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**BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO**

IN THE MATTER OF DISTRIBUTION OF) **CM-DC-2011-004**
WATER TO WATER RIGHT NOS. 36-02551)
AND 36-07694) **SURFACE WATER COALITION'S**
) **POST-HEARING MEMORANDUM**
(RANGEN, INC.))
_____)

COME NOW, A&B Irrigation District, American Falls Reservoir District #2, Burley
Irrigation District, Milner Irrigation District, Minidoka Irrigation District, North Side Canal
Company and Twin Falls Canal Company (collectively, the "Surface Water Coalition" or
"Coalition") by and through their undersigned attorneys of record, and submit this Post-Hearing
Memorandum.

INTRODUCTION

The Coalition is involved in these proceedings for the limited purpose of addressing the use of the Eastern Snake Plain Aquifer Model 2.1 (“ESPAM 2.1”) in the administration of water rights by the Idaho Department of Water Resources (“IDWR” or “Department”). As discussed below, the testimony at the hearing is that ESPAM 2.1 represents the most scientifically accurate method of predicting the hydrology of the Easter Snake Plain Aquifer (“ESPA”). The evidence and testimony confirms that results of ESPAM 2.1 should not be qualified by any “trim line” or “zone of exclusion.” Indeed, there is no technical, factual or legal justification for qualifying the modeled results.

DISCUSSION & PROPOSED FINDINGS

I. ESPAM 2.1 Provides the Most Scientifically Reliable Method for Predicting the Hydrology of the ESPA.

The undisputed testimony and evidence confirms that ESPAM 2.1 represents the best available science for evaluating the effects of pumping and curtailment of ground water rights in the ESPA.

Prior to the hearing, the Department issues a *Staff Memorandum* that concluded ESPAM 2.1 represents the best available science. Ex. 1319. IDWR’s witness, Dr. Alan Wylie, testified that nothing presented during the hearing changed that conclusion:

Q. MR. MAY: Do you believe that Exhibit 2300 shows, in your opinion, that the model is well calibrated and does a good job of predicting the impact of curtailment at Rangen Springs?

A. DR. WYLIE: I'm very pleased with the calibration we got. I agree with Mr. Hinckley and Dr. Brendecke that there are shortcomings. I think from participating here – well, from observing that I got some pearls of wisdom that I can work on to try to improve. It always – criticizing someone else's model is the easiest job you can get paid to do.

Q. Do you believe that it is, however, well calibrated and it's the best science that we have?

A. It's the best science we have, yes.

Q. And did anything that you heard while you were sitting through the hearing today change that opinion?

A. No.

Tr. at 2949-50 (emphasis added). Supporting Dr. Wylie's testimony above, Pocatello's witness, Gregory Sullivan, testified that he has no "specific criticisms of ESPAM 2.1," Tr. at 1465, ll.21-23, and that ESPAM 2.1 represents "the best available science," *id.* at 2739, ll.9-14.

In the final report for ESPAM 2.1, the Department concluded:

Although every model represents a simplification of complex processes, with the ESPAM being no exception, ***ESPAM 2.1 is the best available tool for understanding the interaction between groundwater and surface water on the Eastern Snake Plain.*** The science underlying the production and calibration of ESPAM 2.1 ***reflects the best knowledge of the aquifer system available at this time.*** ESPAM 2.1 was calibrated to 43,165 observed aquifer levels, 2,248 river gain and loss estimates, and 2,845 transient spring discharge measurements collected from 14 different springs. Calibration parameters indicate an excellent representation of the complex hydrologic system of the eastern Snake Plain.

Exhibit 1273A at 89 (emphasis added). Through its *Staff Memorandum*, the Department further stated:

Numerical models are recognized by the U.S. Geological Survey as the most robust approach for predicting the effects of groundwater pumping on surface-water discharge (Barlow and Leake, 2012). A numerical model is able to account for spatial variation in hydrogeologic features and aquifer stresses, and the temporal variation of aquifer stresses. ESPAM2.1 accounts for these features within the constraints of a one-square-mile model grid and one-month stress periods, which is superior to any other predictive method developed for the ESPA to date. Geologic controls on hydrologic responses to aquifer stress are reflected in the discharge and aquifer head data used to calibrate the model. ESPAM2.1, like all groundwater models, is an imperfect approximation of a complex physical system, ***but it is the best available scientific tool for predicting the effects of groundwater pumping on discharge at the Rangen spring cell and other spring and river reaches.*** ESPAM2.1 is a regional

groundwater model and is suitable to predict the effects of junior groundwater pumping on discharge at the Rangen spring cell because the spring discharge responds to regional aquifer stresses, and junior groundwater pumping is a dispersed, regional aquifer stress.

Ex. 1319 at 2 (emphasis added); *id* at 3 (ESPAM 2.1 is the best available science).

A motivating factor in creating ESPAM 2.1 was to improve upon ESPAM 1.1 and its limitations. As Dr. Charles Brockway testified:

Q. MR. HAEMMERLE: And what was the – what was driving a better model better than 1.1? In other words, why was 2.0 created?

A. DR. BROCKWAY: Well, various reasons it was created. I think it was recognized that there were some deficiencies in ESPAM-1.1. It had been a number of years since the datasets for ESPAM-1 and -- 1.0 and 1 were developed. We had more and better data, both on measured discharges, well measurements. There was a feeling that – I believe that the ESPAM-1.1, the grid spacing could be improved to – to enhance the precision of simulations from the groundwater model. So there were a number of things driving the development of an updated or enhanced ESPA1 model.

Tr. at 2296-97.

The process in developing the model was a rigorous one, spanning several years and involving several parties representing various interests. Dr. Brockway discussed one aspect of that process – calibration:

Q. MR. HAEMMERLE: Was there any point in time when Mr. Wylie presented you with a calibration run that he thought this is it?

A. DR. BROCKWAY: Yeah, ultimately he did.

Q. And I think that was under the ESPAM-2.0?

A. Yes.

Q. How was that presented to the committee?

A. Well, Mr. Wylie at every meeting would present the calibration runs he had done since the last meeting, at which time he received input from the committee members as to "Well, why don't you try this. Why don't you do this." And he would always point out areas that he was having troubles with.

If a certain output wasn't matching as well as he thought, he had some ideas he wanted to try to make it fit better. And he would review those with the committee, and the committee would say "Why don't you go ahead and try that." And then the next meeting he would report the results of those additional calibration runs, presenting the simulated output versus the measured output for springs and for specific hydrographs of water levels, and eventually he reached the point where, I believe as modelers do, he felt that he was awfully close and the time and effort to get much closer was probably not warranted. And so he would – he ultimately said, "I believe this is – this is the one."

...

Q. Okay. Dr. Brendecke, Mr. Sullivan agreed that number 8 seemed to present a calibrated run?

A. *I think everybody on the committee was convinced that this was as good as we were going to get in the time frame we had and the resources we had, and it was a reasonable calibration.*

Tr. at 2308-11 (emphasis added).

As Rangen witness, David Colvin, testified, the result of this process is a model that can be described as "robust":

Q. MR. MAY: Okay. In general with regard to ESPAM-2.1, do you have an opinion upon the general quality of the modeling process that went into producing ESPAM-2.1?

A. MR. COLVIN: I do. I think that the modeling process with IDWR leading and within the open environment of the committee, that process of development and just the model procedure development resulted in a very robust model.

Q. Okay. And could you tell me what it is that you mean by "robust."

A. "Robust," by that I mean the ability of the model to provide accurate predictions. Because of the overall model quality of the model at large, even though you might make changes to some smaller parts of the model, but it -- through those changes it would retain the ability to make accurate predictions.

Q. Okay. And do you have an opinion with regard to ESPAM-2.1 with regard to the quality of the model itself?

A. I do.

Q. Okay. And what is that?

A. I believe that the model itself is a high-quality model with good calibration results and accurate predictions.

...

A. ... And to me, this shows that the modeling process led up to ESPAM-2.0 that is a robust model, and was even further improved with ESPAM-2.1.

Tr. 2403-06; *see also Id.* at 2327, ll.14-16 (Brockway Testimony) (describing ESPAM 2.1 as “robust”).

IGWA and Pocatello attempted to challenge the model’s ability to predict impacts at the particular spring from which Rangen diverts its water rights. However, no party challenged ESPAM 2.1’s use as a regional model. Indeed, although alternative models were provided by Dr. Brendecke, on behalf of IGWA, Dr. Wylie testified that they merely illuminated the robust nature of ESPAM 2.1:

A. DR. WYLIE: It made me pretty confident that what we've done at Rangen is fairly robust.

Q. MR. MAY: And why did it give you that confidence?

A. The AMEC 1 had almost exactly the same sum of squared residuals for Rangen and a very, very similar value for the whole model curtailment. And AMEC 2, the residuals were higher for Rangen, but they changed the weights. So I don't know how much of that was a result of changing the weights. But they also – that also had very similar curtailment values for Rangen.

Q. And how about the composite model, did that lend comfort to you as well?

A. Well, I guess in a way. They heroically tried to change things drastically, and there's still significant water coming to Rangen from curtailment.

Tr. at 2925-26.

The end result of this process is a model that is appropriate for use in all administrative processes, including the Rangen Call.

Q. MR. HAEMMERLE: Okay. Based on what you know about the model, based on your experience on the committee, based on your life – or your 40-some, 50 years of experience doing modeling, do you believe ESPAM-2.1 can be used for all administrative purposes for the Department?

A. DR. BROCKWAY: Yes.

Q. Can ESPAM-2.1 be used in curtailment situations like we have in this case?

A. I believe it can be used for water calls. It can be used for impact evaluations in response to – or to evaluate transfer applications, which require a model. So yes, I think it's the best available tool we have. It's based on good science. I think it's properly calibrated and validated, so we ought to use it.

Tr. at 2340-41.

II. There is No Technical, Factual or Legal Justification to Qualify the Modeled Results of ESPAM 2.1.

The concept of a “trim line” was contrived to qualify the modeled results of ESPAM 1.1, a prior version of the model. ESPAM 2.1 is a much more reliable model – with more accurate results. As confirmed at the hearing, there is no technical, factual or legal basis for carrying an artificial “trim line” over from the prior model version and applying it to the results of ESPAM 2.1.¹

A. No Factual or Technical Evidence Supports a “trim line” or “zone of exclusion.”

ESPAM 1.1 was not used or relied upon in the Rangen hearing. As such, any perceived uncertainty associated with that model has no application in this case. During the hearing, there was no evidence or testimony provided by any party attempting to provide any factual or technical basis for a “trim line” or “zone of exclusion.” Mr. Sullivan admitted he had no

¹ In fact, the Hearing Officer cautioned against the use of the term “trim line.” Tr. at 1504, ll.9-15 (indicating that any final order will not use the term “trim line” because “it’s become such a sensitive term”).

technical evidence on the issue and stated that a decision on a “trim line” is “largely a policy decision” in his opinion. Tr. at 1641, ll.12-16. IGWA’s witness, Dr. Brendecke testified that he agreed “that the trim line is a policy matter and not a technical one.” *Id.* at 2697, ll.3-4. Bern Hinckley repeatedly referred to the “trim line” as a “policy decision.” *E.g. Id.* at 2551, ln.17. Even counsel for IGWA recognized that the determination of a trim line is “ultimately ... a policy decision.” *Id.* at 29, ll.17-22. Accordingly, all parties agree with IDWR’s technical staff, who concluded that a “trim line” is not technically justifiable: “Whether a trim line should be applied, and the basis for delineating a trim line, are policy and/or legal decisions.” Ex. 1319 at 5. In short, the undisputed testimony at hearing was that a “trim line” has “nothing to do with model uncertainty.” Tr. at 2329-30 (Dr. Brockway); *Id.* at 2695-97 (Dr. Brendecke).

None of the parties provided any factual or technical information that would support the use of a “trim line” with ESPAM 2.1. Absent any factual or technical basis to support qualifying the modeled results, the Director should not assign a quantified percentage to define a “trim line” in using ESPAM 2.1. Such a percentage would be arbitrary and not supported by the best available science in this case.

B. No Legal or Policy Theory Supports a “trim line.”

Finally, the use of a “trim line” is not supported by any IDWR policy or legal theory. Idaho’s prior appropriation doctrine requires administration of all surface and ground water rights together, or conjunctively. *See Clear Springs v. Spackman*, 150 Idaho 790, 800, 808 (2011). The hallmark of lawful administration is that junior water rights cannot take water that would otherwise be put to beneficial use by a senior water right. IDAHO CONST. Art.XV, § 3; I.C. §§ 42-602, 607. The SRBA Court has legally determined that all water rights in the basin must be administered as connected sources, unless excepted with a separate streams general provision.

See Basin Wide Issue No. 5, Connected Sources General Provision (Conjunctive Management), Memorandum Decision and Order of Partial Decree (Subcase No. 91-00005) (February 27, 2002). Further, junior groundwater users carry the burden to prove, by clear and convincing evidence, no injury to seniors as a result of their out-of-priority diversions – whether the defense is legal, factual or technical. *See A&B Irr. Dist. v. IDWR*, 153 Idaho 500, 284 P.3d 225, 249 (2012). This is because defenses impeding administration to deliver the full amount of the senior water right impinge upon and unlawfully diminish a senior’s property right.

The Conjunctive Management Rules (CM Rules) follow Idaho law and do not excuse any injurious out-of-priority pumping. CM Rules 20&40. The rules require administration of all junior priority ground water rights located within the ESPA, an area of common ground water supply. CM Rule 50. The Director and watermaster must administer junior ground water rights causing injury to a senior water right within an organized water district. CM Rule 40.

Unless a defense is proven by clear and convincing evidence, any junior ground water right that unlawfully takes water away from a senior surface water right must be administered without qualification. Therefore, the use of a “trim line” is not justified by any legal or policy theory. The Director should not apply a “trim line” in the use of ESPAM 2.1.


III. Conclusion

The testimony and evidence presented at hearing confirms that ESPAM 2.1 represents the best available science for conjunctive administration and should be used without qualification. No evidence or testimony was presented to alter this conclusion. The Director should properly apply ESPAM 2.1 to the Rangen call to ensure all hydraulically connected junior ground water rights are administered in accordance with Idaho law.

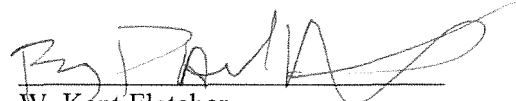
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Dated this 21st day of June, 2013.

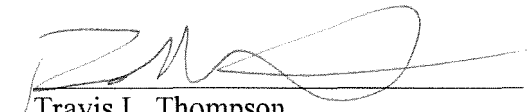
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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 21st day of June, 2013, the above and foregoing document was served on the following via email:

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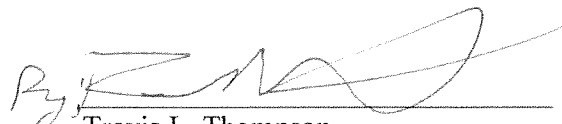
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