

IN THE DISTRICT COURT OF OKLAHOMA COUNTY
STATE OF OKLAHOMA

OKLAHOMA FARM BUREAU LEGAL)
FOUNDATION, et al.)
)
Petitioners,)
)
v.)
)
OKLAHOMA WATER RESOURCES BOARD,)
)
Respondent,)
)
v.)
)
TISHOMINGO NATIONAL FISH HATCHERY,)
et al.,)
)
Other Parties of Record.)

Case No. CV-2013-2414

PETITIONERS' BRIEF-IN-CHIEF

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The Oklahoma Water Resources Board issued an order condemning more than 4,236,063,000,000 gallons of privately owned groundwater even though the order itself admits that the Board's rationale cannot be explained. (Tab 170, p. 2608 (§ 37).) The order is arbitrary and capricious.

Petitioners Oklahoma Farm Bureau Legal Foundation, Pontotoc County Farm Bureau, Oklahoma Independent Petroleum Association, Environmental Federation of Oklahoma, Oklahoma Aggregates Association, Oklahoma Cattlemen's Association and TXI (collectively "Petitioners" hereinafter) hereby submit their Brief-in-Chief. For the reasons discussed below, the Oklahoma Water Resources Board's ("OWRB" or "Board") determination of the Maximum Annual Yield ("MAY") and Equal Proportionate Share ("EPS") for the Arbuckle-Simpson groundwater basin is the product of flawed science and arbitrary agency decisions. It was also issued upon unlawful procedure contrary to the Oklahoma Supreme Court's writ of mandamus. As such it must be reversed and remanded by this reviewing Court.

BACKGROUND

Senate Bill 288 was enacted in 2003. Pertinent hereto, it added a new requirement for the establishment of the maximum annual yield ("MAY") of any aquifer which has been designated as a sole source aquifer by the U.S. Environmental Protection Agency ("EPA"). There is only one such aquifer in Oklahoma - the Arbuckle-Simpson Aquifer ("ASA").

Normally, the MAY is determined by taking the amount of groundwater in the aquifer, adding thereto the annual aquifer recharge (from rainfall) over a minimum 20-year period, then dividing that sum by 20 years. Title 82 O. S. 1020.5 B. The resulting number is the maximum amount of water that can be withdrawn each year from the aquifer .

That portion of the MAY which is allocated to each acre of land that overlies the aquifer is referred to as the Equal Proportionate Share ("EPS"). OAC 785:30-1-2. The EPS is calculated

by dividing the MAY, which is expressed in acre-feet ("AF"; 1AF = 325,851 gallons), by the number of acres overlying the aquifer. The result is the number of AF of groundwater which can be withdrawn each year from each acre of land overlying the aquifer. Until such time as the Oklahoma Water Resources Board ("OWRB" or "Board") conducts a hydrologic study and makes a final MAY determination for a particular aquifer, by statute the default EPS is at least 2 AF per acre per year. 82 O.S. § 1020.11(B)(2).

According to the OWRB's final MAY Order for the ASA, in the absence of S.B. 288, and applying the normal MAY rules applicable to all other aquifers, the MAY for the ASA would have been 732,288 AF and the EPS would have been 1.87 AF/acre/year.¹ This means that normally, *i.e.*, in the absence of the new requirement added by S.B. 288, 732,288 AF of water could be withdrawn from the ASA each year and each landowner could withdraw 1.87 AF of groundwater each year for each acre that the landowner owns which overlies the aquifer.

In addition to the normal requirements for establishing the MAY as above-described, S.B. 288 added one new requirement - that in determining the MAY for any EPA-designated sole source aquifer, *i.e.*, the ASA, the MAY must ensure that groundwater withdrawal "will not reduce the natural flow of water from springs or streams emanating from the basin (aquifer)." 82 O.S. § 1020.9B. In establishing the MAY for the ASA the OWRB was still required to make all of the normal determinations applicable to all aquifers in the State (*i.e.*, the amount of groundwater in storage, annual recharge and acres overlying the aquifer, etc.). 82 O.S. § 1020.5;

¹ MAY = (11,000,000 AF in storage + 3,645,760 recharge over 20 years) ÷ 20 years = 732,288 AF; EPS = (11,000,000 AF in storage + 3,645,760 recharge over 20 years) ÷ 392,019 acres overlying the aquifer ÷ 20 years = 1.87 AF/acre/year.

(Tab 101, Vol. 1, 00:39:55–44:05.²) However, per S.B. 288, the final MAY must also ensure that the natural flow of water from ASA springs and streams will not be reduced.

As explained below, the OWRB decided that the phrase “reduce the natural flow” contained in § 1020.9B could not be interpreted in its plain and ordinary sense, so the OWRB set about to make up a new definition. Although an EPA sole source aquifer description recognizes that the aquifer is the *only* source of groundwater in the area which must be protected from contamination to ensure its availability for use as drinking water, the OWRB decided not to look at drinking water availability as its criteria to measure and define “natural flow”. Instead, through a self-appointed committee, *i.e.*, the Arbuckle Simpson Study Surface Water Technical Advisory Group (“Technical Advisory Group”), the OWRB decided that “natural flow” refers to the protection of fish habitat in surface waters. (Tab 41 p.1113.)

Utilizing an Instream Flow Assessment which correlated reductions in a specific stream flow regime, *i.e.*, Baseline Low Flow, with changes to fish habitat of four selected fish (Tab 41 p. 1103.), the Technical Advisory Group determined that a 25% reduction in the Baseline Low Flow was acceptable because it equated to a maximum reduction in fish habitat of approximately 20%. (Tab 36, p. 970.³) Thus, the Technical Advisory Group defined “reduce the natural flow” to mean not reducing the Baseline Low Flow by more than 25%. Any reduction of the Baseline Low Flow by more than 25% was deemed to be a reduction in natural flow prohibited by S.B. 288. This empirical number - reduction of the Baseline Low Flow by no more than 25% - became the OWRB’s definition of “natural flow”.

² The Administrative Record includes several audio transcripts that are separated into numbered volumes. Throughout this brief, such transcripts are cited by reference to the Tab #, then the volume number, and finally a time range for the specific testimony cited.

³ Throughout this brief, the page numbers included in citations to documents in the record refer to the sequential Bates-number. Where a paragraph number or other reference may provide additional clarity, it is included as a parenthetical.

The next step in the OWRB's process was supposed to be for the computer modelers with the United States Geological Survey ("USGS") to determine how many AF of groundwater can be removed from the ASA each year without reducing the Baseline Low Flow by more than 25%. This computer generated number was then supposed to become the final MAY.

Procedurally, after the OWRB concludes a scientific hydrologic study and comes up with a proposed MAY, the Board is required to conduct a hearing to approve a tentative MAY. This hearing occurred in February and March 2012, resulting in the Tentative MAY Order issued on March 13, 2012. It was this Order which then formed the basis for the MAY evidentiary hearing held on May 14-16, 2012 (the "MAY Hearing"). By statute, MAY hearings are individual proceedings under the Administrative Procedures Act which means they are adversarial evidentiary hearings presided over by a Hearing Examiner, *not* rulemaking proceedings. 82 O.S. § 1020.6; 75 O.S. § 309.

At the MAY Hearing the OWRB is required to present evidence of the science upon which the Tentative MAY Order is based. 82 O.S. § 1020.6. In support of the ASA MAY, the OWRB called one OWRB employee, Ms. Julie Cunningham, to explain the above-described scientific process which supposedly led to the MAY determination. Those parties who supported the proposed MAY then presented their evidence. Petitioners then presented evidence in opposition to the proposed MAY. The OWRB then called two witnesses, Mr. Scott Christenson and Ms. Noel Osborn, both with the USGS, in rebuttal to the Petitioners' evidence.

At all times leading up to the final MAY determination, the OWRB consistently maintained that the MAY determination was based upon the empirical number that the Technical Advisory Group adopted to define "natural flow" and the computer modeling of such flow. The OWRB offered this as the scientific basis for the MAY at the public meetings held prior to the

tentative MAY Order, at the Board meeting that resulted in the Tentative MAY Order, and at the MAY Hearing itself. The final MAY Order recites that it relied upon the Technical Advisory Group's criteria and empirical number. (Tab 170, p. 2607 ¶ 30.) The 25% reduction in Baseline Low Flow supposedly was the scientific criteria that the Board relied upon to determine what constitutes "reduction in natural flow" in order to make its MAY determination.

The evidence at the MAY Hearing debunked the OWRB's claimed scientific basis for the MAY determination. The Board's Final MAY Order actually holds, and the Board thereby admits, that the evidence proved that the OWRB did not base its MAY determination on the scientific criteria upon which it claimed it relied.

The MAY which the OWRB adopted is 78,404 AF, which results in an EPS of .2 (2/10ths) AF/acre/year. Thus, the OWRB restricted landowners to one-tenth ($78,404 \div 732,288 = 10.7\%$) of the amount of groundwater they would have been entitled to use in the absence of S.B. 288, all on the premise that this was protecting fish population. However, as explained below, because the OWRB did not actually use the scientific criteria it said it was using to justify the .2 AF, the OWRB has no idea what protection to fish population was achieved, if any. The OWRB cannot say whether this severe curtailment of groundwater use will save 1, 10, 100 or 1,000 fish or what percentage of fish habitat is protected because the method the OWRB actually used bears no correlation to the IFA fish habitat study upon which it claimed to rely.

Several months after the MAY Hearing, counsel for Petitioners submitted an Open Records Act request to the OWRB requesting all documents relating to the AS MAY which were received by the agency *after* the MAY Hearing. As a result of this request, Petitioners learned that the Hearing Examiner had received secretive post-hearing evidence from witnesses who had testified at the MAY Hearing on behalf of the OWRB, including USGS employees Christenson

and Osborn. This ultimately resulted in a writ proceeding before the Oklahoma Supreme Court, *Arbuckle Simpson Aquifer Protection Foundation of Oklahoma, Inc. v. OWRB*, 2013 OK 29, 343 P.3d 1266. In its opinion and ruling, the Oklahoma Supreme Court determined that the Hearing Examiner's conduct violated the *ex parte* communications prohibition contained in 75 O.S. § 313 and evidenced the appearance of bias by the Hearing Examiner against Petitioners' positions. Rather than order recusal, the Oklahoma Supreme Court issued a writ of mandamus ordering the Hearing Examiner to make the secret USGS report and all responses thereto by any interested parties part of the record in this matter. Upon remand, the Hearing Examiner entered the USGS report into the record, as well as the response thereto by Citizen's for the Protection of the Arbuckle-Simpson Aquifer ("CPASA") which included new evidence, but the Hearing Examiner struck the bulk of Petitioners' response, including most of its evidentiary submission.

As a result of the foregoing and other events, and as explained in detail below, Petitioners' appeal the OWRB's final MAY Order on the following grounds:

1. The Order was made upon unlawful procedure, being permeated with procedural irregularities including the Hearing Examiner's failure to comply with the Oklahoma Supreme Court's writ of mandamus.

2. The MAY determination is arbitrary and capricious in that it is based upon flawed science, is not supported by the scientific criteria upon which the OWRB claimed it was based, and in fact contradicts the evidence produced in the evidentiary hearing and the findings of the OWRB contained in both the Hearing Examiner's Recommended Order and the Board's Final Order that is the subject of this appeal.

3. The MAY determination, as applied, results in an unconstitutional taking of the groundwater owned by the landowners encompassing the Arbuckle Simpson aquifer, without any compensation.

STANDARD OF REVIEW

Pursuant to Oklahoma's Administrative Procedures Act, this Court should hold the Board's Order unlawful if its findings or decisions are (a) in violation of constitutional or statutory provisions, (b) made upon unlawful procedure, or (c) are arbitrary or capricious. 75 O.S. § 322. The Oklahoma Supreme Court's recent decision in *Scott v. OSSAA* adopted a 'hard look' approach to reviewing agency action by making a detailed examination of the administrative record. 2013 OK 84, ¶ 36, 313 P.3d 891, 904. The court endorsed a definition of arbitrary and capricious as acting "without determining principle" and affirmed the obligation to subject agency action to careful scrutiny:

While agency decisions are due some deference...“courts do not hear cases merely to rubber stamp agency actions. To play that role would be tantamount to abdicating the judiciary's responsibility.”

Id. at ¶ 34, 313 P.3d at 903 (quoting *Conservation Law Foundation v. Evans*, 209 F.Supp.2d 1, 8 (D.D.C.2001)). Thus, this Court cannot affirm the Board's order if it is inconsistent with state law or if does not apply a discernible principle to factual findings supported by the record.

I. THE BOARD'S ORDER IS CONTRARY TO 82 O.S. § 1020.9B BECAUSE IT PROTECTS FISH POPULATION AT THE EXPENSE OF IN-BASIN DRINKING WATER SUPPLY

In *Jacobs Ranch, L.L.C. v. Smith*, 2006 OK 34, 148 P.3d 842, 855, the Oklahoma Supreme Court held that the purpose of 82 O.S. § 1020.9B, which contains the pertinent MAY language regarding reduction in natural flow, is to ensure the supply of drinking water in the area over the basin:

We have also determined that the purpose of the challenged legislation is to conserve the sole source of safe drinking water *for in-basin use* until a hydrological study is completed and *a maximum annual yield is determined that ensures the withdrawal of water will not interfere with the in-basin drinking water supply*. Obviously, § 1020.9B was intended to serve that legislative purpose.

Id. (emphasis added). This holding was essential to the court's upholding S.B. 288's classification of sole source groundwater aquifer's as not violating Section 59, Article 5 of the Oklahoma Constitution. Rather than establish a MAY protective of drinking water, however, the Board's Order construes the phrase "natural flow" so as to protect fish habitat. (Tab 170, p. 2614 ¶ 12.) Not only does the MAY not ensure the in-basin drinking water supply, it practically prohibits the use of this sole source of drinking water.

The Board's construction of "natural flow" was actually developed in conscious disregard of the availability of drinking water. It was developed by a Technical Advisory Group, specially convened to determine the meaning of the S.B. 288 (§ 1020.9B). (Smithee, Tab 101, Vol. 10, 00:09:31–09:56; Tab 41; Tab 170, p. 2607 ¶ 30–35.) The Technical Advisory Group was chaired by the OWRB's Mr. Derek Smithee and was heavily composed of fish, wildlife conservation and environmental advocate group members who were appointed by Mr. Smithee. (Tab 41, p. 1093; Tab 101, Vol. 10, 00:07:25–08:00.) Although the eighteen member Technical Advisory Group would later come up with the new definition of "natural flow" upon which the OWRB claimed to rely to justify its severe curtailment of groundwater use, there was only one landowner representative in the entire group. *Id.* The Technical Advisory Group specifically construed "natural flow" to protect fish habitat rather than drinking water in order to place additional limits on groundwater use:

The consensus of the group was that the water supply use was not the most sensitive end point and that there were more sensitive end points that would be a better indicator that the science would allow us to reach than water supply. (Smithee, Tab 170, Vol. 10, 00:15:20–15:32.)

The Technical Advisory Group's construction had the intended effect. The MAY Order finds that there are 11,000,000 AF of groundwater currently in storage in the aquifer. (Tab 170, p. 2605 ¶ 22.) Added to that amount is the average annual recharge of 182,288 AF, for a total of 14,645,800 AF of available groundwater over the basin's statutory life. (*Id.* ¶ 24.) However, the proposed MAY is limited to just 78,404 AF. (*Id.* at 2617 ¶ 4.) This is one-tenth of the 732,288 AF that would apply to the aquifer in the absence of S.B. 288.

The MAY's severe restriction comes at a crippling cost to the very people S.B. 288 was intended to protect: those dependent on the aquifer as the only groundwater source of potable water in the area. Speaking on behalf of Murray County Rural Water District # 1, Mr. Dave Roberson was unequivocal: "If our temporary right of withdrawal of 2 acre feet of water per surface acre is reduced to .2 acre feet of water per surface acre *we will not be able to meet our members needs for water.*" (Tab 95, p. 1750 (emphasis added).) Mr. Roberson explained that maintaining the district's existing water use under the MAY will force its members to purchase or lease over 2,900 acres of land at an estimated minimum cost of \$1,100,000, and to possibly drill new wells costing up to \$2,000,000,. *Id.* at 1750-1751. These are small plot farmers, ranchers and rural residents who rely upon the rural water district for their survival. *Id.* at 1751. To again quote Mr. Roberson, if the .2 acre feet EPS is adopted, "the very existence of Murray County Rural Water District #1 is in doubt". *Id.*

The MAY Order is contrary to both the purpose of the sole source designation and the Court's ruling in *Jacobs Ranch*, and, therefore, it cannot stand.

II. THE BOARD'S ORDER IS MADE ON UNLAWFUL PROCEDURE BECAUSE IT DELEGATES POLICY MAKING TO PERSONS WHO ARE NOT MEMBERS OF THE BOARD AND APPLIES A RULE ADOPTED IN VIOLATION OF ARTICLE I OF OKLAHOMA'S ADMINISTRATIVE PROCEDURES ACT

The Technical Advisory Group's redefinition of "natural flow" constitutes a rule under Article I of Oklahoma's Administrative Procedures Act. Under the APA, a rule includes any agency statement or group of related statements of general applicability and future effect that implements, interprets or prescribes law or policy. 75 O. S. §250.3/15. Redefining "natural flow" for application in MAY proceedings was precisely the charge of the Technical Advisory Group. (Tab 41, p. 1094; Smithee, Tab 101, Vol. 10, 00:09:31–09:56.) Unfortunately, convening an ad hoc committee of conservationists and government employees however well-intended complies with essentially none of the APA's mandatory rulemaking procedures. *See* Title 75 O.S. §§250-308.2. As a result, the group's policy preferences, no matter how wise or well informed, cannot be invoked by the Board for any purpose. *Id.* § 308.2.

Coupled with the Open Records Act and the Open Meetings Act, the APA's procedures create a transparent forum in which the Board may exercise the policy making authority delegated to it by the legislature. Such transparency is essential to the accountability of administrative agencies and the legitimacy of their actions. The Board may not delegate its responsibility to set policy to staff, let alone others:

The process employed here is inherently flawed because it allows employees to make the decisions entrusted by statute to the members of the [agency board].... The use of such a process here essentially renders the hearings for public comment a nullity.

Spring Creek Conservation Coal. v. Oklahoma Dep't of Wildlife Conservation, 2007 OK CIV APP 26, ¶ 9, 156 P.3d 55, 57.

The Hearing Examiner relied on *SEC v. Chenery Corporation*, 332 U.S. 194, 202-03, 67 S. Ct. 1575, 1580, (1947), for the proposition that an agency is not required to follow the statutory rulemaking procedures to interpret statutes it is charged with administering. But *Chenery* was decided under federal law, not Oklahoma law, and it blessed enunciating rules

through a formal adjudication involving an “unforeseeable situation” or a problem “impossible to capture within the boundaries of a general rule” *Id*. Moreover, the court rationalized its decision by noting that the agency had “expressed its reasons with a clarity and thoroughness that admit of no doubt as to the underlying basis of its order” *Id*. at 199. None of this pertains in this case.

By the time the MAY proceeding even began, the Technical Advisory Group had been convened for six years and millions of dollars had already been spent pursuing its enunciated policy. (Tab _____). Board staff actually publicized the Technical Advisory Group’s determination at meetings held in 2009. In other words, the construction of “natural flow” applied in the Board’s Order was conclusively determined well before the hearing on the MAY. It just wasn’t done in compliance with the APA.

III. THE BOARD’S ORDER IS ALSO MADE ON UNLAWFUL PROCEDURE BECAUSE THE HEARING EXAMINER VIOLATED THE OKLAHOMA SUPREME COURT’S WRIT OF MANDAMUS

In *Arbuckle Simpson Aquifer Protection Federation of Oklahoma, Inc. v. OWRB*, the Oklahoma Supreme Court Issued a writ of mandamus requiring the Hearing Examiner to place a post-hearing memo from USGS employees in the record and to give all parties an opportunity to respond. 2013 OK 29, ¶ 17, 343 P.3d 1266, 1272, *reh'g denied* (June 27, 2013). The writ was intended to remedy the Hearing Examiner’s apparent bias against the Petitioners herein. *Id*. The Hearing Examiner brazenly defied the Oklahoma Supreme Court’s writ of mandamus by striking virtually all of the Petitioners’ response to the USGS report. In so doing, the Hearing Examiner again evidenced the very bias and partiality that the Oklahoma Supreme Court was attempting to cure by its writ. As such, the case must be remanded for consideration of Protestants’ entire response to the USGS report as required by the Oklahoma Supreme Court’s writ.

At the MAY Hearing, two employees of the USGS testified in support of the OWRB’s proposed MAY. Those two witnesses were Mr. Scott Christenson and Ms. Noel Osborn. Mr.

Christenson performed the aquifer computer modeling that the OWRB offered in support of the proposed MAY. (Tab 18.) The adequacy of Mr. Christenson's modeling work was one of the central issues at the MAY Hearing. Poeter, (Tab 101, Vol. 8, 00:17:00–18:20.)

After the MAY Hearing, and completely unbeknownst to any of the parties, the OWRB staff forwarded to the Hearing Examiner a post-hearing report prepared by Mr. Christenson and Ms. Osborn (the "USGS Secret Report") in which they provided new testimony and evidence in support of, *inter alia*, the adequacy of Mr. Christenson's computer modeling work. *Arbuckle Simpson Aquifer Protection Foundation of Oklahoma, Inc. v. OWRB*, 2013 OK 29, 343 P.3d 1266, 1269-1271 (cited herein as *ASAPFO*); (Tab 156.) At that time, the Hearing Examiner did not notify any of the parties that she had received and considered this additional evidence, nor did she voluntarily make the USGS Secret Report part of the record and give the parties an opportunity to respond thereto as required by 75 O.S. § 310.

After the MAY Hearing, counsel for Petitioners submitted an Open Records Act request to the OWRB seeking all documents relating to the MAY proceeding which were received *after* the MAY Hearing. *ASAPFO*, 2013 OK 29, at ¶ 12. Sometime later, after much wrangling, the OWRB eventually produced the USGS Secret Report to Petitioners' counsel. At that point it became obvious that the Hearing Examiner had received secret evidence in support of the proposed MAY, thus evidencing her bias and prejudice in favor of approving the proposed MAY.

The Petitioners then filed a motion to recuse the Hearing Examiner on the ground that she had engaged in *ex parte* communications prohibited by 75 O.S. § 313. (Tab 141.) After the OWRB rubber-stamped her conduct and denied Petitioners' motion, finding no impropriety whatsoever (Tab 146.), one of the Petitioners filed a petition for writ of mandamus in the

Oklahoma Supreme Court seeking the removal of the Hearing Examiner on the ground that she had engaged in improper *ex parte* communications.

The Oklahoma Supreme Court held that the Hearing Examiner's receipt of the USGS Secret Report did constitute an impermissible *ex parte* communication which gave rise to the appearance of bias and partiality:

It is readily apparent from the record that the OWRB's hearing officer received communications and information relating to *factual matters* from employees of the USGS, who had appeared as witnesses for the OWRB in the proceedings...These post-hearing communications were not disclosed by the hearing officer to various other parties to the adjudicative action, including the petitioner, until the filing of various open records requests. These communications (the USGS Report) give rise to questions about the hearing examiner's neutrality in the underlying proceeding...To then have the OWRB...acting as a conduit for favorable witnesses (Mr. Christenson and Ms. Osborn) to present further *unchallenged testimony* to the hearing examiner without notice to the other parties allows one to question the hearing examiner's impartiality.

ASA Protection Federation, supra at 1272 (emphasis added); (Tab 154.)

The Oklahoma Supreme Court acknowledged that a hearing examiner should recuse when "circumstances and conditions surrounding litigation are of such nature that they might cast doubt as to the impartiality" of the hearing examiner. *Id.* at 1271. Because the Oklahoma Supreme Court found that the Hearing Examiner's conduct did "give rise to questions about the hearing examiner's neutrality", the normal rule is to require recusal. *Id.* In fact, Justice Watt, in his concurring in part, dissenting in part opinion, stated that the Hearing Examiner should be removed from the case because her conduct created the appearance that she favored one side over the other. *Id.* at 1272-1273.

Nevertheless, the majority decided to give the Hearing Examiner one last chance to remedy the unfair situation created by her improper conduct:

A writ of mandamus *compelling the hearing officer* to provide notice of her *ex parte* communications to all parties in the MAY proceedings, and to include those communications in the record, as well as the responses of interested parties,

will remedy the appearance that the hearing officer is giving undue weight in making her recommendation to the desires of the USGS and OWRB.

Id. at 1272 (emphasis added).

The Oklahoma Supreme Court stated *three* times in its decision that the Hearing Examiner was required to include in the record the responses of all parties to the USGS Secret Report. *Id.* The Court also made clear in its decision that it considered the USGS Secret Report to constitute new “unchallenged testimony”. *Id.* at 1271. Therefore, it is clear that the Oklahoma Supreme Court understood and anticipated that the responses to the USGS Secret Report might contain new responsive testimony and evidence.

On July 22, 2013, pursuant to the writ mandate, CPASA filed its response to the USGS Secret Report. (Tab 160.) Notably, CPASA attached new evidence to its response, specifically it submitted a seven page USGS report entitled “Fundamental Science Practice: Peer Review”. *Id.* at Bates 2479-2484. This new evidence was submitted in support of the testimony contained in the USGS Secret Report that the computer modeling work had been “subjected to rigorous report and technical review processes before being approved”. The new USGS report submitted by CPASA addressed the USGS’ guidelines for conducting peer reviews, with CPASA now arguing that Mr. Christenson’s modeling work had supposedly undergone the peer review described in the guidelines.

Petitioners filed their response to the USGS Secret Report on July 22, 2013. (Tab 157.) In this response, Petitioners also submitted new evidence regarding the claim in the USGS Secret Report that Mr. Christenson’s computer modeling had supposedly undergone rigorous peer review. *Id.* at Bates 2339-2371. Protestants submitted an affidavit by their computer modeling expert, Dr. Eileen Poeter, demonstrating that peer review does not normally entail actually opening the model software and looking at the input parameters entered by Mr. Christenson,

which was necessary here to catch the mistakes that Mr. Christenson made (more on this issue below). *Id.* Almost eight pages of Petitioners' ten page response was dedicated to discussing Dr. Poeter's affidavit in response to Mr. Christenson's new testimony regarding peer review contained in the USGS Secret Report.

Even though CPASA had submitted new evidence in its response, incredibly, on July 29, 2013, CPASA filed a motion asking the Hearing Examiner to strike Petitioners' response to the USGS Secret Report because it contained new evidentiary material, namely Dr. Poeter's affidavit. (Tab 161.) CPASA claimed that to allow this new evidence would deprive CPASA of its right to cross-examine Dr. Poeter regarding her new testimony which would, therefore, deny CPASA due process. *Id.* at Bates 2489-2490.

Consistent with her past conduct favoring those who support the OWRB's proposed MAY, the Hearing Examiner granted CPASA's motion and struck Dr. Poeter's affidavit from the record, thereby also striking approximately eight pages of Petitioners' ten page response that discussed her affidavit. (Tab 164.) In support of her ruling, the Hearing Examiner stated:

Protestants attempt to introduce new evidence, in the form of an Affidavit by Dr. Poeter (who was a witness at the Hearing)...Protestants make no showing why this Affidavit should be admitted in the record...Nor is the fact of peer review sufficient to justify additional evidence, given that peer review was raised at the Hearing and could have been explored there. In sum, Protestants have failed to make any showing to support re-opening the record to add yet more evidence.

Id. at 2548.

By striking Dr. Poeter's affidavit and 80% of Petitioners' response, the Hearing Examiner blatantly violated the Oklahoma Supreme Court's writ of mandamus which specifically directed her to enter into the record all responses to the USGS Secret Report. Petitioners were entitled to make their response - period - and they were not required to make any special showing to do so, just as CPASA was not required to make any special showing to submit its new evidence which

the Hearing Examiner readily accepted into the record. It matters not whether the issue of peer review was raised at the MAY Hearing inasmuch as the USGS witnesses were allowed to surreptitiously submit new evidence regarding peer review after the MAY Hearing. As the Oklahoma Supreme Court recognized, this necessitated giving the other parties a similar opportunity.

The problem that the Oklahoma Supreme Court was trying to correct was entirely of the Hearing Examiner's making. She allowed the USGS witnesses who testified at the MAY Hearing to submit new testimony after the Hearing. She did not require the USGS witnesses to make any special showing why they should be allowed to do so despite the fact they had already had the full opportunity to say whatever they wanted at the May Hearing. Nor were they constrained or limited in the subject matter of their new testimony. They got to say whatever they wanted to say in their secret response.

By permitting this new USGS testimony, the Hearing Examiner deprived all of the parties of the opportunity to conduct cross-examination of the USGS's witnesses regarding their new testimony. According to CPASA, this deprived all of the parties of their due process rights, something with which the Petitioners do not disagree. Nevertheless, the Oklahoma Supreme Court decided how the Hearing Examiner's misbehavior was to be remedied, namely by giving all of the parties the full opportunity to respond to the USGS's new testimony. While CPASA may not be satisfied with the Oklahoma Supreme Court's selected remedy, neither it nor the Hearing Examiner were authorized to change the remedy. By striking Dr. Poeter's affidavit and the majority of Petitioners' response, the Hearing Examiner failed to do what the Oklahoma Supreme Court ordered her to do, thereby excluding from the record that which the Oklahoma

Supreme Court ordered be included. This requires remand so that the entirety of what should have been included in the record is properly considered before a final MAY order is issued.

At the hearing to consider approval of the final MAY order held before the entire nine member Board on October 23, 2013, Petitioners' counsel pointed out to the Board that, by striking Petitioners' responsive evidence but accepting CPASA's new evidence, the Hearing Examiner had not complied with the Oklahoma Supreme Court's writ of mandamus. (Tab 168, 1:10:56-1:13:29.) After hearing this, the Chairman of the OWRB specifically asked the Executive Director to respond. In response, the Executive Director of the OWRB told the Board:

[I]t is absolutely untrue that she [the Hearing Examiner] allowed the responses from CPASA and the supporting parties and rejected all the responses of the Protestants, that is not true...You heard Mr. Walker talk about the fact that CPASA even had some additional testimony, additional evidence that they were trying to get into the record, she did not allow portions of their responses to be included into the record either.

(Tab 168, 1:41:27-1:42:24.)

What the Executive Director told the Board on this critical issue - something which the Board clearly desired to learn the truth about - was simply not true. As explained above, the Hearing Examiner did receive the entirety of CPASA's response to the USGS Secret Report, including the entirety of its new evidence. The Hearing Examiner did strike new evidence submitted by Protestants, just as Petitioners' counsel advised the Board. And yet, when looking for confirmation of this from its staff, the Board was misinformed. Thus, in approving the final MAY order, the Board was led to believe that the Hearing Examiner had treated the supporting and opposing parties exactly the same and had fully complied with the Oklahoma Supreme Court's writ.

It is true that, separate and apart from the responses to the USGS Secret Report, the Hearing Examiner struck some new evidence which CPASA attempted to introduce in its Post-

Hearing Brief submitted shortly after the MAY Hearing. (Tab 164, Bates 2548–2549.) In that brief CPASA made numerous evidentiary claims that were both outside the record and were not supported by any evidentiary proof. (Tab 140 and 131.) However, none of that had anything to do with the responses to the USGS Secret Report which were the only documents governed by the Oklahoma Supreme Court's writ, and which were the only documents addressed to the Board by Petitioners' counsel. It was improper for the Executive Director to advise the Board that the Hearing Examiner treated the parties the same by striking evidence submitted by both CPASA and Protestants in response to the USGS Secret Report, when in fact the Hearing Examiner did no such thing.

The Hearing Examiner's striking of Protestants' responsive affidavit resulted in a material prejudicial error, and not simply because it constituted a violation of the Oklahoma Supreme Court's writ. One of the hotly contested issues at the MAY Hearing was whether Mr. Christenson had committed a fundamental error by treating and inputting into his groundwater model the *unconfined* portion of the aquifer as a *confined* zone (more on this below), thereby rendering his modeling results inaccurate and unsuitable for use in making a MAY determination. Poeter, (Tab 101, Vol. 8, 00:26:40–30:15 and 00:38:27–40:08.) The Hearing Examiner was in the position of having to decide who to believe on this issue, either Petitioners' expert, Dr. Poeter, who said a fundamental error had been committed, or Mr. Christenson who claimed no error had been committed. The Hearing Examiner ultimately decided that the supposed "peer review" of Mr. Christenson's work tipped the scale in favor of her believing Mr. Christenson over Dr. Poeter. Thus, the issue of peer review was critical.

At the MAY Hearing, there were only fleeting references to a potential peer review, and certainly there was no testimony regarding the details of any alleged peer review. CPASA's

counsel asked Dr. Poeter whether she was familiar with the peer review on this particular project, to which she responded she was not. (Tab 101, Vol. 9, 00:6:15–8:15.) The only reference by Mr. Christenson to any peer review was in his rebuttal testimony for the OWRB in which he said, if he made a mistake, it was missed by the peer reviewers. (Tab 101, Vol. 13, 00:06:00–06:18.) There was no evidence whatsoever at the MAY Hearing as to what type of peer review was conducted, the thoroughness of same, or whether a “strict” or “rigorous” peer review had been conducted.

In the USGS Secret Report, Mr. Christenson got another chance to testify about peer review. In response to Protestants’ arguments about Mr. Christenson’s modeling errors as set forth in Protestants’ Post-Hearing Brief, Mr. Christenson stated the following:

The USGS Arbuckle-Simpson groundwater flow model and report (SIR 2011-5029) were subjected to rigorous report and technical review processes before being approved.

(Tab 156, p. 2323.) The obvious import of this out-of-court testimony was to try to impress upon the Hearing Examiner that Dr. Poeter’s criticism of Mr. Christenson’s modeling was not legitimate because, had Mr. Christenson made a real and substantial mistake as alleged, this clearly would have been caught and corrected in the alleged rigorous technical peer review process.

The Hearing Examiner plainly understood it this way, because in her original proposed MAY order, in deciding to accept Mr. Christenson’s testimony over Dr. Poeter’s, the Hearing Examiner held:

The USGS Study underwent strict peer review that should have identified any modeling problems that were present.

(Tab 148, Bates 2245, ¶ 41.) There was no evidence in the record to substantiate this very specific fact finding. Neither Mr. Christenson’s statement regarding the alleged rigorous peer

review nor anything like it appears in the record. It is *only* contained in USGS Secret Report. Thus, the Hearing Examiner utilized, made reference to, and relied upon the Secret USGS Report, and her decision was clearly based upon the substance of that secret report.

As explained below, according to the evidence presented at the MAY Hearing, the Board purportedly based its MAY decision on the Instream Flow Assessment, looking at what percentage reduction in the Baseline Low Flow (as defined in the IFA) would not adversely impact fish habitat. The Technical Advisory Group determined that no more than a 25% reduction in this IFA Baseline Low Flow was acceptable, and the computer modeling was then supposed to determine how much groundwater withdrawal from wells equated to a 25% reduction in the IFA Baseline Low Flow of streams emanating from the aquifer.

The Baseline Low Flow as used in the IFA was the lowest stream flow at the very hottest part of the year (late summer), when there is no rain flow in the stream such that the stream flow is comprised exclusively of groundwater flow (*i.e.* base flow). (Tab 101, Vol. 10, 00:26:40–28:54 (referring to Tab 36 Instream Flow Assessment).) In this particular flow regime the ability of the groundwater aquifer to readily give up water to the stream is critical because, if it does not readily give up water, the removal of small amounts of groundwater from wells will result in a large reduction in the Baseline Low Flow. (Tab 88; Poeter, Tab 101, Vol. 8, 00:15:40–18:15 and 00:29:40–30:30 and 00:38:25–38:38.) However, if the aquifer has the capacity to quickly and readily give up water to the stream, this will have a dampening impact upon the groundwater withdrawal and will serve to lessen the reduction in the Baseline Low Flow caused by groundwater withdrawal. *Id.* It was precisely because the Technical Advisory Group chose the IFA Baseline Low Flow as the critical flow to measure reduction in fish habitat as a proxy for

reduction in natural stream flow that the aquifer's ability to readily give up water to the stream became so important. *Id.*

Whether a groundwater aquifer has the ability to readily give up water to the stream depends upon whether it is a confined or unconfined aquifer. (Tab 88; Poeter, Tab 101, Vol. 8, 00:23:30–24:30 and 00:41:00–42:02; Tab 27.) Unconfined aquifers have the ability to quickly give up groundwater to the stream. *Id.* This ability dampens the impact of groundwater well withdrawal upon the stream flow such that more groundwater can be withdrawn before a 25% reduction in Baseline Low Flow occurs. *Id.* On the other hand, confined aquifers do not readily give up water to the stream; therefore, it takes less groundwater well withdrawal to result in a 25% reduction in Baseline Low Flow. *Id.* Thus, in determining how much groundwater can be removed from the aquifer before a 25% reduction in Baseline Low Flow occurs, it is critical to understand the confined/unconfined properties of the aquifer. *Id.* This is a very basic hydrological concept that was addressed extensively at the MAY Hearing. *Id.*

It is uncontroverted that the uppermost part of the ASA — the part which is in the most direct contact with the stream itself — is unconfined. (Tab. 170, p. 2609 ¶ 42.) In fact, All seven of the hydrologists who testified at the Hearing agreed on this fact.⁴ Notwithstanding this, the USGS modeler, Scott Christenson, treated this uppermost interval as if it were confined in his model. Although he himself admitted that this uppermost zone was unconfined and that the computer software allowed him to treat it as unconfined, he nevertheless treated this zone as confined and ran the model accordingly. (Tab 101, Vol. 13, 00:11:06–15:19.)

⁴ Jennifer Back (National Park Service), Tab 101, Vol. 3, 57:12–1:02:00; Peter Burke (U.S. Fish & Wildlife), Tab 101, Vol. 4, 38:32; Dr. Kyle Murray (Oklahoma Geological Survey), Tab 101, Vol. 5, 2:23–3:22; Scott Christenson, Tab 101, Vol. 6, 22:47–24:35 and Vol. 13, 12:25–13:00; Dr. Blaine Reely, Tab 101, Vol. 12, 49:53–51:58; Noel Osborn, as co-author of Tab 18, Bates 333, “the Arbuckle-Simpson aquifer is...unconfined in different parts of the study area”; Dr. Eileen Poeter, Tab 101, Vol. 8, 00:43:05–44:04; Tabs 88 and 89.

According to testimony by Petitioners' expert, Dr. Eileen Poeter, when using the MODFLOW computer model that Mr. Christenson used there are two options to properly treat an unconfined zone in MODFLOW. (Tab 89; Tab 101, Vol. 8, 00:26:25–29:40.) The first is to input the zone as unconfined, something Mr. Christenson failed to do. *Id.* The second option is to designate the zone as confined in which case the specific yield of the unconfined zone *divided by the thickness of the zone must* be input into the model for the zone. *Id.* Dr. Blaine Reely also testified at the MAY Hearing that a modeler must divide the specific yield by the zone thickness if an unconfined zone is treated as a confined zone and that all modelers know this. (Tab 101, Vol. 12, 00:54:22–55:07.) Here, Mr. Christenson admitted that, in treating the unconfined zone as a confined zone, he failed to divide by the thickness of the zone and acknowledged that he was not familiar with this modeling requirement. (Tab 101, Vol. 13, 00:04:50–05:35 and 00:10:50–15:40.)

Dr. Poeter is a nationally and internationally recognized hydrologist and groundwater modeler. She was named Darcy Lecturer for 2006 by the National Groundwater Association (“NGA”). (Tab 101, Vol. 8, 00:08:57–11:00.) Each year a panel of scientists from the 70,000 member NGA selects one groundwater professional and pays for the selected scientist to travel around the world lecturing on some aspect of groundwater science. As Dr. Poeter testified, she traveled around the world in 2006 lecturing on her specialty - groundwater modeling. *Id.* There have been 29 Darcy Lecturers since the program began. Dr. Poeter is a former professor at the Colorado School of Mines and prior to that at Washington State University where she taught undergraduate and graduate level hydrology and groundwater modeling courses for 27 years, specifically including MODFLOW modeling courses. (Tab 101, Vol. 8, 00:03:18–05:39; Tab 87.) Notably, she taught hydrology and/or groundwater modeling courses to two of the

hydrologists that testified at the MAY Hearing, *i.e.*, to Jennifer Back (National Park Service) and Dr. Kyle Murray (Oklahoma Geological Survey). (Tab 101, Vol. 5, 00:04:31–04:43; Tab 87.) Dr. Poeter was the Director of the International Groundwater Modeling Center from 1997 to 2011. (Tab 101, Vol. 3, 00:54:17–55:01.) Dr. Poeter’s hydrologic modeling credentials are impeccable and she knows of what she speaks.

As Dr. Poeter explained at the MAY Hearing, Mr. Christenson’s failure to input the zone as unconfined and his failure to divide by the zone thickness caused the model not to recognize the zone as unconfined. The result was that the model overlooked the dampening effect this unconfined zone had on groundwater withdrawal, thus causing the model to overestimate the effect of groundwater withdrawal upon stream flow. She showed that for the unconfined zone this error alone resulted in the entry of a value which was in error by a factor of 50 times.⁵ (Tab 157, p. 2344–45 (¶ 10).)

It is in this context that Petitioners submitted Dr. Poeter’s affidavit in response to the USGS Secret Report. In her affidavit, Dr. Poeter explained, *inter alia*, that where a peer review is made, the peer reviewers do not normally open the computer software itself to review the specific parameters that the modeler input into the model. (*Id.* (¶ 9).) Dr. Poeter explained that she opened the model software and actually looked at Mr. Christenson’s inputs and that is the only way that she discovered his mistake. *Id.* Moreover, Dr. Poeter confirmed with other nationally prominent computer modelers, including Dr. Mary Hill, Dr. Stanley Leake and Dr. Leonard — who, like Mr. Christenson, are all employed by the USGS — and the authors of the prominent groundwater modeling textbook *Applied Groundwater Modeling*, Dr. Mary Anderson

⁵ As a result of this error and also of using the wrong storage coefficient/specific yield for the unconfined zone, Dr. Poeter also showed that the EPS could be up to 5 times greater than the proposed .2 EPS and still have the same effect on the 75th Percentile Flow. Tabs 88 and 89.

and Dr. William Woessner, that it is absolutely required to divide the specific yield by the thickness of the unconfined zone when entering an unconfined zone as a confined zone into MODFLOW. (*Id.* 2340 (¶ 4) and 2343–44 (¶ 9).) Therefore, Dr. Poeter concluded that, if a peer review was in fact conducted, it nevertheless failed to catch this blatant error. Because of this error, Dr. Poeter testified that the model “is not ready for use to make policy decisions or even to inform policy issues”. (Tab 157, p. 2344–45 (Exhibit B, pp. 6–7).)

The bottom line is that the Hearing Examiner admitted into the record the additional testimony regarding peer review as contained in the USGS Secret Report (Tab 156) and she allowed CPASA’s additional evidence regarding peer review into the record (Tab 160), but she excluded Petitioners’ additional evidence regarding peer review which was submitted in response to the USGS Secret Report in accordance with the Oklahoma Supreme Court’s writ⁶ (Tab 164). And this bias on the part the Hearing Examiner’s part had its effect: to completely remove from the record Petitioners’ evidence that, to the extent there might have been a peer review, it failed to catch Mr. Christenson’s errors. These errors led to improper calculations regarding groundwater discharge from the unconfined zone to the ASA streams. This flawed science caused the model to overestimate the impact of groundwater withdrawal on the streams, ultimately resulting in the OWRB’s extreme curtailment of groundwater use to 0.2 acre feet. This alone requires reversal and remand.

IV. THE BOARD’S ORDER IS ARBITRARY AND CAPRICIOUS BECAUSE THE COMPUTER MODELING ON WHICH IS PURPORTEDLY BASED IS PERMEATED WITH FUNDAMENTAL ERRORS

⁶ The USGS Secret Report also included new testimony regarding the calibration of the USGS computer model as well as Dr. Reely’s testimony. Dr. Poeter’s affidavit also responded to this new testimony, all of which the Hearing Examiner struck.

In addition to the modeling errors described above, there were additional fundamental errors associated with the computer modeling. In his public presentation made in Ada on August 18, 2009, Mr. Christenson (USGS) explained the importance of aquifer storage coefficient in predicting groundwater level drawdown from pumping and hence impact upon springs and streams. (Tab 27, Bates 629-630 and 636-641.) In a very short series of slides in his PowerPoint presentation, Mr. Christenson explained that there are different types of aquifer rocks, that each has its own unique storage coefficient, and that drawing down the water level one foot from an aquifer with the higher storage coefficient of 0.2 would result in the production of 1.5 gallons of water, whereas the same one foot drawdown from an aquifer with the lower storage coefficient of 0.008 would only produce one cup of water. *Id.* This is because there is more water in storage in each foot of rock in the aquifer with the higher storage coefficient.

The culmination of Mr. Christenson's public presentation regarding the importance of storage coefficient was demonstrated by one PowerPoint slide. (Tab 27, Bates 641.) In this slide, Mr. Christenson demonstrates that the removal of one foot of groundwater from an aquifer with the higher storage coefficient of 0.2 will only draw the water level down five feet, whereas the removal of one foot of water from an aquifer with the lower storage coefficient of 0.008 results in 125 feet of drawdown. Mr. Christenson's slide demonstrates a 5x difference in impact between a stream with a storage coefficient of 0.2 (5 ft. drawdown) and one with .008 (125 ft. drawdown). The point is that the aquifer storage coefficient matters - it is critical in predicting drawdown and the impact upon associated springs and streams. Surprisingly, Mr. Christenson testified at the hearing that he did not remember what he was trying to show the public with this slide. (Tab 101, Vol. 6, 00:19:10-19:55.)

All of the hydrologists who testified at the MAY Hearing agreed that there is an unconfined A-S zone that feeds the associated streams, and that the storage coefficient for this unconfined zone should be at least ten times greater than the storage coefficient for the confined zone. (See n. 4 above.) In short, when looking at the drawdown effect of pumping one foot of groundwater and the corresponding impact upon springs and streams, we must remember that this unconfined layer exists and that it readily gives up water without much corresponding drawdown.

The Tentative MAY recognizes that there are 3 distinct rock groups associated with the A-S, namely the Simpson Group, the Arbuckle Group and the Timbered Hills Group. The A-S study report (Tab 18, p. 269.) acknowledges that the A-S aquifer is comprised of an unconfined zone, a semi-confined zone, and a confined zone, meaning the zones will have different storage coefficients.

In his computer model, Mr. Christenson used the *same* storage coefficient — 0.008 — for all zones and portions of the A-S, both the confined, semi-confined and unconfined zones.⁷ (Tab

⁷ The OWRB admits that it only studied one of the three aquifers of the ASA, being the Eastern Aquifer. Dr. Kyle Murray, hydrogeologist with the Oklahoma Geological Survey and the University of Oklahoma, testified in his expert capacity at the evidentiary hearing that the other two aquifers were so distinct geologically and hydrologically that it was scientifically invalid for the OWRB to have imposed the 0.2 acre-feet per acre per year limitation on the two aquifers not studied. Murray made a proposal to remedy that deficiency (Tab 85.) Nevertheless, the Board applied its 0.2 AF mandate to all three of them.

In paragraphs 16 and 17 of its Final Order the Board attempted to justify treating all three aquifers the same. The reasons for this decision are stated by the Board in paragraph 16 and can be summarized as saying the staff just didn't have the data needed to incorporate the other two aquifers in the study, the Eastern aquifer had many streams flowing through it, and most of the groundwater withdrawals are from the Eastern one. The other reasons given in paragraph 17, such as "tree ring analysis" in all three aquifers, contained no explanation as to how they show hydrological and geological similarities among them at all, much less sufficient to justify the application of the Eastern Aquifer study to all three.

The upshot is that the OWRB, against the expert opinion of the Oklahoma Geological Survey's only qualified hydrogeologist, reduced the allowable usage of the groundwater of the landowners

18; Tab 101, Vol. 6, 00:33:00–34:19.) He did not differentiate storage coefficients between the admittedly different rocks and layers. This is demonstrated by the report prepared by Dr. Rahi and Dr. Halihan. (Tab 34.) As part of the A-S study, these scientists were commissioned to determine the hydraulic properties of the A-S aquifer, including storage coefficient. (*Id.* at 892.) Their report makes clear that the 0.008 storage coefficient value that Mr. Christenson used in his report is strictly associated with the confined and semi-confined portions of the aquifer - *not* the unconfined portion. In fact, the Rahi/Halihan report determined that the average storage coefficient for the entire confined/semi-confined portion of the aquifer was 0.011, which is 30% greater than the 0.008 storage coefficient that Mr. Christenson used in the model. (*Id.* at 892, 936.) Had this value been used in the model, the model would have shown that more groundwater could be pumped with less impact on the springs and streams. Instead, Mr. Christenson used the lower storage coefficient value of 0.008, which guaranteed a model result that predicted a greater adverse impact on springs and streams. As Dr. Poeter explained, the presence of this unconfined zone serves to dampen or lessen the impact on springs and streams from pumping groundwater and, therefore, it is critical to account for this unconfined zone in the computer model. Poeter, (Tab 101, Vol. 8, 00:15:40–18:15 and 00:29:40–30:30 and 00:38:25–38:38 ; Tabs 88 and 89.) This was not done.

As Dr. Poeter testified at the hearing, Mr. Christenson failed to properly address the unconfined portion of the A-S in his model. *See* Poeter, (Tab 101, Vol. 8, 00:26:40–30:15 and 00:38:27–40:08; Tab 88.) Instead, he treated the unconfined zone as a confined zone. Dr. Poeter testified that this was acceptable, but *only if* two things were done. First, the zone should be

at the Central and Western Aquifers by 90% without acquiring any data respecting the groundwater recharge and discharge rates of those two separate aquifers. The reasons for doing so did not take into account the rights respecting the landowners over those two aquifers. It only considered the needs of the OWRB staff.

assigned the proper storage coefficient for the unconfined zone, which all of the hydrologists recognized should be at least ten times higher than the storage coefficient for the confined zone. Mr. Christenson failed to do this, instead assigning the unconfined zone the same and much smaller coefficient of the confined zone. Second, if you are going to model an unconfined zone as a confined one, the storage coefficient for the unconfined zone must be divided by the thickness of the unconfined zone, not the thickness of the entire aquifer, and the resulting value utilized in the model for the unconfined zone. Mr. Christenson failed to do this as well, resulting in a significant error in the modeling results.

The first modeling mistake was the failure to use the proper storage coefficient for the unconfined zone. Dr. Poeter re-ran Mr. Christenson's exact computer model (which she downloaded from the USGS Water Science Center website) but used an actual storage coefficient value for the unconfined zone. (Tab 89; Poeter, Tab 101, Vol. 8, 00:49:35–51:06.) Out of all of the study wells which were tested, there was only one well, Well No. 85182, that was completed exclusively in the unconfined zone. Poeter, (Tab 101, Vol. 9, 00:53:40–54:40; Christenson, Tab 101, Vol. 13, 00:19:30–20:16.) The depth of this well was 53 feet, which corresponds to the unconfined zone utilized in the model which had a thickness of 65.6 feet. The storage coefficient for the unconfined zone as measured in Well No. 85182 was 0.07475 which, as all of the hydrologists predicted, was approximately ten times greater than the 0.008 storage coefficient for the confined zone. When Dr. Poeter properly accounted for this unconfined zone, the model predicted that the reduction in stream flow from groundwater pumping was five times (500 percent) less than what the model predicted when the unconfined zone was treated as a confined zone using the .008 confined zone storage coefficient (as Mr. Christenson did). *Id.* Poeter, (Tab 101, Vol. 8, 00:31:30–32:25.)

Dr. Poeter explained why the unconfined zone is so important in predicting the impact of groundwater withdrawal on springs and streams. *Id.* As Mr. Christenson's PowerPoint so clearly demonstrates, an aquifer with a smaller storage coefficient will result in a larger drawdown in the water level for every foot of water withdrawn, hence a bigger adverse impact upon springs and streams. (Tab 27, p. 641.) Thus, using only the lower 0.008 storage coefficient representative of the confined lower portion of the A-S aquifer, as Mr. Christenson did, the model will predict a much larger water level drawdown and, therefore, much more adverse impact upon the volume of flow of springs and streams. As Mr. Christenson's PowerPoint showed, using the confined-layer 0.008 storage coefficient, a foot of water withdrawal will draw down the groundwater level by 125 feet. *Id.*

However, where, as here, the upper portion of the aquifer is unconfined, as water is withdrawn the unconfined zone gives up a huge amount of water with much less draw-down in the water level compared to what would result from pumping a confined aquifer. Dr. Poeter explained that the reason for this is the different mechanisms for producing water from unconfined and confined zones. When the water level is drawn down in an unconfined zone, the water freely drains from the pore space, meaning it gives up a lot of water with less drawdown in the water level. Poeter, (Tab 101, Vol. 8, 00:23:30–24:30 and 00:41:00–42:02.) This is not the case with the confined portion of the aquifer in which the water does not drain from the pore space, rather a small amount of water is released as a result of the pressure differential caused by the pumping. *Id.* In layman's terms, small amounts of water are squeezed out of the confined portion of the aquifer, whereas the unconfined zone gives up a large amount of water freely with much less comparable drawdown. *Id.* Dr. Poeter testified that, when properly accounted for, the presence of the unconfined zone dampens the water level drawdown predicted by the computer

model, meaning the unconfined zone lessens drawdown from the confined zone and, therefore, lessens the predicted adverse impact on springs and streams. *Id.* Mr. Christenson failed to account for this unconfined zone, which again, all seven of the hydrologists, including Mr. Christenson, agreed was present in the A-S. He did not deny any of this in his testimony at the hearing.

Dr. Poeter summarized her opinions about the model as follows:

The model is not ready for use in making policy decisions.

(Tab 89, p. 1736.)

V. THE BOARD'S ORDER IS ALSO ARBITRARY AND CAPRICIOUS BECAUSE THE MAY DETERMINATION IS NOT BASED UPON THE SCIENTIFIC CRITERIA IT PURPORTS TO ADOPT AND THE ORDER EXPLICITLY RECOGNIZES THIS

Agency decisions must be based upon sound reason. *El Paso Natural Gas Co. v. Oklahoma Tax Commission*, 929 P.2d 1002, 1008 (Okla. App. 1996). If they are not founded on sound reason, they are, by definition, "arbitrary and capricious". *Id.*; *Metcalf v. Okla. Bd. of Medical Licensure and Supervision*, 848 P.2d 48, 50 (Okla. App. 1992). To determine whether an agency decision is arbitrary and capricious, the appellate court obviously must scrutinize the "reasons" the agency gave for its decision. *Progressive Independence, Inc., v. Oklahoma State Dept. of Health*, 174 P.3d 1005, 1008 (Okla. App. 2007). If the reasons given by the agency are irrational, the decision is arbitrary and capricious and must be reversed *Umholtz v. City of Tulsa*, 565 P.2d 15, 25 (Okla. 1977).

At all times the OWRB has attempted to justify its MAY determination as the product of sound science⁸, namely the use of the Technical Advisory Group's empirical definition of the natural flow which was tied to the IFA fish habitat study and the computer modeling based

⁸ Cunningham, Tab 101, Vol. 1, 00:33:49-33:56.

thereon. This was the case in public meetings held by the OWRB in August 2009, in the public hearing in support of the OWRB's tentative MAY determination held in February/March, 2012, and at the MAY Hearing held in May, 2012. Smithee, (Tab 101, Vol. 10, 00:22:00–23:58; Tab 41; Cunningham, Tab 101, Vol. 2, 00:12:00–14:00; Tab 3, p. 6; Tab 61.) In fact, Oklahoma Groundwater Law requires that the MAY determination be based upon a scientific hydrologic study. 82 O.S. §§1020.5-1020.6. As explained below, through the evidence presented at the MAY Hearing, it was revealed that the MAY is *not* based upon or supported by the scientific criteria which the OWRB consistently offered in support of same, *and the MAY Order expressly acknowledges this fact.* (Tab 170, p. 2608 ¶ 36 and 37.) Despite this revelation, the Board proceeded to adopt the exact same MAY without offering any other scientific criteria or justification for its decision, rendering the MAY determination arbitrary and capricious. *Id.*

At the MAY Hearing OWRB employees explained the “science” which purportedly supported the Tentative MAY. As explained above, because the OWRB decided that “natural flow” could not be given its plain and ordinary meaning, the OWRB set about to create a new definition. The evidence at the MAY hearing clearly reflected this:

Q (by Mr. Walker): Now, I understand that you guys got together and you said well, we don't know what natural flow means as it is used in Senate Bill 288, so let's look at different ways that we could try to define natural flow. Correct?

A (by Derek Smithee): Correct. (Tab 101, Vol. 10, 00:10:02–10:25.)

To come up with a definition of natural flow, the OWRB formed the Technical Advisory Group which was charged to come up with an empirical number, *i.e.* the percentage reduction in stream flow that was deemed acceptable from a scientific perspective, so that the computer modelers could then determine the amount of groundwater withdrawal that correlated with the empirical number:

(by Derek Smithee)...It was noted that the ground water modeling needed to have some sort of surface water spring input parameter, uh some sort of target, and I was asked to pull together a work group to provide feedback to Noel and Scott (the computer modelers) as they did their ground water modeling - give them the information they needed for the cell that was the target for what constitutes natural spring flow...we also sat and discussed well, what are the purposes that this water is to be put towards and what are the impacts and uses of this natural flow regime we don't want to reduce...And *in the end, we had to arrive at an empirical answer.* (Tab 101, Vol. 10, 00:04:45–05:23 and 00:10:54–11:36.)

After considering several different ways to define natural flow, the Technical Advisory

Group adopted a definition which ensured the maximum restriction upon groundwater use:

Q (by Mr. Walker): Tell us, after you studied all of the ways you could look at this issue of natural flow, what does this (PowerPoint) slide tell us in terms of what you decided to do?

A (by Mr. Smithee): We decided, as a group, that the most sensitive indicator that science would allow us to get at was...spring dependent fish species...

Q: But, you had to have a general understanding that by setting the most sensitive (criteria), that was going to have an effect of restricting groundwater use the most.

A: Correct. (Tab 101, Vol. 10, 00:17:18–19:34.)

The Technical Advisory Group selected the four fish species as the criteria to assess reductions in stream flow. (Tab 41, p. 1103; Tab 36, p. 948; Tab 61, p. 1481.) The Group's specific goal in establishing an empirical number was to protect fish population:

Q (by Mr. Walker): And, was the ultimate purpose in picking these fish to try to look at stream flows that would protect *fish population*?

A (by Mr. Smithee): Yes. (Tab 101, Vol. 10, 00:20:40–20:51.)

The Technical Advisory Group then relied upon the Instream Flow Assessment which was conducted as part of the Arbuckle-Simpson hydrologic study. (Tab 101, Vol. 10, 00:22:14–23:01.) The IFA looked at three different stream flow regimes, Baseline Low Flow, Baseline High Flow and Baseline Annual Average Flow, as actually measured over the one-year IFA study period. (Tab 36, Tables 6–8.) The IFA compared the changes in fish habitat for the four

selected species with reductions in the three different stream flows.⁹ As Mr. Smithee described it, the IFA results reflect “how much important habitat is lost as you lose a certain amount of flow.” (Tab 101, Vol. 10, 00:23:50–23:57.)

For purposes of selecting the criteria to provide to the computer modelers, the Technical Advisory Group selected the IFA’s *Baseline Low Flow* as the specific stream flow regime to use for purposes of analyzing reductions in fish habitat:

Q (by Mr. Walker): And so when you are looking at this study (the IFA), you guys (the Technical Advisory Group) were really looking at the *Baseline Low Flow*, correct?

A (by Mr. Smithee): Correct. (Tab 101, Vol. 10, 28:45-28:53.)

Q: Well its critical in the sense that we’re looking at in the Instream Flow Assessment is what predicted reductions this Baseline Low Flow condition will cause, correct?

A: Correct. (*Id.* at 30:12-30:30)

Q: And we started out with the Baseline and I want to focus on the Low Flow because that’s really kind of the critical criteria you guys used, right?

A: Okay. (*Id.* at 30:52-31:02)

Q: Then you start going - well what if we start reducing the Baseline Low Flow by different increments and let’s see what affect that’s going to have on habitat for these fish, correct?

A: Correct. (*Id.* at 31:24-31:37)

Q: We’ve got this Baseline Low Flow condition in the summer when the stream is at its very lowest, how much is that going to affect the fish habitat, right?

⁹ The percentage reduction in fish habitat varied drastically depending upon which stream flow was selected. For example, the ISA reflects that, for Blue River, a 20% reduction in the Baseline Low Flow resulted in a 0.3% reduction in least darter habitat, whereas a 20% reduction in Baseline Average Annual Flow resulted in a 2.7% *increase* in least darter habitat, and whereas a 20% reduction in Baseline High Flow resulted in a 7.2% *increase* in least darter habitat. Tab 36, Table 9, p. 30. However, in other instances Baseline Average Flow or Baseline High Flow resulted in the most reduction in fish habitat. *Id.*, Table 8, p. 29. Therefore, it highly matters which stream flow regime is selected as the criteria to measure the effect on fish habitat, which OWRB chose to equate with “natural flow”.

A: Correct. (*Id.* at 31:57-32:11)

The MAY Order erroneously finds that Baseline Low Flow, “is the lowest *annual average* at that location”. (Tab 170, Bates 2608, ¶36.) The evidence showed that the Baseline Low Flow is the lowest stream flow at a particular time of the year, *i.e.* when the weather is hot and dry and the stream is at its lowest flow of the year and is almost entirely dependent upon spring flow. (Smithee, Tab 101, Vol. 10, 00:28:30–28:44.) As Mr. Smithee put it, “it’s (Baseline Low Flow) almost always during the summer time.” Smithee, *id.* at 00:28:40–28:44. Thus, Baseline Low Flow is *not* an annual average flow as the MAY Order erroneously states, but rather is the lowest seasonal flow of the entire year.

This is a critical point. The Technical Advisory Group selected the four fish most sensitive to reductions in stream flow, and then selected the lowest flow within the year, *i.e.* Baseline Low Flow, and then looked at what reduction in that specific low flow regime was acceptable based upon impact to fish habitat. Because the Technical Group selected the lowest low flow to establish the criteria to define “natural flow”, it went without saying that even minor reductions in that low flow would result in significant reductions in fish habitat - much more so than had the Technical Advisory Group selected the Baseline Average Flow or Baseline High Flow also addressed in the IFA. And it was the selection of Baseline Low Flow as the criteria to measure reduction in natural flow that would render so significant the computer modeling errors discussed herein.

Having selected Baseline Low Flow as the criteria to define natural flow, the IFA then allowed the Technical Advisory Group to examine the specific reductions in fish habitat that corresponded with reductions in the Baseline Low Flow. In this manner the Technical Advisory Group was to determine what percentage reduction in fish habitat was deemed acceptable and

then translate that into a percentage reduction in the Baseline Low Flow which it selected as a proxy for “natural flow”.

As shown above, the evidence at the MAY hearing clearly showed that the Technical Advisory Group based its determination of natural flow upon the IFA’s *Baseline Low Flow*. However, when the Technical Advisory Group finally conveyed its empirical number to the computer modelers, it did not express that empirical number as a percentage reduction in the Baseline Low Flow. (Tab 91; Smithee, Tab 101, Vol. 10, 00:32:45–33:14.) Instead, and inexplicably, the Technical Advisory Group expressed the empirical number as a percentage reduction in the “75th Percentile Flow” which it called “Base Flow”. The 75th Percentile Flow is that amount of water in the stream which occurs at least 75% of the time throughout the year. Smithee, (Tab 101, Vol. 10, 00:23:59–24:19.)

The Technical Group then prepared a graph in which it overlaid and compared reductions in the 75th Percentile Flow (Base Flow) to the reductions in fish habitat as shown in the IFA. (Tab 41, p. 111.) This graph was presented by the OWRB as a PowerPoint slide in a public meeting held in August, 2009, and it was discussed at the MAY Hearing. As Mr. Smithee described this slide:

This became kind of the *master slide that drove the decision making* in that those lines represent...how much important habitat is lost as you lose a certain amount of flow. So reduction from Base Flow.

Smithee, (Tab 101, Vol. 10, 00:23:21–23:58.)

However, there was and is a fatal scientific flaw in this graph or master slide. The changes in fish habitat as shown on the slide *only* correspond to reductions in the IFA Baseline Low Flow - not to reductions in the 75th Percentile Flow. The 75th Percentile Flow was not studied, measured or addressed in the IFA, therefore it is not known what changes in fish habitat correspond to reductions in the 75th Percentile Flow. Because of this, it is scientifically

impermissible to overlay and compare the IFA reductions in fish habitat to the 75th Percentile Flow. Not only are the two flows different, but there is a *big difference* between the two:

Q (by Mr. Walker): So when we see Baseline Low (Flow) on this chart (in the IFA), that is the Base Flow that we're going to be talking about?

A (by Mr. Smithee): No. That is the Baseline Low Flow on this chart, but that's not Base Flow.

Q: Okay. What is Base Flow then?

A: Base Flow (75th Percentile Flow) is that -- that flow that occurs at that location the majority of the time. At least 75% of the time. The Low Flow (Baseline Low Flow) is the lowest measured flow at any time. *There's a big difference.*

Smithee, *id.* at 00:28:54–29:38.

It might have been feasible to compare the IFA fish habitat results which were based upon Baseline Low Flow to reductions in the 75th Percentile Flow if there was a scientifically recognized method to convert Baseline Low Flow into the 75th Percentile Flow. However, the Technical Advisory Group Chair was forced to admit that he could not identify any accepted scientific method from which it was possible to convert Baseline Low Flow to 75th Percentile Flow:

Q (by Mr. Walker): But this report that analyzes fish habitat (the IFA) doesn't tell you what reductions in Base Flow (75th Percentile Flow) has on fish habitat, right?

A (by Mr. Smithee): That's correct. That's correct. (Smithee, *id.* at 33:14–33:28)

Q: Can you show us the study or report where you converted these Baseline Low Flows into these Base Flow numbers that you actually used for your recommendation.

A: I cannot. (Smithee, *id.* at 00:33:47–34:01)

Q: So you are now looking at (on the Master Slide) reductions in Base Flow (75th Percentile Flow) and comparing it to something (the IFA fish habitat data) that's not Base Flow (*i.e.* Baseline Low Flow), right?

A: That's correct. (Smithee, *id.* at 00:37:42–37:51)

Q: Can you give us the conversion factor so we can multiply the conversion from Base Flow - Baseline (Low Flow) to Base Flow?

A: I cannot. (Smithee, *id.* at 01:05:28–1:05:37)

Despite the scientific disconnect between the fish habitat results (which, again, were based upon Baseline Low Flow) and the 75th Percentile Flow (*i.e.* Base Flow), the Technical Advisory Group proceeded to come up with an empirical number to define natural flow that was expressed as a reduction in the 75th Percentile Flow (Base Flow). Ultimately the Technical Advisory Group advised the computer modelers to determine what amount of groundwater withdrawal equated to a reduction of no more than 25% in the 75th Percentile Flow:

Q (by Mr. Walker): Your Committee decided a 25% reduction in Base Flow (75% Percentile Flow) was the maximum amount your committee was willing to live with, right?

A (by Mr. Smithee): That's correct. (Smithee, *id.* at 01:04:10–04:23)

Q: ...as a result of your Committee's meeting, it was communicated to the (computer) modelers - tell us what a 25% reduction in Base Flow (75th Percentile Flow) means in terms of groundwater withdrawal?

A: That's right. (Smithee, *id.* at 00:44:33–44:46; Tab 91)

There can be no doubt that the Board adopted and relied upon the Technical Advisory Group's supposed scientific method, including its definition of natural flow. Paragraphs 29 through 35 of the MAY Order confirm that the Board adopted fish habitat as the criteria to define natural flow, and supposedly adopted the Technical Advisory Group's 25% reduction in Base Flow as the criteria to measure the S.B. 288 reduction in natural flow.

Once the computer modelers were provided the empirical number that defined reduction in "natural flow", they proceeded to actually model yet again an entirely different stream flow regime – being *neither* the Baseline Low Flow *nor* the 75% Flow. When it came time to actually populate and run the model, now they used the Five-Year Average Annual Flow ("Five-Year

Flow” hereinafter), looking at the effect that groundwater withdrawal had in terms of reduction in that flow regime. (Tab 101, Vol. 13, 00:23:40–24:55.) In fact the model was calibrated and optimized to the Five-Year Flow - *not* the 75th Percentile Flow. (*Id.*; Tab 156, p. 2322.) The model report does contain simulations of groundwater withdrawal to the 75th Percentile Flow; however, the computer model was never calibrated or optimized to evaluate such flow. *Id.*

The model reflected that a MAY of 28,395 AF equated to an approximately 25% reduction (24.1%) in “base flow”, which in turn equated to a .125 acre feet EPS. (Tab 18, p. 323.) However, these modeling results were for the *Five-Year Flow* - *not* for the 75th Percentile Flow. The Five-Year Flow was not studied, measured or addressed in the IFA, therefore, it is not known how reductions in the Five-Year Flow impact fish habitat. Moreover, the Five-Year Flow is not the stream flow that the Technical Advisory Group defined as “natural flow” for purposes of applying S.B. 288. Therefore, there is no scientific basis upon which to use the Five-Year Flow as the basis to define reduction in natural flow.

The model results for the 75th Percentile Flow showed that the same MAY, *i.e.*, 28,395 AF (and corresponding EPS of .125 AF/acre), resulted in a 35% reduction in the 75th Percentile Flow, far in excess of the 25% that the Technical Advisory Group determined to be acceptable. (Tab 18, p. 323.) Based upon the Technical Advisory Group’s definition of “natural flow”, a MAY of 28,395 AF/.125 EPS resulted in a reduction of natural flow in violation of S.B. 288.

In its presentation to the Board on February 13, 2012 in support of the 78,404 AF Tentative MAY, the OWRB staff represented to the Board that an EPS of .125 AF/acre equated to a 24% reduction in “base flow”. (Tab 61, p. 1482.) Again, however, these numbers refer to the modeling results for the Five-Year Flow, not to the 75th Percentile Flow which the Technical Advisory Group directed the modelers to model nor to the Baseline Low Flow that the Technical

Advisory Group had defined as “natural flow”. (*Id.*; Tab 18, 323 (Pennington Creek); Tab 27, p. 712.) In the same presentation, OWRB staff represented to the Board that the Technical Advisory Group “deemed a reduction in *5-year avg. base flow* by no more than 25% as acceptable limit.” (Tab 61, p. 1481.) This statement is categorically *false*. As shown above, the testimony of the Technical Advisory Group Chairman (Smithee) was that the 25% limit that the Technical Advisory Group provided to the computer modelers referred to the 75th Percentile Flow, and in reality it should have referred to the Baseline Low Flow since that is the IFA flow regime that the Technical Advisory Group actually chose to define natural flow. It is clear that the Board relied upon this error, as its Tentative MAY Order recites that the Technical Advisory Group recommended that the “five-year base flow...not (be) reduced by more than 25%”, when in fact the Technical Advisory Group never made such recommendation.

The OWRB staff seemed not to realize, or not to admit to themselves and the public, that there is a *big difference* in the various flow regimes, although the modeling results make the difference readily apparent. Again, a MAY of 28,395 AF results in a 25% reduction in the Five-Year Flow but results in a 35% reduction in the 75th Percentile Flow, so it does make a big difference which stream flow regime is utilized. At no time did the Technical Advisory Group ever utilize the Five-Year Flow to define natural flow. However, the OWRB staff improperly mixed apples and oranges, treating the different stream flows as if they are one and the same when their own studies showed they are not even close to being the same. In doing so, the staff caused the Board to stray from the “science” upon which it claimed the MAY determination was based.

In the end, the Board’s final MAY determination of 78,404 AF is based neither upon the computer modeling results nor the Technical Advisory Group’s empirical definition of natural

flow. Instead, the number was picked out of thin air. Rather than proposing the computer modeling result of .125 AF (which again corresponded with a 25% reduction in the modeling results for the Five-Year Flow and not the 75th Percentile Flow), the OWRB staff recommended that the Board adopt 78,404 AF as the MAY to account for “modeling variability” and “conservative assumptions”. (Tab 61, p. 1483.) However, when asked at the MAY Hearing to explain how modeling variability and conservative assumptions justified ignoring the modeling results and increasing the modeled .125 AF by 60% to .2 AF, the OWRB had no explanation:

Q (by Mr. Walker): Can you tell us what the model variability was that you discussed to adjust the model results to this .2 acre feet?

A: I think that’s a general statement and I’ll have to have our scientist explain...I’m not qualified to say.

(Tab 101, Vol. 1, 01:07:30–07:58.) No scientist was ever offered at the MAY Hearing to explain or justify the basis for changing the modeling results by 60%.

Based upon the modeling results for the 75th Percentile Flow, a MAY of 78,404 AF equates to over a 70% reduction in the 75th Percentile Flow (Base Flow), far in excess of what the Technical Advisory Group said was acceptable. (Tab 101, Vol. 7, 00:27:48–28:57.) No explanation was ever provided as to what a 70% reduction in the 75th Percentile Flow means in terms of the selected criteria of fish population or fish habitat. And if 70% is acceptable, why isn’t 80% or 90% also acceptable? The problem with the MAY determination is that it is wholly unsupported by the scientific criteria that the Board selected to define reductions in natural flow and it lacks any scientific explanation whatsoever. In fact, the MAY adopted by the Board is clearly not based on the 75th Percentile Flow (Base Flow). (Tab 101, Vol. 13, 01:00:33–00:46.)

The MAY Order expressly admits the above-described disconnect between its selected scientific criteria its MAY determination:

Although the Technical Group determined that a 25% reduction in baseline low flow...would be the maximum allowable reduction, it asked the USGS to consider whether the impact of pumping would reduce the 75% exceedance of total flow by 10-25%...The record offers no rationale for this change. There is no indication how a conversion from the 75-percent exceedance to the baseline low flow would work, how it would impact fish habitat, or how using the baseline low flow instead of the 75-percent exceedance would have impacted the model results - nor is there any explanation to show that the difference would be immaterial.

(Tab 170, p. 2608 ¶ 36-37.)

Having acknowledged that the scientific criteria upon which the MAY determination had been based had failed and was jettisoned, the Board nevertheless proceeded to adopt the *exact same* MAY/EPS, *i.e.* 78,404 AF/.2 AF. The sole explanation given in support of its determination was the following:

Even without relying on the 25% baseline low reduction, however, the Board concludes that the modeling approach - which examined the impact of pumping at different EPSs on different types of flow - is reasonable give the language of Senate Bill 288...[N]othing in the statute requires the linkage of “natural flow” to fish population or habitat. Natural flow could just as reasonably be interpreted as relating to the 75-percent exceedance: this approach accounts for the relationship of pumping to stream flow as contemplated by the Statute; and it tolerates some but not too much reduction in stream flow, which harmonizes the “will not reduce” language with the overall Groundwater Law’s policy of permitting groundwater use.

Id. at ¶ 38.

This proffered explanation states that the Board *could just as reasonably* have interpreted natural flow to relate to the 75th Percentile Flow rather than fish habitat. However, earlier in the MAY Order, the Board specifically construed “natural flow” to refer to fish habitat:

The Board construes the phrase “natural flow to refer to...natural habitat of area streams...To operationalize its interpretation of the statutory mandate...the (Technical) Group identified representative (fish) species - two species of minnows and two species of darters...to consider what level of withdrawals would accommodate an acceptable maintenance of the species’ habitat.

Id., Bates 2606-2607, ¶ 29-30.

While the Board *could* have selected a different criteria, assuming there was sound scientific basis to support same, the MAY Order makes clear that the Board did not do so. Rather the MAY Order expressly states that the Board adopted and used the Technical Group's scientific method and empirical number:

The Board determined that...a reduction in base flow...of not more than 25% should be acceptable...

The Board finds that the selection of indicator fish species was reasonable and is supported in the record...

The Instream Flow Assessment makes a reasonable connection between protection of fish populations and the availability of fish habitat...

The Board finds there is substantial evidence to support the conclusion that *its reliance on fish habitat*, as established by the Instream Flow Assessment, was reasonably related to fish populations.

Id., p. 2607-2608 (§ 31-35)(emphasis added).

This is why the disconnect between the chosen criteria and the actual MAY determination, as admitted in Paragraphs 36-37 of the MAY Order, is so critical. The Board *did* adopt the Technical Advisory Group's criteria (empirical number) and yet the selected criteria does not support the MAY. The scientific basis offered in support of the MAY completely failed.

But even assuming that the Board *could have* used the 75th Percentile Flow to define natural flow, as the MAY Order suggests, as explained above, the 78,404 AF MAY is *not* based upon the 75th Percentile Flow. It is based upon the modeled results for the Five-Year Flow. In fact, the model itself was only calibrated to the Five-Year Flow, not the 75th Percentile Flow. The proffered explanation reveals the Hearing Examiner's, and hence the Board's profound disregard of the underlying evidence.

If in fact the Board had relied upon the 75th Percentile Flow to make its determination, then the MAY Order would be internally inconsistent. On the one hand the Order states that it

used the Technical Advisory Group's fish habitat criteria to make its decision (*Id.*, Bates 2606-2607, ¶ 29-31), but on the other hand it says it did not (*Id.*, Bates 2608, ¶ 36-38). Which is it? The MAY Order is hopelessly flawed.

The proffered explanation states that the 78,404 MAY tolerates some, "*but not too much*", reduction in stream flow. (Tab 170, p. 2608 ¶ 38.) However, no explanation is given as to how the Board determined that the reduction in flow was "not too much". No *evidence* was presented to explain any such rationale or decision. That had been the purpose of the Technical Advisory Group's work and empirical criteria - to determine how much reduction in stream flow was not too much, which was specifically tied to reductions in fish habitat as measured in the IFA. However, once the Board recognized that the Technical Advisory Group's criteria had not been utilized due to the disconnect in the science, there was no longer any criteria by which to judge how much reduction in flow was "too much". Nowhere in the MAY Order does the Board state or identify the criteria by which it made this all important determination - how much is too much.

How did the Board determine that 78,404 AF does not reduce stream flow too much? It's a conspicuously specific number. No criteria, basis or explanation is given. What criteria was utilized to determine that 150,000 AF, or 300,000 AF was too much, but that 78,404 AF was the Goldilocks "just right". Again, the Technical Advisory Group's empirical number was supposed to provide this criteria, but it was not utilized, leaving the Board's determination untethered to any scientific or reasoned criteria.

The MAY Order attempts to defend the Board's determination by claiming it is based upon all of the evidence in the record and the Board's exercise of "its expertise and scientific judgment". (Tab 170, p. 2611 ¶ 56.) Again, however, that is no explanation whatsoever as to the

criteria it applied to determine that 78,404 AF would not result in too much reduction in stream flow, but that any greater number would. What the Board has really done is assert that 78,404 AF is the right answer “because it says so”. While it has tried to cloak its decision with claims of scientific expertise and judgment, it is nothing more than classic *ipse dixit*. Under such rationale, the Board could have picked any number it wanted and then simply argued its decision is unassailable because it says so. Such an approach would render the science a mere charade. While the Board gets to make the final decision, it *must* provide a reasoned basis for its decision, backed by substantive evidence that justifies it, which was not done here.

At the MAY Hearing, the OWRB offered the Technical Advisory Group’s empirical number as the basis and justification for the proposed MAY. That was the sole scientific criteria and evidence upon which this matter was tried. Both the Tentative MAY Order and the MAY Order recognize this fact. However, after the hearing was over, and recognizing that its scientific criteria failed, the Board now attempts to offer an entirely new (albeit unexplained) criteria to support its MAY determination. That is fundamentally unfair. If the OWRB had wanted to offer a different criteria to support its determination than the one that was actually offered, that should have been made clear and known to the parties in the Tentative May Order so that the parties could have presented evidence and challenged such criteria at the MAY Hearing. That was not done. Having failed to demonstrate that its proffered criteria supported its determination, the Board cannot now, *after the fact*, shift to a new unidentified criteria of which the parties were unaware and never had a chance to challenge through the presentation of evidence.

An agency order without a determining principle is arbitrary and capricious and cannot be affirmed. *Scott v. OSSAA*, 2013 OK 84, ¶ 34, 313 P.3d 891, 904. Here, the Board Order purports to adopt the Technical Advisory Group’s definition of natural flow and empirical

standard, but then acknowledges that such definition and standard do not support the MAY. Nevertheless, the Order still makes the MAY determination because the Board “could” have used a rationale even though it did not. The MAY determination is hopelessly irrational, resting solely upon the Board’s *ipse dixit*. It must be reversed.

VI. THE BOARD’S ORDER EFFECTS AN UNCONSTITUTIONAL TAKING OF PRIVATE PROPERTY BECAUSE IT OVERTLY APPROPRIATES PRIVATELY OWNED GROUNDWATER FOR PUBLIC USE

Though the legislature may generally regulate water use to promote public welfare, any action that converts private water for public use without compensation constitutes an impermissible taking. *Franco-Am. Charolaise, Ltd. v. Oklahoma Water Res. Bd.*, 1990 OK 44, 855 P.2d 568, 577. Here, the Board’s order prohibits any use of at least 13,000,000 acre-feet of privately owned groundwater so that more water may be put to use in public streams. Thus, even if the order did not suffer from any of the infirmities discussed above, it would still be invalid as an impermissible taking of private property without compensation.

Both the Oklahoma and the federal constitutions prohibit appropriating private property for public use without just compensation. *See* U.S. CONST. amend. X; OKLA. CONST., Art. II, § 24. “[T]he Constitution measures a taking of property not by what a state says, or what it intends, but by what it does.” *Hughes v. State of Wash.*, 389 U.S. 290, 298, 88 S. Ct. 438, 443, 19 L. Ed. 2d 530 (1967)(Hughes, J. concurring) (cited with approval in *Apr. v. City of Broken Arrow*, 1989 OK 70, 775 P.2d 1347, 1353). So though the state may generally regulate an owner’s use of her property, a regulation that goes too far will result in either a regulatory partial taking or a *per se* taking. *Lingle v. Chevron U.S.A. Inc.*, 544 U.S. 528, 536–40, 125 S. Ct. 2074, 2080–82, (2005). And, as the Supreme Court affirmed just this week, the same principles apply regardless of the type of property involved or the amount taken. *Harne v. Department of Agriculture*, 2015 WL 2473384, *5-6 (U.S.).

Ownership of a physical thing entails “the rights ‘to possess, use and dispose of it.’” *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, 435, 102 S. Ct. 3164, 3176, (1982) (quoting) *United States v. General Motors Corp.*, 323 U.S. 373, 378, 65 S.Ct. 357, 359, 89 L.Ed. 311 (1945). Compensation is not necessarily required when the state “prohibit[s] a property owner from making certain uses of her private property.” *Jacobs Ranch, L.L.C. v. Smith*, 2006 OK 34, ¶ 51, 148 P.3d 842, 855, *as corrected* (Nov. 6, 2006) (quoting *Tahoe–Sierra Preservation Council, Inc. v. Tahoe Regional Planning Agency*, 535 U.S. 302, 122 S.Ct. 1465 (2002)). However, a partial regulatory taking occurs whenever an otherwise valid regulation substantially impairs property’s usefulness to its owner. *See Material Serv. Corp. v. Rogers Cnty. Comm’rs*, 2006 OK CIV APP 52, ¶ 7– 9, 136 P.3d 1063, 1066. Such impairment is determined using “‘essentially ad hoc, factual inquiries,’ designed to allow ‘careful examination and weighing of all the relevant circumstances’” regarding the specific property and its owner’s desired use. *Tahoe–Sierra*, 535 U.S. at 321, 122 S.Ct. 1465 (citations omitted); *Id.* Though there is no set formula, the factors articulated by the Supreme Court in *Penn Central Transportation Co. v. New York City*, 438 U.S. 104, 98 S.Ct. 2646, 57 L.Ed.2d 631 (1978), are often applied.

When the state destroys all the rights of ownership, however, the result is a *per se* taking for which compensation is categorically required. *Loretto* 458 U.S. at 435-36; *Lingle*, 544 U.S. at 538, 125 S. Ct. at 2081; *Kaiser Aetna v. U.S.* 444 U.S. 164, 100 S.Ct. 383 (1979). The paradigmatic example is when the state directly occupies or appropriates private property, but literal occupation or possession is not required. *See Loretto* 458 U.S. at 435-36; *Lucas v. S. Carolina Coastal Council*, 505 U.S. 1003, 1013, 112 S. Ct. 2886, 2892, 120 L. Ed. 2d 798 (U.S.S.C. 1992). A regulation that precludes an owner from making any beneficial use of her property or that makes it available for use by others is tantamount to a direct appropriation or

ouster and likewise constitutes a *per se* taking. *Lingle*, 544 U.S. at 537–38, 125 S. Ct. at 2081. In such cases, the size and scope of the appropriation and its effect on the owner’s desired use of the property do not matter. Even if the state appropriates only a small portion of a person’s holdings, the result is still a taking and compensation is still required. *Loretto* 458 U.S. at 435-36.

In Oklahoma, percolating groundwater is private property belonging to the owner of the overlying surface. 60 O.S. § 60. As such, it is protected by the constitutional prohibitions against takings without compensation. *Franco-Am. Charolaise, Ltd. v. Oklahoma Water Res. Bd.*, 1990 OK 44, 855 P.2d 568, 576 (protection extends to “*every valuable interest which can be enjoyed and recognized as property*” (emphasis in original)). Both Oklahoma and federal cases hold that government action causing private water to be available for public use is categorically a taking.

In *Franco-American*, the Oklahoma Supreme Court examined a statutory amendment that reduced the riparian right to use stream water from any reasonable use to domestic uses only. *Id.* Riparian Rights were restricted in contemplation of making more stream water available for use as public water. The court recognized that the state could regulate an owner’s use of water, but held that a taking nevertheless results when a restriction causes private water to be made available for public use:

The OWRB argues the 1963 amendments are a permissible exercise of the police powers just as a zoning ordinance would be. That contention is inapposite when, as here, the use of stream water is *not just restricted but is taken for public use*.

Id. at 577 (emphasis in original). Without relying on any of the facts specific to the parties in the case, the court held the amendment facially unconstitutional because it destroyed all riparian rights to non-domestic water use. *Id.* at 569. The court’s analysis did not require there to be a specific use to which the restricted water was to be directed, only that riparian water rights were reduced with the result that more would be available for use by others.

Franco-American's holding regarding categorical takings whenever private water is converted to public use is consistent with federal water law cases. In its 2008 opinion in *Casitas Municipal Water District v. United States*, the Federal Circuit considered the case of a water district that was authorized to use all water that a dam diverted from the Ventura River into a canal. 543 F.3d 1276. At the direction of the U.S. Bureau of Reclamation, the district built a fish ladder meant to allow endangered trout to bypass the dam. *Id.* at 1282. Operating the fish ladder required the district to redirect water from the canal, which the district asserted to be a taking. *Id.* The trial court held the district's takings claim was limited to the regulatory takings analysis for substantial impairment, and entered judgment against the district. *Id.* at 1283. The Federal Circuit reversed, finding that the government had commandeered the district's water for a public use — preservation of an endangered species — and holding that this resulted in a physical taking. *Id.* at 1294.

The court in *Casitas* relied on three Supreme Court cases that it recognized as comparable appropriations of private water for public use. *Id.* at 1290. First among these was the Supreme Court's 1931 opinion in *International Paper Co. v. United States*. 282 U.S. 399, 51 S. Ct. 176. There, a power plant was authorized to draw water from the Niagara River into a canal, and a paper mill had a lease to draw some of the plant's water from the canal to operate the mill. *Id.* During World War I, the United States requisitioned all of the electricity generated by the plant and specifically directed the plant to cut off the water being taken by the mill to increase production. *Id.* at 405–06. The Supreme Court found this to be an appropriation of the mill's water for public use requiring compensation:

There is no room for quibbling distinctions between the taking of power and the taking of water rights. The petitioner's right was to the use of the water; and when all the water that it used was withdrawn from the petitioner's mill and turned

elsewhere by government requisition for the production of power it is hard to see what more the Government could do to take the use.

Id. at 407.

In this case, the Board's order finds that the Arbuckle-Simpson aquifer holds 11,000,000 acre-feet of groundwater and that it will recharge another 3,645,800 AF over the basin's statutory minimum life. (Tab 170, p. ¶ 22 and 24.) It then caps the total amount groundwater that may be used over the basin's statutory life at just 1,568,080 AF (78,404 MAY × 20 year statutory life = 1,568,080 total permissible withdrawals). So, at a minimum, the Board's order condemns more than 13,000,000 acre-feet of privately owned groundwater, prohibiting its use for any purpose.

14,645,760	total aquifer yield
- 1,568,080	total permissible withdrawal
13,077,680	condemned groundwater

All told, the order reduces each owner's holdings by nearly 90% from 1.9 to just 0.2 acre-feet of groundwater per surface acre.

The order's explicit purpose is to restrict groundwater withdrawals in order to direct more water to the State as public water to here provide fish habitat. (*Id.* ¶ 29.) Apart from the board's purpose in protecting fish populations, stream water, unlike groundwater, is held by the public. 60 O.S. § 60; *Franco-Am.*, 855 P.2d at 586 (Lavender, J., dissenting)(contrasting ownership of groundwater with riparian rights to use of stream water). Thus, the order not only prohibits owners from possessing, using, or disposing of at least 13,000,000 acre-feet of groundwater, it does so specifically to convert water to public use. Thus, under *Franco American*, the Board's order effects a categorical taking without compensation in violation of both the state and federal constitutions. 855 P.2d 568 at 577.

CONCLUSION

The process and substance giving rise to the OWRB'S final MAY Order was fatally flawed. The decision by the board to issue the order was arbitrary and capricious. The order itself setting the EPS at 0.2 AF per acre is clearly erroneous. The order should be reversed and remanded.

Respectfully Submitted,

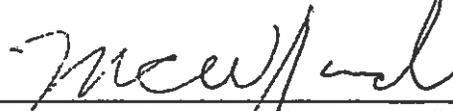

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I hereby certify that on this 26th day of June, 2015, a true and correct copy of the above and foregoing was mailed, by depositing it in the U.S. Mail, postage prepaid to:

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