliminary matter you wanted to talk about before
 14 we begin testimony.
 15 MR. FEREDAY: Yes. Thank you, Mr. Hearing
 16 Officer.
 17 Last Wednesday, the day after our last
 18 hearing session, M3 Eagle's managing partner,
 19 Mr. Brownlee, received an e-mail from the staff's
 20 Sean Vincent inquiring as to whether the staff
 21 could enter M3 Eagle's property to do seismic
 22 studies running one line down Big Gulch.
 23 And Mr. Brownlee responded, and that
 24 was -- excuse me, that was Friday, May 8th,
 25 Mr. Brownlee responded to Mr. Vincent by e-mail

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1 saying that we -- he thought we ought to talk
2 about this here. And that's the -- just the
3 purpose of this.
4 I just want to make sure that because
5 this is an ongoing case that we've discussed how
6 this is all going to take place in the context of
7 this hearing.
8 Did I say Vincent? I meant
9 Mr. Owsley.
10 THE HEARING OFFICER: Oh, yeah.
11 MR. FEREDAY: I'm sorry. If I said Sean
12 Vincent, I meant Owsley, Mr. Owsley sent the
13 e-mail. Mr. Brownlee responded on Friday. So
14 with just kind of want to know what the plan is
15 for that and what the timing might be.
16 My sense is that M3 will be willing to
17 open its property, but we just wanted to alert you
18 to this, just because of the unusual situation
19 that we have an ongoing hearing that is focused on
20 this very same property. So that's the purpose
21 for this preliminary.
22 THE HEARING OFFICER: Well, I'm assuming
23 that these -- and I'm guessing this is a
24 seismic -- some sort of seismic testing that's
25 anticipated. And I think there was some

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1 discussion about the worth of doing that seismic
2 testing, perhaps during the previous testimony.
3 And I would not expect that testing to
4 be completed and be available for submittal to the
5 Hearing Officer as evidence. So it seems to me
6 that all of that future testing, and I assume
7 there will be additional data gathering that will
8 occur as time goes on, some of that anticipated
9 data gathering will be discussed, and the
10 Department needs to take the information that it
11 has and go forward and make a decision.
12 So that's my intent as the Hearing
13 Officer, and I view this other operation as being
14 right now extraneous to the hearing process, not
15 something I want to consider at all.
16 MR. FEREDAY: Thank you.
17 THE HEARING OFFICER: Nor do I think it's
18 appropriate for me as a Hearing Officer. And the
19 extent I can, I'll stay out of those discussions
20 and instruct the same. I don't want to be part of
21 it. Okay.
22 MR. FEREDAY: Okay. Thank you.
23 THE HEARING OFFICER: Anything further on
24 that subject?
25 MR. FEREDAY: No.

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1 THE HEARING OFFICER: Okay. Other parties?
2 Again, it's a little tough sometimes
3 for me as a Hearing Officer to maintain my
4 neutrality and objectivity in this process. But I
5 want to insulate myself from these kinds of
6 discussions. And I know they've been going on,
7 but it's -- it should not affect where I'm headed
8 or where we're headed in this hearing.
9 MR. FEREDAY: Well, thank you, Mr. Hearing
10 Officer.
11 And we recognize that the Department
12 has funding from the legislature to do
13 hydrogeologic studies in a few parts of the state,
14 including north Ada, and that those studies have
15 been ongoing. So it just is, I guess, a
16 coincidence that our hearing has to come up in the
17 middle of that. But I appreciate your comments.
18 THE HEARING OFFICER: Okay. Let's see. I
19 think we finished with testimony of Mr. --
20 MR. FEREDAY: Mr. Utting.
21 THE HEARING OFFICER: Yeah. Mr. Mark
22 Utting had just finished testifying. And I think
23 at this juncture we had agreed to call Department
24 witnesses. And I have not established an order
25 for that presentation. I've left it up to them.

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1 Mr. Vincent, what is your preference
2 at this point?
3 MR. VINCENT: I'm going to go first today.
4 THE HEARING OFFICER: Okay. Why don't you
5 come forward, if you would.
6 MR. ALAN SMITH: Before we start, Judge --
7 THE HEARING OFFICER: Mr. Smith?
8 MR. ALAN SMITH: And I hope you don't mind
9 me referring to you as "Judge," but --
10 THE HEARING OFFICER: Well, "Mr. Spackman"
11 would be fine. I feel some discomfort with that.
12 MR. ALAN SMITH: "Mr. Hearing Officer"
13 seems a little awkward.
14 But we have a motion under rule 14 at
15 the -- 413 at the close of the applicant's case.
16 Our motion is to dismiss. Eagle Pines Water
17 Association and the individual protestants move to
18 dismiss application 63-32573 in the name of M3
19 Eagle on the following grounds. And I believe
20 North Ada County Groundwater Users Association
21 joins with us in this motion.
22 Item No. 1, M3 is not a municipality
23 under Idaho Code 42-202(b)(4). They have applied
24 for this water right as a municipal water right.
25 It's been admitted by Mr. Brownlee in his

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1 testimony, as president of M3, that they are not a
2 municipality.
3 Item 2, M3 is not a municipal
4 provider. The statute states "a municipality that
5 provides water for municipal purposes to the
6 residents and other users within its service
7 area."
8 And section (b) provides that "any
9 corporation or association holding a franchise to
10 supply water for municipal purposes, or a
11 political subdivision of the state of Idaho
12 authorized to supply water for municipal
13 purposes," and the critical language here is, "and
14 which does supply water."
15 M3 does not supply any water to a
16 municipality or for any municipal purposes within
17 any service area.
18 Section (3) -- or (c) -- and I don't
19 know if you have the statute before you.
20 THE HEARING OFFICER: I don't, but I'm
21 familiar with it.
22 MR. ALAN SMITH: But it provides that "a
23 corporation or association which supplies" -- and
24 I would point out that both section (b) and (c)
25 are in the present tense, "which supplies water

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1 for municipal purposes through a water system
2 regulated by the state of Idaho."
3 It's clear that subsection (c) is
4 intended to cover independent entities like United
5 Water, Boise Water Corporation, Eagle Water that
6 are already supplying water to municipalities. It
7 is not -- the statute is not intended to provide
8 for a planned community to come within any of
9 those (a), (b), or (c) provisions of the statute.
10 I don't care what the rest of the
11 statute says. M3's got to get by these three
12 first, and they cannot do that. The words "and
13 which does supply" are in the conjunctive. It
14 doesn't say "or which does supply or which may in
15 the future want to supply" or be a wannabe type
16 municipal corporation. It says "and," and that's
17 conjunctive, not disjunctive, and it's worded in
18 the present tense.
19 So is subsection (3). That's worded
20 in the present tense, "which does supply or which
21 supplies water." And again, I think that's only
22 intended to cover independent entities like United
23 Water, Eagle Water, or whatever.
24 It is clear from this statutory
25 language that it is intended to cover only

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1 independent suppliers. M3 is not now supplying
2 water for municipal purposes, and certainly does
3 not own, control, or operate a public water
4 supply.
5 Again, subsection (c) is in the
6 present tense. It appears to me that it would be
7 a real stretch of the logical and common sense
8 statutory construction to conclude that M3
9 qualifies for a municipal water right. This
10 statutory language dictates that no such water
11 right can or should be granted to a for-profit
12 corporation.
13 We request a ruling on this motion
14 under rule 413(c). The applicant has rested its
15 case. And we would also urge the Department to
16 enter a declaratory ruling under rule 400 that
17 planned communities do not qualify for municipal
18 water rights. They're not contingent to any
19 municipality. And we feel that it would be
20 foolish of the Department not to enter a
21 declaratory ruling in this matter within the next
22 few days and to put a stop to this before we get
23 to the May 28th and 29th hearings, and north Ada
24 County group has to bring down an expert witness
25 at considerable cost when we don't feel that

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1 there's any basis or foundation for them to be
2 applying for a municipal water right.
3 And we feel that a declaratory
4 judgment is necessary, or declaratory ruling by
5 the director, as these things are going to be
6 popping up all over the state of Idaho. We've
7 already wasted your time, the court reporter's
8 time. Mr. Owsley and Mr. Vincent have been
9 sitting here for a week, seven days, and it's
10 clear that M3 knew from the start that they did
11 not qualify for a municipal water right. And we
12 would therefore move to dismiss and in the
13 alternative for a declaratory ruling so that we
14 don't have to be back here in another year or two
15 fighting another one of these.
16 Thank you.
17 THE HEARING OFFICER: Thank you, Mr. Smith.
18 Mr. Fereday, do you want to respond?
19 Do you want a moment to prepare? What's your
20 druthers?
21 MR. FEREDAY: I can respond to that, I
22 believe.
23 THE HEARING OFFICER: Okay.
24 MR. FEREDAY: Mr. Smith is concerned that
25 the statute, at least as he reads it, is in the

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1 present tense. A water right application is in
2 the future tense, by definition. The question is,
3 whether this water right will be granted to allow
4 an entity to have a municipal water right where
5 they otherwise qualify under the definition
6 provided by the 1996 act, Municipal Water Rights
7 Act, as a municipal provider, which includes a
8 private corporation.
9 Now, Mr. Smith may not be aware of
10 what this statute provides. But this statute
11 enacted in 1996 was intended in substantial part
12 to allow the formation of entities that would
13 qualify upon filing of sufficient application for
14 the status of municipal water provider.
15 If what Mr. Smith says is correct,
16 then that entire thrust of the statute was without
17 foundation and would be rendered useless. The
18 statute is otherwise.
19 It clearly allows entities that are
20 not yet providing municipal water to provide it by
21 proving up in an application form the elements
22 sufficient to show a future needs, planning
23 horizon type water right.
24 Under Mr. Smith's theory, the only
25 entities in the entire world that would ever be

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1 able to provide municipal waters are those that
2 are doing it now.
3 MR. ALAN SMITH: That's right.
4 MR. FEREDAY: And therefore, no new entity
5 could be formed because they couldn't ever file
6 an -- a sufficient application. This is, frankly,
7 nonsense.
8 The -- the municipal water right
9 statute clearly contemplates that applications can
10 be filed, and sets forth the procedures by which
11 an application can be set forth to make out a case
12 as a municipal water provider.
13 The Department has already allowed
14 this in at least one other case, and never has it
15 been suggested that the statute really intended
16 and that the legislature really intended to do
17 nothing at all with the 1996 act.
18 So given that, we -- we believe that
19 Mr. Smith's motion should be denied. We believe
20 that the Department, in fact, has taken
21 substantial steps, even as recently as last week,
22 in putting together a policy, a guidance, setting
23 forth exactly the rules by which a private
24 corporation, such as a planned community
25 developer, can establish, is entitled to establish

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1 a future needs municipal water right and become,
2 through that process, a municipal provider.
3 Mr. Smith's motion should be denied.
4 THE HEARING OFFICER: Okay. Mr. Smith, any
5 response?
6 MR. ALAN SMITH: Yes, I do have.
7 What he's asking you to do, Judge, is
8 stretch the statute. I don't think you can do
9 that. This statute is poorly written. It's one
10 of the worst statutes I've ever seen in my life.
11 And after 14, 15 years on the bench, I've looked
12 at a few of them.
13 I think if this has been granted, it's
14 time for the Department to close Pandora's box,
15 otherwise you're going to have these all over the
16 state wanting municipal water rights when they do
17 not qualify under the clear language of this
18 statute. And it's time for Pandora's box to be
19 closed.
20 The future-use argument, I don't care
21 what you want to argue there. You got to get by
22 these first three, (a), (b), and (c). And it's
23 all worded in the present tense. And it's all
24 talking about water systems that are supplying
25 water to municipalities and because of growth new

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1 water rights are needed.
2 It's probably only intended to apply
3 to areas contiguous to a municipality, not eight
4 or ten miles away off of Highway 16 from the city
5 of Eagle. Thank you.
6 MR. JASON SMITH: I have copies of just
7 like the one page that we're talking about, if you
8 guys want them. If not, that's fine too.
9 THE HEARING OFFICER: Let's go off the
10 record.
11 (Recess.)
12 MR. ALAN SMITH: Can I make just one more
13 statement, Mr. Spackman, before you rule?
14 THE HEARING OFFICER: Well, I guess we can
15 have another round. I don't want to unduly
16 prolong the discussion, I guess.
17 MR. ALAN SMITH: Okay. I just wanted to
18 inquire as to whether this issue was raised in any
19 other case that's already granted this. I doubt
20 that it was.
21 THE HEARING OFFICER: No, I don't recall
22 that, although there probably are water rights
23 that have been issued -- and when I say "water
24 rights," water right permits that have been issued
25 for municipal purposes in both protested and

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1 nonprotested considerations of the Department
2 where applications have been filed. My guess is
3 there are.
4 You raise an interesting argument,
5 Mr. Smith, and I appreciate you reading the
6 statutes. The particular code section that you're
7 referring to -- and I don't know whether you were
8 looking at the code itself or whether you were
9 looking at the act as it was passed by the
10 legislature.
11 But the definitions are now codified
12 in Idaho Code Section 42-202(b). And so there are
13 definitions and, as you stated, they're in the
14 present tense, at least as I read them.
15 I also read (a), (b), and (c) as being
16 distinctly separate types of entities. In other
17 words, the (a) would be a typical municipality, a
18 city, that is providing the water service, potable
19 and culinary water.
20 (b) would be a United Water type
21 entity, as I understand it, that has a franchise
22 and is governed by the Public Utilities
23 Commission. And they set the rates.
24 (c), in my opinion, is a different
25 type of entity that the Public Utilities

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1 Commission doesn't oversee, but they are subject
2 to regulation by DEQ and other entities. In other
3 words, they're an association or something else,
4 provides water for a group of users within a
5 development or -- and we have seen a number of
6 those.
7 So then I guess -- and as I read these
8 three, it seems to me that the most likely of the
9 three that M3 Eagle would fit within is the third
10 or the (c) definition. So now I guess the
11 question is what does the "present tense"
12 definition mean.
13 And I think we really have to go
14 beyond the definition and look at the other
15 statutes that really describe what the Department
16 is supposed to be doing with these. And I haven't
17 done an entire review.
18 Have you looked all the way through
19 42-203(a), 42-204, which are the statutes that
20 govern the issuance of a permit, Mr. Smith? Have
21 you looked at those? Mr. Smith?
22 MR. ALAN SMITH: Yes, sir.
23 THE HEARING OFFICER: Have you looked at
24 Idaho Code Section 42-203(a) and 204?
25 I might ask you the same question,

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1 Mr. Fereday.
2 I don't find at least specific
3 language that talks about how that permit is
4 supposed to be issued to a municipality. The
5 language that I find regarding the issuance of
6 something by the Department to a municipality is
7 in 42-219, which -- and the title of that is
8 "Issuance of a license." And --
9 MR. ALAN SMITH: 42-219?
10 THE HEARING OFFICER: 219. And at least in
11 the code -- it starts at the bottom of the page.
12 And I haven't looked at the other part, but I
13 don't think that it's been amended. But I will
14 look.
15 It has not. Anyway, I start at the --
16 about midway through the first paragraph, and it
17 says, "A license may be issued to a municipal
18 provider for an amount up to the full capacity of
19 the system constructed or used in accordance with
20 the original permit, provided that the Director
21 determines that the amount is reasonably necessary
22 to provide for the existing uses and reasonably
23 anticipated future needs within the service area
24 and otherwise satisfies the definition
25 requirements specified in this chapter for such

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1 use."
2 And so, Mr. Smith, in my opinion, the
3 definition that is in 42-202(b), even though it's
4 in the present tense, would apply at the time the
5 Department examines the beneficial use after the
6 opportunity has been given for development and
7 construction and placing the water to beneficial
8 use, and that the status of that entity at the
9 time of that examining the license is when that
10 present tense would apply.
11 And I think that's consistent with
12 what the Department has done with other uses. The
13 Department receives applications for irrigation
14 from people that are not yet irrigators that are
15 not yet domestic users, and that are not yet
16 commercial or industrial users, and we receive
17 them in anyway.
18 So based on that, Mr. Smith, I'll deny
19 the motion, and we'll move on. Okay?
20 MR. ALAN SMITH: All right. I would like
21 to call to your attention 42-222 --
22 THE HEARING OFFICER: Okay.
23 MR. ALAN SMITH: -- which states in the
24 last paragraph -- and this is on change in the
25 point of diversion, "The municipal provider" --

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1 that's about the third or fourth line down --
2 "shall provide to the Department sufficient
3 information and documentation to establish that
4 the appellant qualifies as a municipal provider."
5 I don't see that they've ever done that.
6 THE HEARING OFFICER: Okay. But Idaho Code
7 Section 42-222 specifically addresses changes in
8 an existing water right, a perfected water right.
9 And I think it also addresses issues of
10 forfeiture, extensions of time to avoid
11 forfeiture.
12 But it does not apply, 42-222, in the
13 context of this particular hearing. So it's not
14 an issue today.
15 MR. FEREDAY: Mr. Spackman?
16 THE HEARING OFFICER: Yes.
17 MR. FEREDAY: If I could just respond. And
18 I appreciate your ruling. But I would hope that
19 the -- these protestants would not seek to
20 continue this debate potentially through appeal.
21 And I just would point out, in addition to the
22 points that you've made, also section 202(2)
23 specifically describes how the place of use is to
24 be determined.
25 And it states that it's the location

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1 of where the water under this municipal water
2 right "is to be used." "Is to be used," not where
3 it already is used.
4 The definitions that Mr. Smith is
5 referring to also specifies language such as
6 "reasonably expected" or "is or becomes entitled"
7 in terms of the service area. So it's very clear
8 that this is, as you say, analogous to the
9 irrigator who is not yet an irrigator but wants to
10 become one. That's the whole concept of our prior
11 appropriation system in this state is that people
12 get to apply now for something they are not yet
13 doing. That's the idea. So I would hope that
14 this ends this debate.
15 THE HEARING OFFICER: Okay. Well, in the
16 way of argument, now, I guess we've got more
17 argument ongoing. I hate to take too much time
18 because I don't intend to change my ruling,
19 Mr. Smith.
20 MR. ALAN SMITH: I realize that. I just
21 want to say --
22 THE HEARING OFFICER: Okay.
23 MR. ALAN SMITH: -- that an irrigator
24 wanting a water right is not similar to a
25 municipality. Where they say where it's intended

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1 to be used, they're talking about a new
2 subdivision growing out off of a municipality that
3 needs additional water through an independent
4 entity or corporate provider or whatever. I still
5 don't think they've come within the definition of
6 a municipal provider. And with that, I'll end my
7 argument.
8 THE HEARING OFFICER: Okay. All right.
9 I've ruled. It's on the record. Let's move
10 forward.
11 MR. ALAN SMITH: We do have another motion,
12 your Honor.
13 THE HEARING OFFICER: Okay.
14 MR. ALAN SMITH: In fact, sir, I've got two
15 more.
16 THE HEARING OFFICER: Okay.
17 MR. ALAN SMITH: I believe one was based on
18 the request for admissions 1, 2, and 3 by Attorney
19 Beeman where M3 has admitted that they are not a
20 corporation, not a corporate provider. They've
21 already admitted all that. That's binding for all
22 purposes in this hearing.
23 And since it was Attorney Beeman's
24 request for admissions, and Mr. Thornton is going
25 to argue that on behalf of north Ada County, and

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1 we do join in their motion. For the record, we
2 want to argue this.
3 THE HEARING OFFICER: Okay. Mr. Thornton?
4 MR. THORNTON: Yeah. The points that we
5 want to make and have on the record, Mr. Hearing
6 Officer, is document M3's response to
7 interrogatory November 28th, 2008, pages 16 and
8 17. The requests for admissions 1, 2, and 3.
9 MR. FEREDAY: Mr. Hearing Officer, if I
10 could, we haven't been provided with a copy of
11 this document. It would be helpful if we could at
12 least see what Mr. Thornton is referring to.
13 MR. JASON SMITH: I have pages 16 and 17,
14 but I don't have the entire thing, Jeff.
15 MR. FEREDAY: Okay.
16 MR. JASON SMITH: Is that okay?
17 MR. FEREDAY: Yes.
18 MR. JASON SMITH: Do you need one too, sir?
19 THE HEARING OFFICER: I probably need one.
20 I think so. Some of these things -- I think
21 sometimes they're erroneously filed with the
22 Department or the Hearing Officer. But these are
23 answers to discovery, and at least in a court of
24 law they aren't filed with the court. So they
25 need to be provided if there's something that

1 you're relying on.
 2 MR. THORNTON: Okay. And I've got the full
 3 document in my hand, Mr. Hearing Officer.
 4 THE HEARING OFFICER: Okay.
 5 MR. THORNTON: So the answers to request
 6 for admissions. Admission No. 1, "M3 admits that
 7 it is not a corporation or association which
 8 supplies water for municipal purposes through a
 9 water system regulated by the State of Idaho as a
 10 public water supply."
 11 Admission No. 2 is "M3 admits it is
 12 not a corporation or association holding a
 13 franchise to supply water for municipal purposes
 14 or a political subdivision of the state of Idaho
 15 authorized to supply water for municipal purposes,
 16 and which does not supply water for municipal
 17 purposes to users within its service area."
 18 Admission No. 3, "M3 admits that it is
 19 not a municipality."
 20 And then we, North Ada County
 21 Groundwater Users Association, joined by Eagle
 22 Pines Water Users Association, and individual
 23 protestants, move to dismiss application
 24 No. 63-32573 as applicant M3 Eagle admits it does
 25 not qualify for a municipal water right.

1 is sufficient for a high-capacity pumping for a
 2 large municipality.
 3 Three, it has not shown by a
 4 preponderance of the evidence that the new
 5 municipal use will not damage existing water
 6 rights. In fact, most of their own evidence, both
 7 in testimony and in their second amended
 8 application in support of their application,
 9 states exactly the contrary. They recognize that
 10 artesian wells will stop flowing, that domestic
 11 and irrigation well users may have to deepen their
 12 wells or lower their pumps.
 13 Four, M3 has not shown that the
 14 aquifer is not going to be mined, which will
 15 conflict with the local public interest. We would
 16 again urge the Department to issue a declaratory
 17 ruling under rule 400. This issue has been raised
 18 by the protestants in the hearing and is properly
 19 before the Water Resources Department.
 20 If you fail to close Pandora's box,
 21 you will be involved in these community hearings
 22 all over the state of Idaho. The north Ada County
 23 group has been out many thousands of dollars in
 24 order to protest this matter, and some of their
 25 group have jobs in jeopardy because they've had to

1 MR. FEREDAY: Is that counsel's argument?
 2 MR. THORNTON: Yes.
 3 THE HEARING OFFICER: Okay. Mr. Fereday?
 4 MR. FEREDAY: We would rest on our previous
 5 argument and on the comments you made in your
 6 previous ruling.
 7 THE HEARING OFFICER: And the argument is
 8 that M3 Eagle is not yet a corporation or
 9 association that supplies, presently supplies.
 10 Okay. Denied. I'll deny the motion,
 11 Mr. Thornton and Mr. Smith.
 12 Other motions?
 13 MR. ALAN SMITH: I have a third motion
 14 Judge -- or, Mr. Spackman. North Ada County
 15 Groundwater Users joins with Eagle Pines Water
 16 Users Association and the individual protestants
 17 and moves to dismiss this application on the
 18 ground that M3 has not met its burden of proof, as
 19 it has not shown by a preponderance of the
 20 evidence, one, that the application is made in
 21 good faith when it has applied for a municipal
 22 water right and does not qualify as a municipality
 23 or a municipal provider under rule 42-202 -- or
 24 statute 42-202(b).
 25 Two, M3 has not shown the water supply

1 take so much time off work to fight this thing.
 2 But we move under those four grounds
 3 that they have not carried their burden of proof
 4 and would ask you to dismiss their application.
 5 THE HEARING OFFICER: Okay. Thank you,
 6 Mr. Smith.
 7 Mr. Fereday?
 8 MR. FEREDAY: Mr. Hearing Officer, M3 has
 9 indeed carried its burden, certainly its burden to
 10 make a prima facie showing. We believe that the
 11 evidence is overwhelming with regard to good
 12 faith, sufficient water supply, no injury, and
 13 certainly with regard to the so-called aquifer
 14 mining issue.
 15 We submit that the record so far is
 16 quite clear that this case more than meets our
 17 burden to sustain the granting of a water right.
 18 If Mr. Smith and his colleagues wish
 19 to contest on these four grounds, they are going
 20 to have to put on substantial evidence that by a
 21 preponderance of the evidence shows that their
 22 theories are correct. And we await their case.
 23 Thank you.
 24 THE HEARING OFFICER: Okay. Mr. Smith?
 25 MR. ALAN SMITH: That is a misstatement,

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1 sir. We do not have the burden of proof. We're
2 not the applicant. They are. And we don't have
3 to show any of this that he's talking about.
4 THE HEARING OFFICER: Okay. Thank you.
5 In every matter that comes before the
6 Department, the Department always wishes for and
7 every consultant, Mr. Smith, that I've ever heard
8 testify will tell you that we need more data and
9 information than we have. The Department needs to
10 take the data and information that it has, it
11 needs to consider the application as it comes in.
12 I think we do not yet have all of the
13 information that I want to consider in this
14 matter, either good or bad. I understand the
15 applicant has rested.
16 If I were in a situation where there
17 were no information that had come in or that the
18 information is minimal, I might consider your
19 motion. But I think the information that's come
20 in is substantial, I think it's credible, and I
21 won't say that it's determinative yet, but at
22 least from my perspective there's sufficient
23 information that's been presented to establish
24 prima facie case. The motion is denied.
25 Okay. Other matters?

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1 MR. ALAN SMITH: That's all I have, Judge.
2 THE HEARING OFFICER: Okay. Mr. Vincent.
3 Let's go off just for a minute.
4 (Recess.)
5 THE HEARING OFFICER: Okay. We are
6 recording again after distribution of some
7 documents.
8 And PowerPoint's ready to go for you,
9 Sean?
10 MR. VINCENT: Yeah.
11 THE HEARING OFFICER: Okay. Mr. Sean
12 Vincent has been called.
13 And I anticipate, Mr. Vincent, that
14 you'll narrate your testimony. There's no one
15 here to examine you at this point.
16 THE WITNESS: That's correct.
17 THE HEARING OFFICER: So I'll swear you in,
18 you may narrate your testimony, and then be
19 subject to examination.
20 And for the parties, as you
21 contemplate asking questions -- and I may tell you
22 that again, but Mr. Vincent does not have an
23 attorney here to protect him. And so I view that
24 somewhat as my job as a Hearing Officer. So I'd
25 ask both -- all of you to be respectful of him in

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1 the examination process.
2 Mr. Vincent, if you'll raise your
3 right hand.
4 SEAN VINCENT,
5 having been called as a witness by the Department,
6 was duly sworn and testified as follows:
7
8 THE HEARING OFFICER: Thank you. Please be
9 seated.
10 And by the way, as he narrates it, if
11 parties wish to object to any portion of this,
12 you're welcome to do that. Even though the
13 exchange isn't quite the same, please feel free to
14 be active in voicing objections.
15 Okay. Mr. Vincent?
16
17 DIRECT NARRATIVE TESTIMONY
18 BY SEAN VINCENT:
19 THE WITNESS: On behalf of hydrology staff,
20 I'd like to thank the Hearing Officer for giving
21 us an opportunity to set the record straight on
22 several topics where there appears to be
23 confusion. I'll start by trying to clarify a few
24 overarching issues, and then I'd like to respond
25

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1 to some of the comments that were made by HLI in
2 their response to our March 2nd, 2009 staff
3 memorandum.
4 I have a lot of information to cover
5 today, and I want to be accurate, so I'm going to
6 be reading my testimony.
7 Let me start by clarifying what I
8 perceive to be staff's role of the hearing
9 process. In response to the Hearing Officer's
10 written request, we performed a review of the
11 technical documentation provided in support of
12 M3's water right application.
13 THE HEARING OFFICER: Okay. Mr. Vincent,
14 now one of the things that we -- and I'm sorry to
15 interrupt you, but I also need to protect the
16 court reporter to some degree, because I think he
17 has, in the exchange between questions and
18 answers, usually he has a little bit of a respite
19 in between.
20 And if you're reading rapidly
21 through -- I don't know, Jeff, I suspect it will
22 be tough on you.
23 So if you can pause and not be too
24 speedy.
25 MR. FEREDAY: And, Mr. Hearing Officer, if

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1 I could, Mr. Vincent is reading from a narrative
2 text that we do not appear to have.
3 Could that be made available to us as
4 well, please?
5 THE WITNESS: Certainly.
6 THE HEARING OFFICER: Mr. Vincent, do you
7 have a problem with that?
8 THE WITNESS: No.
9 THE HEARING OFFICER: After the reading?
10 You don't care about having it right now?
11 MR. FEREDAY: Yes, at least after it's read
12 and before we inquire, we would appreciate that.
13 THE HEARING OFFICER: Okay. I think that's
14 doable.
15 Okay. Mr. Vincent, I'm sorry to
16 interrupt you.
17 THE WITNESS: I'm going to restart that
18 slide.
19 THE HEARING OFFICER: Good.
20 THE WITNESS: Let me start by clarifying
21 what I perceive to be staff's role in the hearing
22 process. In response to the Hearing Officer's
23 written request, we performed a review of the
24 technical documentation provided in support of
25 M3's water right application. The breadth of our

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1 scope generally begins and ends with that
2 assignment.
3 The Hearing Officer has full access to
4 the supporting documentation, so a large part of
5 our responsibility was to point out
6 inconsistencies that we found in the data,
7 analyses, and conclusions with respect to the
8 topics that he identified for us to look at.
9 Basically, we are looking for
10 inconsistencies of a technical nature that have
11 bearing either on the hydrogeologic conceptual
12 model or the assessment of hydrologic impacts.
13 We are neither for nor against
14 approval of M3's water right. And it wouldn't
15 matter if we were because ultimately it's not our
16 decision. I happen to agree with certain aspects
17 of HLI's testimony and M3's holistic approach to
18 water resource development, but that is beyond the
19 scope of my assignment and I won't be discussing
20 those opinions today.
21 Before I address the HLI response to
22 our staff memorandum, I want to talk about
23 something that has been bothering me about our
24 write-up, and I believe that it reflects a failure
25 on our part to effectively communicate the

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1 intended significance of one of our analyses. It
2 has to do with our drawdown calculation that is
3 described in section 4A of the staff memorandum.
4 The analysis was intended as a reality
5 check to verify the reasonableness of the M3 model
6 predictions.
7 THE HEARING OFFICER: Okay. Mr. Vincent,
8 can we go to that particular document, which I
9 think is -- is it 50?
10 MR. FEREDAY: 50, correct.
11 THE HEARING OFFICER: Okay. So that we can
12 at least look at that particular...
13 MR. FEREDAY: Mr. Vincent, is that figure 3
14 of Exhibit 50, page 22?
15 THE WITNESS: That's correct.
16 THE HEARING OFFICER: What page?
17 MR. JASON SMITH: 22.
18 THE HEARING OFFICER: Figure 3. Okay. Go
19 ahead, Mr. Vincent.
20 THE WITNESS: It has to do with our
21 drawdown calculation that is described in
22 section 4A of the staff memorandum. The analysis
23 was intended as a reality check to verify the
24 reasonableness of the M3 model predictions. It's
25 a calculation, not a calibrated flow model.

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1 As described in the staff memo, it's
2 what's called an image well analysis, and it's
3 based on the Theis well hydraulics equation. The
4 development of the Theis equation involved the use
5 of a number of simplifying assumptions.
6 Despite the fact that those idealized
7 assumptions never occur in real aquifer systems,
8 the Theis equation has proven to be a very robust
9 and commonly applied predictor of the hydraulic
10 response to pumping. It was used, for example, to
11 evaluate the City of Eagle Water right
12 application.
13 Something that's important to
14 understand about the Theis drawdown equation is
15 that it is transient, which means that drawdown is
16 a function of time. It's a directly proportional
17 relationship. The greater the time, the greater
18 the predicted water-level drawdown at a given
19 location.
20 In reality, most aquifer systems that
21 are subjected to new pumping stresses will
22 eventually reach a new equilibrium in which water
23 levels are lower but nonetheless stable with
24 increasing time -- provided, that is, that there
25 is ample recharge, which is why staff was focused

1 in part on understanding the mechanisms of
 2 recharge to the PGSA.
 3 The problem is that it's difficult to
 4 estimate when, if ever, equilibrium will occur and
 5 how much lowering of water levels will occur
 6 before that time. The saving grace here is that
 7 drawdown based on the Theis solution is a function
 8 of the logarithm of time so that the difference
 9 between the drawdown at, say, 90 days and one
 10 year, a difference of approximately .6 log cycles,
 11 isn't as significant as you might expect, and it's
 12 not nearly as significant as the difference
 13 between the predicted drawdown at ten minutes and
 14 a thousand minutes because that represents a two
 15 log cycle difference in time.
 16 Department staff typically looks at a
 17 time frame of one year in order to evaluate
 18 hydrogeologic impact predictions using the Theis
 19 solution. It has been argued that this is
 20 conservative, and certainly that's the case for
 21 some aquifer systems. But a little conservatism
 22 isn't a bad thing, from our perspective.
 23 Our chosen time frame of one year is
 24 the same as that used by the Idaho Department of
 25 Environmental Quality for projecting long-term

1 drawdown for public-water-supply wells, and the
 2 same time frame that was chosen for evaluating the
 3 City of Eagle Water right application.
 4 As explained in the staff memorandum,
 5 HLI performed and presented results of a nearly
 6 identical image well analysis in the year one
 7 progress report, Exhibit 12, and got similar
 8 results for their, quote, "worst case," end quote,
 9 scenario for a time period of 90 days as we got
 10 using a one-year time frame and aquifer properties
 11 from HLI's analysis of the SVR-7 aquifer test.
 12 We both predicted 8 feet of drawdown
 13 at the intersection of Floating Feather and
 14 Highway 16, a randomly chosen location several
 15 miles away from the M3 pumping center. They
 16 calculated only 4 feet for their best case at 90
 17 days.
 18 For comparison they calculated
 19 approximately 5 feet at the same location after 50
 20 years with the H-match version of their numerical
 21 model, and approximately 7 feet with the T-match
 22 version.
 23 Based on the similar magnitude of
 24 these numbers, we judged their model-based
 25 prediction to be within the bounds of what is

1 reasonable, assuming a laterally continuous
 2 aquifer system that is hydraulically connected to
 3 one or more sources of recharge.
 4 That doesn't mean that their
 5 prediction is correct, but it does mean that it's
 6 within the realm of reason, given the underlying
 7 assumption of continuity. In retrospect, I regret
 8 that we chose to present the results of our
 9 intermediate calculation for a time frame of 50
 10 years because it more likely overestimates impacts
 11 than the one-year snapshot -- provided, that is,
 12 that there is hydraulic connection to the regional
 13 aquifer system from M3's pumping center.
 14 Although we pointed this out in the
 15 staff memorandum text, we only presented the
 16 figure for the 50-year prediction, and I think
 17 that we unintentionally may have given the wrong
 18 impression to readers of our memo.
 19 If we had to do it over again and we
 20 could only show results for one time frame, we
 21 would only present the graphic for the one-year
 22 time period since that is what was used to assess
 23 reasonableness.
 24 We also pointed out that neither our
 25 drawdown analysis nor HLI's numerical model was

1 used to predict impacts on hydraulically-connected
 2 reaches of the Boise River.
 3 And now I'd like to address some of
 4 the major issues that were raised in HLI's
 5 response to the March 2nd, 2009 staff memorandum,
 6 which is Exhibit 45.
 7 First, there are a couple of places in
 8 the response where HLI implies that we are somehow
 9 holding M3's consultant to a higher standard.
 10 Specifically, HLI feels that, quote, "this
 11 aquifer's boundaries is defined far beyond what in
 12 our experience is customarily deemed necessary in
 13 evaluating a water right application," end quote,
 14 and conclusions, quote, "It is not customary to
 15 require applicants for groundwater permits to
 16 answer all questions regarding the recharge
 17 mechanism for a basin. This would seem an onerous
 18 and unrealistic requirement," end quote.
 19 HLI also felt compelled to point out
 20 that, quote, "M3 has spent over \$2 million over
 21 the last three years studying the north Ada County
 22 hydrology," end quote.
 23 There are several points that I'd like
 24 to make with reference to these statements.
 25 First, we are grateful for the data

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1 collection and analysis that was performed on
2 behalf of the applicant, and we think that it
3 improves our understanding of the hydrogeology in
4 north Ada County. This was one of our primary
5 conclusions of our staff memorandum, and those
6 sentiments were expressed repeatedly.
7 The data gathering and processing
8 efforts were generally of high quality. On the
9 other hand, the application process is not a quid
10 pro quo in which a water right is granted or
11 denied based upon the amount of money that is
12 spent on supporting studies.
13 In case there's any confusion,
14 Department staff was not asked by the Hearing
15 Officer to consider how much money was spent in
16 our technical analysis of the submitted materials.
17 That's in part because the sustainability of the
18 resource and the potential impacts to existing
19 water right holders are independent of the amount
20 of money spent on characterization.
21 Other water right applicants have also
22 decided to perform expensive aquifer
23 characterization studies. Hydrogeologic work that
24 was performed in support of the Avimor water right
25 application, for example, included a well drilling

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1 and installation program, routine water-level
2 monitoring, a geochemical analysis, and aquifer
3 testing and data analysis.
4 We are not holding M3 to a higher
5 standard than other applicants. In fact, it is
6 HLI that was compelled to point out where existing
7 standards are too low. For example, in the
8 Aquifer Test Prospectus, Exhibit 69, which was
9 provided to staff for comments in November of
10 2007, HLI noted, quote, "the majority of the
11 testing to date has been of too short of duration
12 to be useful for aquifer analysis. Unfortunately,
13 most of the existing testing has been of generally
14 poor design, as well, and this has caused the data
15 from both short and long-term testing to be of
16 limited value for aquifer characterization."
17 In Exhibit 12, the reanalysis of 16
18 aquifer tests the Eagle/Star area, HLI stated,
19 quote, "We believe that all water right
20 applications should be obliged to provide the data
21 needed to understand and manage the resource.
22 Properly designed and conducted pumping tests are
23 part of the process that provides these data. We
24 believe that all applicants for withdrawal of
25 significant quantities of groundwater be required

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1 to provide the rigorous and defensible aquifer
2 test data that would be generated following the
3 recommendations below. All groundwater users in
4 the region, present and future, would benefit were
5 these recommendations to be followed and become
6 standard procedure."
7 The list of recommended aquifer test
8 procedures that follows this statement includes
9 conducting the tests before the irrigation season,
10 which it should be noted is less restrictive than
11 the January/February time frame that Mr. Utting
12 described in his testimony.
13 Other recommendations included using a
14 high pumping rate from 900 to more than
15 2700 gallons per minute, selecting test wells
16 based upon well construction, and collecting
17 water-level recovery data for at least a week.
18 While we agree with HLI on the need
19 for quality data, we also would point out that HLI
20 offered these opinions without solicitation.
21 Moreover, the Department never stipulated that HLI
22 be required to reanalyze 15 aquifer tests that
23 were performed by other investigators or to
24 construct a seven-layer flow model. They decided
25 to take on those onerous challenges themselves.

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1 On the other hand, we did expect that
2 HLI would make good on the testing that they
3 scoped out in the Aquifer Test Prospectus,
4 Exhibit 69, a document that was reviewed and
5 commented on by Department staff.
6 However, in lieu of the planned
7 large-scale regional test, which involved the
8 design and installation of two large-bore, fully
9 penetrating wells, HLI conducted two smaller
10 scale, constant rate aquifer tests using pumping
11 rates at the low end of their recommended range
12 and test wells that are substandard by HLI's own
13 assessment.
14 The first aquifer test conducted by
15 HLI in support of this application was performed
16 using the Kling irrigation well. The well was
17 pumped for 3,000 minutes, a little more than two
18 days, at a rate of approximately 900 gallons per
19 minute. HLI described the partially penetrating
20 test well in the following passage from
21 Exhibit 12.
22 Quote, "The Kling irrigation well is
23 completed in the upper 109 feet of the Pierce
24 Gulch Sand Aquifer, which is about 275 feet thick
25 at this location. The already small open area of

1 the well screen in the Kling irrigation well is
2 significantly and irreversibly clogged, is subject
3 to sand production, and is not suitable for
4 long-term use as a regional supply well. The
5 Kling irrigation well is poorly documented, poorly
6 designed, and poorly constructed of marginal
7 materials. Since the well was completed 19 years
8 ago, a general deterioration of the well allowed
9 by the marginal materials and caused partly by the
10 inefficient design has resulted in a reduced well
11 efficiency and yield. The proportion of water
12 derived from various parts of the screen, and
13 therefore the aquifer, is not known. The partial
14 clogging of the well screen renders this analysis,
15 and any future analysis, for aquifer coefficients
16 uncertain," end quote.

17 You may recall that Mr. Squires
18 described the Kling irrigation well as, quote, "a
19 piece of crap," end quote, during his testimony on
20 April 24.

21 The second test was performed by
22 pumping from the SVR-7 test well for a period of
23 nine days, also at a rate of approximately
24 900 gallons per minute. HLI pointed out on page 7
25 of the response to IDWR staff memorandum,

1 Exhibit 45, that, quote, "M3 did not construct
2 this well. It was already cased, and therefore
3 could not be effectively logged. The existing
4 lithologic and geophysical logs for SVR-7 are of
5 poor quality. They were obtained with an
6 uncalibrated geophysical logging unit by a driller
7 having what we consider to be insufficient
8 training and understanding of geophysical
9 principles," end quote.

10 Elsewhere in Exhibits 44 and 12, HLI
11 referred to the, quote, "relatively small
12 diameter," end quote, well as being, quote,
13 "poorly constructed with perforated casing and a
14 louvered well screen," end quote.

15 They also noted that details
16 concerning the annular seal are, quote, "somewhat
17 limited," end quote and that, quote, "the degree
18 of penetration is not accurately known because of
19 the well construction," end quote.

20 HLI concluded that, quote, "Ideally,
21 future aquifer tests should be conducted on wells
22 that are properly completed in a significant
23 portion of the aquifer and which are fully
24 penetrating."

25 However, what we end up having to rely

1 upon as the basis for water right application is
2 not data from the regional scale test that was
3 proposed by HLI and reviewed by Department staff,
4 but instead from two smaller scale tests using
5 existing wells that don't fully penetrate the
6 target aquifer and, in the estimation of HLI, are
7 poorly constructed and poorly documented.

8 HLI's willingness to now rely upon
9 aquifer test data from partially penetrating,
10 poorly-constructed wells is inconsistent with
11 their recommendations and their tendency to ignore
12 for discount data from poorly-constructed wells
13 elsewhere. Mr. Owsley is planning to further
14 address this issue in his narrative.

15 Moreover, HLI led staff to believe
16 that the SVR-7 aquifer test would not be relied
17 upon in a significant way for the M3 application.
18 In an e-mail to the Department dated March 3,
19 2008, that was submitted by staff to the parties
20 on the first day of the hearing, HLI described the
21 SVR-7 aquifer test as merely, quote, "an
22 opportunity," end quote, and indicated that,
23 quote, "although this does not take the place of
24 our planned regional scale aquifer test using an
25 efficient large-bore production well that fully

1 penetrates the aquifer at a higher discharge rate,
2 pumping this well for a somewhat prolonged period
3 would provide us with some useful data and could
4 help us to refine our aquifer testing plan."

5 HLI also indicated, quote, "We view
6 this opportunity as a small-scale test using
7 monitoring wells close to the pumping well and no
8 attempts will be made to contact well owners or to
9 measure the wells of others as we intend to do in
10 the regional scale aquifer test of our prospectus
11 using a large-bore production well."

12 HLI further downplayed the
13 significance of the proposed SVR-7 test by
14 concluding, quote, "It is not the mother of all
15 aquifer tests, rather it is an opportunity to
16 extend an already planned well development pumping
17 test into a research effort that could yield some
18 meaningful results," end quote.

19 Although the significance of the SVR-7
20 aquifer test was originally downplayed by HLI, the
21 short time frame given the Department for approval
22 hinted otherwise.

23 HLI's representative informed the
24 Department, quote, "I regret that you do not have
25 more time to consider this proposal, but we need

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1 to move forward with our contracted work while we
2 have the rental test equipment on site. If the
3 Department can approve this request, we commit to
4 making every effort to obtain good quality and
5 meaningful data, but we would literally need to
6 know tomorrow in order to make arrangements."
7 Based on HLI's correspondence, we were
8 both surprised and disappointed to read in the
9 SVR-7 aquifer test report, which we did not
10 receive until January of this year, that, quote,
11 "Our earlier recommendation for the need to
12 conduct a major, regional scale aquifer test of
13 the Pierce Gulch Sand Aquifer beneath the north
14 Eagle foothills has been met by the SVR-7 test.
15 The data obtained from the SVR-7 nine-day test has
16 been used to calibrate and update the existing M3
17 Modflow numerical groundwater model," end quote.
18 Thus what had originally been
19 described to us as a small-scale test is
20 apparently now being viewed as a major
21 regional-scale test, and the data from it have
22 been relied upon for the prediction of long-term
23 impacts from pumping.
24 Regardless of scale, it is our opinion
25 that the SVR-7 test ended prematurely and

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1 inconclusively with the test data from the
2 observation well with the greatest response to
3 pumping suggesting that after applying all
4 corrections, negative hydraulic boundary had been
5 encountered.
6 Because long-term testing generally is
7 performed to evaluate hydraulic boundary
8 conditions and the test ended before boundary
9 conditions could be established, we respectfully
10 disagree with HLI's opinions in Exhibit 45 that,
11 quote, "extending the test would have added no
12 significant information," end quote, and, quote,
13 "adjusting the drawdown data from the Big Gulch
14 stock well to correct for this trend generated a
15 drawdown plot (figure 6) with almost all of the
16 apparent end of test increase in drawdown
17 removed."
18 Let me show you what I'm talking
19 about. This is figure 6 from Exhibit 45. It's a
20 plot of trend-corrected drawdown versus the
21 logarithm of time in the monitoring well closest
22 to the test well.
23 The increase in the slope of the data
24 trend that have identified with the upper red
25 circle is diagnostic of the cone of depression

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1 encountering a negative hydraulic boundary, as is
2 the increase in the value of the derivatives,
3 which I've identified with the lower red circle.
4 All external influences have already
5 been removed from these data so there doesn't
6 appear to be a more plausible explanation. The
7 drawdown plot clearly shows that the aquifer test
8 ended while the slope of the data was still
9 changing, and equivalently, the value of the
10 derivative was still increasing.
11 Ending the test while those things are
12 occurring is contrary to the goal of establishing
13 boundary conditions in order to assess long-term
14 performance of the aquifer. The fact that the
15 derivative values have increased by more than a
16 factor of two is cause for concern to staff
17 because, although inconclusive, it suggests that
18 the boundary -- that the drawdown data possibly
19 were being affected by more than one hydraulic
20 boundary.
21 Here, according to Squires, Wood, and
22 Osiensky, Exhibit 67, is a plot of data from a
23 relatively short term test in the Goddard No. 2
24 well, which also is completed in the PGSA.
25 Drawdown is plotted as increasing with depth on

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1 this plot so the downward deflection is analogous
2 to the upward deflection in the Big Gulch stock
3 well.
4 In any event, the change in slope was
5 interpreted, correctly in my estimation, to be a
6 negative hydraulic boundary which affects
7 groundwater flow in the vicinity of this PGSA
8 well. Though short term, this test was at least
9 run long enough for the change in the slope to
10 stabilize.
11 Notice that the late time data do not
12 deviate from the second linear trend. If
13 presented, the derivative values would be
14 unchanging along the second trend line, which is
15 not the case for the late data collected in the
16 Big Gulch stock well during the SVR-7 aquifer
17 test.
18 It's my understanding that the Goddard
19 No. 2 well has been producing water for more than
20 ten years, so a single negative boundary does not
21 mean that pumping is unsustainable, but it does
22 cause there to be increased drawdown and it can
23 contribute to long-term water level declines.
24 Also, a negative boundary could
25 contribute to a sustainability problem if, in

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1 combination with other boundaries, they
2 collectively cause the aquifer to be
3 compartmentalized.
4 We don't necessarily think that this
5 happens at M3. But because it's located at the
6 basin margin, it is our opinion that boundary
7 conditions should be thoroughly evaluated, if at
8 all possible.
9 Mr. Squires testified that he
10 conducted 30-day aquifer tests when he was an
11 employee of United Water Idaho. Running a longer
12 term test allows for better definition of aquifer
13 boundary conditions, which is important when
14 you're interested in assessing the long-term
15 response to pumping like United Water Idaho is for
16 their production wells.
17 I think it's safe to say that everyone
18 in this room would be interested in knowing the
19 same thing for the PGSA and the overlying shallow
20 aquifer system in the vicinity of M3.
21 Although we think continued pumping
22 would have been worthwhile, I want to emphasize
23 that interpretation of the drawdown data from the
24 Big Gulch stock well, which was the well closest
25 to SVR-7 and the only observation well with more

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1 than 1 foot of drawdown, was made difficult by its
2 well construction.
3 It's only 180 feet deep, and according
4 to the summary of well and aquifer details table
5 in the SVR-7 report, Exhibit 44, the top of the
6 PGSA is 180 feet deep at that location. HLI
7 nonetheless considers it to be a PGSA well,
8 according to a notation in the same summary table.
9 The indicated aquifer top depth of
10 180 feet in the summary table is contradicted in
11 the text from the same report, which indicates
12 that the top of the PGSA is 240 feet deep at this
13 location.
14 That passage, which is based on the
15 240-foot top of aquifer depth, acknowledges that
16 the Big Gulch stock well, quote, "maybe completed
17 about 100 feet above the top of the Pierce Gulch
18 Sand Aquifer," but nonetheless concludes, quote,
19 "we believe it neither invalidates the analysis of
20 data from this well, nor our interpretation of
21 aquifer properties," end quote.
22 Note that 100 feet deeper than the
23 depth of the Big Gulch stock well is 280 feet, not
24 240 feet, as suggested in the middle of the
25 passage, and not 180 feet as indicated in the

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1 summary table.
2 Here is figure 3 from the same report.
3 The PGSA beneath the Big Gulch test well on this
4 cross-section is shown at a depth of 280 feet,
5 which agrees with the reference in the text to
6 there being a 100-foot difference between the
7 total depth of the well and the top of the
8 aquifer, which I've identified with a red arrow on
9 this cross-section.
10 The next topic from the response to
11 the staff memorandum that I'd like to address is
12 HLI's taking exception to our characterization of
13 the stratigraphy in the study area as being
14 complex.
15 THE HEARING OFFICER: Okay. Mr. Vincent,
16 I'm wondering -- now you're changing subjects a
17 little bit, I'm wondering if this would be a good
18 place for us to take a morning break?
19 THE WITNESS: Sure.
20 THE HEARING OFFICER: Would that be okay?
21 MR. FEREDAY: Yeah.
22 THE HEARING OFFICER: We're digesting a lot
23 of material, and maybe give everybody a chance to
24 catch up a little bit. So let's break for 15
25 minutes.

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1 MR. THORNTON: 15?
2 THE HEARING OFFICER: Yeah. Let's go off
3 the record.
4 (Recess.)
5 THE HEARING OFFICER: Okay. We are
6 recording again.
7 Mr. Vincent, you may continue.
8 THE WITNESS: I'm going to start over on
9 that last slide.
10 THE HEARING OFFICER: Thank you.
11 THE WITNESS: The next topic from the
12 response to the staff memorandum that I'd like to
13 address is HLI's taking exception to our
14 characterization of the stratigraphy in the study
15 area as being complex.
16 HLI's current stance on this issue is
17 inconsistent with the fact that there are numerous
18 references to complexity and heterogeneity in the
19 package of information that was submitted in
20 support of M3's water right application.
21 Going all the way back to 1981, Wood
22 and Anderson, Exhibit 19H, stated, quote, "The
23 stratigraphic relationships within the Idaho group
24 beneath the western plain are complex," end quote.
25 More recently, a 2002 report authored

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1 by Wood and Clemens on the geologic and tectonic
2 history of the Western Snake River Plain,
3 Exhibit 19D, stated, quote, "The distribution of
4 sand aquifers in the fluvial-lacustrine section is
5 complex, but in just the last few years we are
6 gaining a clearer understanding of the
7 depositional history and gross features of the
8 sedimentary architecture."
9 In a 2008 report, Exhibit 12, HLI
10 attempted to explain what might have caused
11 drawdown in water level recovery data to suggest
12 very different aquifer boundary conditions in
13 different monitoring zones within the PGSA at M3.
14 They stated quote, "These apparent contradictions
15 support the conclusion that the aquifer system is
16 heterogenous and does not match well with the
17 simplified models envisioned for the analytical
18 methods of analysis," end quote.
19 It is staff's interpretation that a
20 heterogeneous system that cannot be described by a
21 simplified model is a complex system.
22 An indication that the stratigraphy is
23 nonuniform and that the nature of groundwater flow
24 is complex is the recent determination by HLI that
25 fracture flow possibly is important in addition to

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1 porous media flow, but only in certain portions of
2 the aquifer.
3 On page 6 of Exhibit 44, the text
4 states, quote, "The cemented nature of the aquifer
5 along with relatively large transmissivities
6 calculated from numerous aquifer tests supports
7 the possibility of fracture flow in addition to
8 porous media flow. This type of flow would allow
9 for higher transmissivities in a somewhat cemented
10 sand or sandstone aquifer, than would porous media
11 flow itself. We do not postulate that the entire
12 Pierce Gulch Sand Aquifer is cemented because
13 there are many instances of sand production in
14 wells and borehole collapse to suggest otherwise.
15 As a general rule, cementation appears to increase
16 with proximity to the basin margin and in the
17 vicinity of known structural faulting."
18 Beyond what's been written in the
19 supporting documentation, I think the fact that
20 the M3 flow model comprises seven layers, three of
21 which are used to represent the PGSA, is, in and
22 of itself, a fairly convincing argument that the
23 hydrostratigraphy in the area is complex."
24 Consider, for example, that the
25 Department has implemented conjunctive management

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1 for the Eastern Snake Plain using a one-layer flow
2 model, and M3's model is used to describe
3 groundwater flow in only a portion of the smaller
4 Western Snake Plain.
5 Complex stratigraphy also is suggested
6 by the fact that none of the 13 geologic
7 cross-sections contained in M3's submittal No. 27
8 in support of the application identify formal
9 geologic units, such as formations, or correlate
10 stratigraphy between any of the boreholes.
11 Here's one of those cross-sections
12 from Exhibit 27. If the stratigraphy is not
13 particularly complex, as indicated by HLI in
14 Exhibit 45, geologic correlation should be a
15 relatively straightforward process and one that
16 would be worthwhile from the standpoint of
17 developing an understanding of the subsurface.
18 This geologic cross-section is
19 figure 5 from the year one progress report,
20 Exhibit 2. The section runs from the southwest to
21 the northeast through Big Gulch on M3 property.
22 Question marks are used between SVR-7 and SVR-6 to
23 indicate uncertainty in the stratigraphic
24 relationships between these wells, both of which
25 occur on the same side of the West Boise/Eagle

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1 fault. That indication of uncertainty suggests
2 that the stratigraphy beneath M3 is complex.
3 Also notice this depiction of the PGSA
4 from Exhibit 2 as having concave upward top and
5 bottom structures with a continuously increasing
6 dip as you move further to the northeast, which is
7 to the right on this diagram. I've added red
8 lines to show how the dip of the contact between
9 the PGSA and the underlying Terteling Springs
10 formation dramatically increases as you move
11 further along section and away from the center of
12 the basin.
13 The nearly horizontal red line
14 represents the dip of the contact near the City of
15 Star well, and the much steeper solid red line
16 illustrates that the dip is thought to be much
17 steeper near the intersection of the PGSA with
18 land surface. As far as I know, this
19 stratigraphic complexity is not discussed in the
20 supporting documentation.
21 Notice now that the finalized version
22 of this same section, figure 3 from Exhibit 44,
23 shows a somewhat different but also difficult to
24 explain interpretation in which the dip of the
25 PGSA bottom structure between TW-4 and TW-2 is

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1 more than double the slope of the bottom structure
2 between TW-1 and TW-4.
3 Note that the projection of the
4 contact between the PGSA and the underlying
5 mudstone using the steeper dip would cause the
6 so-called green line to be located well to the
7 northeast side of SVR-6. In fact, the projection
8 of the contact, which I've drawn on the figure
9 using a dashed red line, intersects land surface
10 near SVR-10, which is northeast of the West
11 Boise/Eagle fault.
12 However, this is contrary to the
13 inferred location shown on figure 2 in Exhibit 44,
14 the SVR-7 aquifer test report. The green line is
15 instead shown on the southwest side of the West
16 Boise/Eagle fault, which would require an even
17 steeper dip between TW-2 and SVR-6 than the
18 already increased dip that was shown on the last
19 slide.
20 A slight steepening might be expected
21 as you move closer to the sediment source, but the
22 increase in dip necessary to keep the green line
23 on the west side of SVR-6 is dramatically greater
24 and, as I mentioned, the geologic mechanism that
25 would cause this to occur is not explained in the

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1 supporting documentation.
2 I'd like now to go back to figure 5 in
3 Exhibit 2, which is the year one progress report.
4 Notice that this figure shows an abrupt
5 water-level change between SVR-7 and SVR-6. The
6 water level in the shallower SVR-7 well is roughly
7 200 feet higher than in the well with a deeper
8 completion interval, SVR-6.
9 The fact that this significant
10 water-level difference appears to occur on the
11 well same side of the known West Boise/Eagle fault
12 also is contrary to our expectations based on the
13 information that we've been provided. A much
14 lower water level in the deeper well might be
15 expected on opposite sides of a no-flow barrier,
16 but it is not expected between wells on the same
17 side of a fault, especially in an area, whereas
18 Mr. Squires testified, there's supposed to be an
19 upward hydraulic gradient.
20 The cause for the dramatic change in
21 dip and apparent strong downward hydraulic
22 gradient are not explained in the HLI submittals
23 and suggest to staff that the hydrostratigraphy
24 beneath the M3 property is complex. I should also
25 point out that the pronounced downward vertical

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1 gradient is not explained by the so-called green
2 line because the aquifer underlying the PGSA is
3 laterally continuous in the southwest direction
4 according to the conceptualization shown on this
5 figure.
6 Based on my experience characterizing
7 and modeling faulted fluvial deltaic aquifers in
8 Texas, a plausible explanation for what's going on
9 between SVR-7 and SVR-6 is that the stratigraphic
10 section is cut by an unidentified fault, which
11 most likely parallels the West Boise/Eagle fault.
12 This possibility could dramatically change the
13 significance of the so-called green line on the
14 hydrogeology beneath M3.
15 Since I'm on the topic of vertical
16 hydraulic gradients, I should mention that there
17 also is a downward vertical hydraulic gradient
18 between the unnamed alluvial sand aquifer and the
19 upper layers of the PGSA and the TW-1 piezometer
20 nest based on the water-level data that are
21 presented in Exhibit 44, table 2.
22 However, the same dataset indicates
23 that the gradient is upward toward the unnamed
24 alluvial aquifer in the TW-4 piezometer nest. I
25 have not seen the existence of a downward vertical

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1 hydraulic gradient in the TW-1 piezometer nest
2 discussed in the supporting documentation or heard
3 it described in any of the testimony. The complex
4 vertical gradient distribution makes tenuous the
5 Exhibit 2 conclusion, quote, "These measured
6 vertical gradients that exist in the foothills
7 region also serve to refute the prevailing notion
8 of the foothills as a recharge area," end quote.
9 Incidentally, the TW-1 and TW-4 are
10 located on opposite sides of the fault that was
11 identified by Wood in his 2007 report, Exhibit
12 19B.
13 MR. FEREDAY: Excuse me, Mr. Vincent.
14 Could you repeat that last point. I don't believe
15 that was on your slide.
16 THE WITNESS: Incidentally, TW-1 and TW-4
17 are located on opposite sides of the fault that
18 was identified by Wood in his 2007 report,
19 Exhibit 19B.
20 MR. FEREDAY: Thank you.
21 THE WITNESS: Additional complexity is
22 revealed by looking at figure 1 from the response
23 to our staff memorandum, Exhibit 45. There is a
24 break in the West Boise/Eagle geologic fault north
25 of M3 in the area that I've circled in red. I'm

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1 not sure whether the offset was caused by a
2 transverse fault or some other mechanism, but
3 whatever the cause, the nonlinearity of this
4 feature complicates the hydrogeology of the PGSA
5 since it transects both the shallow and deep
6 strata.

7 One last indication that there is
8 complexity is the water-level trend analysis that
9 was performed by HLI for the SVR-7 aquifer test.
10 The trend analysis was performed in order to
11 correct drawdown and water-level recovery data for
12 regional water-level trends, which is standard
13 practice.

14 However, HLI did not calculate a
15 single water-level trend for all of the PGSA wells
16 on M3 property during the period of monitoring.
17 Instead, and contrary to what you would expect for
18 a trend that is, quote, "regional," unquote, a
19 different trend was calculated for each and every
20 well that exhibited measurable drawdown. In fact,
21 two different water-level trends were estimated
22 for some of the wells.

23 The trend correction is described on
24 page 17 of the SVR-7 aquifer test report. Quote,
25 "The water-level trend visually identifiable at

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1 TW-2 and TW-4 appeared as a declining level over
2 the course of the entire test, including the week
3 before the test began. The peak of the 2008 water
4 levels in the aquifer near these wells appeared to
5 occur just prior to March. Beneath the eastern
6 portion of the M3 property, however, the water
7 levels appeared to be rising before the start of
8 the test and declining at the end. Based on
9 linear projections of the pretest and posttest
10 trends observed in SVR-7, Flack Corral 6-inch
11 stock, Flack Corral 4-inch stock, and the Little
12 Gulch stock wells, the 2008 peak in water levels
13 in this area appeared to occur sometime during the
14 period March 17 to 19. Because of the peak
15 occurring during the test, two separate equations
16 were generated for the estimated water-level trend
17 at each well: one for the rising level period, and
18 one for the declining level period. Trends could
19 not be estimated for the aquifer near the pumping
20 well, SVR-7, and the nearby Big Gulch stock well
21 using the pretest data because pretest pumping
22 caused water levels to fluctuate obscuring any
23 visually discernible trends. Instead we used the
24 data collected during the two months following
25 completion of the test," end quote.

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1 I want to point out to the Hearing
2 Officer that calculating a different regional
3 trend or multiple trends for each well using data
4 that span the period of tests is not common
5 practice. Typically, an analyst picks a single
6 well outside the area of pumping influence to
7 determine a single pretest trend for the entire
8 aquifer, or perhaps calculates an average pretest
9 trend using a couple of wells.

10 HLI's trend analysis, however,
11 suggests that the background trend in the PGSA
12 beneath M3 varies both with depth and location,
13 and the need for that unusually complicated
14 analysis suggests complexity to us.

15 I also want to point out that
16 attempting to calculate a different trend for the
17 pumping and recovery period in each and every well
18 that has been impacted by pumping is a difficult
19 undertaking and makes analysis of all the aquifer
20 test data uncertain, especially analysis of the
21 water-level recovery data.

22 I want to talk some more about the
23 trend correction, but this time it's in the
24 context of water-level recovery, rather than
25 stratigraphic complexity. Specifically, we noted

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1 in the staff memorandum that the Kling domestic
2 well did not appear to recover from the Kling
3 irrigation well test and that water levels in the
4 Big Gulch stock well also seemed to indicate
5 delayed or incomplete recovery from the SVR-7
6 nine-day aquifer test.

7 HLI's response to these concerns
8 included the following statement: Quote, "HLI has
9 explained why the water levels in measured wells
10 did not recover to pretest levels during the
11 recovery measurement period, including the annual
12 fluctuation in regional water levels shown in all
13 monitored wells in the area. It would be unusual,
14 and a contradiction to standard well recovery
15 analyses using methods based on the Theis
16 equations, for water levels in the Boise River
17 Valley wells to fully recover in hydraulic tests
18 within the same amount of time as the drawdown
19 occurred. However, to assure IDWR that the
20 aquifer did indeed recover, the attached figure 5
21 shows that the water levels in TW-1, completed in
22 the PGSA about 50 feet from the Kling domestic
23 well, recovered within two weeks."

24 Here is figure 5 from HLI's response
25 to the staff memorandum. The labeling by HLI

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p style="text-align: right;">Page 1810</p> <p>1 indicates that the water levels in TW-1 are the 2 orange colored data and the water levels in TW-4 3 are the green data. I've identified the water 4 levels in TW-1 during the Kling irrigation and 5 SVR-7 tests by drawing red circles around those 6 data.</p> <p>7 Note that the maximum water-level 8 change is such a small fraction of 1 foot that 9 it's almost imperceptible during both the Kling 10 irrigation and SVR-7 aquifer tests. It's 11 therefore difficult to determine, based on looking 12 at this figure, whether or not there was any 13 drawdown in TW-1 during either test.</p> <p>14 Further complicating interpretation of 15 this figure is the fact that TW-1 is a nested 16 piezometer which monitors water levels at five 17 different elevations. According to table 1 in 18 Exhibit 44, which is the SVR-7 aquifer test 19 report, none of the five zones responded to 20 pumping during the SVR-7 test, and according to 21 page 200 of the Exhibit 12, the shallowest 22 piezometer, zone five, quote, "Did not react at 23 all to pumping," end quote.</p> <p>24 The text on page 205 from the same 25 report indicates that the minimum end-of-test</p> | <p style="text-align: right;">Page 1812</p> <p>1 fluctuations. The period of monitoring 2 encompasses the period of pumping and water-level 3 recovery. You can see that the water levels 4 declined quickly in response to the onset of 5 pumping on March 10, 2008, and they partially 6 recover in response to the pump being shut off on 7 March 19.</p> <p>8 In our staff memorandum, we expressed 9 concern with the fact that water levels in the Big 10 Gulch stock well, which, again, was the closest 11 monitoring well to the SVR-7 test well, and the 12 only observation well to have more than 1 foot of 13 drawdown during the nine-day test, did not appear 14 to be trending toward full recovery.</p> <p>15 Note that the water level at the end 16 of the water-level recovery period, 12 days after 17 the pump was shut off, was approximately 4/10ths 18 of a foot lower than the water level that was 19 measured immediately prior to turning on the pump. 20 Incomplete or delayed water-level recovery are 21 concerns to staff because they can be indications 22 that the aquifer is of limited extent.</p> <p>23 This is figure 26 from Exhibit 44, the 24 SVR-7 aquifer test report. The water-level 25 recovery data from the previous figure have now</p> |
| <p style="text-align: right;">Page 1811</p> <p>1 drawdown among the other four TW-1 piezometers was 2 6.5 feet in zone one. Because figure 5 for the 3 response to the staff memorandum indicates almost 4 imperceptible drawdown during the Kling irrigation 5 test and the smallest drawdown in any of the four 6 zones that did respond to pumping was 6.5 feet, 7 the only logical interpretation is that the orange 8 line represents the water levels in zone five of 9 TW-1, which, like the Kling domestic well, is 10 identified by HLI as being completed in the 11 shallow alluvial aquifer system.</p> <p>12 It's difficult to reconcile HLI's 13 conclusion that the water level in TW-1 recovered 14 within two weeks, with indications that the water 15 level in zone five did not respond to pumping in 16 either of M3's aquifer tests. The indication from 17 the aquifer test reports is that there was no 18 water-level decline from which to recover.</p> <p>19 I want to focus now on the SVR-7 20 aquifer test. This hydrograph is figure C-3 from 21 Exhibit 44, which is the SVR-7 aquifer test 22 report. It's an arithmetic plot of water level 23 versus time.</p> <p>24 The blue colored data are the water 25 levels after correcting for barometric pressure</p> | <p style="text-align: right;">Page 1813</p> <p>1 been plotted in the standard format for 2 quantitative analysis, which is as residual 3 drawdown, the difference between the original 4 pretest water level and the water level during 5 recovery, versus the logarithm of the ratio "T," 6 the time since the pump was turned on, divided by 7 "T" prime, the time since the pump was turned off. 8 Note that the data on this plot have not yet been 9 corrected for regional water-level trend.</p> <p>10 The main thing I want to point out 11 about this plot is that the first data to be 12 collected after the pump shut off are the blue 13 colored dots in the upper right-hand part of the 14 plot, and the data in the lower hand portion of 15 the plot are the last recovery data that were 16 collected. So the recovery time increases to the 17 left on this diagram.</p> <p>18 Also note that the ending residual 19 drawdown values are approximately 4/10ths of a 20 foot, which means the water levels at the end of 21 the recovery period are 4/10ths of a foot lower 22 than the pre-pumping level. That's the same 23 determination that I made for the previous slide 24 because these are the same water-level data. 25 They've just been plotted differently to</p> |

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1 facilitate analysis.
2 This is figure 27 from Exhibit 44, the
3 SVR-7 aquifer test analysis report. This plot is
4 of the same data one more time, only now they've
5 been corrected for the water-level trend. Our
6 review of this diagram was the basis for our
7 comment about the apparent failure to achieve
8 water-level recovery in the Big Gulch stock well.
9 MR. FEREDAY: Excuse me, Mr. Hearing
10 Officer.
11 Mr. Vincent, when you mentioned these
12 various figures that are exhibits, that does not
13 mean that your material that you've added to them
14 were part of the exhibit; right? I would like you
15 to just clarify which portions of each of these
16 that you've added material to. That would be
17 helpful to us.
18 THE WITNESS: It's generally something
19 that's been circled or boxed in red. In fact, in
20 every case, save for the green line box, I've used
21 red to denote that those are my marks.
22 MR. FEREDAY: Okay. Thank you.
23 THE WITNESS: This plot is of the same data
24 one more time, only now they've been corrected for
25 the water-level trend. Our review of this diagram

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1 was the basis for our comment about the apparent
2 failure to achieve water-level recovery in the Big
3 Gulch stock well. That conclusion was based not
4 only on the ending residual drawdown values, which
5 are slightly more than half of a foot on this
6 diagram, but the fact that the data trend is not
7 toward zero residual drawdown, but instead toward
8 a positive residual drawdown of approximately one
9 quarter of a foot.
10 The positive, non-zero intercept is
11 diagnostic of an aquifer of limited extent, and
12 that is a major concern for staff in the context
13 of evaluating the sustainability of the resource.
14 HLI's analyst acknowledged the
15 possibility of late and/or incomplete recovery in
16 the caption on the right side of the figure. It
17 says, "S over S prime less than one suggests late
18 or incomplete recovery. However, incomplete
19 correction for seasonal declining regional
20 water-level trend over 12 days of recovery is most
21 probable cause of apparent incomplete recovery,"
22 end quote.
23 We also noted that the late time
24 recovery data, which are the blue dots in the
25 lower left-hand corner of the plot, are located

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1 above the trend line. That was not commented on
2 by HLI's analyst, however.
3 As it turns out, HLI had misapplied
4 the trend correction for the Big Gulch stock well.
5 As described on page 24 of their response to the
6 staff memorandum, Exhibit 45, quote, "We
7 inadvertently omitted a minus sign to the
8 correction. By applying the minus sign to the
9 correction, the revised recovery plot, figure 7
10 below, now projects close to the total recovery
11 point of the graph as is expected through standard
12 well pumping and recovery theory. The small
13 difference between the actual plot and a perfect
14 projection may be the result of incomplete
15 correction for trend, or it could be the effects
16 of the edge of aquifer boundary discussed above
17 and noted in our reports."
18 Here, then, is figure 7 from the
19 response to the staff memorandum, Exhibit 45.
20 This figure is a plot of the water-level recovery
21 data from the Big Gulch stock well after applying
22 the revised correction, which you'll recall is
23 based on analysis of data that were collected in
24 this same well after the test had been conducted.
25 With the revised correction, the

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1 residual drawdown at the Y-intercept is only
2 slightly positive, approximately 5/100ths of a
3 foot. Nonetheless, HLI's analyst again
4 acknowledges the possibility of late or incomplete
5 recovery, but this time indicates that it was
6 caused -- that it was, quote, "caused either by:
7 a) incomplete correction for seasonal declining
8 regional water-level trend, or b) hydraulic
9 effects of nearest known no-flow boundary, the
10 edge of the aquifer green line on the site plan,"
11 end quote.
12 This is figure 23 from Exhibit 44,
13 which purportedly is a plot of trend-corrected
14 recovery data from the SVR-7 pumping well. Note
15 that the trend-corrected residual drawdown at T
16 over T prime equals one for the pumping well is
17 approximately 1/10th of a foot, which is somewhat
18 larger than for the revised correction on the Big
19 Gulch stock well.
20 Again, the caption acknowledges that
21 the recovery appears to be late or incomplete
22 based on the trend line but, unlike in the case of
23 figure 27 for the Big Gulch stock well, the
24 analyst considers late data that don't plot along
25 the trend line in concluding, quote, "projection

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1 of the end of recovery data would likely intersect
2 residual recovery equals zero at T over T prime
3 equal one, indicative of complete recovery."
4 Beyond pointing out this inconsistency
5 in the treatment of the late recovery data, the
6 reason that I wanted to drag everyone through this
7 rather difficult material is to emphasize that the
8 regional water-level trend corrections that were
9 applied to the recovery data effectively mask the
10 true response of the aquifer. In other words, the
11 drawdown that was caused by pumping in the two
12 wells with the most drawdown, SVR-7 and the Big
13 Gulch stock well, is not of sufficient magnitude
14 in relation to the various water-level correction
15 factors to definitively assess whether or not the
16 aquifer recovery was delayed or possibly even
17 incomplete.

18 The fact that uncertainty about the
19 regional water-level trend was used to explain
20 residual drawdown intercepts of both 0.05 feet and
21 0.25 feet in the Big Gulch stock well, and
22 0.1 feet in the nearby SVR-7 well, supports the
23 idea that in the case of the SVR-7 test where the
24 maximum recoveries are only on the order of a foot
25 or two, a well specific regional trend analysis

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1 based on data that were collected after the test
2 makes evaluation of aquifer boundary conditions
3 using the water-level recovery data tenuous.
4 Based on this figure, it is our
5 opinion that the aquifer was not stressed enough
6 by pumping at 900 gallons a minute for nine days
7 to facilitate a more definitive -- definite
8 analysis of the recovery data.

9 Before we move on from figure 23, I
10 want to point out that the first data points to
11 plot along the trend line, which I've circled in
12 red, are for residual drawdown values of slightly
13 less than 1.5 feet, and the maximum residual
14 drawdown value of any data point on this plot is
15 approximately 2.3 feet, which I've also circled in
16 red.

17 The 2.3-foot maximum residual drawdown
18 suggest that there may be a problem with
19 figure 23, which again is the trend-corrected
20 water-level recovery plot for the pumping well
21 during the nine-day SVR-7 aquifer test.

22 Table 2 from Exhibit 44, the SVR-7
23 aquifer test report, indicates that the maximum
24 measured drawdown in the pumping well was
25 29.79 feet, and that after correcting for well

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1 loss, the maximum drawdown in the pumping well was
2 7.51 feet.

3 The 2.3-foot maximum residual drawdown
4 on figure 23 is therefore more than 5 feet less
5 than the maximum drawdown after correcting for
6 well loss. This rather large and unexplained
7 discrepancy suggests to staff that the data shown
8 on figure 23 may not be representative of water
9 levels in the pumping well during recovery.

10 The next topic that I'd like to
11 address is that of aquifer continuity. On page 4
12 of their response to staff memorandum, HLI stated
13 quote, "Again, the evidence in published reports,
14 together with recent studies we have compiled,
15 supports the conclusion that the PGSA is laterally
16 extensive and hydraulically interconnected over a
17 regional scale. All new evidence we have
18 uncovered continues to point to that conclusion.
19 We do not subscribe to the staff's apparent belief
20 that there is a lack of clarity with respect to
21 this issue."

22 Staff cannot reconcile this statement
23 with findings from a previous study that was
24 conducted for the Treasure Valley Hydrologic
25 Project by two of M3's experts, Mr. Ed Squires and

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1 Dr. Spence Wood.
2 That study was documented in a 2001
3 report, Exhibit 19E, that was submitted as part of
4 a seven-document package entitled "Documentation
5 Provided by S.H. Wood, Ph.D., Professor Emeritus."
6 The first excerpt from the 2001 report
7 speaks both to the complexity and lateral extent
8 issues for sedimentary aquifers in the Boise area,
9 which according to the HLI numerical model, is
10 located between the PGSA recharge area and M3.
11 The introduction to the report is a nice summary
12 of the hydrogeologic setting southeast of M3.

13 It begins, quote, "The cold water
14 aquifer system beneath the city of Boise is
15 composed of sandy sediments interbedded with
16 claystone and mudstone that were deposited near
17 the shores of lakes which filled the Western Snake
18 Plain during the late Miocene and Pliocene epochs
19 (10 to 1.7 million years ago). The sand layers
20 are deposits of stream channels, beach sands
21 winnowed by wave action, deltas built out into the
22 lake, and possibly density flows across the lake
23 bottom from collapse of parts of the delta shelf.
24 These depositional environments do not produce
25 broadly distributed sand layers. Instead the sand

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1 layers are typically restricted in their
2 horizontal and vertical continuity by interbedded
3 mudstone or lateral termination into mudstone.
4 The difficulty here lies with
5 correlation of sand layers and determination of
6 their shapes. Important is to predict whether
7 sand layers found in wells have some sort of
8 hydraulic connection, and which are not
9 interconnected. By analogy to modern sedimentary
10 environments and subsurface studies of others, our
11 goal is to obtain at least a partial understanding
12 of the three-dimensional geometrical shapes of
13 sand aquifers. Structural downwarping coupled
14 with normal faulting along the margins of the
15 plain further complicates the stratigraphic
16 section."
17 The next excerpt also touches on both
18 complexity and continuity issues and appears later
19 in the same document. That statement reads,
20 quote, "In the past, aquifers were typically named
21 for the geologic formations in which they
22 occurred. However, the variety of depositional
23 environments of the lake-stream systems and the
24 changing environments with fluctuating lake level
25 tells us that the sand units are complex. In

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1 previous reports, the aquifer systems are
2 associated with a set of geologic formations
3 originally defined by Malde and Powers. The
4 stratigraphic order and characteristic lithology
5 of formations is a useful framework, because the
6 changing lithology in some cases can be attributed
7 to basinwide geologic events or progressions of
8 similar depositional environments across the
9 basin. However, it is unlikely that these
10 formation units reliably relate to hydraulic
11 connectivity of aquifers."
12 Next, on page 44 of the 2009 report
13 for the SVR-7 aquifer test, Exhibit 44, HLI
14 explains that, quote, "These conclusions are, of
15 course, only preliminary and additional monitoring
16 (currently ongoing) will help to clarify and test
17 our understanding of interconnectivity."
18 For the benefit of the Hearing
19 Officer, I'd like to emphasize what's been said
20 here. In rebuttal to our staff memo, HLI implies
21 that staff is somehow misguided in thinking that
22 there is a lack of clarity with regard to the
23 scale of aquifer interconnectivity. But in their
24 last supporting submittal, based on the most
25 recent data that they've collected, they indicate

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1 that additional monitoring is needed to help
2 clarify their preliminary conclusions regarding
3 aquifer interconnectivity.
4 Suffice it to say that hydraulic
5 interconnectivity is a concern to staff because
6 the assumption of connectivity to an off-site
7 source of recharge is the basis for the numerical
8 model that was applied to predict hydrologic
9 impacts.
10 Lastly, in the response to our staff
11 memorandum, Exhibit 45, HLI asserts, quote, "The
12 staff evidently does not dispute that PGSA
13 groundwater moves many miles from the
14 east-southeast into the area beneath the M3
15 property knowledge of Eagle, and that it comes
16 from at least as far away as Garden City," end
17 quote.
18 HLI appears to have arrived at their
19 conclusion about what staff thinks based on the
20 affidavit of Dr. Dale Ralston, a portion of which
21 is presented later in HLI's response to our staff
22 memorandum.
23 HLI's assumption about what staff
24 thinks about the scale of aquifer
25 interconnectedness is wrong on several counts.

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1 One, just because staff does not
2 specifically state opposition to an HLI concept
3 does not indicate our endorsement of the idea.
4 Two, with all due respect to
5 Dr. Ralston, he does not speak for hydrology staff
6 and we don't speak for him. He is not a neutral
7 party in this matter. None of my staff has had
8 any communications with Dr. Ralston relative to
9 M3's pending water right application.
10 Three, whether the PGSA beneath M3 is
11 hydraulically connected to PGSA wells in Garden
12 City is significant in that there are historical
13 data for production wells in the Garden City area,
14 and if those wells are hydraulically connected to
15 M3 it is an argument against aquifer
16 compartmentalization. However, demonstrating
17 hydraulic connection to the primary recharge
18 sources is equally important in the context of
19 validating M3's conceptual and numerical models.
20 According to the numerical modeling report,
21 Exhibit 16, these include the New York Canal and
22 the Boise River above Capitol Bridge, not the
23 Boise River in Garden City.
24 Four, we have documented our concerns
25 about faulting near M3 and the possibility that it

1 may limit hydraulic communication with the PGSA
2 elsewhere. The indication by HLI on page 18 of
3 Exhibit 45 that we offered, quote, "no lines of
4 evidence," end quote, in our staff memorandum to
5 justify such a concern is not correct. I'll
6 further address this issue in a moment.

7 Five, the Goddard Street No. 2 well is
8 located between M3 and the postulated recharge
9 source areas.

10 Squires, Wood, and Osiensky documented
11 that the 551-foot deep Goddard No. 2 well was
12 impacted by a hydraulic barrier (i.e., no-flow)
13 boundary in their 1992 report entitled
14 "Hydrogeologic Framework of the Boise Aquifer
15 System, Ada County, Idaho," Exhibit 67.

16 They also presented an aquifer test
17 data plot for the Goddard No. 2 well and
18 identified the point on the curve where there was
19 an increase in the slope of the drawdown trend as
20 indication of a negative hydraulic barrier.

21 According to HLI's response to our
22 staff memo, Goddard No. 2 is a PGSA well. So
23 there apparently is some sort of a flow barrier in
24 the PGSA between M3 and the postulated recharge
25 area. As I mentioned earlier, Goddard No. 2

1 nonetheless has been in production for more than a
2 decade, so my concern is not that this well taps
3 into a hydraulically isolated portion of the
4 aquifer, but rather that M3's numerical model
5 might not be an accurate predictor of impacts
6 since it does not simulate this hydraulic barrier.

7 Six, on page 25 of the response to
8 staff memorandum, HLI specifically identifies
9 several new, also modern day recharge sources that
10 were not simulated as areas of concentrated
11 recharge in the M3 numerical model. One of these
12 is, quote, "where the PGSA rises up dip to the
13 present-day Boise River gravels east of the United
14 Water Idaho Swift well."

15 However, inspection of figure 11
16 within the 1992 report, Exhibit 67, suggests that
17 the Swift well, which I've identified with a small
18 red dot, is on the upthrown side of the West
19 Boise/Eagle fault, which I've emphasized with a
20 dashed red line. The estimated offset across the
21 fault is 800 feet, which is indicated on the left
22 side of the fault trace below the large red arrow.
23 If this is the case, hydraulic communication
24 between this newly identified recharge area near
25 the Swift well and the PGSA at M3 likely is

1 limited by the fault.

2 Seven, as indicated in our staff
3 memorandum, we are concerned about lateral
4 continuity because for the M3 numerical model to
5 be an accurate representation it is required to
6 connect the PGSA beneath M3 to assumed recharge
7 sources in east Boise (i.e., the Boise River
8 upstream from Capitol Bridge and the New York
9 Canal).

10 We noted in the staff memorandum that,
11 quote, "HLI has not presented geologic data to
12 support the existence of the PGSA beneath the
13 Boise River," end quote. In retrospect, we
14 probably should have stated "beneath the Boise
15 River above Capitol Bridge," since that's the
16 postulated recharge area. But I think that the
17 intended meaning was clear enough because this
18 statement was in the context of a discussion of
19 recharge from the Boise River and New York Canal.

20 HLI offered the following response to
21 our statement in Exhibit 45, quote, "HLI's 2007
22 report clearly shows the PGSA geophysical
23 signature 400 feet beneath the river at the UWID
24 Swift wells which are located on the banks of the
25 Boise River at Lakeharbor. The base of aquifer

1 map clearly shows that the PGSA continues up dip
2 under the Boise River at least well into west
3 Boise and probably beyond," end quote.

4 There are several points that I'd like
5 to make with reference to HLI's response to our
6 statement about the extent of the PGSA east of M3.

7 One, HLI is correct in pointing out
8 that they identified the PGSA near Lakeharbor. We
9 stand corrected.

10 Two, Lakeharbor is not a recharge area
11 in the M3 numerical model.

12 Three, the phrase, quote, "probably
13 beyond," end quote, does not constitute geologic
14 evidence that the PGSA is upstream from Capitol
15 Bridge -- is present upstream from Capitol Bridge.

16 Four, in HLI's 2007 report, Exhibit 2,
17 the Swift well, which I've circled in red, is
18 located on the downthrown side of the West
19 Boise/Eagle fault on the map showing the extent of
20 the bottom of the PGSA. Note that the fault is
21 located on the northeast side of the Boise River,
22 near the Swift well on this figure. This indeed
23 suggests that there may be hydraulic continuity
24 between the PGSA at M3 and beneath Garden City,
25 but, as previously discussed, this fault location

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1 is different than that shown on the map in the
2 1992 report, Exhibit 67.
3 Like the 1992 report, the Wood and
4 Clemens 2002 report, Exhibit 19D, shows the
5 Eagle/West Boise fault to be on the southwest side
6 of the Boise River near the Swift well, which I've
7 identified on figure 10 with a red dot. We are
8 not aware of any new data that justify relocating
9 the West Boise/Eagle fault from its mapped
10 location, albeit approximate, in the 1992 and 2002
11 reports.
12 Five, the driller's log and the near
13 surface geophysical signature for the Swift well,
14 which I've circled in red in the upper-right
15 corner of figure 4 from Exhibit 45, indicate that
16 there is at least 30 feet of blue clay on top of
17 what HLI identified as the PGSA.
18 The surficial clay layer shows up as a
19 kick to the right on the gamma log, which is the
20 left strip chart in the area that I've circled,
21 and a deflection to the left on the resistance
22 log, which is the strip chart on the right.
23 If laterally continuous, that clay
24 layer would limit hydraulic communication between
25 the PGSA and the alluvial aquifer system. As

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1 discussed by Mr. Glanzman, the geochemistry data
2 indicate that PGSA groundwater has not had much
3 contact with clay, which also suggests that
4 communication with the Boise River is not
5 significant in the vicinity of the Swift well.
6 Six, the figure showing the bottom of
7 the PGSA in HLI's 2007 report, figure 3 from
8 Exhibit 2, does not show contour lines east of the
9 Garden City Fairgrounds or south of Cloverdale
10 Avenue. The contours also do not extend west
11 beyond the Canyon/Ada County line or into Gem
12 County. The lateral extent of the PGSA shown on
13 this figure based on geologic data is therefore
14 considerably smaller than the modeling domain of
15 the M3 numerical model.
16 Seven, extrapolation of hydrogeologic
17 conditions at Lakeharbor through west Boise and
18 beyond is not justified based on the information
19 contained in HLI's submittals. The 1992 Squires,
20 Wood, and Osiensky report, Exhibit 67, indicates
21 not only that there are negative boundaries in the
22 PGSA, but also that there's a major discontinuity
23 in the underlying cold water aquifer system --
24 quote, "The west Boise deep artesian aquifers
25 should be truncated to the north or northeast by

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1 down-to-basin normal faults such as the West
2 Boise/Eagle fault and/or beveled off up dip by an
3 erosional angular unconformity. Virtually all
4 well-completion/pump capacity tests of production
5 wells in this region have shown indications of
6 such negative hydraulic boundaries in the
7 subsurface."
8 MR. FEREDAY: Mr. Hearing Officer, it is
9 noon. Maybe it's a good time to take a break.
10 THE HEARING OFFICER: What do you think,
11 Mr. Vincent? Is this a good time?
12 THE WITNESS: Sure.
13 THE HEARING OFFICER: Starting on another
14 subject?
15 THE WITNESS: Yeah.
16 THE HEARING OFFICER: Let's break for an
17 hour. Let's come back at 12:05.
18 MR. FEREDAY: 1:05.
19 THE HEARING OFFICER: 1:05. I'm sorry.
20 (Lunch recess.)
21 THE HEARING OFFICER: We're recording again
22 after the lunch recess.
23 We've decided on course of action
24 related to the presentation of the parties'
25 testimony. And we've determined in our

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1 discussions that Department staff will attempt at
2 least to present all of their narrative testimony
3 today, and then copies of that narration will be
4 provided to the parties, both in hard copy and
5 over the website. The document will be posted, or
6 documents. And the parties have agreed to that.
7 And then we'll hold off on the
8 examination or cross-examination of the Department
9 witnesses until we convene on the 28th of May. I
10 think all the parties are in agreement on that.
11 Okay. Mr. Vincent, do you want to
12 continue your testimony at this point?
13 THE WITNESS: Yes.
14 THE HEARING OFFICER: Thanks.
15 THE WITNESS: I'll resume my testimony with
16 a new topic: Faulting. HLI seems to take
17 exception to our assertions that the PGSA might be
18 faulted and that this faulting could serve as a
19 partial or complete aquifer boundary.
20 Specifically, HLI concludes in
21 Exhibit 45 that, quote, "with perhaps one
22 exception, there's no evidence that the major
23 faulting in the deep volcanic basement rocks,
24 including that detected by the magnetometer survey
25 conducted by M3 Eagle in 2007, offsets, or even

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1 breaks, the shallower water-bearing units,
2 including the PGSA.
3 The available evidence actually shows
4 the opposite, that the deep-seated faults do not
5 propagate to land surface or penetrate the younger
6 sediments above. An exception is the mapped basin
7 bounding West Boise/Eagle fault extending into and
8 apparently truncating the sedimentary section,"
9 end quote.
10 They also wrote in Exhibit 45 that,
11 quote, "Major faulting that formed the Western
12 Snake Plain generally does not significantly cut
13 or offset the younger sedimentary units (shallower
14 than 1,000 feet) in the basin on the north side of
15 the plain," end quote, and mentioned, quote, "HLI
16 did commission seismic reflection and magnetometer
17 surveys mainly to determine deep structural
18 features," end quote.
19 Let me be clear on this point,
20 hydrology staff does not know whether there is
21 fault gouge or fine-grained sediments infilling
22 the fault plain or whether there is offset of the
23 PGSA across the fault that was mapped by Wood in
24 his 2007 report, Exhibit 19B. We also don't know
25 whether and, if so, how much any of those factors

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1 affect groundwater flow.
2 We do know, however, that faults can
3 and do exert control on groundwater and aquifers
4 beneath the Western Snake Plain and elsewhere
5 acting as partial and in some cases more or less
6 complete barriers to flow. That's why we're so
7 interested in understanding the location and
8 hydrologic functioning of faults in north Ada
9 County and why we've commissioned BSU's center for
10 subsurface geophysical investigation to conduct a
11 seismic study using a larger seismic source than
12 was previously used. BSU's lead investigator
13 would like to get started within the coming month.
14 We are grateful to M3 for allowing us
15 access to their property. The report for that
16 study is not anticipated until next year and the
17 analysis would probably be conducted in the fall
18 of this year, is the schedule.
19 Another thing that we know about
20 faults is that they don't typically occur in
21 isolation. In the 1992 report, Exhibit 67,
22 Squires, Wood, and Osiensky used the term, quote,
23 "zone," end quote, to describe the faults that
24 truncate and serve to limit the areal extent of
25 the Boise aquifer system which separates M3 from

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1 the Boise River recharge area. They stated,
2 quote, "The Boise aquifer system is limited in
3 areal extent and depth. The sedimentary basin is
4 bounded on the north by the crystalline rocks of
5 the Idaho Batholith where sedimentary strata lap
6 onto or are faulted against these relatively
7 impermeable granitic rocks. The cold-water
8 bearing section is further truncated along the
9 basin-bounding fault zone and other down-to-basin
10 normal faults," end quote.
11 The implication of the last sentence
12 is that there are normal faults that are located
13 away from the basin margin that also cut through
14 the cold-water sedimentary aquifers.
15 We also know that HLI convinced their
16 client that a study of the deep structural
17 features was pertinent to this water right
18 application, which involves pumping from an
19 overlying sedimentary aquifer. The rationale for
20 HLI commissioning a geophysical survey that,
21 according to Dr. Wood, is not relevant to the PGSA
22 groundwater study is unclear to staff.
23 The rationale for submitting a
24 nonrelevant but site-specific study in support of
25 their water right application also is unclear to

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1 staff. Moreover, a focus on deep structural
2 features is not apparent in the report documenting
3 the inconclusive seismic reflection survey that
4 was commissioned by HLI.
5 That report, Exhibit 13, included the
6 following statement, quote, "The deep water table
7 at the site means that the seismic signal must
8 propagate through a significant thickness of
9 unsaturated sediments prior to reaching the
10 primary target, which in this case is the
11 stratigraphy associated with the fresh water
12 aquifer and the fault that appears in traverse the
13 property," end quote.
14 Also unclear to staff is why HLI now
15 believes that the fault map by Wood using a
16 magnetometer survey, quote, "does not act as a
17 no-flow boundary as speculated by IDWR staff," end
18 quote, when in their analysis of aquifer test data
19 from the Kling irrigation well test they
20 concluded, quote, "Since the Aqtesolv analyses
21 used to generate a curve match required the use of
22 a fault acting as a no-flow boundary, and because
23 other subsurface geophysical mapping by HLI
24 suggests a buried fault trace, it appears likely
25 that such a fault may be present in the vicinity

1 of the Kling well and that it may control
2 groundwater movement in the aquifer to some
3 extent," end quote.

4 Here's a copy of a drawdown data plot
5 from the Kling irrigation well test. It's
6 figure 88 from Exhibit 12. I want you to notice
7 the notation that's been highlighted with a red
8 circle. It says, quote, "Best fit with no-flow
9 boundary 1,500 feet to the northeast from pumping
10 well," end quote.

11 And then below that it says, quote,
12 "Derivative analysis supports method. Good fit
13 throughout entire test period," end quote.

14 I really don't see how it can be
15 considered speculative on the part of staff to
16 think that the fault that was identified by Wood
17 in the panhandle of M3's property approximately
18 1,500-foot northeast of the Kling irrigation well
19 acts as a no-flow boundary, when it was HLI's only
20 analyst that first proposed the idea in a
21 submittal to the Department.

22 Before I go on, I want to point out
23 something to the Hearing Officer. Staff does not
24 appreciate being accused of being speculative or
25 the implication that we are unaware of, quote,

1 "basic principles of hydrogeology," end quote,
2 when all we have done is to review and try to make
3 sense of the information that we have been
4 provided by M3's consultant.

5 That the fault mapped by Wood in his
6 2007 report might exert some level of control on
7 groundwater flow in the PGSA is not an idea that
8 we come -- we came up with on our own. HLI was
9 compelled to identify the panhandle fault on four
10 different well location maps in the report
11 documenting the reanalysis of 16 aquifer tests.

12 They also used the fault package in
13 the computer-aided aquifer test program Aqtesolv
14 in order to analyze test data from the Kling
15 irrigation well test. It was HLI, not the
16 Department, that pointed out, quote, "Geophysical
17 evidence (Wood, 2007) suggests that a structural
18 fault may be present between TW-4 and the
19 monitored wells lying to the west (TW-1, TW-3, and
20 Kling irrigation well). Such a fault, if present,
21 could have attenuated and/or delayed the response
22 to the portions of Pierce Gulch Sand Aquifer lying
23 to the west of the fault, caused by pumping the
24 Pierce Gulch Sand Aquifer at a location east of
25 the fault. In a manner similar to the SVR-7 test,

1 pumping from the Kling irrigation well (located
2 west of the possible fault) caused no measurable
3 drawdowns in wells lying to the east of the fault,
4 supporting the concept of a structural fault," end
5 quote.

6 Given this statement and the
7 previously discussed aquifer test analysis, it's
8 inconsistent for HLI to accuse the Department of
9 being speculative and to now assert that, quote,
10 "In short, there is no support for a suggestion
11 that faulting offsets the PGSA, much less that it
12 serve as a no-flow boundary," end quote.

13 Dr. Wood's testimony that he doesn't
14 believe that the magnetometer survey was relevant
15 to the PGSA groundwater study seemingly is at odds
16 with the fact that this work was commissioned by
17 HLI and performed by Dr. Wood in the context of a
18 study of PGSA groundwater.

19 Let me give another example where
20 conclusions by HLI are inconsistent with their
21 analysis concerning negative (i.e. barrier or
22 no-flow) boundaries. The following statement
23 appears in Exhibit 45 in response to our staff
24 memorandum: Quote, "Negative hydraulic boundaries
25 can be confirmed by pumping tests of properly

1 constructed wells in the aquifer under
2 investigation when they are evidenced by an
3 increased rate of drawdown. Significant negative
4 hydraulic boundaries did not show up in the
5 nine-day SVR-7 aquifer test or in the 30-day
6 Lexington Hills test, both of which we consider to
7 be of sufficient duration to have revealed
8 boundaries. Indeed, as our previously submitted
9 reports show, positive (recharge) boundaries were
10 evident in those tests," end quote.

11 I happen to disagree with that
12 statement, but its meaning is pretty clear.
13 According to HLI, there was no indication of
14 negative (i.e., barrier or no-flow) boundaries
15 during the SVR-7 and Lexington Hills aquifer
16 tests -- rather there were indications of recharge
17 boundaries in both tests.

18 Now, I've already discussed the
19 analysis of data from the SVR-7 aquifer test, but
20 I haven't yet talked about HLI's reanalysis of the
21 Lexington Hills test.

22 So here's what's written in
23 Exhibit 12, the only submittal that discusses the
24 Lexington Hills 30 day aquifer test: Quote, "As
25 noted in the hydrogeologic overview section of

1 this report, the West Boise/Eagle fault lies
2 approximately one-half mile to the northeast of
3 the Lexington Hills well No. 1. Review of well
4 driller's reports and the hydraulic data included
5 in the CH2M Hill report indicate this fault acts
6 as a no-flow barrier and edge to the Pierce Gulch
7 Sand Aquifer. We incorporated the effects of this
8 no-flow boundary into all the log-log type-curve
9 analysis."

10 It's reasonable to assume that the
11 understanding of the role of faults in the Boise
12 Basin has evolved over the years. If so, however,
13 I've not seen where changes in that understanding
14 are explained in HLI's submittals. All we know
15 for sure is that HLI's current stance is much more
16 definitive than previously offered by M3's team of
17 experts.

18 Consider, for example, the following
19 quote from the 1992 report that was authored by
20 Squires, Wood, and Osiensky, Exhibit 67: Quote,
21 "In addition to the basin-bounding fault zone of
22 the Boise Front, which truncate the lateral extent
23 of aquifer units, other faults within the
24 sedimentary section of the valley impede
25 groundwater flow and limit the lateral extent of

1 aquifer units. The extent to which these faults
2 cut the sedimentary sequence above 1,000 feet is
3 presently -- is not presently known. The amount
4 of movement (offset) that has occurred along these
5 faults and the degree to which they affect
6 groundwater movement is poorly understood at
7 present."

8 More recently, HLI offered figure 2 in
9 their response to our staff memorandum,
10 Exhibit 45, as evidence that, quote, "Major
11 faulting that formed the Western Snake Plain
12 generally does not significantly cut or offset the
13 younger sedimentary units (shallower than
14 1,000 feet) in the basin on the north side of the
15 plain. Figure 2 shows in detail the nature of
16 faults in the basin," end quote.

17 Inspection of figure 2 reveals that it
18 can't be used directly to support that argument
19 since the beginning depth of the profile is
20 greater than 1,000 feet. There simply are no data
21 in the shallow section that includes the target
22 aquifer. Indeed, the deep faults aren't shown as
23 propagating to land surface on this figure but,
24 based on the information in one cross-section that
25 doesn't extend into the shallow section, it's

1 unclear whether the understanding of the
2 hydrogeologic significance of shallow faults has
3 improved since the 1992 report, which, at that
4 time, described the level of understanding as
5 poor."

6 MR. FEREDAY: Excuse me. Mr. Vincent,
7 could you describe which cross-section to which
8 you just referred.

9 THE WITNESS: It's figure 2 from
10 Exhibit 45.

11 MR. FEREDAY: Oh, okay.

12 MR. THORNTON: Question: And if you're
13 referring to this one, Mr. Vincent, then they're
14 both figure 2 and figure 3 on the same page?

15 THE WITNESS: That's correct. Figures 2
16 and 3.

17 MR. THORNTON: Okay. So you're referring
18 to both figure 2 and 3 or just --

19 THE WITNESS: Yes, I didn't reference
20 figure 3, but it is also on -- on this slide.

21 MR. THORNTON: Okay.

22 THE WITNESS: And it does have the same
23 lack of data in the shallow section.

24 MR. THORNTON: Okay.

25 THE WITNESS: As explained in our staff

1 memorandum, the authors of Exhibit 33G, a 2002
2 report that was prepared for the Treasure Valley
3 Hydrologic Project and offered as supporting
4 documentation by M3, indicated that faulting along
5 the basin margin adds complexity and uncertainty
6 to the hydrogeologic setting.

7 They stated, quote, "In addition to
8 complexity inherent in deposition and erosion, a
9 series of major faults bisect the stratigraphic
10 section along the northern basin margin. The
11 hydrologic impact of these faults is poorly
12 understood, but they are likely to be an important
13 influence on groundwater flow in the Boise-area
14 aquifers," end quote.

15 As mentioned previously, the
16 sustainability of the target aquifer at M3 is a
17 function of whether there is strong hydraulic
18 connection with the significant source of
19 recharge. In this case primary sources of
20 recharge are thought to be distant from M3. As
21 such, it should come as no surprise to M3's
22 experts that we are concerned about faulting.
23 Here then is how the fault issue looks from our
24 perspective:

25 One, a basin-margin fault was

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1 identified by HLI, which conceptually might limit
2 hydraulic connection to the primary off-site
3 recharge sources.
4 Two, HLI then used the fault package
5 of an aquifer test analysis software program to
6 analyze the test data based on their understanding
7 of the hydrogeologic setting and the goodness of
8 fit of the test data to the theoretical response
9 of a no-flow boundary.
10 And then three, HLI dismissed the
11 potential implications of faulting in their last
12 submittal by saying, quote, "The influence of
13 structural basin-margin faulting, which is known
14 to exist in the general vicinity, is not addressed
15 here," end quote.
16 The rationale for not addressing the
17 fault issue is unclear to staff.
18 I'd now like to touch on an issue
19 which I think now serves to distract us from the
20 central issue, and that is the issue of
21 groundwater flow direction.
22 While I would agree that our ability
23 to accurately predict hydrologic impacts is
24 directly related to our knowledge of aquifer
25 boundaries and these ultimately impact flow

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1 direction, the magnitude of the actual impacts
2 that would be caused by pumping are insensitive to
3 whether groundwater flows northwest from M3 toward
4 the Payette River or west toward the Boise River.
5 I agree with Mr. Fereday and
6 Mr. Squires on that point. That's because the
7 primary impact of pumping is water-level decline.
8 And in accordance with the principle of
9 superposition, the distribution and amount of
10 water-level decline that occurs is independent of
11 the flow direction.
12 However, HLI implied otherwise in
13 Exhibit 2 when they stated, quote, "The
14 groundwater proposed to be withdrawn by M3 Eagle
15 for its development will be from subsurface flow
16 that has already departed the Boise Basin on its
17 way to the Payette Basin, so that impacts to
18 existing area water users in the lowlands near
19 Eagle are predicted to be so small as to be
20 insignificant," end quote.
21 Though intuitively appealing, this
22 assertion is contradicted by HLI's own modeling,
23 which predicts water-level declines of
24 approximately 5 feet extending several miles in
25 the upgradient direction for both versions of the

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1 M3 model. In other words, there is no reason to
2 expect that the hydrologic impacts will be less
3 significant if groundwater flow is to the Payette
4 Basin.
5 The more important issue in terms of
6 long-term impacts is whether there is strong
7 hydraulic communication between the PGSA beneath
8 M3 and a significant source of recharge.
9 HLI makes essentially the same
10 argument as the basis for concluding in Exhibit 45
11 that, quote, "PGSA groundwater in the M3 Eagle
12 vicinity is tributary in large part to the Payette
13 River. We do not anticipate measurable impact to
14 the Boise River in the reaches downgradient from
15 the Eagle site," end quote.
16 The bottom line is that drawdown in
17 the alluvial aquifer along hydraulically-connected
18 reaches of the Boise River will reduce flow in the
19 river. As stated in our staff memorandum, neither
20 HLI nor the Department has evaluated the impacts
21 of pumping on senior surface water right holders.
22 Before I finish, I would like to go on
23 record that Department staff does not particularly
24 enjoy the role of adverse witness and having to
25 get up here and defend ourselves. Staff is

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1 unanimous in believing that part of the reason
2 that we are in this situation is because two of
3 HLI's most important submittals were late and
4 their submittals and testimony have
5 inconsistencies.
6 Having said that, some contradictions
7 are unavoidable and admittedly many of these are
8 not significant in the context of M3's water right
9 application. Others, however, are more critical,
10 and an attempt should be made to resolve them. An
11 apparent contradiction still needing resolution is
12 how the PGSA could be so transmissive and strongly
13 recharged by water from both surficial waters and
14 leakage from the modern-day Boise River and
15 New York Canal, as asserted by HLI and assumed in
16 the M3 flow model, when, according to
17 Mr. Glanzman's testimony, the PGSA has no
18 connection to shallow aquifers and, according to
19 his geochemical analysis, the water beneath M3 is
20 almost exclusively sourced from the, quote,
21 "geologically ancestral Boise River," end quote.
22 The terminology that Mr. Glanzman used
23 to describe the source of PGSA water is
24 geologically ancestral, not premodern. The
25 geologic time scale extends back more than

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1 4 billion years so when a registered professional
2 geologist like Mr. Glanzman speaks using the
3 materials "geologically ancestral," he or she is
4 talking about something that happened a very long
5 time ago.
6 Now, I heard Mr. Glanzman testify that
7 he understands "geologically ancestral" to apply
8 to something that is more than 1,000 years old.
9 Less than a minute later, however, he testified
10 that he understands "geologically ancestral" to
11 mean, quote, "as much as 1,000 years old," end
12 quote.
13 Having listened to that testimony, I'm
14 really not sure what "geologically ancestral"
15 means to him. By his second definition, something
16 more than 1,000 years old would be classified as
17 older than geologically ancestral, which is a
18 difficult concept to fathom since 1,000 years
19 isn't even a blip on the geologic time scale.
20 Mr. Glanzman also indicated that
21 carbon age dating can't be used for water that's
22 less than 5,000 years old and that the only thing
23 that he can say for sure about the age of PGSA
24 groundwater is that it's somewhere between zero
25 and 5,000 years old.

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1 The problem with that is that he used
2 carbon age dating as the basis for describing PGSA
3 water as being sourced not from the Boise River,
4 but from the geologically ancestral Boise River.
5 He made that distinction, staff did not.
6 To further the confusion, HLI was
7 compelled in their response to our staff
8 memorandum to point out, quote, "From this model,
9 they estimated the PGSA groundwater from the
10 Goddard No. 2 and HP wells to be about 2,960 years
11 old. These sealed production wells are located
12 about 1 mile south of the Boise River and have
13 been pumped for at least a decade, so the
14 estimated age should be accurate," end quote.
15 Thus despite Mr. Glanzman's testimony,
16 HLI feels that 2,960 years, an age that's
17 intermediate between zero and 5,000 years, is not
18 only accurate, but should be reported in a
19 document that was addressed to the Hearing Officer
20 using three significant digits.
21 While there remains a serious
22 disconnect regarding the residence time issue, the
23 similarity in major ion chemistry between UWID
24 wells and M3 wells is support, though certainly
25 not conclusive, for hydraulic connection to wells

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1 in the Boise Valley. Having said that, I'm not an
2 expert on geochemistry.
3 It's not just inconsistencies with
4 complicated technical issues that we've struggled
5 with in our review of M3's submittals. It's
6 inconsistencies with seemingly straightforward
7 concepts. It's difficult, for example, to
8 reconcile HLI's statement in the Aquifer Test
9 Prospectus, quote, "generally speaking, the longer
10 the test the better," end quote, with the
11 statement in their response to our staff
12 memorandum, quote, "it is a common misconception
13 that the longer the test the better," end quote.
14 One more set of observations before I
15 close. I spent a fair amount of everyone's time
16 this morning trying to address some of the major
17 technical issues that were raised in HLI's
18 response to the staff memorandum. It needs to be
19 recognized, however, that there simply is not
20 enough time to respond to all of HLI's criticisms.
21 HLI accused staff of being incorrect on six
22 different occasions, inaccurate on three
23 occasions, speculative on three occasions,
24 misleading on three occasions, and inappropriate
25 on two occasions.

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1 Our analyses were described as being
2 quote, "deeply flawed," end quote, and our
3 rationale as having, quote, "no scientific basis,"
4 end quote.
5 HLI criticized staff for not
6 discussing something from Dr. Ralston's affidavit,
7 which as a document that we were not assigned to
8 review. Staff also was criticized for not
9 evaluating and discussing a series cross-sections
10 that are clearly labeled "draft," which were given
11 to us without a location map and which are not
12 referenced by HLI in any of their own submittals,
13 and which are devoid of both former geologic
14 interpretation and stratigraphic determination
15 between boreholes.
16 Despite these factors, HLI's opinion
17 of the cross-sections on page 10 of Exhibit 45 is
18 that, quote, "All are significant to our analysis
19 and support our conclusions about the nature of
20 hydrogeology in the area and the lack of any PGSA
21 truncating faults here other than the WBE fault,"
22 end quote.
23 HLI accused staff of incorporating
24 unintentional bias and significant errors and
25 implied that we were cursory or incomplete in our

1 review of their information on three occasions.
 2 We were criticized for not addressing uncertainty
 3 that's inherent in the use of data from wells that
 4 have unknown and/or questionable well
 5 construction, even though the aquifer test data
 6 provided by HLI as the basis for M3's application
 7 comes from two test wells that are, by their own
 8 estimation, partially penetrating, poorly
 9 documented, and poorly constructed.

10 Moreover, I'm not aware that staff
 11 ever committed to performing a well construction
 12 uncertainty analysis of M3's data or that that
 13 should be our responsibility. I suggest that HLI
 14 might address the inconsistencies in their
 15 submittals rather than trying to pin additional
 16 responsibilities on staff.

17 Review of M3's supporting materials is
 18 already a large responsibility. By my count, M3's
 19 submittals in support of this application include
 20 nine different technical reports prepared by HLI,
 21 three geologic submittals containing a total of 19
 22 separate geologic cross-sections, 11 composite
 23 diagrams, nine maps, one master's thesis, seven
 24 publications that were authored or coauthored by
 25 Dr. Spence Wood, ten Treasure Valley Hydrologic

1 Project reports, 22 miscellaneous data submittals,
 2 the rebuttal to our staff memorandum, and eight
 3 different submittals dealing with the
 4 qualifications of M3's hydrogeologic experts.

5 A frustration for me as a reviewer is
 6 that there are important aspects of hydrogeologic
 7 conceptual model that are uniquely located in at
 8 least five different documents: the reanalysis of
 9 aquifer tests (Exhibit 12), the SVR-7 nine-day
 10 aquifer test report (Exhibit 44), the geochemical
 11 characterization report (Exhibit 43), the
 12 groundwater flow modeling report (Exhibit 16), and
 13 the one-year progress report (Exhibit 2).

14 Moreover, important information such
 15 as the fact that the Goddard No. 2 well produces
 16 3,000-year-old PGSA groundwater, was only recently
 17 introduced to us via the response to our staff
 18 memorandum.

19 In closing, there are a lot of
 20 high-quality data that have been collected and
 21 analyzed on behalf of M3. And it seems to me,
 22 based upon some of the early testimony, that M3 is
 23 doing the right thing both in trying to minimize
 24 consumptive use of water and in helping to develop
 25 a better understanding of the hydrogeology in

1 north Ada County.

2 Frankly, however, our job as technical
 3 reviewers has been made difficult by the timing
 4 and the sheer volume of the submittals and by the
 5 numerous and difficult to resolve inconsistencies
 6 within them.

7 Staff feels that there remain several
 8 unresolved issues that are germane to making a
 9 reasonably confident assessment of long-term
 10 hydrologic impacts, and we stand by our initial
 11 recommendation for a high-rate, long-term pumping
 12 test to help better evaluate aquifer boundary
 13 conditions in the vicinity of M3.

14 We agree with Mr. Utting that the best
 15 way to predict long-term response to pumping,
 16 particularly in a complicated hydrogeologic
 17 setting such as that in north Ada County, is to
 18 measure it rather than to simulate it.

19 That's all I have. I'm glad to stand
 20 for questions.

21 THE HEARING OFFICER: Okay. Thank you,
 22 Mr. Vincent. Based on our previous discussion, I
 23 think we'll defer your examination until the 28th
 24 of this month.

25 Is that acceptable to all the parties,

1 again?

2 MR. THORNTON: Yes, it is.

3 MR. ALAN SMITH: Yes.

4 THE HEARING OFFICER: Okay. And you'll
 5 provide written copies of what you have before the
 6 end of the day?

7 THE WITNESS: I will, yes.

8 THE HEARING OFFICER: Thank you,
 9 Mr. Vincent.

10 In the order of presentation of
 11 testimony, Mr. Owsley, are you next?

12 MR. OWSLEY: I am. Can I take five
 13 minutes?

14 THE HEARING OFFICER: Sure.

15 (Recess.)

16 THE HEARING OFFICER: Okay. We're
 17 recording again after a brief recess.

18 We've talked about the documents that
 19 Mr. Vincent had referred to, either a PowerPoint
 20 presentation or his accompanying narrative. And
 21 we have marked the PowerPoint presentation as
 22 Exhibit 901.

23 (Exhibit 901 marked.)

24 THE HEARING OFFICER: And his narrative
 25 that he's presenting to the parties will be marked

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1 as Exhibit 902.
2 (Exhibit 902 marked.)
3 THE HEARING OFFICER: And then Mr. Owsley's
4 PowerPoint presentation has been marked as 903.
5 (Exhibit 903 marked.)
6 THE HEARING OFFICER: We anticipate that
7 the underlying narrative document will be marked
8 as 904 when that is copied and presented to the
9 parties.
10 So I will receive Exhibit 901 into
11 evidence, and the others we'll discuss at the time
12 they're presented.
13 (Exhibit 901 admitted.)
14 THE HEARING OFFICER: Okay. Are we ready
15 to go again?
16 MR. THORNTON: Uh-huh.
17 THE HEARING OFFICER: Mr. Owsley, stand.
18
19 DENNIS OWSLEY,
20 having been called as a witness by the Department,
21 was duly sworn and testified as follows:
22
23 THE HEARING OFFICER: Thank you. Please be
24 seated.
25 And I may have neglected to do this

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1 with Mr. Vincent, although he previously
2 testified, but will you please state your name,
3 spell it for the record, and also state for us
4 your position with the Department of Water
5 Resources, and a little bit about your training.
6 THE WITNESS: Okay. My name is Dennis
7 Owsley, O-w-s-l-e-y. I'm a hydrogeologist here at
8 the Idaho Department of Water Resources. I work
9 in this building at 322 East Front Street, Boise.
10 A little about my training. I have a
11 bachelor's degree in geology from the University
12 of Idaho. I have a master's degree in hydrology,
13 also from the University of Idaho. I am currently
14 a professional registered geologist in the state
15 of Idaho. I have approximately six years
16 experience as a technical hydrogeologist.
17 THE HEARING OFFICER: Okay. Thank you.
18 You may narrate your testimony.
19
20 DIRECT NARRATIVE TESTIMONY
21 BY DENNIS OWSLEY:
22 THE WITNESS: This narrative testimony was
23 developed in response to the April 1st memo
24 prepared by HLI in response to our March 2nd staff
25 memorandum. I coauthored the March 2nd staff

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1 memorandum and appreciate this opportunity to
2 provide testimony in response to the comments
3 provided by HLI in the memo.
4 Our March 2nd staff memo was developed
5 in request of the Hearing Officer. We provided a
6 summary of the technical work submitted by M3 in
7 support of this water right application. I feel
8 the technical work completed for this
9 investigation was of high quality. However, some
10 of the assumptions and conclusions related to the
11 work leave me with some questions and concerns.
12 I would like to identify some specific
13 questions that are due to inconsistencies in the
14 data submitted by M3 and the testimony I've
15 listened to in this hearing. But first, I'd like
16 to start by showing the presentation of the
17 submitted data, highlighting the review process we
18 were challenged with.
19 As in most large scale hydrogeologic
20 investigations, a comprehensive summary report is
21 completed at the end of the project to provide a
22 summary and discussion of the work collected
23 through the investigation, including any
24 conclusions drawn from the research.
25 As quoted from page 3 of Exhibit 2,

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1 the HLI one-year progress report, which is also
2 included in this second amended water right
3 application, HLI states, quote, "A comprehensive
4 report is anticipated to be completed in time to
5 be presented in support of IDWR's review of M3
6 Eagle's water right application. HLI's
7 comprehensive report will contain the supporting
8 data files and findings based upon additional well
9 tests, hydrological data collected from additional
10 well studies, and completion of a Modflow
11 numerical model. In the meantime, and the water
12 study progress, additional reports will be issued
13 to document and present refinements of the
14 findings presented here," end quote.
15 A comprehensive report would have been
16 beneficial to the Department's review. Multiple
17 historic reports are presented in the supporting
18 documentation for this water right and referenced
19 in the April 1st, 2009 HLI memorandum, which
20 appear to have a significant importance to HLI's
21 conceptual model. However --
22 THE HEARING OFFICER: Okay. Mr. Owsley,
23 will you also slow down --
24 THE WITNESS: Okay. Sorry.
25 THE HEARING OFFICER: -- for Mr. LaMar.

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1 MR. THORNTON: Smoke was coming out of his
2 ears.
3 THE HEARING OFFICER: You just need to be
4 deliberate in going through this.
5 THE WITNESS: Sure.
6 THE HEARING OFFICER: And for those of us
7 who are here, we all want to finish the hearing.
8 But when it comes in this way, it's just -- it's
9 just a constant barrage.
10 THE WITNESS: Gotcha.
11 THE HEARING OFFICER: Thanks. Go ahead.
12 THE WITNESS: However, many of these
13 historic reports were not directly referenced in
14 the HLI authored reports to support the data
15 collected from this project.
16 As highlighted in our staff memo, HLI
17 has completed a large amount of work in their
18 efforts of characterizing the aquifers beneath the
19 M3 site. This has resulted in a large volume of
20 information being submitted in support of this
21 water right application. However, the submittal
22 of the information was lacking organization. I
23 would like to present the list of submitted
24 documents to highlight this point.
25 This slide shows the documentation in

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1 support of the water right application as it was
2 presented to the Department. The submittals are
3 not organized chronologically or by category.
4 This slide shows how I organized the
5 submittals based on similar categories. I would
6 just like to reemphasize that without a
7 comprehensive report and the sheer volume of
8 documents submitted, this lack of organization
9 created some confusion at times during the review.
10 Two documents in support of this water
11 right were submitted after the November 26th, 2008
12 deadline for submission of supporting
13 documentation. These two documents provided
14 important information regarding the hydrogeologic
15 conditions beneath the M3 site and represent a
16 significant portion of the work completed by HLI.
17 The timing of these reports resulted
18 in the Department requesting an extension in time
19 in our deadline of the staff memorandum. The
20 timing of these reports also did not allow the
21 Department an opportunity to discuss our questions
22 and concerns with these documents with HLI prior
23 to releasing the staff memorandum.
24 I would now like to focus this
25 testimony on my response to Exhibit 45, HLI's

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1 April 1st memorandum, and where applicable,
2 incorporating the testimony I've listened to in
3 this administrative hearing.
4 The remaining testimony points out
5 inconsistencies with technical information
6 presented to date. I have organized this
7 presentation with respect to general hydrogeologic
8 categories.
9 The topics of interest I would like to
10 cover include north Ada County stratigraphy,
11 faulting, aquifer continuity between the Boise and
12 Payette, M3 Eagle's aquifer testing, aquifer
13 boundaries, recharge sources, water levels and
14 trends in the aquifer, M3 Eagle's modeling,
15 geochemistry analysis, and aquifer sustainability.
16 The first topic I would like to
17 discuss is the stratigraphy of north Ada County.
18 I would like to reemphasize HLI's
19 response to our description of the area's geology
20 as complex. On page 2 of Exhibit 45, the HLI
21 response to the staff memorandum, HLI states,
22 quote, "The stratigraphy in the area is not
23 particularly complex, although it may appear so on
24 a cursory look," end quote. And quote, "In any
25 event, we do not consider the stratigraphy in this

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1 area to be overly complex, although it may appear
2 so on a cursory look," end quote.
3 As Mr. Vincent testified, there are
4 multiple lines of evidence that indicate the
5 hydrogeology of the area is complex. We've also
6 heard testimony from Mr. Squires in which he
7 referred to the hydrogeology of the area as,
8 quote, "complicated," end quote.
9 We have also heard testimony from
10 Mr. Glanzman that the study area was a, quote,
11 "complex groundwater basin," end quote. HLI's
12 claim that the stratigraphy is not complex is
13 inconsistent with the lines of evidence
14 Mr. Vincent pointed out, as well as previous
15 testimony from M3's expert witnesses.
16 THE HEARING OFFICER: Okay. Again, would
17 you please slow down just a little, take a breath
18 between each sentence, Mr. Owsley.
19 THE WITNESS: Yes, sir.
20 THE HEARING OFFICER: We'll get through it.
21 Thanks.
22 THE WITNESS: These two images are clips
23 from the geologic map included by M3 in the
24 submittal of supporting documentation for this
25 water right (Exhibit No. 33T). We referenced this

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1 map when describing the Pierce Gulch Sand in our
2 staff memo.
3 In response to our description and
4 citation of this map, HLI states on page 3 of
5 Exhibit 45, quote, "Othberg and Stanford (1992)
6 compiled some of the mapping done earlier by
7 S.H. Wood and W. Burnham but did not define or
8 investigate the PGS. Othberg and Stanford did not
9 even map the Pierce Gulch Sand in the Eagle USGS
10 quadrangle, although it outcrops there. Rather,
11 they were focused entirely on the terrace gravels,
12 which lie above the PGS and are not involved in M3
13 Eagle's application," end quote.
14 The staff referenced the Othberg and
15 Stanford map as it was the only published geologic
16 map submitted in support of this water right. The
17 PGS is shown as an outcrop on this map and is
18 specifically defined in the legend on the map.
19 THE HEARING OFFICER: Where is that,
20 Mr. Owsley?
21 THE WITNESS: Eagle is right here where I'm
22 pointing to and this is just due east of Eagle in
23 the foothills (indicating). This lighter blue
24 shaded area represents the outcrop of the Pierce
25 Gulch Sand. This first blue box on the top is the

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1 description of the geologic unit and the map, and
2 I will read it.
3 It says, "Sand of the Pierce Gulch
4 formation, pale yellow, gray arkosic sand overlain
5 by pebble and cobble gravel. Sand includes
6 cross-bedded and fore-set bedded sequences named
7 by W.L. Burnham and H.S. Wood, written
8 communication unpublished manuscript, 1989."
9 Also on page 3 of the response, HLI
10 states, quote, "We do not believe it -- we do not
11 believe it technically correct to refer to the PGS
12 as a formation at this time," end quote.
13 Again, the staff referred to the PGS
14 as a formation based on the description on the
15 geologic map HLI provided to the Department. In
16 addition, it is inconsistent for HLI to claim the
17 Pierce Gulch Sand is not a formation when we heard
18 Dr. Wood's April 4th testimony referring to the
19 Pierce Gulch Sand as a formation."
20 The base of the aquifer is one of the
21 two boundaries that HLI states they have currently
22 defined. However, figure 4 of Exhibit 44 does not
23 indicate the base of the aquifer is fully defined
24 beneath the M3 property. For example, look at
25 test well No. 4, specifically at the lower

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1 completion of the well. Terteling Springs
2 Mudstone is drawn through the bottom of the
3 aquifer in this well.
4 Test well No. 3 and test well No. 4
5 are the two wells in which we heard Mr. Squires
6 testify that they had, quote, "great uncertainty,"
7 end quote, in correlating the geologic units
8 between them. Even with what is considered
9 great -- great certainty, in correlating units
10 under the M3 property using the high-quality
11 borehole data that exists on the property, some
12 inferences and interpretations must be made to
13 correlate the geologic units. These
14 interpretations get larger as you move further
15 away from the M3 property due to the lack of high
16 quality borehole data.
17 This is the same slide again, however,
18 I would like to point out two additional items
19 related to this slide. First, is the
20 identification of the target aquifer and the
21 United -- UWID State and Linder test wells. The
22 top of the Pierce Gulch Sand Aquifer in this
23 picture is hard to distinguish in the geologic and
24 geophysical logs between what is identified as the
25 overlying, quote, "undifferentiated alluvial

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1 aquifers and aquitards," unquote. The fact that a
2 screened portion overlaps the boundary line drawn
3 further supports this observation.
4 The depiction of the thickness of the
5 Pierce Gulch Sand Aquifer in this figure is
6 inconsistent with other HLI documents. For
7 example, Exhibit 12, the reanalysis of 16 aquifer
8 tests report identified the Pierce Gulch Sand to
9 be 525 feet thick at this location. However --
10 THE HEARING OFFICER: What location was
11 that, Mr. Owsley?
12 THE WITNESS: The location of UID (sic)
13 State and Linder test wells.
14 However, this figure shows the Pierce
15 Gulch Sand Aquifer to be only approximately
16 300 feet thick at this same location of the UWID
17 State and Linder test wells.
18 MR. FEREDAY: Excuse me. Mr. Owsley, could
19 you tell us where -- was that Exhibit 12? Did you
20 have a page reference?
21 THE WITNESS: Sure.
22 MR. FEREDAY: Exhibit 12? Didn't you just
23 refer to Exhibit 12, or maybe I misheard you
24 about --
25 THE WITNESS: I'll reread that sentence.

| | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p style="text-align: right;">Page 1870</p> <p>1 For example, Exhibit 12, the 2 reanalysis of 16 aquifer tests report, identified 3 the Pierce Gulch sand to be 525 feet thick at this 4 location. 5 MR. FEREDAY: At the location of -- 6 THE WITNESS: Of UWID State and Linder test 7 wells. 8 MR. FEREDAY: Okay. 9 THE WITNESS: These inconsistencies create 10 challenges when trying to distinguish the Pierce 11 Gulch Sand Aquifer from the, quote, 12 "undifferentiated alluvial aquifers and 13 aquitards," unquote, that comprise the Treasure 14 Valley Aquifer system. 15 One last point on this slide, and then 16 we will move on. 17 Looking now at test well 3 and the 18 completion intervals within it. The elevations of 19 the saturated intervals of this well range from 20 2,453 feet above mean sea level to 2,355 feet 21 above mean sea level. Ground surface identified 22 on this map near Linder Road and the Boise River 23 is labeled at 2,518 feet above mean sea level. 24 Therefore, the elevation of the water-bearing 25 zones in test well No. 3 are equivalent to the</p> | <p style="text-align: right;">Page 1872</p> <p>1 staff memo does not discuss them. They are all 2 significant to our analysis and support our 3 conclusions about the nature of the hydrogeology 4 in this area and the lack of any PGSA-truncating 5 faults here other than the WBE fault," end quote. 6 I would now like to point out a few 7 issues related to these submittals. This slide 8 shows an example of one of the submitted figures 9 in Exhibit 27. Note that there is no attempt in 10 correlating geologic units between wells. All of 11 the figures included in this exhibit are labeled 12 draft with an original date of August 2006. 13 Also, as we saw during this hearing, 14 the map to accompany these diagrams was not 15 presented until halfway through this hearing. 16 These diagrams were not previously referenced in 17 any HLI-authored documents prior to Exhibit 45. 18 In addition, these diagrams were not previously 19 available to the Department, although they are 20 dated back in 2006. 21 The next topic I would like to cover 22 is faulting. This issue has been discussed 23 significantly in this hearing, however, I would 24 like to briefly discuss it. 25 This is figure 2 from Exhibit 45. As</p> |
| <p style="text-align: right;">Page 1871</p> <p>1 elevation of water-bearing zones that are 2 approximately 65 feet to 165 feet below the Boise 3 River near Linder Road. 4 This quote is from Exhibit 68, a 5 report prepared by Dr. Wood. Based on the 6 interpretations pointed out in the previous 7 cross-section that was developed using high 8 quality data, I agree with his statement that 9 says, quote, "One should view with distrust 10 cross-sections attempting to correlate over 11 distances of several miles, unless the section is 12 along strike, and the sedimentary facies is 13 identified," end quote. 14 Some final comments I'd like to make 15 regarding the stratigraphy of the area are related 16 to the documents in Exhibit 27 titled 17 Cross-sections of wells near M3 Eagle with 18 construction and lithology (13 total). 19 On page 10 of Exhibit 45, HLI states, 20 quote, "M3 Eagle submitted 16 subsurface 21 cross-sections with its materials on 22 November 26th, 2008, and an additional four 23 cross-sections on January 29th, 2009," end quote. 24 And continues with, quote, "It is unclear whether 25 staff evaluated the originally submitted 16; the</p> | <p style="text-align: right;">Page 1873</p> <p>1 Mr. Vincent pointed out in his testimony, the 2 upper 1,000 feet of data for these profiles is not 3 provided, limiting the use of this data to make 4 assumptions regarding the upper 1,000 feet. 5 We have heard testimony that geologic 6 surface features in the area are rare, limiting 7 the ability to identify or map faults at the 8 surface. We have also heard testimony that well 9 logs cannot indicate the presence or absence of 10 faulting. 11 Considering the seismic survey 12 attempted by BSU on the M3 property was 13 unsuccessful, it appears no data has been 14 collected to support the lack of any faults that 15 may be present in the upper 1,000 feet of the 16 sedimentary section. 17 To further emphasize this point that 18 shallow faults may exist on the property, I would 19 like to point to Dr. Wood's testimony that, quote, 20 "there was faulting going on but it was not as 21 intense," end quote, when he was discussing the 22 depositional environment of the upper sedimentary 23 sequence. Later he testified he has observed 24 faults in the Pierce Gulch Sand. 25 In conclusion, there is currently no</p> |

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1 research that has been conducted to confidently
2 rule out the presence of faults in the upper
3 sedimentary sequence. If faults do exist, they
4 may play an important role in groundwater flow in
5 the area. They could serve as either conduits or
6 flow barriers depending on the absence or presence
7 of fault gouge. Or, more importantly in my
8 opinion, could offset sedimentary units,
9 increasing the hydraulic connections between
10 different strata and reducing the hydraulic
11 connection between within the same strata.
12 The next topic I would like to discuss
13 is the aquifer continuity between the Boise and
14 Payette Basins. As we have heard through this
15 testimony, the regional flow direction is not a
16 significant aspect of the water right application.
17 HLI spent a considerable amount of time and effort
18 trying to illustrate the PGSA extending to the
19 Payette Basin.
20 This slide shows part of page 1 of
21 Exhibit 2, the one-year progress report developed
22 by HLI. In this introduction paragraph, the
23 connection to the Payette Basin is referred to
24 three times, as highlighted in red. In my
25 opinion, establishing a connection to the assumed

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1 recharge mechanisms is more important than
2 determining where the water flows once it leaves
3 the site.
4 This figure -- this is figure 1 of
5 Exhibit 18, showing HLI's representation of the
6 regional groundwater flow in the Pierce Gulch
7 Aquifer. There are several observations I would
8 like to note regarding this figure.
9 HLI states on page 10 of Exhibit 45
10 that, quote, "The piezometer level map of the PGSA
11 wells, based on reliable data from available wells
12 completed in the PGSA." Additionally, on page 33
13 of Exhibit 45, HLI states, quote, "We selected 59
14 wells for our second measurements because these
15 were the only ones we were confident -- we were
16 confident were completed within the PGSA, and they
17 were the only ones that remained as candidates
18 after a rigorous analysis weeded out wells of poor
19 and/or unknown construction," end quote.
20 It should be noted that there are only
21 approximately 20 of the 59 wells that are
22 confidently identified as PGS wells plotted on
23 this groundwater map.
24 However, one of the wells, Caldwell
25 test well No. 19, is one of the wells used to

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1 develop the groundwater contours. This well is
2 also one of the only four wells that lies west of
3 the Ada/Canyon County line that were used to
4 develop this map. It is noted in the data
5 accompanying the flow map that the Caldwell well
6 may be completed above the PGSA. HLI agrees that
7 it's currently unknown whether or not this well is
8 completed into or above the PGSA.
9 Data for the Zigler well, the well in
10 the northwest corner of the map and located in the
11 Payette Valley, was not provided in the -- by HLI
12 in the accompanying data with the report,
13 Exhibit 18. This well appears to be an important
14 well in the inferred northwest groundwater flow as
15 this well is the furthest most northwestern well.
16 I researched the well log for this
17 well. This well is 176 feet deep that is composed
18 primarily of silt and contains only 6 feet of
19 saturated sand. It is not apparent to me that
20 this well is completed in the PGSA.
21 The inclusion of data from these wells
22 is inconsistent to HLI's statement that only wells
23 confidently determined to be PGSA wells were --
24 with reliable data were used to construct this
25 map.

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1 This is a zoomed-in image of the
2 previous slide focused on the M3 area that
3 contains the majority of the data points plotted
4 on the regional map. The quote, "green line," end
5 quote, on the map represents a no-flow barrier and
6 has significant importance on the groundwater flow
7 direction. Notice at the termination of the line
8 the groundwater flow abruptly changes to the
9 north.
10 THE HEARING OFFICER: Termination where,
11 Mr. Owsley?
12 THE WITNESS: Approximately right at the
13 county line.
14 THE HEARING OFFICER: So the intersection
15 of the Ada/Canyon County line and the green line
16 depicted?
17 THE WITNESS: Yes, sir.
18 THE HEARING OFFICER: Okay. Go ahead.
19 THE WITNESS: To support the continuity
20 between the Boise and Payette Basins, HLI states
21 on page 11 of Exhibit 45, quote, "The normal
22 resistivity logs for the Ted Daws No. 1 well
23 submitted to IDWR in November 2008 and discussed
24 in our January 2009 submittal clearly show that
25 the sand unit called the Pierce Gulch Sand Aquifer

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1 is a widespread deposit that extends to the
2 Payette River Valley north of New Plymouth
3 (figures 3 and 4)," end quote.
4 And on page 17, quote, "The identical
5 log characteristics that HLI has shown in Boise
6 area wells occur in the Ted Daws No. 1 well and
7 the adjacent Virgil Johnson No. 1 well" --
8 THE HEARING OFFICER: Okay. Are you
9 referring to another -- you're just narrating?
10 You're not referring to a slide?
11 THE WITNESS: Correct.
12 -- "adjacent Virgil Johnson No. 1 well
13 and also in the geophysical logs to the west near
14 the town of Payette and south to Lake Lowell," end
15 quote.
16 Continued on page 17, HLI states,
17 "However, Dr. Ralston did not evaluate these
18 geophysical logs from just wells that were
19 described above and did not evaluate the Zigler
20 well. Id. at 103-104. It appears the staff also
21 did not," end quote.
22 HLI is correct that the staff did not
23 review the geophysical logs for the mentioned
24 wells in the Payette Basin for two reasons.
25 First, the April 1, 2009 memo prepared by HLI is

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1 the first and only authored -- HLI-authored
2 document in which these wells are specifically
3 referenced. The quote that is currently on the
4 screen is the extent of the discussion of these
5 wells in the 2009 submittal.
6 It reads, quote, "Indeed, the
7 identified characteristic, quote, "geophysical
8 signature," end quote, "of the base of the Pierce
9 Gulch Sand Aquifer appears to be present from deep
10 petroleum exploration bores beneath the cities of
11 Meridian, Caldwell, and Payette, Idaho (S.H. Wood
12 personal communication, 2009) suggesting that the
13 Pierce Gulch Sand Aquifer is extensive to not only
14 the Payette River Valley but also to the Snake
15 River Valley," end quote.
16 The subject wells are not directly
17 referenced in the 2009 submittal.
18 The second reason the staff did not
19 review the geophysical logs for the Daws and
20 Johnson wells is because the logs were not
21 properly identified and difficult to read. The
22 slides shown here are the geophysical logs as they
23 were submitted to the Department. Several issues
24 made the review of these logs difficult.
25 First, it is unclear as to what the

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1 labels RB1, BC1, TD1, and VJ1 represent. Second,
2 there was not a map to accompany these plots to
3 show their location. And third, the legibility of
4 the actual data on the plots was difficult to
5 read.
6 The Department was unaware of the
7 significance of these plots until we read the
8 April 1, 2009 memo from HLI.
9 This slide shows the two hydrogeologic
10 profiles of the Pierce Gulch Sand Aquifer
11 submitted in support of this application that
12 extend into the Payette River Basin. Although
13 similar, the two profile lines are not in the same
14 location. They do, however, follow the general
15 strike of the aquifer as defined to the northwest.
16 Therefore, the change in dip cannot account for
17 the different depths of the Pierce Gulch Sand
18 Aquifer between the Payette River. The
19 differences between the two profiles suggest
20 additional information is necessary to better
21 define this aquifer on a regional scale."
22 The next topic for discussion is
23 aquifer testing. There are a few observations I
24 would like to address on this topic.
25 This slide is figure 24 from

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1 Exhibit 44 showing the drawdown plot for the Big
2 Gulch stock well in the January 2009 submittal.
3 The sudden increase at the end of the test raised
4 questions for the Department and we commented
5 accordingly in the staff memo.
6 This is figure 6 from Exhibit 45. HLI
7 responded to our comments in the staff memo by
8 correcting the drawdown data with the regional
9 aquifer trend in an attempt to account for the
10 late rises in water-level declines. Note the
11 increase is apparent in the corrected water levels
12 as it was in the original submittal. In addition,
13 to the text on the graph states, quote, "Rise in
14 apparent drawdown and derivatives after 6,000
15 minutes may reflect boundary effects of nearest
16 known no-flow boundary, the edge of the aquifer
17 shown in the site plan as the green line," end
18 quote.
19 The presence of a hydraulic boundary
20 is suspected by the boundary and HLI. A test of
21 longer duration would have provided additional
22 information needed to determine the significance
23 of such a boundary.
24 This slide is figure 27 of Exhibit 44.
25 This plot is a recovery plot of the Big Gulch

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1 stock well. Note the deviation from the blue line
2 on the left side of the plot. This deviation
3 indicated an incomplete recovery in the water
4 levels, meaning the water level did not fully
5 recover to the pretest level. Again, we commented
6 accordingly in our staff memo.
7 This slide is figure 7 of Exhibit 45.
8 HLI presented this plot in response to our
9 comments regarding the lack of recovery. This is
10 a plot of drawdown recovery data that was
11 previously shown but corrected for a trend that
12 was misapplied to the data in the original
13 submittal. Note the correction reduces the
14 deviance from the straight blue line. The data
15 also come closer to approaching full recovery.
16 Possible reasons for incomplete
17 recovery are stated in the text on this plot that
18 include, quote, "S over S prime less than one
19 suggests late or incomplete recovery. Apparent
20 late recovery caused by either a) incomplete
21 correction for a seasonal declining regional
22 water-level trend or b) hydraulic effects of the
23 nearest known no-flow boundary -- the edge of the
24 aquifer (green line on the site plan)," end quote.
25 The next topic I would like to discuss

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1 is aquifer boundaries.
2 This is -- this slide shows figure 3
3 from Exhibit 44.
4 The quote, "green line," end quote is
5 one of the two boundaries that HLI states they
6 have defined. As we heard in Mr. Vincent's
7 testimony, based on this figure, it is unclear as
8 to how the base of the aquifer can daylight on the
9 west side of SVR No. 6. Additional questions are
10 related to the water-level fluctuations across the
11 green line, as it appears in this figure that
12 permeable sediments could be in contact across the
13 line.
14 This slide shows figure 3 of
15 Exhibit 2. The map depicts the elevation contours
16 in which represent the bottom of the aquifer. The
17 bottom of the Pierce Gulch Sand Aquifer is
18 considered equivalent to the top of the underlying
19 thick mudstone.
20 Equating the extent of the Pierce
21 Gulch Sand Aquifer to the extent of the mudstone
22 involves making the assumption that the sediments
23 that directly overlie the mudstone are composed of
24 deltaic sands. As I previously testified, the
25 distinction between the Pierce Gulch Sand Aquifer

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1 and the undifferentiated alluvial aquifers and
2 aquitards that exist throughout the regions become
3 less distinct with distance from the M3 property.
4 This slide shows figure 3-4 of
5 Exhibit 33D. This figure depicts the subdivisions
6 of Idaho group sediments in the Treasure Valley
7 after Squires, et al., 1992 and Wood 1994."
8 These subdivisions of the sedimentary
9 units is supported through the data and testimony
10 submitted in support of this water right
11 application. Note the gray lobe on the northeast
12 side of the group of classifications. This gray
13 shaded area represents the lake margin deposits,
14 which would indicate the -- include the deltaic
15 sands of the Pierce Gulch Aquifer.
16 The limited extent of these lake
17 margin deposits supports the earlier testimony I
18 provided that the lake margin sediments merged
19 into the finer-grained deposits within the basin.
20 This depiction of the sedimentary units within the
21 Treasure Valley indicates the lake margin deposits
22 are not as extensive as conceptualized by HLI.
23 I would now like to focus on recharge
24 mechanisms to the target aquifer. HLI specifies
25 five sources of recharge that they feel are likely

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1 in their opinion. Some of these recharge sources
2 have been previously considered, others have not.
3 As shown on this slide, HLI states
4 from page 25 of Exhibit 45 that, quote, "There are
5 like -- there likely is recharge at least at these
6 locations: 1), the Boise River in the upper basin
7 (above Capitol Bridge); 2) where PGSA rises up dip
8 to the present-day Boise River gravels east of the
9 United Water Idaho (UWID) Swift well (in the
10 vicinity of Farmers Union Ditch Company's river
11 diversion; 3) added pressure head from the flood
12 irrigation and irrigation laterals off the
13 New York Canal and other main canals; 4) recharge
14 along the eastern edge of the -- eastern edge of
15 the basin northeast of Eagle; and 5) from
16 groundwater moving into the aquifer under an
17 upward gradient from below," end quote.
18 I would like to address each of the
19 potential sources in the following slides.
20 The quote on the slide is from page 28
21 of Exhibit 45. It states, quote, "Staff for some
22 reason combines reaches long known to be gaining
23 with reaches long known to be losing apparently to
24 suggest," quote, "considerable uncertainty," end
25 quote, "in the seepage analysis," end quote.

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1 Staff referenced the various estimates
2 of the gains or losses associated with the Boise
3 River in the staff memorandum to show there is
4 considerable uncertainty in the estimated -- in
5 the estimates and sources of such estimates.
6 I will now explain the reference
7 estimates to highlight the uncertainty within
8 these estimates.
9 This slide shows table 1 from
10 Exhibit 50, the IDWR staff memorandum. The table
11 shows four different measurements of gains or
12 losses associated with the Boise River in the
13 reach between Lucky Peak and Glenwood Bridge.
14 The first estimate, labeled IDWR,
15 2009, represents the difference in the gauge
16 readings from Lucky Peak to Glenwood Bridge for
17 the nonirrigation season (November through March).
18 Only the winter flow measurements were used in the
19 estimate to eliminate any losses or returns from
20 irrigation diversions. The results from these
21 calculations resulted in a net gain of 14 cubic
22 feet per second.
23 The second estimate, labeled USGS,
24 1997, represents the results from the 1999 USGS
25 report that was submitted as an exhibit by the

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1 protestants last week titled "Stream-flow Gains
2 and Losses in the Lower Boise River Basin, Idaho,
3 1996 through 1997."
4 The results from this study indicate a
5 net gain of 52 cubic feet per second based on a
6 seepage analysis along the lower reach of the
7 river above Glenwood Bridge.
8 The third estimate, labeled Urban and
9 Petrich, 1998, was the estimate used in the
10 Treasure Valley Hydrologic Report. The data used
11 for this estimate are unknown, other than it
12 represents the reach of the river between the
13 Lucky Peak Dam and Capitol Bridge. The result of
14 this estimate was a loss of 21 cubic feet per
15 second.
16 The fourth and final estimate libeled
17 Urban 2005 is an updated estimate for the Treasure
18 Valley Hydrologic Project. Again, the data used
19 for this estimate is unknown, other than it
20 represents the reach from Lucky Peak to Capitol
21 Bridge in the year 2000.
22 The calculations used to produce this
23 estimate are unclear, as a gauge did not exist at
24 Capitol Bridge in the year 2000. The results from
25 this estimate indicate a net loss of 110 cfs,

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1 cubic feet per second.
2 In summary, I included this table in
3 the staff memorandum to highlight to the Hearing
4 Officer the current level of uncertainty in the
5 gains and loss associated with the Boise River.
6 This slide shows one of the submitted
7 cross-sections developed by HLI in Exhibit 26.
8 With respect to PGSA exposure under the Boise
9 River, HLI states on page 28 of Exhibit 45 that
10 the geophysical signature of the Swift well
11 represents the PGSA 400 feet beneath the river.
12 According to this figure, the PGSA is
13 depicted from approximately 75 feet to 225 feet
14 below the Boise River at the same well. This
15 inconsistency questions the certainty of
16 identifying this interval of this well as PGSA.
17 In addition, the region identified as
18 the PGSA in the two central wells of this diagram
19 is not distinguishable from the undifferentiated
20 alluvial aquifers and aquitards in the upper left
21 section of this diagram.
22 MR. FEREDAY: Mr. Owsley, I'm sorry. I
23 didn't quite catch that. You said that this Swift
24 well depth interval was inconsistent with what
25 other measurement?

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1 THE WITNESS: With this figure.
2 MR. FEREDAY: Which depth estimate was
3 inconsistent with this figure?
4 THE WITNESS: I'll reread it.
5 With respect to the PGSA exposure
6 under the Boise River, HLI states on page 28 of
7 Exhibit 45 that the geophysical signature of the
8 Swift well represents the PGSA 400 feet beneath
9 the river. According to this figure, the PGSA is
10 depicted from approximately 75 feet to 225 feet
11 below the Boise River at this same well.
12 MR. FEREDAY: Okay. Thank you.
13 THE WITNESS: With respect to the third
14 source of proposed recharge, we have heard
15 testimony regarding the age and travel time of the
16 ground water in the PGSA. It is still unclear to
17 staff as to how the irrigation water seepage
18 upstream from Cole Road is available as
19 recharge -- as a recharge source to the PGSA.
20 The fourth source of recharge was not
21 included in the numeric model developed to predict
22 impacts from pumping in the PGSA. There was no
23 attempt to identify or quantify the specific
24 mechanisms that could be contributing recharge to
25 the PGSA in the eastern edge of the basin

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1 northeast of Eagle.
2 HLI's fifth and final source of
3 proposed recharge to the PGSA is from ground water
4 moving into the aquifer from the thick mudstone.
5 HLI's recharge from groundwater moving into the
6 aquifer from an upward gradient from below is not
7 viewed as a significant source of recharge to the
8 PGSA based on HLI's finding in the modeling report
9 that stated, quote, "The difference between runs
10 with and without this upward flow from beneath the
11 Pierce Gulch Sand Aquifer were found to be so
12 small (maximum increase in water levels in the
13 Pierce Gulch Sand Aquifer of less than 0.1 foot)
14 that an eighth layer was deemed unnecessary," end
15 quote. Page 17 of Exhibit 16. Therefore, it
16 seems today HLI would suggest this recharge
17 mechanism and not model it as one.
18 These quotes are from page 28,
19 Exhibit 45, and the top one states, quote, "In
20 past studies and HLI's more recent, it is shown
21 that the PGSA receives substantial recharge
22 primarily from the Boise River and associated
23 canal systems," end quote. No specific references
24 are provided to support this statement.
25 The second quote states, quote, "This

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1 issue of water availability for the proposed
2 project does not, in our view, require M3 Eagle to
3 work out the exact PGSA recharge mechanisms in the
4 Boise Basin," end quote.
5 Department agrees that the exact
6 recharge mechanisms in the Boise Basin do not need
7 fully identified, but an attempt to characterize
8 and quantify the recharge mechanisms to the
9 aquifer in which the water right application
10 should be done.
11 The third quote, also from Exhibit 45,
12 states, quote, "The aquifer is strongly
13 recharged," end quote. This statement is not
14 referenced with any documentation to support this
15 statement.
16 Now I'd like to change the focus of
17 this testimony to water-level trends.
18 THE HEARING OFFICER: Mr. Owsley, before
19 you go there, this might be a good time for us to
20 take the afternoon break, full 15 minutes, and
21 we'll switch out. Okay? So let's go off the
22 record.
23 (Recess.)
24 THE HEARING OFFICER: Mr. Owsley, you may
25 continue.

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1 THE WITNESS: Thank you.
2 Now I'd like to change the focus of
3 this testimony to water levels and trends. This
4 slide is figure 46 of Exhibit 44. It is a plot of
5 the water-level data collected by HLI in the M3
6 test wells. The dates on the plot range from July
7 of 2006 to October of 2008. There are several
8 observations I would like to point out with this
9 graph.
10 First, I would like to point out four
11 wells that all show a similar downward trend over
12 of the past three years of monitoring. The wells
13 are SVR-7, SVR-9, TW No. 2, and TW No. 3. They
14 are the two blue plots and the pink and green
15 plots on the graph.
16 THE HEARING OFFICER: Okay. Will you
17 identify for us which is which?
18 THE WITNESS: Sure.
19 THE HEARING OFFICER: Because we can't read
20 it. At least I can't.
21 THE WITNESS: This top blue line
22 (indicating) is SVR No. 7. The second blue line
23 is SVR No. 9. The pink line is TW No. 2. And the
24 green line is TW No. 3. These wells are all
25 located in the central portion of M3.

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1 THE HEARING OFFICER: Mr. Owsley, what is
2 the -- what are the gradations of scale on the
3 Y-axis? Can you tell me?
4 THE WITNESS: Every foot. These are 1-foot
5 increments, and the water levels have been
6 adjusted -- either had elevations added or
7 subtracted so they could all plot on the same
8 graph.
9 THE HEARING OFFICER: And over what period
10 of time is this?
11 THE WITNESS: It starts back in July of
12 2006, and the last data that's presented is
13 October of 2008.
14 THE HEARING OFFICER: So approximately two
15 years?
16 THE WITNESS: Yeah, for a couple of the
17 wells we have three -- three -- three data points
18 that fall on different years. For example, August
19 of 2006, 2007, and 2008 are available in SVR
20 No. 7, similar for SVR No. 9. We have three data
21 points we can look at within individual years.
22 THE HEARING OFFICER: Okay.
23 THE WITNESS: A close visual inspection of
24 the water level -- water levels from these four
25 wells on the M3 property shows a declining trend

1 over the past few years. This trend is
 2 interesting, considering the testimony that water
 3 levels are rising down in the valley in wells
 4 believed to be completed into the same aquifer.
 5 Next, I'd like to point out two more
 6 wells on this graph. The wells are United Water
 7 State and Linder test well and TW No. 1. These
 8 wells are represented with the orange plot, United
 9 Water test well -- State and Linder test well, and
 10 the maroon plot, TW-1 on the graph. Notice the
 11 significantly different seasonal water level
 12 fluctuation exhibited in these wells when compared
 13 to the first four identified.
 14 TW No. 1 is located down in the
 15 southwest portion of the, quote, "panhandle"
 16 section of the property. United Water State and
 17 Linder well is located near the intersection of
 18 State Street and Linder Road.
 19 The Department noted this change in
 20 water level fluctuations in the staff memorandum,
 21 and HLI responded on page 20 of Exhibit 45, quote,
 22 "The PGSA, as monitored by M3 Eagle's more
 23 westerly wells, are confined with lower
 24 storitivity and thus show a greater water-level
 25 drawdown and recovery from the collective pumping

1 from the aquifer to the south. Such responses are
 2 consistent with the basic principles of
 3 hydrogeology," end quote.
 4 And, quote, "The fact that the water
 5 level fluctuations between the two wells is,"
 6 quote, "nearly an order of magnitude greater,"
 7 end quote, "does not justify staff's implication
 8 that the two well groups lie in separated geologic
 9 units. Such a difference would be expected, given
 10 the location of these wells relative to the
 11 pumping wells that are causing the seasonal
 12 drawdowns," end quote.
 13 The staff did not ever imply that the
 14 two groups of wells were in separate geologic
 15 units. This difference in fluctuations does not
 16 support HLI's claim that the fluctuations are due
 17 to the proximity of the pumping centers, or one
 18 would expect the State and Linder monitoring well
 19 would have a greater response to such pumping than
 20 TW No. 1.
 21 The response by HLI is not supported
 22 by the data presented in figure 46, as the
 23 seasonal fluctuations in State and Linder (closer
 24 to the pumping wells) are approximately 5 feet,
 25 whereas the same seasonal fluctuations in TW No. 1

1 are on the order of 16 feet.
 2 On page 14 of Exhibit 2, HLI states,
 3 quote, "A water-level change map of measured water
 4 levels in comparison to the water levels reported
 5 on driller's reports is planned for HLI's
 6 comprehensive report," end quote.
 7 The Department has not received a
 8 water-level change map from HLI. However, HLI
 9 does appear to have knowledge of water-level
 10 changes when they quote on page 27 of Exhibit 45
 11 that, quote, "many of the wells completed in the
 12 PGSA have water-level elevations that are at or
 13 above the levels reported by the well driller when
 14 the well was initially completed," end quote.
 15 It should be noted that many of the
 16 PGSA identified wells on the M3 property have
 17 water levels that are below the level they were
 18 when drilled.
 19 Now I'd like to change the focus of
 20 this testimony to the groundwater modeling
 21 category. This slide shows two quotes from HLI
 22 documents that discuss the southeastern boundary
 23 of the model that state on page 29 of Exhibit 45,
 24 quote, "The Boise River and New York Canal seepage
 25 values were not directly input to the model," end

1 quote.
 2 I agree that the seepage values were
 3 not directly input into the model, but I do think
 4 the seepage is represented in the model. This
 5 idea is supported by the statement made by HLI on
 6 page 28 of Exhibit 16 that states, quote, "We
 7 assume that a significant portion of this general
 8 head flow into the model's southeastern boundary
 9 originated as seepage from both the Boise River
 10 and the New York Canal," end quote.
 11 This slide shows tables 3 and 4 from
 12 Appendix B of Exhibit 16. These tables show the
 13 water budgets for the most current model runs
 14 performed by PGG. The inflow rates assigned to
 15 the PGSA in the southeastern corner of the model
 16 are based on losses from the Boise River and
 17 New York Canal and are higher than all of the
 18 combined pumping within these layers (Layers 5, 6,
 19 and 7) that represent the PGSA.
 20 In the upper table, table 3, the total
 21 inflow in the southeast corner is 114.77 cubic
 22 feet per second. The total pumping from this
 23 table is 94.12 cubic feet per second for these
 24 layers over the entire model domain.
 25 In the lower table, table 4, the total

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1 inflow in the southeastern corner of the model is
2 106.82 cubic feet per second. The total
3 withdrawal from these layers for the entire model
4 domain due to pumping is 94.4 cubic feet per
5 second.
6 The amount of water entering the model
7 is an approximate amount that is similar to a
8 better known rate of current discharge. A slight
9 error in the inflow component to the model would
10 result in the predicted impacts to be
11 underestimated.
12 I would like to change the focus of
13 this testimony to the geochemistry work completed
14 in support of this application. I have only a few
15 observations related to this topic.
16 First, we heard testimony from
17 Mr. Glanzman that the TDS values in the Pierce
18 Gulch Aquifer ranged from approximately
19 80 milligrams per liter to over 400 milligrams per
20 liter. He later testified that the low TDS value
21 indicates you are near a recharge zone.
22 The lowest TDS value from PGSA wells
23 came from the State and Linder well, which is tens
24 of miles from the speculated recharge area. I'll
25 identify the State and Linder well right here on

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1 the map. It's, again, near the intersection of
2 State Street and Linder Road.
3 The location in which the State and
4 Linder well is located is defined as a discharge
5 area for the PGSA by HLI, an inconsistency in the
6 conceptual model and geochemical results.
7 It does not appear that many (or any)
8 shallow, non-PGSA identified wells were sampled
9 and analyzed. The analysis of the overlying
10 aquifers when compared to the PGSA analysis would
11 provide information related to the
12 interconnectivity between the aquifers.
13 I would now like to change the focus
14 of this to aquifer sustainability. The quote on
15 this slide is presented on page 40 of Exhibit 45.
16 On this page HLI states, quote, "Although the
17 staff refers to lines of evidence suggesting the
18 aquifer may be limited, not even listing -- not
19 even a listing of such evidence appears in the
20 staff memo," end quote.
21 The lines of evidence the staff was
22 referring to was the lack of recovery in the Big
23 Gulch stock well and the current downward decline
24 in the monitored water levels in test wells
25 completed on the M3 property. A response to the

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1 lack of recovery was presented in Exhibit 45 and
2 presented in this testimony. However, the fact
3 that the water-level declines on the M3 property
4 exist without being nearby a significant source of
5 pumping questions the recharge rates and long-term
6 sustainability of the aquifer.
7 An additional concern regarding the
8 long-term sustainability was presented through the
9 testimony that the southeast Boise groundwater
10 management area exists although very productive
11 aquifer materials exist in the area. The
12 southeast Boise groundwater management area exists
13 on the edge of the Treasure Valley aquifer system,
14 much like the M3 area.
15 The southeast Boise groundwater
16 management area is underlain with highly
17 transmissive aquifer materials, much like the M3
18 Eagle area.
19 And finally, the recharge mechanisms
20 to the southeast Boise area are limited, although
21 it exists within this basin that receives a
22 significant amount of recharge on an annual basis.
23 There are a few final miscellaneous
24 comments I would like to make. This slide shows
25 two quotes presented by HLI regarding the

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1 Department's uncertainties regarding the
2 hydrogeology of the area.
3 The first quote from page 38 of
4 Exhibit 45 states, quote, "The largest
5 uncertainties in understanding the hydrogeology of
6 the north Ada County area, in our opinion, derive
7 from the data available from poor quality
8 driller's reports and poorly constructed or
9 dilapidated domestic and irrigation wells that are
10 so prevalent here," end quote.
11 And later, on page 40 of Exhibit 45,
12 HLI states, quote, "The staff does not address in
13 its report the uncertainty inherent in the use of
14 data from wells that are not sealed, whose
15 construction is both unknown and questionable, and
16 that may be receiving groundwater from (or leaking
17 into) aquifers other than the PGSA. This omission
18 is significant," end quote.
19 HLI is actually contributing to these
20 uncertainties in the understanding of the
21 hydrogeology by using poorly-constructed wells to
22 collect data and reference such wells in support
23 of their conclusions. Examples of such uses are,
24 one, the SVR No. 7 well was used as the pumping
25 well in the nine-day aquifer test. This well,

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1 admitted by HLI, has construction issues.
2 Two, the Big Gulch stock well, which
3 was the closest observation well to the pumping
4 well in the SVR No. 7 nine-day aquifer test has
5 unknown construction.
6 Three, the Kling irrigation well was
7 used as a pumping well in HLI's first aquifer
8 test. This well, again, has construction issues.
9 And four, the Eagle Pines well, which
10 is documented by HLI to be unsealed, is referenced
11 twice in the response to the staff memorandum as,
12 quote, "another example of remarkably stable water
13 levels in the PGSA," on page 38 of Exhibit 45.
14 This slide shows figure 27 of
15 Exhibit 45. This figure depicts the Eagle Pines
16 Water Association old and new irrigation well
17 diagrams. Note the annular seal on both wells is
18 identified as "Unsealed Annular Seal."
19 On page 40 of Exhibit 45, HLI states,
20 quote, "The staff does not address in its report
21 the uncertainty inherent in the use of data from
22 wells that are not sealed, whose construction is
23 both unknown and questionable, and that may be
24 receiving groundwater or leaking into aquifers
25 other than the PGSA. This omission is

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1 significant," end quote.
2 And again on page 38 of the same
3 document, Exhibit 45, HLI states, quote, "Another
4 example of remarkably stable water levels in the
5 PGSA," end quote.
6 By referring to the water levels in
7 this well that is identified by Mr. Squires as
8 unsealed, HLI is not consistent with their
9 previous statements regarding the use of data from
10 unsealed wells.
11 And that concludes my narrative
12 testimony.
13 THE HEARING OFFICER: Okay. Thank you,
14 Mr. Owsley.
15 Now, do we have a document that we can
16 mark as Exhibit 903, I believe?
17 THE WITNESS: Correct.
18 THE HEARING OFFICER: Is that what you
19 have?
20 THE WITNESS: Yes. Would you like this
21 copy?
22 THE HEARING OFFICER: Is that document --
23 do you have one that's marked 903, Michele?
24 MS. EDL: She's got it logged. I don't see
25 one with the sticker.

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1 THE HEARING OFFICER: Is there one that's
2 marked?
3 MS. EDL: There it is, yeah.
4 THE HEARING OFFICER: Okay.
5 THE WITNESS: Okay. Do you want that?
6 THE HEARING OFFICER: No.
7 Mr. Owsley's narrative is concluded.
8 And at this point, unless there's some objection,
9 I'll receive the slide presentation into evidence.
10 MR. FEREDAY: No objection.
11 THE HEARING OFFICER: Okay. Other parties?
12 MR. THORNTON: No objection.
13 MR. ALAN SMITH: No objection.
14 THE HEARING OFFICER: Okay. It's received
15 into evidence.
16 (Exhibit 903 admitted.)
17 THE HEARING OFFICER: Again, Mr. Owsley,
18 you'll be expected to come back for examination
19 the 28th and 29th. Probably the 28th. Okay?
20 THE WITNESS: Thank you.
21 THE HEARING OFFICER: Okay. Now, I think
22 would be Mr. McVay.
23 Is he here?
24 While we're doing that, Mr. Vincent,
25 did you make copies? Do you have those available?

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1 MR. VINCENT: I did, yeah.
2 THE HEARING OFFICER: Okay. Thank you.
3 Why don't we distribute those while we're waiting
4 for Mr. McVay.
5 Why don't we go off the record.
6 (Recess.)
7 THE HEARING OFFICER: Okay. I guess we are
8 recording again.
9 Would you mark that as 906, please,
10 Exhibit 906.
11 (Exhibit 906 marked.)
12 THE HEARING OFFICER: Okay. We've resumed
13 recording, and Mr. Michael McVay has come forward.
14 We've marked a couple of documents, and I want to
15 just clean up the record for purposes of ensuring
16 that the documents we have discussed are received
17 into evidence.
18 So according to our records,
19 Exhibits -- or the documents marked as
20 Exhibits 901 through 903 have been received into
21 evidence.
22 (Exhibit 902 admitted.)
23 THE HEARING OFFICER: 904 is a copy of
24 Mr. Owsley's narrative, which is printing right
25 now, and he'll distribute.

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1 Exhibit 905 is a copy of the upcoming
2 PowerPoint presentation prepared by Mr. McVay, and
3 also contains his narrative. So there will only
4 be one document and -- that relates to the
5 PowerPoint presentation. And then we've also
6 marked a document as Exhibit 906, which is a
7 memorandum that's referred to in some of the
8 documentation, I'm told, that's previously been
9 submitted. And I don't -- Mr. McVay says that he
10 doesn't intend to refer to this document, but
11 maybe we'll just wait and see what happens as we
12 go through and then talk about the admission of
13 this document at the end.

14 Anybody?

15 MR. FEREDAY: Yes. Mr. Hearing Officer,
16 since we're on this subject of this document, 906,
17 Exhibit 906, which is a January 28th, 2009 memo to
18 Dennis Owsley from Mike McVay, copies to
19 Misters Vincent and Raymondi, this -- I understand
20 from a brief conversation I had with Mr. McVay
21 that this is, I guess, his original effort with
22 regard to his water-level measurement work.

23 That effort, evidently, resulted in
24 two memos, this being the first, this January 28th
25 being the first, and the second being what became

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1 Exhibit A to the staff's March 2nd memorandum.
2 And at this point we have not seen this
3 January 28th memo before and I think, as Mr. McVay
4 I think recognized, there has been some confusion
5 because of a reference in the March 2nd memo to
6 some 16 wells that he worked with when, in fact,
7 his Exhibit A only referred to ten. There were
8 some other discrepancies as well that we were
9 somewhat confused about.

10 But this, I assume, will help to
11 answer those questions, so I think it should come
12 in.

13 THE HEARING OFFICER: Okay. Any objection
14 to receiving this document into evidence from the
15 parties?

16 MR. ALAN SMITH: None. That's 906?
17 THE HEARING OFFICER: It's 906.
18 MR. ALAN SMITH: No objection.
19 MR. THORNTON: No objection.
20 THE HEARING OFFICER: Mr. Edwards?
21 MR. EDWARDS: No.
22 THE HEARING OFFICER: Okay. Document
23 marked as Exhibit 906 is received into evidence.
24 (Exhibit 906 admitted.)
25 THE HEARING OFFICER: Mr. McVay, if you'll

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1 stand please and raise your right hand.
2
3 MICHAEL McVAY,
4 having been called as a witness by the Department,
5 was duly sworn and testified as follows:
6
7 THE HEARING OFFICER: Thanks. Please be
8 seated.
9 If you would state your name, spell it
10 for the record, and then describe your position
11 with the Department of Water Resources and a brief
12 description of your education and experience,
13 please.
14 THE WITNESS: My name is Michael McVay,
15 M-i-c-h-a-e-l, McVay, M-c-, capital V-a-y. I'm a
16 staff hydrogeologist with the Department of Water
17 Resources. I've been here for just a little bit
18 over a year now. Before that I worked for
19 approximately 16 months at the Department of
20 Environmental Quality for the State of Idaho. And
21 previous to that I was in graduate school at the
22 University of Idaho studying hydrology through the
23 geology department.
24 Prior to my education, my master's
25 education, I worked for approximately 16 months at

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1 an environmental engineering firm in Laramie,
2 Wyoming, called Tri-Hydro, where I performed some
3 groundwater studies, groundwater remediation,
4 engineering remediation, and mine waste
5 remediation.
6 And my undergraduate degree was from
7 the University of Idaho in 2003 in geological
8 engineering.
9 THE HEARING OFFICER: Okay. You may
10 narrate your testimony.
11 THE WITNESS: Thank you.
12
13 DIRECT NARRATIVE TESTIMONY
14 BY MICHAEL McVAY:
15 THE WITNESS: I would like to thank the
16 Hearing Officer for this opportunity to provide
17 testimony narrating the water level analyses which
18 I performed. In January of 2009, Dennis Owsley
19 requested that I performed a water level analysis
20 of 17 north Ada County area wells. All of the
21 wells are part of the State of Idaho
22 groundwater-level database. These are the
23 historical water-level data for this area.
24 In particular, Dennis asked me to look
25 at the data and attempt to identify any

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1 water-level patterns that will allow for the
2 differentiation of wells completed in the Pierce
3 Gulch sands from wells completed in other
4 water-bearing strata.
5 Restated, this analysis was conducted
6 to compare water levels from different wells to
7 each other in an effort to identify Pierce Gulch
8 completions from other wells -- based on water
9 level behavior. This undertaking was not intended
10 to determine the periods of rising and declining
11 water levels in individual wells.
12 When I plotted the available
13 water-level data, it was apparent that the data
14 spanned different time periods and were collected
15 on variable sampling frequencies. Therefore, it
16 seemed most appropriate to find a time period that
17 allowed for the comparison of the largest number
18 of wells over the longest period of time.
19 For the first analysis, I chose the
20 general time period of 1996 to 2003 because this
21 is the longest period of time in which all wells
22 have data.
23 For the second analysis, I chose a
24 general time period of 1996 to 2008.
25 As illustrated in this table, the data

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1 for the 17 wells span different time periods.
2 Since I was trying to compare the wells to each
3 other, I wanted to compare the wells over a common
4 time period. Because some of the wells don't have
5 data until 1996, I chose it as the earliest year
6 in the dataset. Similarly, I did not conduct the
7 first analysis up to present. But because several
8 of the wells did not have -- or excuse me,
9 similarly, I did not conduct the first analysis up
10 to present, but because several of the wells did
11 not have data. Excuse me.
12 THE HEARING OFFICER: Okay. Mr. McVay,
13 will you also just slow down and be deliberate.
14 THE WITNESS: It felt really slow.
15 THE HEARING OFFICER: No. Need to go about
16 half the speed you're going.
17 THE WITNESS: All right. So let me restate
18 that last sentence. I kept stumbling over myself.
19 The first analysis I did not conduct
20 up to present because they didn't -- most of the
21 wells didn't have data up to 2008.
22 In any time series analysis, the data
23 needs to be collected and analyzed for equal
24 time-steps. Since the historical monitoring
25 network data had been collected on variable sample

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1 frequencies, I felt it was necessary to filter
2 data to roughly equal time-steps.
3 THE HEARING OFFICER: Okay. Mr. McVay,
4 you're at the same speed you were before, I think.
5 THE WITNESS: That felt slower.
6 THE HEARING OFFICER: You need to drop the
7 speed by half. Okay?
8 THE WITNESS: Were you able to get that
9 first sentence, or should I repeat?
10 THE HEARING OFFICER: I think the reporter
11 is getting it down.
12 THE WITNESS: Okay.
13 THE HEARING OFFICER: But we're trying to
14 digest it as it comes through, and what you're
15 referring to, and he is as well.
16 THE WITNESS: Okay.
17 THE HEARING OFFICER: I don't mean to
18 badger you.
19 THE WITNESS: No, that's okay. I'm nervous
20 and going fast.
21 THE HEARING OFFICER: Just go really slow,
22 please.
23 THE WITNESS: Okay. I'll repeat the second
24 sentence.
25 Since the historical monitoring

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1 network data had been collected on variable
2 sampling frequencies, I felt it was necessary to
3 filter the data to roughly equal time-steps.
4 Often the same general time period each year is
5 chosen to determine the long-term trend in water
6 levels.
7 Indeed, this is the current procedure
8 employed in trend determination and model trend
9 calibration for the Eastern Snake River Plain
10 Aquifer.
11 One reason for filtering to equal
12 time-steps is to avoid artifact trends that
13 misrepresent the dataset. This concept is
14 illustrated with synthesized hypothetical data in
15 the following figures.
16 THE HEARING OFFICER: Okay. I'll tell you
17 the same thing. You're at the same meter you were
18 before. Maybe we need to set a metronome out
19 here. But just really slow it down. Take a
20 breath between sentences. Count to two, go on to
21 the next one.
22 Thank you.
23 THE WITNESS: Okay. One reason for
24 filtering to equal time-steps is to avoid artifact
25 trends that misrepresent the dataset. This

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1 concept is illustrated with synthesized
2 hypothetical data in the following figures.
3 This figure illustrates synthetic
4 water-level data collected monthly over the entire
5 time span. This hypothetical plot displays
6 seasonal variation and a stable long-term trend of
7 negative .007 inches per year, which I would
8 consider stable. So I created this data, I
9 synthesized it to illustrate a point.
10 To simulate the effect of nonuniform
11 sampling frequency, I created subsets of data from
12 the data used in figure 1 by instituting random
13 sampling frequencies. To do this, first I picked
14 a random starting date and used the RAND function
15 in Excel to generate random numbers from one to
16 12. This random numbers represented the amount of
17 time in months between sampling dates. So what I
18 did is I used this random number generator to
19 select dates on a random frequency from the
20 original dataset.
21 This figure utilizes the same data
22 population as in figure 1, with a delayed --
23 however, with the data collected on a random
24 frequency. The plot illustrates how variable
25 sampling frequencies can create false or artifact

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1 trends. Note the apparent trend is two orders of
2 magnitude different from the trend in the previous
3 plot. In the previous plot, it was negative
4 0.007 inches per year, and in this plot it's
5 negative .12 inches per year. I repeated this
6 exercise a few times just to show how the random
7 sampling frequency can affect water-level trends.
8 This figure is another random sampling
9 frequency plot created using the RAND function in
10 Excel. I created several of these graphs to
11 illustrate the artifact concept. Note the trend
12 in this data is two orders of magnitude different
13 than the trend in figure 1. It also has a
14 different sign. So this is a positive .13 inches
15 per year, and it's just another random sampling
16 frequency that I generated.
17 This figure is another random sampling
18 frequency plot. Note the periods of different
19 apparent trends. Note also that the long-term
20 trend of this data is one order of magnitude
21 different than the trend in figure 1. This one is
22 negative 0.06 inches per year.
23 Again, this is another figure -- oops,
24 excuse me. Another figure illustrating trends
25 associated with random sampling frequencies. Note

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1 that the trend of this data is two orders of
2 magnitude different (and has the opposite sign)
3 than the dataset from figure 1.
4 This final figure illustrates how
5 filtering to yearly values can assist in
6 eliminating artifact trends that result from
7 variable sampling frequencies. This data was
8 filtered from the figure 2 dataset using a
9 two-month window for data capture. Note the
10 similarity in trend values between figure 1 and
11 this figure. First figure was negative
12 0.007 inches per year, negative .006 inches per
13 year in this figure.
14 Another reason for filtering to yearly
15 data is to reduce the variability associated with
16 short-term trends, i.e., seasonal fluctuations.
17 The best-case scenario is to pick the same date
18 during the most stable period of year. In short,
19 try to pick a date before or after the irrigation
20 season.
21 The variable sampling frequencies
22 present in the historical monitoring network
23 dataset create two issues that forced me to
24 deviate from the best-case filtering scenario.
25 First, the beginning of the irrigation

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1 season is difficult to assess. Since data is
2 collected sporadically -- pardon me, there is not
3 a good record of when the water levels begin to
4 drop each year, in each well -- excuse me, each
5 year in each well, and often only relative
6 high-water levels are recorded.
7 MR. FEREDAY: Excuse me. Mr. McVay, could
8 you explain to me what you mean by "relative
9 high-water levels."
10 THE WITNESS: When looking at the
11 hydrograph, when you see a peak or a low water
12 level, you can't assume that's the high of the
13 season or the high of the year because we don't
14 have a complete record. All's you know is that
15 the two data points on either side of it are
16 lower. So all's we know for sure is it's
17 relatively higher than the ones next to it and not
18 seasonally or yearly high.
19 MR. FEREDAY: Thank you.
20 THE WITNESS: As can be seen in this table,
21 a common high-water level date is hard to assess.
22 The dates of the highest yearly water level varied
23 over the period of record, and the table displays
24 averages of these dates for each well. The dates
25 in red are the results of averaging spring and --

1 spring and fall high-water level dates, and as
2 such they offer little meaning.
3 But what we can see is -- is if we
4 average dates that are similar, you know, we got
5 middle of March, October, late March, middle of
6 March, late April, late April, mid-May, September,
7 March again, October 13th -- or October,
8 September, March. And the point of this is with
9 good data we probably would be able to
10 differentiate when irrigation pumping starts to
11 effect the water levels in all wells. However, in
12 this dataset it changes well to well, from season
13 to season, and largely -- and due to the sporadic
14 nature of the data.

15 MR. FEREDAY: Excuse me. Mr. McVay, just
16 because I've got what is only a black-and-white
17 copy here, your presentation also will be up on
18 the web so it can be seen in color?

19 THE WITNESS: Yes.

20 MR. FEREDAY: Okay. Thank you.

21 THE WITNESS: Did you need me to point out
22 the red ones in this?

23 MR. FEREDAY: Well, actually, it might be
24 helpful if you could just name which ones are in
25 red.

1 THE WITNESS: Okay. So well 4 north, 1
2 west, 13 --

3 MR. FEREDAY: How about coming down and
4 giving the dates on the right.

5 THE WITNESS: Sorry. A little less
6 cumbersome.

7 The fourth date down, 2 July and 10
8 July, are both -- I would call them erroneous
9 averages. They're averaging vastly different
10 dates.

11 Down towards the bottom we have 22nd
12 July and 29 May, and both those are also erroneous
13 averages.

14 MR. FEREDAY: Thank you.

15 THE WITNESS: The second reason it is not
16 possible to pick the same pre-irrigation date is
17 because there are data gaps that make selecting
18 the same date, or even same month, impossible for
19 all wells. Therefore, to assemble a large enough
20 record to analyze, I chose a three-month window
21 with which to capture the data.

22 The most frequent data measurements
23 occurred in the March, April, May window, which
24 allowed me to compare the largest number of wells.

25 Although it was not possible for me to

1 choose a date for each well that is absolutely
2 before seasonal changes take effect, it is
3 important to note that every effort was made to
4 select the earliest and most similar dates in each
5 well. For most of the wells, I was able to pick
6 very similar dates, which reduced the variability
7 associated with seasonal water-level changes.

8 And as you can see on these wells up
9 here (indicating), the first well, they're almost
10 all in March. I have an April, some Aprils
11 towards the end, and then a May at the very end of
12 it.

13 Second well here you can see I've got
14 an April, the rest are Marches. And most of them
15 are typically like that. There are a couple, the
16 far bottom right corner, we have a little more
17 variability. And we get months from all three --
18 or we get all three months of the data range in
19 that one. And admittedly, there's more variation
20 in wells like that.

21 And here's a continuation of that same
22 table. I know you can't see it on your copies,
23 but there are several dates in red. And the first
24 well you could see the bottom dates are in red,
25 the bottom center row, we have a couple dates in

1 red in 1997.

2 And then on the next page, the top
3 right, I have some -- two dates in 2008 that are
4 in red. The dates shown in red text I found data
5 selection errors in the water-level data that I
6 chose. So that's what the red is representing,
7 some errors that I had made.

8 The most significant error was in well
9 4 north, 1 east, 3DAD1. An apparent
10 copy-and-paste error led me to report an incorrect
11 water level for 2007 and completely omit the
12 information for 2008.

13 Instead of a declining water level,
14 this well now appears stable with a slight rise of
15 0.009 feet per year. I classified this well as
16 undifferentiated, and HLI classified it as
17 Terteling Springs in their response memo. I would
18 defer classification to HLI.

19 MR. FEREDAY: Excuse me. Mr. McVay, I just
20 wanted to make sure I understand this. This
21 figure 10 on page 15 is something that you've done
22 since the March 2nd memo; is that right?

23 THE WITNESS: Correct.

24 MR. FEREDAY: Okay.

25 THE WITNESS: In preparing for this, I

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1 noticed I made many errors, and so I wanted to
2 graph them up and show you what those errors
3 caused.
4 MR. FEREDAY: I see. Thank you.
5 THE WITNESS: There was also an area in
6 graphing well 5 north, 1 east, 26DCD1. I
7 erroneously chose the February date in 1997
8 instead of the March date. This did not change
9 the conclusions about this well. This well still
10 groups with other Dry Creek area wells based on
11 water-level behavior, which was my main
12 conclusion.
13 There was another error in graphing
14 well 5 north, 3 east, 12CCA1, again, I erroneously
15 chose the February date in 2008 instead of the May
16 date. The trend changed from negative 0.32 feet
17 per year to negative 0.42 feet per year. This did
18 not change the conclusions about this well. This
19 well still exhibits a slight downward trend during
20 the period I analyzed.
21 So after selecting a generally similar
22 time span, filtering the data to yearly spring
23 measurements, I graphed the data. I then visually
24 compared the graphs, looking for similarities and
25 differences, that would allow me to classify wells

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1 based on water-level behavior. I placed linear
2 regression approximations on the graphs to
3 facilitate comparison of wells by linear trends.
4 Once I completed the analysis, I
5 submitted my results to Dennis Owsley and Sean
6 Vincent. This occurred twice, as Dennis asked me
7 to re-review any wells with more current data.
8 The second analysis utilized fewer
9 wells because fewer wells had data beyond 2003.
10 Therefore, two memos were submitted to Dennis and
11 Sean.
12 The first memo dated January 28, 2009
13 (Memo 1) included 17 wells. However, well 5
14 north, 1 east, 32DBD1 had only fall data and was
15 not included in the analysis. Therefore, 16 wells
16 were evaluated for the general data comparison
17 period of 1996 to 2003.
18 Due to the data constraints (i.e.,
19 lack of measurements) four wells were evaluated
20 for the time period of 1996 to 2002, and one well
21 was evaluated for the time period 1996 to 2004.
22 The graph for well 5 north, 1 east, 32DBD1 was
23 included in the figures for completeness of record
24 because Dennis had asked me to review 17 wells.
25 The second memo dated March 2nd, 2009

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1 (Memo 2) included ten wells. However, well 5
2 north, 1 east, 32DBD1 only had fall data that was
3 not included in the analysis. Regrettably, I
4 included this well in the calculation of the
5 average trend and in the presented range of
6 trends.
7 The range that I should have reported
8 is positive 0.13 feet per year to negative
9 0.49 feet per year instead of the reported
10 negative 0.11 feet per year to negative 1.06 feet
11 per year. And average trend for the well should
12 have been negative 0.20 feet per year, instead of
13 the reported 0.29 feet per year.
14 These adjusted trend values also
15 reflect the changes associated with correcting
16 data selection errors in wells 4 north, 1 east,
17 3DAD1, and well 5 north, 3 east, 12CCA1.
18 The conclusions from these analyses
19 are:
20 No. 1, wells in the Dry Creek area
21 exhibit a similar water-level pattern that is
22 different from the other wells I reviewed.
23 No. 2, there is no water-level pattern
24 that allows for the differentiation of water-level
25 fluctuations in the Pierce Gulch Aquifer from

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1 non-Pierce Gulch water-level behavior in the wells
2 I reviewed, except for those in Dry Creek.
3 No. 3, all non-Dry Creek wells --
4 excuse me. No. 3 applies to memo one only, the
5 first analysis. All non-Dry Creek wells that I
6 reviewed, except for 4 north, 2 west, 7AAC1
7 display negative water-level trends over the
8 period analyzed with a range of negative .21 feet
9 per year to negative .49 feet per year, and an
10 average trend of negative 0.27 feet per year.
11 The fourth conclusion applies to memo
12 2 only. All non-Dry Creek wells that I reviewed,
13 except for 4 north, 1 east, 11BBB1 and 4 north, 1
14 east, 3DAD1 display negative water-level trends
15 over the period analyzed. The non-Dry Creek wells
16 displayed trends ranging from positive 0.13 feet
17 per year to a negative 0.49 feet per year with an
18 average trend of negative 0.20 feet per year.
19 It is interesting to note that both 4
20 north, 1 east, 11BBB1 and 4 north, 1 east, 3DAD1
21 are classified as Terteling Springs by HLI.
22 Next I would like to address some of
23 the comments provided by HLI in the final
24 technical memorandum response to IDWR staff memo,
25 or better known as Exhibit 45.

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1 In the final paragraph on page 29 --
2 it's a continuation -- excuse me -- from the final
3 paragraph on page 29, the first sentence on
4 page 30, HLI asserts, quote, "All but one of the
5 wells analyzed by HLI and McVay show increasing
6 water levels over the past 6 to 12 years."
7 I do not agree with this statement.
8 As discussed earlier, it is important to pick
9 equal time intervals for analysis. The data
10 records for these wells are collected on
11 different -- different and varying time schedules.
12 By using the records as is, HLI may have
13 incorporated apparent trends caused by variable
14 collection frequencies.
15 Furthermore, the statement is based on
16 hand-drawn lines that encompass different data
17 periods. The choice of different data periods in
18 an attempt to illustrate rising levels -- excuse
19 me, rising water levels, is not, in my opinion, an
20 objective, unbiased method of water-level
21 analysis.
22 My analyses were not intended to
23 assign a water-level trend to any aquifer, and
24 only to compare water levels in an effort to
25 identify the aquifers.

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1 The next several slides depict the HLI
2 analysis of water levels using the entire dataset
3 for each well.
4 This figure is a screen capture of the
5 HLI response figure 8. Hand-drawn lines are
6 superimposed on hydrograph to illustrate recent
7 trend. The data that were collected during the
8 time span illustrated by the blue lines were
9 collected on frequencies different than the data
10 preceding this period, which may produce artifact
11 trends as previously discussed.
12 Local minima and maxima in this
13 dataset cannot be assumed to be water-level
14 inflection points, only data inflection points.
15 Note the HLI trend is applied to approximately the
16 last seven years.
17 Also note that the lines cut through
18 some of the data.
19 This next feature -- excuse me. This
20 next figure is a screen capture of HLI response
21 figure 9. Hand-drawn lines are superimposed on
22 the hydrograph to illustrate recent trend. Data
23 that were collected during the time span
24 illustrated by the blue lines were collected on
25 varying frequencies.

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1 Notice how the amplitude and frequency
2 of the latter data are different than the
3 preceding data, which may indicate artifact trends
4 due to changes in sample frequency. Again, local
5 minima and maxima in the dataset cannot be assumed
6 to be water-level inflection points, only data
7 inflection points. Note the HLI trend is applied
8 to approximately the last seven years.
9 Also note that lines -- that the lines
10 cut through some of the data.
11 This figure is screen capture of HLI
12 response figure 10. Hand-drawn lines are
13 superimposed on the hydrograph to illustrate
14 recent trend. Data were collected on varying
15 frequencies, which may produce artifact trends.
16 Local minima and maxima in the dataset cannot be
17 assumed to be water-level inflection points, only
18 data inflection points. Note the HLI trend is
19 applied to approximately the last four years.
20 This figure is a screen capture of the
21 HLI response figure 11. Hand-drawn lines are
22 superimposed on the hydrograph to illustrate
23 recent trend. Data were collected on varying
24 frequencies, which may produce artifact trends.
25 Local minima and maxima in the dataset cannot be

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1 assumed to be the water-level inflection points,
2 only the data inflection points. Note the HLI
3 trend is applied to the last four years.
4 Note also how the lines cut through
5 some of the data.
6 This figure is a screen capture of HLI
7 response figure 12. Hand-drawn lines are
8 superimposed on the hydrograph to illustrate
9 recent trend. Data were collected on varying
10 frequencies, which may produce artifact trends.
11 Local minima and maxima in the dataset cannot be
12 assumed to be water-level inflection points, only
13 data inflection points. Note the HLI trend is
14 applied approximately to the years 1980 to 1990.
15 Note also how the lines cut through
16 much of the data.
17 This figure is a screen capture of HLI
18 response figure 13. Again, hand-drawn lines are
19 superimposed on the hydrograph to illustrate
20 recent trend. Data were collected on varying
21 frequencies which may produce artifact trends.
22 Local minima and maxima in the dataset cannot be
23 assumed to be water-level inflection points, only
24 data inflection points.
25 THE HEARING OFFICER: Okay. Mr. McVay, do

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1 we have a number of additional hydrographs that
2 are similar to these?
3 THE WITNESS: No. This is it.
4 THE HEARING OFFICER: Okay. I just didn't
5 see the need to repeat.
6 THE WITNESS: Okay. Note the HLI trend is
7 applied to the last eight years -- years.
8 As can be seen in these figures, the
9 analysis proposed by HLI appear to be based solely
10 on judgment, as evidenced by the analysis of
11 different time periods and time spans as well as
12 allowing the lines to cross data that do not fit
13 the trend being illustrated. Furthermore, the
14 chance exists that artifact trends are present in
15 the data plotted in these figures as evidenced by
16 the changes in amplitude and frequency of --
17 observable in the graphs.
18 I believe filtering to yearly data is
19 a more objective approach.
20 In their response memo, HLI criticizes
21 the lack of statistical rigor in the analyses. As
22 discussed previously, the data constraints
23 inherent with sporadic sampling frequencies
24 prevented me from using a more rigorous approach.
25 HLI also contends that filtering the

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1 data to yearly time-steps incorporates
2 unintentional bias into the analysis. I believe
3 that filtering in this manner is the only way to
4 avoid the bias associated with artifact trends. I
5 also feel that picking variable time spans during
6 different time periods, as was done in the
7 response memo, invokes much more bias than
8 filtering.
9 HLI further disagrees with the use of
10 linear regression lines across the entire time
11 period for which I analyzed, stating that this
12 approach masked periods of rising and falling
13 water levels.
14 The purpose was not to identify
15 periods of differing water-level behavior in each
16 well, it was to compare the wells to each other,
17 and as such, a linear regression estimation was
18 employed to compare the wells over the entire time
19 span. Indeed, part of the reason for utilizing
20 the linear regression was to remove the effects of
21 the shorter-term trends.
22 HLI also expresses concern over the
23 dates selected for each well and concern about
24 discrepancies in the number of wells used in the
25 analyses. HLI states, quote, "A review of the

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1 IDWR online record, however, indicates that most
2 of these data were not collected within the
3 March 1st to May 31st time frame," end quote.
4 A review of the dates presented
5 earlier in figures 8 and 9 indicate that most of
6 the data were collected in the spring filtering
7 window. HLI also expresses confusion about the
8 number of wells used and the time periods that
9 were chosen. This confusion appears to be based
10 on the fact that two memos were submitted, but
11 only one was included in the staff memorandum.
12 HLI also expresses concern that wells
13 4 north, 1 west, 1 IDDA1 and 4 north, 1 east,
14 14CCB2 were not analyzed. They state that these
15 wells are a better representation of the Pierce
16 Gulch Aquifer than the wells that were analyzed.
17 They further disagree with many of the wells used
18 in the analysis because they are not completed in
19 the Pierce Gulch Aquifer.
20 It is important to remember that these
21 analyses were not intended to assign a trend value
22 to the Pierce Gulch Aquifer, only to compare the
23 wells that I was given to assess similarities and
24 differences. I did not review any other wells
25 beyond the 17 that I was given.

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1 Thank you. I appreciate the
2 opportunity to narrate my testimony.
3 THE HEARING OFFICER: Okay. Thank you,
4 Mr. McVay.
5 (Exhibit 905 marked.)
6 THE HEARING OFFICER: Now we have a
7 document that's been marked as Exhibit 905.
8 That's a representation of the PowerPoint
9 presentation and his narration.
10 Any objection to its admission?
11 MR. FEREDAY: No objection.
12 MR. THORNTON: No objection.
13 MR. EDWARDS: No objection.
14 MR. ALAN SMITH: No objection.
15 THE HEARING OFFICER: Okay. It's received
16 into evidence.
17 (Exhibit 905 admitted.)
18 THE HEARING OFFICER: Okay. Do we have
19 anybody else from the Department, Mr. Vincent?
20 MR. VINCENT: No.
21 THE HEARING OFFICER: Okay. All right.
22 What's the pleasure of the parties at this point?
23 Knock off early for the day?
24 MR. ALAN SMITH: Sounds good.
25 THE HEARING OFFICER: I'm not sure there's

1 anywhere else we go today, unless there's
2 suggestions.
3 MR. FEREDAY: I think we still have the
4 Owsley narrative coming up? Is it on its way?
5 MR. VINCENT: He's getting it right now.
6 MR. ALAN SMITH: 904 is not admitted yet?
7 MR. JASON SMITH: Not yet.
8 THE HEARING OFFICER: Well, rather than
9 stay on the record, let's go off for a minute.
10 (Recess.)
11 THE HEARING OFFICER: We're recording once
12 more.
13 And Mr. McVay has finished his
14 testimony. Mr. McVay, I'll remind you that you'll
15 need to come back to be examined, probably on the
16 28th of this month.
17 THE WITNESS: Okay.
18 (Exhibit 904 marked.)
19 THE HEARING OFFICER: And we also have a
20 document that's been distributed by Mr. Owsley.
21 It's been marked as Exhibit 904. I propose that
22 it also becomes part of the record.
23 Parties? Mr. Fereday?
24 MR. FEREDAY: Yes.
25 THE HEARING OFFICER: Okay. Protestants,

1 is it acceptable to you?
2 MR. THORNTON: Yes.
3 MR. ALAN SMITH: Yes.
4 MR. EDWARDS: Yes.
5 THE HEARING OFFICER: It is received into
6 evidence.
7 (Exhibit 904 admitted.)
8 THE HEARING OFFICER: Okay. Other matters
9 we need to talk about today?
10 I know Debbie Gibson is preparing
11 another amended notice of hearing that we'll send
12 out. It looks to me as if just -- well, let's
13 close the record at this point in time, and then
14 we'll just talk.
15 (Proceedings adjourned at 4:23 p.m.)
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1 REPORTER'S CERTIFICATE

2 I, JEFF LaMAR, CSR No. 640, Certified
3 Shorthand Reporter, certify:

4 That the foregoing proceedings were taken
5 before me at the time and place therein set forth,
6 at which time the witness was put under oath by
7 me.

8 That the testimony and all objections made
9 were recorded stenographically by me and
10 transcribed by me or under my direction.

11 That the foregoing is a true and correct
12 record of all testimony given, to the best of my
13 ability.

14 I further certify that I am not a relative
15 or employee of any attorney or party, nor am I
16 financially interested in the action.

17 IN WITNESS WHEREOF, I set my hand and seal
18 this 21ST day of May, 2009.



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[Handwritten signature]

JEFF LaMAR, CSR NO. 640
Notary Public
Eagle, Idaho 83616

My commission expires December 30, 2011

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