

OCT 01 2012

DEPARTMENT OF
WATER RESOURCES

Robyn M. Brody (ISB No. 5678)
 Brody Law Office, PLLC
 P.O. Box 554
 Rupert, ID 83350
 Telephone: (208) 420-4573
 Facsimile: (208) 260-5482
 robynbrody@hotmail.com
Attorneys for Rangen, Inc.

J. Justin May (ISB No. 5818)
 May, Browning & May
 1419 W. Washington
 Boise, Idaho 83702
 Telephone: (208) 429-0905
 Facsimile: (208) 342-7278
 jmay@maybrowning.com
Attorneys for Rangen, Inc.

Fritz X. Haemmerle (ISB No. 3862)
 Haemmerle & Haemmerle, PLLC
 P.O. Box 1800
 Hailey, ID 83333
 Telephone: (208) 578-0520
 Facsimile: (208) 578-0564
 fxh@haemlaw.com
Attorneys for Rangen, Inc.

BEFORE THE DEPARTMENT OF WATER RESOURCES
 OF THE STATE OF IDAHO

IN THE MATTER OF THE PETITION
 DELIVERY CALL OF RANGEN, INC.'S
 WATER RIGHT NOS. 36-02551 & 36-
 7694

Docket No. CM-DC-2011-004

**AFFIDAVIT OF ROBYN M.
 BRODY IN OPPOSITION TO
 IGWA'S MOTION TO CONTINUE
 HEARING AND REQUEST FOR
 EXPEDITED DECISION**

STATE OF IDAHO)
)
 COUNTY OF MINIDOKA) ss:

Robyn M. Brody, being first duly sworn upon oath, deposes and says:

1. My name is Robyn M. Brody. I am one of the attorney of record for Rangen, Inc.

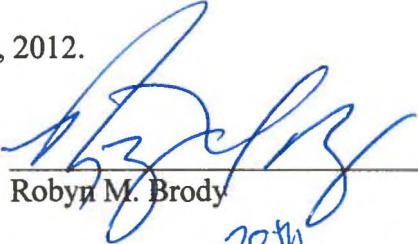
The matters contained in this affidavit are based on my personal knowledge and beliefs.

2. Attached hereto as Exhibit 1 is a true and correct copy of portions of the Transcript of the January 19, 2012 Prehearing Conference.
3. Attached hereto as Exhibit 2 is a true and correct copy of portions of the Transcript of the February 21, 2012 Status Conference.
4. Attached hereto as Exhibit 3 are true and correct copies of the Gantt chart and “punchlist” dated April 17, 2012 as provided by the Idaho Department of Water Resources.
5. Attached hereto as Exhibit 4 is a true and correct copy of portions of the Transcript of the April 28, 2012 Status Conference.
6. Attached hereto as Exhibit 5 is a true and correct copy of the email sent from Rick Raymondi to Director Spackman on July 16, 2012.
7. Attached hereto as Exhibit 6 is a true and correct copy of Willem Schreuder’s August 2011 Powerpoint presentation on MKMOD.
8. Attached hereto as Exhibit 7 is a true and correct copy of a letter from TJ Budge to Robyn M. Brody dated September 25, 2012.
9. Attached hereto as Exhibit 8 is a true and correct copy of a letter from Robyn M. Brody to TJ Budge dated September 25, 2012.
10. Attached hereto as Exhibit 9 is a true and correct copy of portions of the transcript of the May 24, 2012 Status Conference.
11. Rangen agreed to engage in written discovery with IGWA in approximately May 2012 without prior authorization by the Director.
12. In early August 2012 I sought permission from Rangen to have its documents scanned and produced electronically because I was concerned that IGWA had not yet made arrangements to have them copied. I arranged for the scanning of documents on August 8, 2012, had the documents hand-delivered to the scanner on August 9, 2012 and picked them up with a disc on August 15, 2012. I notified IGWA on August 16, 2012 that there was a problem with the disc received and that I had to obtain a new one. I

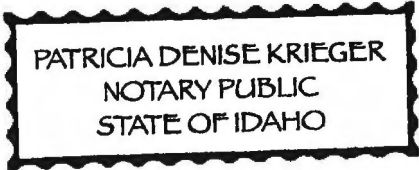
arranged for a courier to hand-deliver the disc to IGWA on August 21, 2012 – just 15 days after it requested to review the documents.

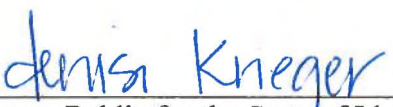
13. I uploaded a large number of documents to a shared electronic website on September 6th and 7th, 2012. The only upload that I made on September 10th was a small batch of documents that I overlooked during the production process. These documents were all provided with Bates Nos., file names that contained the Bates Nos. and a description of the document, and they were grouped together by category. At the time of the depositions on September 10, 2012, I also provided counsel for IGWA with an index showing how the Bates Nos. corresponded to the various categories of documents requested; this was my personal workproduct, but I thought it might make the review process easier for IGWA.

DATED this 27th day of September, 2012.


Robyn M. Brody

SUBSCRIBED AND SWORN TO BEFORE ME this 28th day of September, 2012.


PATRICIA DENISE KRIEGER
NOTARY PUBLIC
STATE OF IDAHO


Notary Public for the State of Idaho

Residence: Hazelton

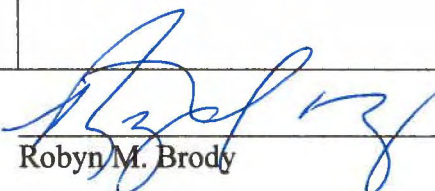
My Commission Expires: 2/28/2018

CERTIFICATE OF SERVICE

The undersigned, a resident attorney of the State of Idaho, hereby certifies that on the 28th day of September, 2012 she caused a true and correct copy of the foregoing document to be served via email and on the 29th day of September she caused a true and correct copy of the foregoing document to be served via U.S. Mail upon the following:

Original: Director Gary Spackman Idaho Department of Water Resources P.O. Box 83720 Boise, ID 83720-0098 Deborah.Gibson@idwr.idaho.gov	Hand Delivery ☐ U.S. Mail ☒ Facsimile ☐ Federal Express ☐ E-Mail ☒
Garrick Baxter Chris Bromley Idaho Department of Water Resources P.O. Box 83720 Boise, Idaho 83720-0098 garrick.baxter@idwr.idaho.gov chris.bromley@idwr.idaho.gov	Hand Delivery ☐ U.S. Mail ☒ Facsimile ☐ Federal Express ☐ E-Mail ☒
Randall C. Budge Candice M. McHugh Thomas J. Budge RACINE, OLSON, NYE, BUDGE & BAILEY, CHARTERED P.O. Box 1391 101 South Capitol Blvd, Ste 300 Boise, ID 83704-1391 Fax: 208-433-0167 rcb@racinelaw.net cmr@racinelaw.net tjb@racinelaw.net	Hand Delivery ☐ U.S. Mail ☒ Facsimile ☐ Federal Express ☐ E-Mail ☒
Sarah Klahn Mitra Pemberton WHITE & JANKOWSKI Kittredge Building, 511 16th Street, Suite 500 Denver, CO 80202 sarahk@white-jankowski.com mitrap@white-jankowski.com	Hand Delivery ☐ U.S. Mail ☒ Facsimile ☐ Federal Express ☐ E-Mail ☒
Dean Tranmer City of Pocatello P.O. Box 4169 Pocatello, ID 83201 dtranmer@pocatello.us	Hand Delivery ☐ U.S. Mail ☒ Facsimile ☐ Federal Express ☐ E-Mail ☒
John K. Simpson Travis L. Thompson	Hand Delivery ☐ U.S. Mail ☒

Paul L. Arrington Barker Rosholt & Simpson, L.L.P. 195 River Vista Place, Suite 204 Twin Falls, ID 83301-3029 Facsimile: (208) 735-2444 tlr@idahowaters.com jks@idahowaters.com	Facsimile ☐ Federal Express ☐ E-Mail ☒
C. Thomas Arkoosh Capitol Law Group PO Box 2598 Boise, ID 83701 Facsimile: (208) 424-8874 tarkoosh@capitolawgroup.net	Hand Delivery ☐ U.S. Mail ☒ Facsimile ☐ Federal Express ☐ E-Mail ☒
W. Kent Fletcher Fletcher Law Office P.O. Box 248 Burley, ID 83318 wkf@pmt.org	Hand Delivery ☐ U.S. Mail ☒ Facsimile ☐ Federal Express ☐ E-Mail ☒
Jerry R. Rigby Hyrum Erickson Robert H. Wood Rigby, Andrus & Rigby, Chartered 25 North Second East Rexburg, ID 83440 jrigby@rex-law.com herickson@rex-law.com rwood@rex-law.com	Hand Delivery ☐ U.S. Mail ☒ Facsimile ☐ Federal Express ☐ E-Mail ☒


Robyn M. Brody

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BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO

* * * * *

IN THE MATTER OF DISTRIBUTION)
OF WATER TO WATER RIGHT NOS.)
36-02551 and 36-07694) CM-DC 2011-004
)
(RANGEN , INC.))
_____)

REPORTER'S TRANSCRIPT
OF RECORDED HEARING

DATE: January 19, 2012

LOCATION: Idaho Department of Water Resources
 322 East Front Street,
 Boise, Idaho.

Before Interim Director Gary Spackman

Transcribed by:
Maureen Newton, CSR #321
P.O. Box 132
Heyburn, ID 83336

EXHIBIT 1

1 was rigorous. And so I guess what's on my mind is, what
2 does it mean? You know, does the committee have clear
3 expectations from the department about what it is that
4 they're supposed to do?

5 And I guess I'm worried that we're never going to
6 get to a point where it's final. I mean, models aren't, by
7 their nature, final. People are already talking about
8 version 3.0. If we don't go through the expert process --
9 I mean, now I'm just worried that six months from now we're
10 going to be sitting in this conference room doing the same
11 exact thing that we're doing now.

12 MR. HAMMERLE: Is it possible, director, for you
13 to issue what issues you think you have with 2.0, so that
14 if we go forward with the expert process we have an
15 opportunity to address the issues you have through our
16 experts? I think that would be helpful probably to us, for
17 certain, and for you also, because then you have
18 independent expert reports probably from two contested
19 sides on the issues you have. And it probably coincides
20 somewhat with your earliest date that you would expect to
21 roll out the model, which is, you know, three months at the
22 earliest.

23 MR. SPACKMAN: I'm not sure I understand what it
24 is that you're proposing, Fritz.

25 MR. HAMMERLE: Well, we have the proposal to roll

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1 can participate in the process. If they want to be a part
2 of the modeling committee, they can, I suspect they already
3 are, and that they can identify those proposals we're
4 engaged in right now that they feel are unproductive.

5 I mean, that's one of the questions that I
6 continue to ask the staff is: What are we doing, if we are
7 doing anything, that's getting us nowhere? Because I don't
8 want to engage in that kind of process. But I intend to
9 stand firm on not using 2.0 right now and not starting a
10 process that uses it ahead of the department and the
11 modeling committee feeling comfortable that we're ready to
12 roll it forward. And my target is a three-to-six-month
13 target.

14 MS. BRODY: At this point do you have a sense of
15 what they have left to do? I mean, what you want them to
16 finish?

17 MR. SPACKMAN: Well, they need to go through
18 calibration. They haven't even finished the calibration
19 process dealing with the changes that we have here. I
20 mean, calibration of the model is an essential part of any
21 modeling process. I think the real arguments out there
22 are, once the model is calibrated, then we stress the
23 model, and then we look at it and say: Based on those
24 stresses. So you apply a stress to it to see what the
25 reactions are in various parts of the model, and by doing

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1 out the expert reports. You said you had concerns,
2 specific concerns, with 2.0. So if you identified the
3 issues you had and we make those available to our experts,
4 you know, we'd have the opportunity to roll out our expert
5 reports, identifying the concerns you have, in a real case.

6 MR. SPACKMAN: Well, the concern I have, I guess,
7 is version 2.0 is a department product. And the
8 participants in the modeling committee are advisors,
9 they're helpful, they have not developed the model itself,
10 and there is a process set up for determining when that
11 model is ready to go.

12 Now, I suppose another process that we could go
13 through, Robyn, that I think would be an anathema to
14 everybody here is, we could really start a formal adoption
15 process, where we start adopting models through ruling. I
16 mean, that's a possibility, too. You know, that the models
17 that we use could actually be recognized by rule and that
18 we go through a formal process of adoption. I don't want
19 to do that kind of thing. I'm just thinking of
20 alternatives.

21 But I think it's incumbent on the department when
22 it's a department product to say, We're ready to roll this
23 out, and then to be proactive in doing so. So, again, I
24 appreciate your suggestion, Fritz, but I don't want to get
25 out ahead of the game. And I think those expert witnesses

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1 so you identify flaws. Now, are they significant or are
2 they not significant? We don't know that, but we've
3 identified two of three of them by going through that
4 process already.

5 I recognize the argument, Robyn, that we could go
6 through that process forever. I don't intend to do that,
7 but I also don't intend to float a model out there that may
8 be inaccurate, that may produce results that change
9 obligations or rights of various parties in litigation that
10 then we find out are in error and I whipsaw people back and
11 forth. And I'm not willing to do that. So I intend to
12 hold firm in the use of 2.0 and just say that I don't
13 intend to use it and we'll reevaluate it in three to six
14 months and we'll see where we're at based on these
15 criteria.

16 And my suggestion, Fritz, is that if the experts
17 representing Rangen want to participate more actively --
18 and I think they have -- didn't we receive some information
19 from Chuck Brockway in the filings about an opinion that
20 version 2.0 is ready to go forward? Wasn't that part of
21 the file?

22 MS. BRODY: I think all of our experts would say
23 it's the best science and that it ought to be used.

24 MR. SPACKMAN: And I agree, with the caveat that
25 it ought to be used when it's ready to go. And there's

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1 department. You know, you guys are working hard, I
 2 understand that, but you're dragging on a little bit and
 3 we've got to get this done, you've got to roll it out.
 4 MR. SPACKMAN: Yeah. My impression in the
 5 committee -- and again, I don't want it to be some sort of
 6 implication that they're not being objective -- but
 7 listening to the distant voices in the committee, I'm not
 8 sure that they will ever come to an agreement as a whole
 9 that the model is ready to use.
 10 And I don't think -- and I'm not sure that it's
 11 proper for the chairman of that committee, Rick Raymond, I
 12 to ask them to vote on it and then for us to take a vote.
 13 So I think it's the department's responsibility to say
 14 we've done what we need to do and we need to move forward.
 15 And so -- the committee is advisory. Ultimately
 16 it's staff and the department's responsibility to say this
 17 is ready. And I feel a huge obligation, it's one of two or
 18 three big issues on the horizon right now, and so I don't
 19 take that responsibility lightly.
 20 MR. HAMMERLE: Under the prior model I think
 21 there's been discussion, debate, issues, whether the trim
 22 line exists in the model or outside the model. So as you
 23 sit here today, when you say there's an expectation that if
 24 we wanted to proceed today the trim line is in or out, or
 25 is it open to discussion from your standpoint?

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1 be imposed using version 1.1 to overcome that trim line,
 2 given its precedent in previous decisions. I will tell
 3 you, in discussing version 2.1, given the way in which
 4 the -- and I may slip in my discussion in representations
 5 of the model -- in its simulations and calibrations to
 6 spring nodes -- well, model nodes and springs, rather than
 7 reaches of the river, the use of any kind of trim line is
 8 much more difficult.
 9 And trim lines may not be a component at all in
 10 using version 2.0. I don't have any idea. But version 2.0
 11 certainly changes because of its accuracy and the way it
 12 simulates the impacts of various activities on the plain to
 13 a particular cell or node. It changes much of that
 14 previous analysis. So I'm giving you more in answering
 15 your question. I want to kind of give you a comparison,
 16 talking about version 1.1 and 2.0.
 17 I, personally, think there's significant
 18 advantage to the department and to Rangen and other parties
 19 to not go through the effort under 1.1 and having version
 20 2.0 rolled out shortly thereafter. But I also recognize
 21 that when a petition for delivery call is filed with the
 22 department, given the court's directives, the department
 23 has an obligation to expeditiously afford the senior an
 24 opportunity for a hearing, but that expeditious hearing
 25 would be held under 1.1.

24

1 MR. SPACKMAN: Well, the best I can do is turn
 2 back and look at the decisions that have been issued by the
 3 department and subsequent issues that have been issued by
 4 the courts (Inaudible). And despite the fact that nobody
 5 liked the trim line, it was recognized by the court as a
 6 reasonable method of determining obligation to the junior
 7 groundwater users.
 8 And I suppose in going through any kind of legal
 9 proceeding, you know, issues can be raised and people can
 10 attempt to put in additional evidence regarding something
 11 like the trim line and ask the director to reconsider it
 12 based on additional facts or information that's available
 13 to the parties. Certainly the collection of that data and
 14 information is not stagnant. But at least right now in
 15 evaluating version 1.1 the intended trim line has been
 16 recognized by the court and I think that gives the use of
 17 the trim line the force of those precedent, at least, in
 18 the department's decision making at this point.
 19 MR. HAMMERLE: If we had to task our experts,
 20 though, you know, I think the question that we have is, is
 21 the trim line open for discussion within 1.1, or in your
 22 mind would you be open to further discussions on that issue
 23 in 1.1, or is there a trim line?
 24 MR. SPACKMAN: At least right now there's a trim
 25 line. It seems to me that there's a huge burden that would

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1 MR. HAMMERLE: Director, can we have maybe a five
 2 - ten minute recess so we can speak?
 3 MR. SPACKMAN: Sure.
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 5 Recess.
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 7 MR. SPACKMAN: We're back recording again after a
 8 brief recess.
 9 Fritz, you're the one that asked for the recess.
 10 Robyn, your thoughts?
 11 MS. BRODY: Director, what we would like to see
 12 happen, if we had our wish list, is to have the department
 13 modelers issue kind of a punch list: A To-Do list. Here's
 14 what we've got left to do to get this model rolling, and to
 15 share that with the committee on Monday when they meet, so
 16 that everybody's got a clear game plan for what's left to
 17 do.
 18 And what we'd like to do, too, is come back to
 19 you in 60 days and say, Where are we on the punch list?
 20 What's going on and what progress has been made? We
 21 don't -- and we also met with Candace during the break and
 22 all of us agree that using version 1.1 is not the thing to
 23 do. And so our position is, let's just get this model
 24 finished as soon as we can, because every day that goes by,
 25 every irrigation season that goes by, is more injury to

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1 Rangen (inaudible).
2 MR. SPACKMAN: I think those are both reasonable
3 requests. In fact, one of the things I thought about as I
4 was just sitting there, I had suggested 30 -- or three
5 months, and I thought you suggested 60 days. I mean, I'm
6 even willing to schedule a status conference every 30 days
7 to say, Where are we at.

8 MR. HAMMERLE: Maybe that's a good -- A 30-day
9 telephonic status conference to show where we are would be
10 probably preferred.

11 MR. SPACKMAN: Yeah. I think there's urgency
12 about it and maybe even putting it off three months is
13 unreasonable. I just think, as I said before, the
14 department staff, the last couple of meetings I've said
15 I'm -- in fact I think the last meeting I said, Guys, I may
16 be in here pushing really hard on you to say when will you
17 get this done? And so -- but on the other hand, I have to
18 respect the scientific process, and that's the tension that
19 we're operating under. And I'm happy to have you folks be
20 a part of this, in whatever way we can, to be transparent
21 and work at it. So if you want -- and I can have Victoria
22 set it up on a recurring basis, put it on my calendar,
23 clear it with you folks. And I'm happy to ask the modeling
24 committee -- I think we have some of that in the
25 background, but certainly it can be distributed. You know,

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1 here are the things that we're doing and here's what we're
2 trying to accomplish now.

3 :: One of the concerns we always have is that we may
4 go through a calibration process now and find out that with
5 the input of additional data all of a sudden the model
6 doesn't calibrate. Then what do you do? We don't think
7 that will happen, but I always have to hedge against those
8 kinds of unforeseen circumstances. I mean, that the model
9 actually blows up in some way. That's probably a remote
10 possibility, but it's out there. And I'm not a modeler, so
11 I couldn't give you a percentage of possibility in those
12 areas, but I can't make a commitment and say it will be
13 done in three months or it will be done in six or whatever.
14 But the best I can do is apply a sense of urgency to it and
15 recognize that you have rights that need to be protected
16 and the call needs to be addressed.

17 So we can do those two things and Victoria will
18 set up a schedule, let's meet on a regular basis. And if
19 the experts want to participate in that conference in some
20 way, I'm happy to have at least some kind of discussion.
21 You know, Where are we? But it can't highjack the modeling
22 committee and the department's process.

23 MR. HAMMERLE: Director, is the department
24 willing to submit a list of issues to the committee, say as
25 early as Monday, about questions you might have, so they

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1 can be addressed?

2 MR. SPACKMAN: Well, I'll talk to them about it.
3 Is the modeling committee on a Monday? I've lost track of
4 that.

5 MS. McHUGH: It's on the 23rd, which is Monday.

6 MR. BAXTER: Director, if I might, I think they
7 actually already have the (Inaudible) Director's order laid
8 out in his earlier letter saying you need to complete the
9 calibration process. You know, they've already voted
10 previously on a calibration and then found out, Whoops, we
11 need to go back and change some data. So I don't think
12 that calibration is going to be that much difficult of a
13 process for them to come to agreement on saying when a
14 model is calibrated.

15 You know, the committee has already previously
16 voted and talked about the issues of validation and the
17 uncertainty analysis, and those are steps in the scientific
18 process that need to take place before the model is ready.
19 So can the department point to an issue? They can say
20 that, We need to finish the steps, but the scientific
21 process and the technical document suggests you need to go
22 through before you have a model that is appropriate for
23 use.

24 MR. HAMMERLE: Having said that, I'm not an
25 expert in this field, but it sounds like your experts have

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1 specific questions about calibrations. I mean, very
2 specific issues. And, you know, I guess our hope is that
3 specific issues with respect to calibration and uncertainty
4 from the department's perspective are made available and
5 known to the committee so that they can start working on
6 those, as well as your experts, so that we have the most
7 resources possible working -- Hopefully, as this model's
8 rolled up, the issues are narrowed down into a funnel. You
9 know, less and less issues. So if those issues are known
10 to everybody, we could work on the same page.

11 MR. SPACKMAN: That's our whole point. What if
12 we refine the request of staff, Fritz? What if they work
13 with the committee on Monday to develop that punch list?

14 MR. HAMMERLE: That would be perfect.

15 MR. SPACKMAN: So that we're not just dumping
16 that on them and then it's a product that comes out of this
17 Monday meeting. Would that be a --

18 MR. HAMMERLE: Yeah, because I think the
19 committee would be most effective if you made available to
20 them very specific issues you're having. I understand
21 those may change, but let's get them out there.

22 MR. SPACKMAN: Okay. Any other comments?

23 MS. McHUGH: No comments. I think that works
24 fine.

25 MR. SPACKMAN: Okay. And, Victoria, you'll set

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BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO

* * * * *

IN THE MATTER OF DISTRIBUTION)
OF WATER TO WATER RIGHT NOS.)
36-02551 and 36-07694) CM-DC 2011-004
(RANGEN , INC.))
_____)

REPORTER'S TRANSCRIPT
OF RECORDED HEARING

DATE: February 21, 2012

LOCATION: Idaho Department of Water Resources
322 East Front Street,
Boise, Idaho.

Before Interim Director Gary Spackman

Transcribed by:
Maureen Newton, CSR #321
P.O. Box 132
Heyburn, ID 83336

1 District and work them. We've had an e-mail from Brian
2 Higgs who said he's putting it together.
3 A VOICE: When will that be done?
4 MR. RAYMONDI: Well, the data -- Brian has the
5 data. It's recorded. He just has to transfer it to us, so
6 we'll be in touch with him. I just got the e-mail this
7 morning that said he was going to give it to us, so we'll
8 get back with him and make sure (Inaudible) right away and
9 let him know that's there's urgency.

10 MR. SPACKMAN: I just thought the discussion
11 about validation might be important so that you had some
12 context about what the validation is directed towards, as
13 opposed to what calibration is.

14 MR. HAMMERLE: Director, last meeting we talked
15 about the committee being on the same kind of plane that
16 the department is and sharing information and making sure,
17 you know, your concerns are relayed to them in a timely
18 fashion. So last time we talked about the department
19 providing the committee a punch list. Just a list of items
20 that you might be concerned about that the committee's not
21 working on and should be working on. I think we talked
22 about that, and I don't think the committee's been provided
23 that kind of information, so I don't know if there is any
24 or -- I think it would be helpful so both the department,
25 again, and the committee are working on the same page.

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1 memo that's helpful for sure. But if there's particular
2 variables that relate to validity, calibration or
3 uncertainty, you know, that if you're concerned about that
4 the committee should be working on, we don't want to get
5 months down the process and then, you know, all of a sudden
6 have anyone say, Gee, well, we didn't consider this, that
7 or the other and we should be. So that's our concern.

8 MR. SPACKMAN: Let's work on an appendage to
9 this, unless you have some other ideas.

10 MR. BAXTER: I'm just going to go back to what
11 Rick said. I think this is the list. That last sheet that
12 we had talked about some of the activities that had taken
13 place that had resulted in data improvement. And what we
14 see here, the result is, because they answered the
15 questions about the data improvement, they've sent out what
16 they believe is the properly calibrated model. We're
17 getting ready to send out another version of the model. So
18 those data issues that we talked about have apparently been
19 resolved to the satisfaction of the department, to get them
20 to say, okay, we believe this is going to be the best
21 calibrated model that we have to date, sending them out
22 here in the next day or two it sounds like, so the
23 committee will be ready to vote on that.

24 I'm not aware of any specific issues or anything
25 else that's out there. I think last time we talked about

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1 MR. SPACKMAN: Rick?

2 MR. RAYMONDI: This is the list.

3 MR. HAMMERLE: I think you had talked about some
4 specific variables, and I can't remember exactly which they
5 were at the last meeting, but there was some specific
6 concerns that you had that the committee wasn't looking at
7 and you believed they should have been looking at.

8 MR. SPACKMAN: I guess I don't remember that
9 discussion. What we did have, we had a summary that I
10 referred to, and I could retrieve it, of the things that
11 were being done at the time and then the things that needed
12 to be addressed. And, you know, some of them were -- and I
13 can just kind of remember the conversation -- but some of
14 them were we had an underflow issue.

15 MR. HAMMERLE: Right. That's one that I recall.

16 MR. SPACKMAN: One was the underflow issue that
17 the committee agreed that we needed to look at for purposes
18 of calibration. The other one was the adjustments to
19 spring flows where there had been errors in those entries
20 and we found better data. And those were the two that I
21 remember. But, you know, we certainly -- you're right,
22 Fritz, there was a discussion about a punch list. So to
23 the extent that this doesn't satisfy it, we can probably
24 put that together as a bulletin list.

25 MR. HAMMERLE: You know, I see this as a process

11

1 going back to the director's letter, as Rick has put on it
2 here, that kind of framed, from the department's
3 standpoint, what really needed to happen for us to be able
4 to move forward. And this shows us all those steps that
5 the director put out in that letter, talking about the
6 calibration, the validation, and I think what we've done
7 here is took your concerns from last meeting, where I heard
8 what you said was that you were concerned about the
9 timeframe in which all these things would happen, and this
10 starts to explain to you how that timeframe process works
11 from the department's perspective. That we think coming up
12 with the calibrated model here pretty soon, would expect
13 the committee to vote that, yes, the model is calibrated,
14 ready to go.

15 The validation process, the last time we talked
16 about how sometimes you get into that -- what's the proper
17 term here -- this fact flow, that if you come through
18 validation and you find out you have a problem sometimes
19 you have to go backwards and work through it. But the end
20 result here is to have a validated model here -- well,
21 actually have a calibrated model probably by February 27th,
22 we would expect the modeling committee to be there, go
23 through the validation approach. I think Rick has put it
24 best guesstimates for a timeframe, shooting for July to
25 have that validation process and predictive uncertainty

13

1 process complete.
2 MR. HAMMERLE: So as you sit here today you're
3 not aware of any variables that the department is concerned
4 about? Some of the same ones we discussed last time?
5 MR. BAXTER: I guess I don't know what other
6 variables, other than as the director pointed out, we
7 talked about some data issues that --
8 MR. HAMMERLE: I think our only concern, Garrick,
9 is that if those issues do come up, that the department
10 provide that list to the committee so they could be working
11 on it in a timely fashion. So I guess you said there are
12 none, but what we would ask is if you see any, that they be
13 made available fairly timely so the committee can work on
14 them.
15 MS. BRODY: And I guess just thinking out loud
16 for a minute, for example, the data gathering for
17 validation, you mentioned the ET -- the diversions, you
18 know, a whole list of areas where you were gathering data.
19 I mean, I guess our hope was that we would have information
20 about: Here is the data that we believe is necessary to do
21 the validation. I mean, these are the 6 or 10 or however
22 many areas that there are, and this is who's going to go
23 get that data, this is when it's going to be accomplished.
24 I mean, literally, you know, like you'd see if you're
25 building a house. You know, caulk the back of the toilet.

14

1 who's maybe -- I'm a chart person -- is there anybody who's
2 got that kind of chart that's really tracking all of that
3 stuff to make sure that it is getting done? I mean,
4 because I know the committee folks are incredibly busy
5 people with lots of different projects and things, and so,
6 you know, to make sure that emails get sent and data that's
7 sitting in a government office gets transmitted like it
8 should, that kind of thing.
9 MR. RAYMONDI: I think if I can spend a few
10 minutes with you and the committee minutes I could show you
11 everything you're talking about. Stacey Taylor's in charge
12 of all this data gathering here and every meeting she goes
13 through what's left. What's been collected, what's left,
14 and every meeting it's less and less and less. So we're
15 right down to the end now.
16 MR. BAXTER: But you're kind of the point person
17 for the department. You stand there and take on the roll
18 Robyn kind of talks about as being kind of the minutes man
19 at the committee meeting, following up with people and
20 making sure -- have I read that wrong?
21 MR. RAYMONDI: No, that's correct. So we have a
22 web page. All of this is on there. All our calibration
23 runs, all our meeting minutes, all of model data.
24 Everything. Current data, files are all listed in there.
25 MR. HAMMERLE: So the department's fairly

16

1 You know, that kind of level of detail. Because this, to
2 me, speaks of a very high level view of what's going on,
3 and we'd kind of like to see the real details in terms of
4 what the department's doing, and if it is the department
5 that's going out gathering all this data, and make sure
6 that the committee is in agreement that, yes, these are the
7 ten data areas that we need to conduct validation that this
8 is appropriate. And that way we know who's responsible for
9 it and what the timing of it is.
10 You know, same thing -- and I may be moving a
11 little bit ahead -- but, like, with predictive uncertainty:
12 64 runs. Okay, what do those runs look like? Eight of
13 them look like this, ten of them look like this, here's
14 who's going to do it, this is when it's going to be done.
15 But a real game plan for, we're down -- I know everybody's
16 working hard to get it done, but I mean, these are the 57
17 things we need to do between now and finish day and who's
18 going to do it.
19 MR. RAYMONDI: All of that you would find in the
20 committee minutes. We discuss all these details and who's
21 doing it and what's the progress. There's even, like,
22 Chuck Brockway will say, I'll contact so and so and help
23 you get that. So it's down to the nitty gritty in the
24 committee meetings, and the minutes will reflect that.
25 MS. BRODY: Is there anybody in the department

15

1 confident we're all working on the same page and all the
2 variables are known to all the parties?
3 MR. RAYMONDI: They are.
4 MR. HAMMERLE: Okay.
5 MR. BROCKWAY: This is Chuck Brockway. I heard
6 my name mentioned and I thought -- I have a question, I
7 guess it must be relative to status, and that the
8 committee's going to hear something about validation coming
9 up on the 27th. Has the department put together any
10 suggested criteria for evaluating the sufficiency of the
11 validation process? What are you going to present to us to
12 compare or to judge or to give an opinion on relative to
13 the sufficiency of the validation?
14 MR. RAYMONDI: You know, we don't have a document
15 with that, but I can make that assignment when we begin the
16 process of making the runs. We'll get that going here
17 right away so that it's done -- the criteria are done
18 before the validation runs are done.
19 MR. BAXTER: But, Rick, this isn't something
20 new --
21 MR. BROCKWAY: I think that would be good for the
22 committee to at least have suggested criteria to judge by.
23 The committee in their infinite wisdom will come up with
24 some of their own, I suppose, but anyway, it would be good
25 to give us some guidance.

17

1 MR. HAMMERLE: That's a fair point. I mean, we
2 want to understand how it will be handled by the
3 department. Whether you're going to say this is the
4 uncertainty and that's what it is and that's what we're
5 going to apply, or is it going to be at a point where
6 you're going to say we had a good model, 2.0, we've
7 accepted it, and now we're -- within this call we're going
8 to talk about uncertainty analysis being handled.

9 MR. BAXTER: I think you see from the reports
10 that are being prepared by the experts for the modeling
11 committee that uncertainty can mean a lot of different
12 things. I believe that the director is still digesting the
13 information that's being provided by the parties and is
14 still subject to a final determination on how it's going to
15 look (inaudible).

16 I think you're right, I think we're a little
17 premature on that, but the department is continuing to work
18 on predictive uncertainty, which is associated with
19 (inaudible) here in the chart.

20 MR. BROCKWAY: This is Chuck. I think you're
21 right: What we are getting from the uncertainty analysis
22 as it's currently structured is some indication of
23 predictive uncertainty. But I think it appears from the
24 discussion of the director he's probably at the same
25 position now as he was at the first hearing where he said,

22

1 I believe, that he really didn't know what form the
2 certainty was going to be factored into the administrative
3 (inaudible). And it sounds, Gary, like you're still there.

4 MR. SPACKMAN: That's correct. I think it's
5 really premature to even talk about it, as Fritz said,
6 until we get through that process and people have an
7 opportunity to digest the results and then talk about it.
8 Not only the results of the predictive uncertainty, but I
9 know there are other uncertainties out there. So --

10 MR. HAMMERLE: I guess, director, the question
11 was: May we get to the point where we're willing to say,
12 we have a good model, 2.0, and within this call I'm going
13 to hear the arguments about uncertainty? Or are you going
14 to --

15 MR. SPACKMAN: Yeah, I think that's where we're
16 headed. I think we're headed to a point where we can say
17 that the model is calibrated and that the committee feels
18 that we've exhausted or at least done what we need to do,
19 so that there's comfort in the calibration and we've gone
20 through a validation process that will be further defined
21 by Rick, to look at independent data and, you know, apply
22 the model or place that data in the model to verify or
23 validate the results of the original model. And then
24 there's a predictive uncertainty component of that and it
25 will have some percentages of variation and then I think we

23

1 say, Well, the model's been calibrated, it's been
2 validated, and there is some uncertainty and here's the
3 ranges of that uncertainty and then people can argue the
4 various sides about what that really means. You know, is
5 it significant; is it not significant; and how should it
6 factor into the ultimate decision of the department.

7 MR. HAMMERLE: That's helpful to understand.

8
9 (Voices talking simultaneously).

10
11 MR. BROCKWAY: Hey, Rick, this is Chuck again.
12 Is Allen on the phone?

13 MR. RAYMONDI: No, he's not.

14 MR. BROCKWAY: Okay. I got an e-mail from Allen,
15 who said relative to calibration runs that Allen's favorite
16 is run number E120116A001. Is that still true?

17 MR. RAYMONDI: As far as I know. But like I
18 said, there's a run that just came off the computer this
19 weekend and Allen said he hadn't had time to review it. I
20 was just in his office 20 minutes ago.

21 MR. SPACKMAN: Do you have a favorite, Chuck?

22 MR. BROCKWAY: Pardon?

23 MR. SPACKMAN: Do you have a favorite?

24 MR. BROCKWAY: No, I don't. We've looked at
25 several of them and at least for the ones we've run there's

24

1 some pretty wide variability in spring flow simulations and
2 I was just wondering if he had done anything after the 001
3 run. And apparently he has but it isn't on the (inaudible)
4 yet.

5 MR. RAYMONDI: No.

6 MR. BROCKWAY: Okay.

7 MR. RAYMONDI: We'll share that with you today or
8 tomorrow. And I'll ask him to update if there's any change
9 in his favorite run.

10 MR. BROCKWAY: Yes, ask him that. He may not
11 answer, but ask him anyway.

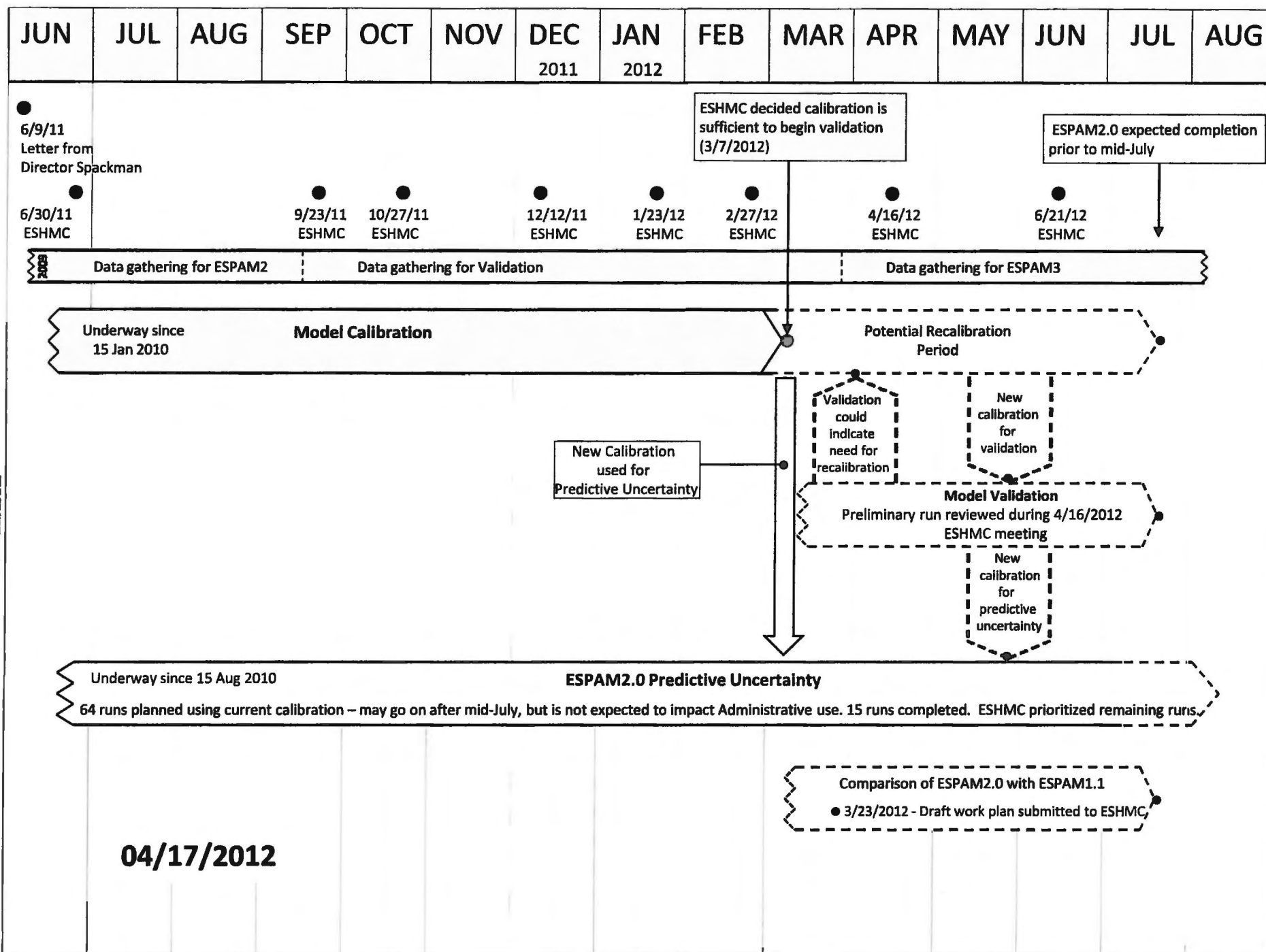
12 MR. SPACKMAN: Other questions today?

13 MS. BRODY: Is there any plan, Rick, I mean to
14 sort of -- I know you said I can go back to the minutes or
15 whatever and sort of look at all of this. Is there any
16 plan to put together in a single place with this chart a
17 real checklist? I say real. I just mean a detailed
18 checklist about what it is that's going to be done and
19 who's going to do it?

20 MR. RAYMONDI: That's easy to do and we can
21 provide that.

22 MR. SPACKMAN: I thought we'd agreed -- and I
23 wanted to come back to this subject, Robyn -- but I think
24 if Rick goes through as we talked about and summarizes the
25 simulations, the predictive uncertainty runs that have

25



April 17, 2012

Items required for completion of Eastern Snake Plain Aquifer Model

ESPAM version 2.0

Item	Status	Comments
Assemble Validation Data Sets	Data set essentially complete for 2009/2010 validation. IDWR recently received 2009-2010 spring flows at Niagara and Blue Lakes, and the data will be entered later this week for comparison with modeled values.	ESHMC is aware that validation is going forward using averages for missing data components. Preliminary run was presented to committee on April 16 th . Results to date are encouraging, and completion of validation is on track.
	Data set for 1902 validation has been assembled.	1902 validation will not impact schedule to complete model by mid-July.
Model Calibration	IDWR proposed calibration runs E120116A006 & E120116A008 to ESHMC for review on March 5 th .	ESHMC adopted calibration run E120116A008 on March 7 th . E120116A008 is incorporated in validation and uncertainty runs.
Model Validation	Using calibrated model, validation with 2009/2010 dataset began in March. Preliminary results presented to ESHMC April 16 th . Updated runs in progress.	ESHMC provided comments and recommendations on how to present results during April 16 th meeting.
	Validation run is being planned.	Results of 1902 validation runs will be done in late April/May, shared with committee, and later discussed in the June 21 st meeting.
Predictive Uncertainty runs	Runs with newly calibrated dataset began week of March 12 th . Fifteen runs have been completed and were presented to the ESHMC for discussion.	Runs will continue through early summer. IDWR will perform uncertainty runs after mid-July, but effort will not impact completion. ESHMC will be routinely notified of results. Discussions will be held in ESHMC meetings.
Comparison of ESPAM version 1.1 with version 2.0	A work plan for comparing the results of the Curtailment Scenario using ESPAM version 1.1 and version 2 was developed and sent to the committee for comment on March 23 rd .	The work plan was discussed with the committee on April 16 th . Comparison runs will likely be completed in May. Results will be sent to committee when completed and discussed in the June 21 st ESHMC meeting.
June 21st ESHMC meeting	Meeting agenda will be sent to committee and will include results of validation, uncertainty, and comparison of ESPAM version 1.1 with version 2.0.	IDWR will provide consultants and committee members training on procedures for simulating a curtailment of junior priority ground water users. Training held June 22 nd .

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BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO

* * * * *

IN THE MATTER OF DISTRIBUTION)
OF WATER TO WATER RIGHT NOS.)
36-02551 and 36-07694) CM-DC 2011-004
(RANGEN , INC.))
_____)

REPORTER'S TRANSCRIPT
OF RECORDED HEARING

DATE: April 28, 2012

LOCATION: Idaho Department of Water Resources
322 East Front Street,
Boise, Idaho.

Before Interim Director Gary Spackman

Transcribed by:
Maureen Newton, CSR #321
P.O. Box 132
Heyburn, ID 83336

1 MR. HAMMERLE: Rick, Garrick, you said one thing
2 that interests me. It seems like we're rolling out a model
3 that might have some policy overlays over the model. And
4 I'll just kind of cut to the chase: In our mind under 1.0
5 there was a trim line policy that overlaid the model and
6 you said that there may be some policy decisions with
7 respect to ESPAM 2.0. Do we expect those policy decisions
8 to be made before or at the time the model is rolled out;
9 or, director, are those things you may roll out based on
10 what we've presented evidentiary hearings?

11 MR. SPACKMAN: My inclination is, I think we've
12 been consistent about this, is to have the model roll out
13 and have it from a policy standpoint be very sterile. In
14 other words, it's clean from a policy determination and
15 then let the parties present evidence regarding how that
16 model should be used so that -- I mean I certainly want to
17 be well enough versed in what's happening with it that I
18 understand what's going on as the evidence comes in, but I
19 want to come in with as clean a slate as I can and have the
20 parties present.

21 MR. HAMMERLE: It's always been our
22 understanding, director, too. We appreciate that. The
23 word policy just came up so we didn't want to be surprised
24 or confused at any particular comment.

25 MR. SPACKMAN: And I guess, Rick, I still have

18

1 some concerns about training and how you define the
2 mechanics and keep the mechanics out of the policy. And I
3 suppose I don't understand that boundary right now, unless
4 the mechanics are simply trying to go through and show how
5 a comparison of ESPAM 1.1 was completed. A comparison of
6 1.1 and 2.0. Because I think in making that comparison you
7 probably have to go back to certain assumptions that were
8 made in 1.1, otherwise you can't. The comparison is apples
9 and oranges is my guess. I don't know. I'm not close
10 enough to it.

11 MR. BROCKWAY: This is Chuck Brockway.

12 Gary, you know, the modeling committee has acted
13 as an advisory to the department or to you on the model and
14 on the development of ESPAM 2, and it would seem to me like
15 you would want advice from the committee relative to the
16 capabilities of the model. If the model is capable of
17 simulating individual spring flows it would seem that you
18 would want the modeling committee to weigh in on that
19 capability so that you could develop a rational policy.
20 And I think they're prepared to do that.

21 So to defer, in my opinion, to say I'm not even
22 going to decide whether that model is capable of simulating
23 an individual spring until after the evidentiary hearing,
24 it seems that your advisory committee on that topic is
25 somewhat useless.

19

1 MR. SPACKMAN: But isn't this the subject, Chuck,
2 that was supposed to be presented in the beige paper on the
3 model paper, or whatever other color it was supposed to be?

4 MR. BROCKWAY: I think it should be, yeah.

5 MR. SPACKMAN: I guess I thought that information
6 was being developed by the modeling committee and would be
7 presented.

8 MS. McHUGH: And I would hesitate to provide --
9 what our letter goes towards -- and if you don't have
10 copies then I'll send it to you -- is a concern that the
11 modeling committee consensus or whatever takes on some sort
12 of legal significance different than an advisory group.
13 Because we know that not all the experts see things the
14 same way. So I understood that the white paper, or the
15 model paper, was going to be just a summary of everybody's
16 comments on what the model can or cannot do or what
17 considerations should or shouldn't be considered. That the
18 actual evidence the director would be considering would be
19 presented in the evidentiary hearing through expert
20 opinion.

21 MR. HAMMERLE: You know, we -- and director, I
22 disagree with that approach for this reason. We've been
23 participating within the committee in good faith trying to
24 say, This is our opinion of what the model is capable of
25 doing. And based on what it's capable of doing, this is

20

1 our policy, what we would suggest. And we've done that
2 throughout this entire committee. We have not hidden
3 any -- we've tried not to hide any of our expert opinion.
4 And, you know, if this is to be an effective committee we
5 would ask that IGWA presents what limitations it thinks are
6 with respect to 2.0 or the committee can't function
7 properly. The department is working on the model. We've
8 presented what we think are the limits, what policies
9 should come from that model, and we think it would be
10 really unfair for you and IGWA to sit back silent as the
11 deputy adopts 2.0 and then come out in an evidentiary
12 hearing with stuff that you've just been sitting on the
13 whole time. I don't think that's good faith.

14 MS. McHUGH: And I don't think there's anything
15 in the committee that Chuck Brendecke's not presenting. He
16 comments and provides this information, he's on the
17 committee. I think it's no secret, we are very adamant
18 that the committee's not a policy group and we've said it
19 and been consistent from the beginning. And Chuck does not
20 give his opinions about policy, or if he does, it's in
21 response to other experts providing policy and saying this
22 isn't what we understand the committee to do. And so I
23 don't --

24 MR. HAMMERLE: For example --

25 MS. McHUGH: -- bad faith issue. I think he's

21

From: [Raymond J. Rick](#)
To: [Spackman, Gary](#)
Cc: ["marx.hintze@ico.doe.gov"](#); ["marxhintze@hintze.net"](#); [Olenichak, Tony](#); ["kwogsland@spronkwater.com"](#); ["marijv@tflaw.com"](#); ["irvu@uidaho.edu"](#); ["Dave Shaw"](#); ["brian@waterwellconsultants.com"](#); ["jalroherman@boisestate.edu"](#); [Weaver, Mathew](#); ["Kevin Boggs"](#); [Jennifer Johnson](#); [Bob Turk](#); [Brendecke, Chuck](#); [Bryce Contor \(bcontor@rockymountainenvironmental.com\)](#); [Chuck Brockway](#); [Dave Colvin](#); [David Blew](#); [David Hoekema](#); [David Kampwerth \(David_Kampwerth@fws.gov\)](#); [Gary Johnson](#); [Greg Clark](#); [Greg Sullivan](#); [Gregg S. Ten Eyck](#); [Hal Anderson](#); [J. D. May](#); [Jack Harrison](#); [Janak Timilsena](#); [Jeff Sondrup](#); [Jim Bartolino](#); [Jim Brannon](#); [John Koreny](#); [John Lindgren](#); [Jon Bowling](#); [Ken Skinner](#); [Linda Lemmon](#); [McVay, Michael](#); [Mike Beus](#); [Rick Allen](#); [Rick Raymondi \(rick.raymondi@idwr.idaho.gov\)](#); [Roger Warner](#); [Sharon Parkinson](#); [Stacey L Taylor](#); [Sukow, Jennifer](#); [Swank, Lyle](#); [Thomas R Wood](#); [Vincent, Sean](#); [Willem Schreuder](#); [Wylie, Allan](#); [Young Harvey Walker](#)
Subject: ESPAM version 2.0
Date: Monday, July 16, 2012 5:09:21 PM

Gary,

The following statement was agreed upon by **twenty** members of the Eastern Snake Hydrologic Modeling Committee (David Hoekema, Bryce Contor, Willem Schreuder, Jim Brannon, Dave Colvin, Chuck Brockway, Gary Johnson, Chuck Brendecke, Rick Allen, David Blew, John Koreny, Allan Wylie, Jon Bowling, Rick Raymondi, Jennifer Sukow, Jennifer Johnson, Mike McVay, Stacey Taylor, Greg Sullivan, and Sean Vincent):

"The Eastern Snake Hydrologic Modeling Committee recommends that the Department begin using ESPAM version 2 rather than ESPAM version 1.1 for ground water modeling."

There was considerable debate in developing the recommendation with numerous committee members expressing the concern during the last meeting and via emails that the model should be used with caution and that there may be other tools or models that may be more appropriate for some analyses. Greg Sullivan indicated that the recommendation was more complete and he was more comfortable if the following phrase was added to the above statement:

.....although other tools or models may be more appropriate in certain circumstances."

Chuck Brendecke said that he shared Greg's concerns about implying that the model is appropriate for any and all situations.

Finally, Roger Warner indicated that the following paragraph submitted by the Eastern Idaho Water Rights Coalition reflected his opinion, and Bryce Contor indicated that when added to the first statement, the paragraph below represented his full opinion:

The ESHMC has completed the development of the Eastern Snake Plain Aquifer Model (ESPAM) version 2.0. Great effort was put in by the committee to improve the model in hopes that the model can help better predict future hydrologic scenarios. We feel the model is useful for planning purposes but recognize that data used in the model vary in accuracy with select data varying greatly. Therefore, while we feel the model is useful for planning purposes, we acknowledge accuracy limitations with use of the model for administrative purposes; particularly at a local scale. While we have all aspired to the highest level of accuracy attainable, we are forced to admit that if this model were to continue to be used for administrative purposes it must recognize some defensible level of uncertainty.

Thanks,

Rick Raymondi

mkmod

Willem A. Schreüder
Principia Mathematica
August 2011

What is mkmod

28

- Program to build MODFLOW input files for the ESPAM model
- Replaces the *readinp.for* program used with ESPAM 1.x
 - “Tail end” of the recharge tool
- Operates at the entity-model cell level
 - Maps entity level inputs to model cells
 - Time increments are stress periods (months)

What is new in mkmod

36

- Implements new algorithms for calculating recharge and pumping
 - On farm algorithm
 - Soil Moisture Accounting
 - Returns calculated instead of specified
- Adds output options
 - Steady state initial stress period
 - Separate recharge and well packages
 - Summary tables

Whom to blame for mkmod ⁴

- Greg Sullivan (on farm algorithms)
- Willem Schreüder (implementation)
- Jim Brannon (peer review)
- Allan Wylie (user testing)
- David Blew (just because we always blame him for everything)

mkmod inputs

- Command line options
 - Controls algorithms, file names, etc.
- mkmod control file (.mdl)
 - Specifies model dimensions, units, periods,...
- Data files
 - Output from other tools that pre-process data
 - Input data such as efficiencies

mkmod outputs

6

- MODFLOW input files
 - Net recharge a.k.a. “well term”
 - Individual water budget items
- Summary tables
 - HTML table by period and entity
- Diagnostic outputs
 - Acres by cell, ...
 - User specified summeries

mkmod flow chart

7

- Read definitions and time invariant data
- Loop over periods
 - Read data for current period
 - Calculate irrigated recharge/pumping
 - Calculate non-irrigated recharge
 - Distribute canal seepage
 - Distribute trib underflow and perched river
 - Save data

Irrigated recharge/pumping

- Applied water by entity
 - Diversion-Canal Seepage+Off-site Pumping
- Loop over entities
 - Loop over gravity & sprinkler lands
 - Loop over cells
 - Calculate CIR, pumping recharge, soil moisture
 - Algorithms depend on command line switches
 - GW and SW treated differently
 - Done on unit area basis, then multiply by acres
 - Accumulate irrigated acres

Crop Irrigation Requirement (CIR)

- Done by cell under the entity
- Adjusted ET = $ET_{adj}(Gr/Sp) * ET(Cell)$
- Precip = Precip(Cell)
- CIR = Adjusted ET - Precip

For Groundwater Entities

10

- If $CIR < 0$, pumping = 0
- Else pumping = $CIR / \text{Efficiency}(Gr/Sp)$
- Recharge = Pumping – CIR
- Notes
 - If $CIR < 0$, Recharge = -CIR
 - Net Recharge = -CIR = Recharge-Pumping
 - Recharge = Precip + $(1 - \text{Eff}) * \text{Pumping}$
 - Soil moisture never changes

For Groundwater Entities

//

- If $CIR < 0$, pumping = 0
- Else pumping = $CIR / \text{Efficiency}(Gr/Sp)$
- Recharge = Pumping – CIR
- Notes
 - If $CIR < 0$, Recharge = -CIR
 - Net Recharge = -CIR = Recharge-Pumping
 - Recharge = Precip + $(1 - \text{Eff}) * \text{Pumping}$
 - Soil moisture never changes

SW Entities - On Farm Algorithm ¹²

- Determine over/under irrigation
 - deficit is the amount of under irrigation
 - excess is the amount of over irrigation
- Adjust soil moisture of deficit/excess
- Recharge = $DPin \cdot (1 - Eff) \cdot Applied + DPex \cdot Excess$
- Runoff = $(1 - DPin) \cdot (1 - Eff) \cdot Applied + (1 - DPex) \cdot Excess$
- Notes
 - When deficit > 0, CIR is not met (ET shorted)
 - When excess > 0, Actual Efficiency < Eff(Gr/Sp)

Deficit/Excess Calculation (SW) ⁷⁸

- $\text{NetApp} = \text{Eff}(\text{Gr}/\text{Sp}) * \text{Application} - \text{CIR}$
 - if $\text{NetApp} > 0$, $\text{excess} = \text{NetApp}$, $\text{deficit} = 0$
 - if $\text{NetApp} < 0$, $\text{excess} = 0$, $\text{deficit} = -\text{NetApp}$
- Optional Soil Moisture Adjustment
 - $\text{SM}_{\text{sink}} = \text{field capacity} - \text{soil moisture}$
 - $\text{SM}_{\text{source}} = \text{soil moisture} - \text{wilting point}$
 - If $\text{deficit} > 0$ & $\text{SM}_{\text{source}} > 0$
 - $\text{SM}_{\text{change}} = -\min(\text{SM}_{\text{source}}, \text{deficit})$
 - $\text{deficit} = \text{deficit} + \text{SM}_{\text{change}}$
 - If $\text{excess} > 0$ & $\text{SM}_{\text{sink}} > 0$
 - $\text{SM}_{\text{change}} = \min(\text{SM}_{\text{sink}}, \text{excess})$
 - $\text{excess} = \text{excess} - \text{SM}_{\text{change}}$

SW Entities – V1.x Algorithm 14

- Recharge = Application – CIR
- Notes
 - Assumes Runoff/Returns are known and subtracted from Applied Water
 - Application efficiency could be 100%
 - Needs manual adjustment to avoid negatives
 - $\text{Eff} * \text{Applied} \geq \text{CIR}$, On Farm algorithm gives the same result, but uses DPex & DPin to partition overage to recharge and runoff

Irrigated Entity Summary

151

- GW – pump to meet CIR
 - SM constant, net pumping=ET-precip
- SW – Apply Diversion–Leakage+Pumping
 - SM adjusted for excess or deficit
 - Recharge fixed fraction of applied water plus fixed fraction of an excess
 - Runoff fixed fraction of applied water plus fixed fraction of excess
 - Deficit shorts ET
- Cell by cell for all entities, Sprinkler/Gravity

mkmod flow chart

1/4

- Read definitions and time invariant data
- Loop over periods
 - Read data for current period
 - **Calculate irrigated recharge/pumping**
 - Calculate non-irrigated recharge
 - Distribute canal seepage
 - Distribute trib underflow and perched river
 - Save data



You are here

Non-irrigated recharge

17

- $\text{Area} = \text{Cell Area} - \text{Irrigated Area}$
 - Calculated when doing irrigated recharge
- Loop over all active cells
 - $\text{Recharge} = \text{Factor}(\text{soil}) * \text{NIR} * \text{Area}$

Fixed point & off-site terms

81

- Loop over all locations
 - Add term to budget
 - Location specified by model cell
 - Budget term specified in .mdl file
 - Wetlands is a special case and have an adjustment factor (currently 1)

Canal Seepage

- Volume specified as total for entity
- Location specified as a list of model cells
- Volume is distributed uniformly to cells

Tributary Underflow & Perched River Seepage

20

- Volumes specified by reach
- Scale factor for each reach
- Location specified as a list of cells
- Distribute uniformly to cells in reach

Output

21

- Recharge, pumping, etc are accumulated on a cell by cell basis
 - Net Recharge “well term” is the sum of all arrays on a cell by cell basis
 - Arrays can be saved individually or as sum
- Budget terms are accumulated for each irrigation entity
 - Summarized for all SW and GW entities and by entity in the HTML table

Steady State

22

- Steady State stresses are average of sequence of stress periods
 - Currently 229 (May 1999) to 240 (April 2000)
- mkmod can calculate this average and save it as the first stress period
 - Combines steady state and transient into one MODFLOW run
 - Requires more memory

Running mkmod

23

- Written in Perl, so needs a Perl interpreter
- Mac OS/X, Unix, Linux
 - `mkmod <options and parameters>`
- Windows
 - Invoke perl explicitly
 - `perl mkmod <options and parameters>`
 - Compile to EXE using PAR-packer

Production mode command line ^{h6}

- `mkmod -ss E110712A`
 - Parameter `-ss` omits steady state, saves only “well term” and requires only 72MB RAM
 - Input files are named `E110712A.*`
 - Output file is `E110712A.net`
 - Run time about 10 minutes

Input files with data that apply to all periods in the simulation

- .mdl Model units, dimensions, periods, ...
- .cel Active cells and cell areas
- .sol Soil type for non-irrigated recharge
- .red Reduction factors (Gravity, Sprinkler)
- .eff On Farm parameters Eff, DP_{in}, DP_{ex}, ..

Input files with data by Entity

24

(Header + data set for each stress period)

- .ent Entity names; sprinkler fractions
- .iar Irrigated acres by cell
- .div Diversions and returns
- .cnl Canal leakage
- .fpt Fixed point pumping
- .off Off-site pumping
- .pch Perch river seepage
- .trb Tributary underflow

Input files with cell arrays

76

(no header, just array of values for each stress period)

- .pre Precipitation
- .eti Evapotranspiration
- .nir Non-irrigated recharge

Model Input File (.mdl)

(See annotated mdl file for details)

- Run title (shown in HTML)
- Units
- Stress periods
- Dimensions
- Adjustment factors
- Fixed point definitions
- Debug output
- Minimum non-irrigated area

Cells (.cel) and Soil Types (.sol)²⁹

- cel file
 - IBOUND array (1=active,0=inactive)
 - Area by cell (5280 x 5280)
- .sol file
 - Soil index for non-irrigated recharge
 - 1-max (max $\leq$ number of soils in .mdl)
 - Dead cells are ignored

ET Reduction Factors (.red)

30

- Row 1: gravity reduction factor
- Row 2: sprinkler reduction factor
 - Should be a fraction (0=none)
 - One value per stress period

On Farm Factor File (.eff)

31

- One row for each entry
 - Name
 - Maximum efficiency gravity (0-1)
 - Maximum efficiency sprinkler (0-1)
 - DPin (Deep perc fraction of applied water)
 - DPex (Deep perc fraction of excess water)
 - Wilting point
 - Field Capacity
 - Depth of rooting zone

Entity File (.ent)

32

- Header
 - Entity Identifier (e.g. IESW029)
 - Entity type (SW/GW)
 - ET Adjustment Sprinkler
 - ET Adjustment Gravity
 - Display name
- For each stress period
 - Sprinkler Fraction (one value per entity)

Irrigated Area File (.iar)

28

- No Header
- For each stress period
 - List of cells (row,col,count)
 - List of entities in that cell
 - List of areas (one per entity)
- Many stress periods repeat previous data

Diversions (.div)

31

- Header
 - Row listing entities
- Each Stress Period
 - Row of diverted amounts (cubic feet)
 - Row of returns (cubic feet)
 - Returns are zeroed when returns are calculated

Canal Leakage (.cni)

35

- Header
 - #Cells, Adjustment, Identifier, Text Name
 - Row Column (rest of row is not used)
 - Could be used to weight spatially
- For each stress period
 - Canal leakage fraction (of diversion)

Fixed Point [Pumping] (.fpt)

34

- Header
 - Type Layer Row Column Name
 - Current types
 - W Wetlands
 - U Urban Pumping
 - E Exchange Pumping
 - M Mud Lake Pumping
- Stress periods
 - Row of values, one per entry (cubic feet)

Off-site Pumping (.off)

- Header
 - Layer Row Column Entity Name
- For each stress period
 - Row of volumes, one per well (cubic feet)

Command Line

- **mkmod [parameters] fileroot**
fileroot sets default file root for input and output files
 - o sets alternate output file root
 - xxx sets alternate input file name, where xxx is the file extension (e.g. --ent foo.ent)
 - a save service areas (entityname.dat)
 - s single output file ('well term')
 - ss No steady state, single output file
 - S No steady state, separate output files
 - sss Production mode only output is well file

Command Line Option -m

LS

- FRS (default): Maximum Farm Efficiency using Runoff for Returns and Soil Moisture
- 1: ESPAM 1.1
- MFE: Maximum Farm Efficiency using Fixed Returns
 - ESPAM 1.1 with on farm
- FER: Maximum Farm Efficiency using Runoff for Returns
 - FRS without soil moisture

Output files (-s)

40

- Net recharge ['well term'] (.net)
 - MODFLOW well file format (k,i,j,q)
- Summary table (.htm)
 - Summarizes input and output by groups and by entity by stress period
- Summary table (.dat)
 - Main summary table for plotting
- Return flows (.rfl)
- Debug output (.rfx)

Output files (separate terms) ^{ch}

- .ppt precipitation recharge
- .can canal seepage
- .tri tributary underflow
- .gwr groundwater deep percolation
- .swr surface water deep percolation
- .wel well pumping

Output Files (acreage)

42

- .AGWgr Groundwater Gravity Acres
- AGWsp Groundwater Sprinkler Acres
- ASWgr Surface Water Gravity Acres
- ASWsp Surface Water Sprinkler Acres

Summary Table Contents (.htm)⁴³

- Title and definitions
- Total Non-irrigated, GW & SW by period
- Average values by GW entity
- Individual GW entities by period
- Average values by SW entity
- Individual SW entities by period
- *See example file for individual fields*
- *Column numbers correspond to .dat file*

Programing Notes 1

44

- Major functions
 - Read read next non blank/comment line
 - ReadLine Read & split on spaces
 - ReadCSV Read array from CSV file
 - Open open file and read header
 - Next read next period from file
 - Average Average summary values
 - SaveCell save stresses in cell format
 - SaveArea save stresses in array format

Programming Notes 2

- Major Variables
 - Input Data Structures
 - $x\{\text{type}\}\{\dots\}$
 - Structure varies by input data type
 - Output arrays
 - $\text{out}\{\text{type}\}[\text{period}][\text{cell}]$
 - Volumes (converted to rates when saving)
 - Summary tables
 - $\text{sum}[\text{period}]\{\text{entity}\}\{\text{type}\}$

LAW OFFICES OF

**RACINE OLSON NYE BUDGE & BAILEY
CHARTERED**

W. MARCUS W. NYE
RANDALL C. BUDGE
JOHN A. BAILEY, JR.
JOHN R. GOODELL
JOHN B. INGELSTROM
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CONRAD J. AIKEN
RICHARD A. HEARN, M.D.
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BRENT L. WHITING
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JASON E. FLAIG
FERRELL S. RYAN, III
AARON A. GRARY
JOHN J. BULGER
BRETT R. CAHOON
BOYD J. HAWKINS

101 SOUTH CAPITOL BOULEVARD
SUITE 300
BOISE, IDAHO 83702

TELEPHONE (208) 395-0011
FACSIMILE (208) 433-0187

WWW.RACINELAW.NET

SENDER'S E-MAIL ADDRESS:

POCATELLO OFFICE

201 EAST CENTER STREET
P.O. BOX 1391
POCATELLO, IDAHO 83204
TELEPHONE: (208) 232-6101
FACSIMILE: (208) 232-6108

IDAHO FALLS OFFICE

477 SHOUP AVENUE
SUITE 107
POST OFFICE BOX 50698
IDAHO FALLS, ID 83405
TELEPHONE: (208) 528-6101
FACSIMILE: (208) 528-6101

ALL OFFICES TOLL FREE
(877) 232-6101

LOUIS F. RACINE (1917-2005)
WILLIAM D. OLSON, OF COUNSEL
JONATHAN S. BYINGTON, OF COUNSEL
JEFFREY A. WARR, OF COUNSEL

September 25, 2012

Robyn M. Brody
Brody Law Office, PLLC
PO Box 554
Rupert, ID 83350

Fritz X. Haemmerle
Haemmerle & Haemmerle, PLLC
PO Box 1800
Hailey, ID 83333

J. Justin May
May, Browning & May
1419 W. Washington
Boise, ID 83702

SENT VIA EMAIL
robynbrody@hotmail.com
fxh@haemlaw.com
jmay@maybrowning.com

RE: Rangen Delivery Call (CM-DC-2011-004)
ESPAM 2.0 computer code modules

Dear Counsel:

This letter is sent in a good faith effort to secure information and documentation that our expert Chuck Brendecke needs to properly evaluate ESPAM 2.0 for the upcoming administrative hearing on Rangen's delivery call. It is our understanding that some of the information needed to complete the documentation supporting ESPAM 2.0 is held by your expert, Jim Brannon. We ask that you provide all such information, including electronic data and documentation regarding the computer code modules MKMOD, the On-Farm Algorithm, and Mr. Brannon's analysis and decomposition of Rangen spring flows used as the target for ESPAM 2.0 calibration.

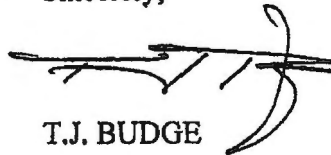
It was the understanding of Dr. Brendecke that Mr. Brannon would submit this information to the Eastern Snake Hydrologic Modeling Committee well in advance of the October 10, 2012, deadline for opening expert reports in this case, which has not occurred. The lack of this

EXHIBIT 7

information compromises Dr. Bredecke's ability to render an opinion on how ESPAM 2.0 should be applied to the Rangen delivery call.

Because the deadline for opening reports is fast approaching, I am requesting that this information be provide to Dr. Bredecke by the end of business tomorrow, September 26, 2012. If you are not able to comply with this request, please let me know as soon as possible.

Sincerely,



T.J. BUDGE

cc: Garrick Baxter (Garrick.Baxter@idwr.idaho.gov)
Chris Bromley (Chris.Bromley@idwr.idaho.gov)
Sarah A. Klahn (SarahK@white-jankowski.com)
Mitra Pemberton (MitraP@white-jankowski.com)
Travis Thompson (tlt@idahowaters.com)
Jerry Rigby (jrigby@rex-law.com)

BRODY LAW OFFICE, PLLC
P.O. BOX 554
RUPERT, IDAHO 83350
(208) 420-4573
robynbrody@hotmail.com

September 25, 2012

TJ Budge
Racine Olson
201 East Center Street
Pocatello, ID 83204

Re: Jim Brannon Information

Dear TJ:

I received your letter this afternoon and have had a chance to discuss it with Mr. Brannon. It is my understanding that Mr. Brannon reviewed the computer code used for MKMOD5 in approximately November 2010 and gave a powerpoint presentation to the ESHMC concerning his findings. Copies of his Powerpoint slides are attached to this email. I understand that MKMOD8 is now being used. Mr. Brannon has done no review of MKMOD8. Mr. Brannon has been looking through some of the ESHMC documentation that is available on-line and he has told me that some information concerning MKMOD is available through the following link:

http://www.idwr.idaho.gov/Browse/WaterInfo/ESPAM/Recharge_tool_threaded_discussions/MK%20mod%20changes/.

I am not sure what type of information that Mr. Brendecke is looking for, but perhaps this link will assist him.

With respect to Rangen's historical spring flows, Mr. Brannon gave a Powerpoint presentation to the ESHMC in September 2009 prior to Rangen's spring being made a target. I provided a copy of that presentation to Ms. McHugh via email before the site visit in June 2012. The data and Mr. Brannon's presentation were also produced by IDWR in response to one of IGWA's document requests to the Department. It is on Disk 3 of 6, Folder: RangenHistoricDischarge Rangen Water History for IDWR.xls (a copy is also attached to this email). The presentation can also be found at:

http://www.idwr.idaho.gov/Browse/WaterInfo/ESPAM/meetings/2009_ESHMC/9-21%202009/rangen_data_presentation.pdf

You mentioned in your letter that Mr. Brendecke understood that Mr. Brannon would submit the information outlined in your letter "well in advance" of the October 10th deadline for expert witness reports. Mr. Brannon has not done any work on MKMOD5 or Rangen's historic

TJ Budge
September 25, 2012
Page - 2

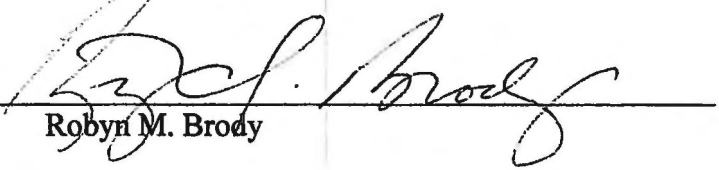
spring flows for at least two years. His analysis of these issues was presented to the ESHMC long ago and is complete.

TJ, if I have misunderstood something, please give me a call to discuss this further.

Very truly yours,

BRODY LAW OFFICE, PLLC

By:


Robyn M. Brody

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BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO

* * * * *

IN THE MATTER OF DISTRIBUTION)
OF WATER TO WATER RIGHT NOS.)
36-02551 and 36-07694) CM-DC 2011-004
(RANGEN , INC.))
_)

REPORTER'S TRANSCRIPT
OF RECORDED HEARING

DATE: May 24, 2012

LOCATION: Idaho Department of Water Resources
322 East Front Street,
Boise, Idaho.

Before Interim Director Gary Spackman

Transcribed by:
Maureen Newton, CSR #321
P.O. Box 132
Heyburn, ID 83336

1 I'd like to have an order placed before the beginning of
2 the next irrigation season.
3 So I think May is too late for me, Candace.
4 MS. McHUGH: And if you would indulge me as to
5 what we were thinking, just for my benefit and maybe this
6 would help for some of the other parties.
7 Rangen made the delivery call in December and at
8 that point we came to the conclusion that it didn't make
9 sense to go forward under the old model and there was a
10 conclusion that we needed to proceed with the new model.
11 My proposal of a May 1st hearing date is actually
12 less than a year from the time we have all of the
13 production tools that are in the new model available to
14 Chuck. I originally thought, you know, a late winter/early
15 spring hearing was probably going to be doable, and then
16 talking to Chuck and the kind of effort that needs to
17 happen on running the model and then getting that
18 information to our other experts to use that information to
19 then be able to construct expert reports, it just was too
20 quick.
21 The proposal was basically in July. The model
22 will be done and in less than 30 days Chuck would have his
23 original expert report done. I mean, I think that's
24 pushing it. And based on the party's agreement in
25 December, you know, in good faith we decided not to pursue

6

1 all the production tools in place to work with that and
2 work with our other model people. It's less than a year
3 from our site visit. And the fact is, is that's I think a
4 reasonable schedule.
5 Pushing it I think is prejudicial to the
6 Groundwater Users and will essentially not allow us to put
7 together the kind of case to present you with information
8 you need to look at all of the different policy as well as
9 technical information. This is not just a case of, you
10 know, the model and what it says, et cetera. There's also
11 other considerations, and that stuff I think we should be
12 fairly able to discover and our experts should be fairly
13 able to conclude and share that information.
14 And then also built into this, the other cases
15 that we've tried took much longer from the time the first
16 order was issued. Not when the delivery call was issued,
17 but the first order was issued, and the hearing, and we
18 were already starting out with data from the department.
19 The department had done a lot of information and discovery
20 and we were reacting to information that was already there.
21 Now we are actually creating it. And so I think it's more
22 reasonable to have a hearing that gives us the time we need
23 and it's based really on looking from July to when the
24 first expert report could reasonably be done.

25 And I think that's the area where the change was.

8

1 the case aggressively, kind of seeing where the model was,
2 to make sure that it was in fact going to stay on track.
3 Since the last status conference when we realized the model
4 was on track and we were going to have it in July the
5 parties exchanged hearing schedules. You know, we talked
6 about a site visit. We have it tentatively scheduled for
7 the middle of June.

8 But the reality is, is Rangen's case and IGWAs
9 cases are very different, and the preparation time, the
10 fact of the matter is, is going to be different. We have
11 to defend the call. We have to look at the trim line. We
12 have to come up with ways to, you know, express the trim
13 line both from a technical potential or some other basis
14 for the trim line. We also need to be able to inspect
15 their facilities, understand their water use, look at their
16 diversion structures, understand the spring discharge, all
17 of the information of which Rangen has at its disposal and
18 we have to discover and then incorporate into all of these
19 different expert reports.

20 Their case kind of rises and falls on the fact
21 that they don't have their claim of not enough water and
22 that the model answers all their questions. The defense
23 requires more work, frankly, and we just weren't able to
24 come up with a way to do that so quickly from July on. The
25 main hearing date is ten months after the time Chuck has

7

1 I think they proposed a month later and we proposed about
2 three months later. And then when I looked at the
3 schedule, basically I understand the director has a
4 two-week hearing that I'm actually involved in in April,
5 starting April 15th, so that took the month of April kind
6 of out of the equation. So that month, in part the reason
7 the schedule starts in May, three months later, is because
8 we have an April challenge from the director's schedule to
9 not have it start in April.

10 But anyway, you know, the solutions and the
11 timing of what the Ground Water District's pumping may or
12 may not effect the sprinklers at Rangen didn't happen
13 immediately and any curtailment isn't going to give them
14 water immediately.

15 That's not to discount the fact that you don't
16 want to go through another irrigation season, I understand
17 that. But I want the director to know that my picking of
18 the May 1st hearing date didn't have to do with the fact
19 that it makes another by on the irrigation season. I just
20 really think it's based on the timing of when we have the
21 tools available to us. And Chuck can certainly weigh in on
22 that, but we really did give it some consideration on when
23 we could get our first expert reports reasonably and fairly
24 filed after we got the information we needed. So I would
25 ask for a longer hearing date -- for a hearing date later.

9

1 MR. HAMMERLE: Director, first and foremost we
2 think we can actually live with your date of December. Our
3 experts have been working I think within the committee.
4 We've been working on validation, calibration,
5 uncertainties, and these aren't secrets. Hopefully IGWA's
6 experts are working within the committee, can anticipate
7 what the committee's doing and exactly what the issues are.
8 This is frankly the first time I've heard about a trim line
9 from IGWA.

10 You told Robyn in confidence or not in confidence
11 that you were going to do that. We understood you were
12 going to do that. We think you have plenty of time within
13 the committee to propose that, at least anticipate it
14 within your own experts what that might be. So, you know,
15 if you want to move, director, with the December date, we
16 think we can accommodate that. Our experts are prepared.
17 We've been working on these issues and we should be able to
18 go on your deadline. So if that's the date that you want,
19 director, then that's the date we'll live with.

20 MR. SPACKMAN: I think in listening to Candace:
21 Candace, you pointed out some compelling reasons why maybe
22 there ought to be additional time, so I'm willing to move
23 back to a January or 1st of February hearing date. End of
24 January, 1st of February. When you were you proposing?

25 MR. HAMMERLE: We had actually proposed

10

1 have been issued is that the courts have said that the
2 director has the responsibility to afford the parties a
3 hearing, (inaudible) the director needs to expedite that
4 hearing and that the director can't delay. And I think
5 there was some dissatisfaction expressed with the time
6 frames within which the hearings were held and orders were
7 timely issued. And I want to be sensitive and be timely.
8 Sounds to me like January 28th is a good day. How long do
9 we need to reserve?

10 MS. McHUGH: If I understood the director's
11 comments from earlier this year, you were anticipating all
12 life witness testimony, correct? Is that a correct
13 assumption?

14 MR. SPACKMAN: Well, I'm happy to receive
15 testimony as has been received previously, if that's the
16 preference of the parties. Go ahead.

17 MR. HAMMERLE: Do you want to adopt somewhat of a
18 contested case rules, where if the parties agree they can
19 submit things as -- I forget what those are called --
20 they're in the contested rules -- statements -- kind of
21 affidavits, for lack of a better word, with the parties
22 agreeing?

23 MR. BAXTER: Pre-filed testimony?

24 MS. McHUGH: That's what we've done in the past
25 cases and it's taken to -- I guess the reason I ask the

12

1 January 28th.

2 MR. SPACKMAN: I'm willing to go to there. But
3 to have sufficient time to issue an order by the 1st of
4 April, which to me is drop-dead time for issuance of an
5 order for the irrigation season, I think any later than
6 that, and that's consistent with the other orders that were
7 issued, I need to hold a hearing at the end of January or
8 first of February. What day is the 28th?

9 MS. BRODY: It's a Monday.

10 MR. SPACKMAN: So I guess I'm willing to move off
11 of the earlier date, move into January, but I don't see a
12 way. And under the schedule we have outlined, Candace,
13 that would give your expert not one month, but about three
14 to prepare, and all the experts to prepare their original
15 reports, looking at the SeaPac order that was issued. So
16 they'd have 90 days, plus the time starting right now to
17 prepare.

18 And we can listen to Rick and what he has to say,
19 but my guess is, because I haven't heard noise, is we're
20 moving forward within the next couple months and we'll be
21 ready to go. That's my guess. So I think the parties can
22 gear up and start preparing.

23 And I guess the other point that I'll make here
24 is -- and I haven't gone back and read it for quite
25 awhile -- but my understanding of the court orders that

11

1 question is, the pre file -- with pre-filed testimony and
2 cross examination only it's taken 18 days roughly. You
3 know, 12 to 18 days in the past hearings. A few more
4 parties. So that's why I was asking the question if we
5 were going to do only a live direct examination and also
6 cross examination, I think, you know, it would be a solid
7 two weeks, I think a good ten days of hearing time, if not
8 more. That's why I was asking the question.

9 MR. SPACKMAN: 18 days (inaudible).

10 MS. McHUGH: It was 18 days of actual hearing
11 time. I believe it was 18 days for the Thousand Springs
12 hearing.

13 MS. KLAHN: This is Sarah Klahn. Candace, I
14 think that 18 days was the Surface Water Coalition where we
15 didn't really have fully pre filed testimony.

16 MS. McHUGH: Okay, that could be.

17 MS. KLAHN: Or was it A&B? It was the one where
18 we didn't have fully pre filed testimony.

19 MS. McHUGH: Okay. So I'm just saying that
20 that's a consideration when you look at this, as far as if
21 we do all examination orally.

22 MR. HAMMERLE: I think pre filed with the
23 opportunity to cross-examine would be, you know --

24 MS. McHUGH: (Inaudible).

25 MS. KLAHN: It's more efficient.

13