

No. 141, Original

IN THE  
SUPREME COURT OF THE UNITED STATES

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\_\_\_\_\_  
STATE OF TEXAS,

*Plaintiff,*

v.

STATE OF NEW MEXICO and  
STATE OF COLORADO,

*Defendants.*

◆  
\_\_\_\_\_  
**OFFICE OF THE SPECIAL MASTER**

◆  
\_\_\_\_\_  
**STATE OF NEW MEXICO'S REPLY IN SUPPORT OF NEW MEXICO'S MOTIONS IN  
LIMINE**

HECTOR H. BALDERAS  
New Mexico Attorney General  
TANIA MAESTAS  
Deputy Attorney General  
CHOLLA KHOURY  
Assistant Attorney General  
ZACHARY E. OGAZ  
Assistant Attorney General  
P.O. Drawer 1508  
Santa Fe, New Mexico 87501  
505-239-4672

MARCUS J. RAEL, JR.\*  
LUIS ROBLES  
SUSAN BARELA  
Special Assistant Attorneys General  
Robles Rael & Anaya  
500 Marquette Ave NW #700  
Albuquerque, NM 87102  
[marcus@roblesrael.com](mailto:marcus@roblesrael.com)  
505-242-2228

*\*Counsel of Record*

August 12, 2021

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The State of New Mexico (“New Mexico”) submits this reply in support of New Mexico’s Motions in Limine.<sup>1</sup> As explained below, New Mexico’s Motions in Limine should be granted in their entirety.

## **ARGUMENT**

### **I. RULE 702 AND *DAUBERT*’S GATEKEEPING FUNCTION HAVE BEEN APPLIED IN BENCH TRIALS AND ORIGINAL JURISDICTION ACTIONS.**

In its response, Texas suggests that New Mexico’s *Daubert* motions are not appropriate in this original jurisdiction action. While the Special Master must weigh competing considerations of compiling a complete record for the Court, *Daubert* and Federal Rule of Evidence 702 apply to bench trials as well as compact disputes before special masters. A judge’s gatekeeping role—and the Special Master’s gatekeeping role here—is not diminished by the fact that a trial is before the bench and not before a jury. See *UGI Sunbury LLC v. A Permanent Easement for 1.7575 Acres*, 949 F.3d 825, 832 (3d Cir. 2020) (holding that the judge’s gatekeeping role under Rule 702 applies regardless of “whether the trier of fact is a judge or a jury”).

Additionally, Texas misrepresents how *Daubert* motions have been utilized in other interstate compact disputes. In *Kansas v. Nebraska*, Special Master Kayatta commented generally

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<sup>1</sup> New Mexico recognizes the twenty (20) page limit set out in the April 9, 2021 Trial Management Order for responses to motions in limine. Although no specific page limit was established for replies, New Mexico’s combined reply in support of the five motions it filed is under twenty pages. Thus, New Mexico believes it is in compliance with any limitations implied in the Trial Management Order for individual replies.

that although he favored reserving his ruling on *Daubert* motions until he had an opportunity to hear the expert's testimony, he also would not wait to rule on a *Daubert* motion if it presented clear circumstances where exclusion was proper. Transcript, Telephone Conference before Special Master William J. Kayatta, Jr., *Kansas v. Nebraska & Colorado*, Orig. 126 at 62:18-64:11 (March 23, 2012). Special Master Kayatta clarified that he was not discouraging the parties from filing *Daubert* motions:

So I'm not precluding the filing of *Daubert* motions, if anyone wants to file them.

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Again, I'm not precluding them. It might—you might want to file one, I suppose, to start educating me about an expert, if you want.

*Id.* at 64:9-11; 66:3-6.

In *Montana v. Wyoming*, Special Master Thompson commented that “*Daubert* is relevant in a proceeding of this nature” and acknowledged that—in response to Wyoming’s *Daubert* motion—he could rule that “the testimony should be excluded under the *Daubert* rule.” Transcript of Final Pretrial Hearing, *Montana v. Wyoming & North Dakota*, No. 137 Orig. at 29:24-25; 30:5-9 (Oct. 15, 2013). In making his decision on Wyoming’s *Daubert* motion, Special Master Thompson weighed competing considerations of the risk of remand if the Supreme Court disagreed with the ruling with the downside of wasted time, expense, and resources at trial for putting on expert testimony that should have been excluded before trial. *Id.* at 30:24-31:11. With these considerations in mind, Special Master Thompson ultimately decided to reserve his ruling until trial, but also noted that he was doing so under the circumstances of this particular motion. *Id.* at

31:11-13 (“But in this particular case, I think that that downside is outweighed by the advantages of waiting.”).<sup>2</sup>

Although the special masters in these two compact disputes expressed their preference to reserve ruling on *Daubert* motions until trial, they both acknowledged that *Daubert* motions should be considered in original actions and may be ruled on before trial under the proper circumstances.

## **II. THE RELIABILITY ISSUES NEW MEXICO RAISED IN ITS *DAUBERT* MOTIONS CONCERN THE ADMISSIBILITY OF TEXAS’S EXPERT OPINIONS.**

Texas responds to all three of New Mexico’s *Daubert* challenges by asserting that New Mexico’s arguments go to the weight of the challenged expert opinions, not their admissibility. New Mexico’s *Daubert* motions, however, identify specific issues with Texas’s experts under the relevancy and reliability standards in Rule 702 and *Daubert*. These issues go to the heart of Rule 702’s concerns with the methodology an expert employs and not merely the reasonable disagreements differing experts may have.

### **A. Texas Does Not Convincingly Defend the Relevancy and Reliability of Dr. Hutchison’s Model.**

Texas argues New Mexico’s *Daubert* challenge of Dr. Hutchison’s Model does little more than point out the Model’s inconsistencies with New Mexico’s theory of the case. The defects in

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<sup>2</sup> The fact that counsel for New Mexico represented Montana in this case and opposed Wyoming’s *Daubert* motion under its particular circumstances is of no consequence.

the Model New Mexico identifies, asserts Texas, are not properly considered under *Daubert* because they go to the weight of Dr. Hutchison's testimony, not its admissibility. But as New Mexico explained thoroughly in its motion, the shortcomings in Dr. Hutchison's Model directly concern the relevancy and reliability prongs of Rule 702 and *Daubert*.

As for the requirement that expert testimony be relevant—which is captured under Rule 702(a) and characterized as whether the proposed testimony “fits” the facts of the case, *see Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 591 (1993) (quotations omitted)—Texas does not explain how its Model can answer the questions to be resolved at trial despite its inability to evaluate Project operations. Nor does Texas address the authority New Mexico referenced in which other courts excluded expert models that were not up to the task of representing the real-world conditions that needed to be considered.

For the same reasons Dr. Hutchison's Model does not fit the facts of this case, it is not a reliable tool to analyze compliance under the Compact. Like the cases New Mexico cited in its motion that excluded expert testimony as unreliable because the expert overlooked important circumstances that should have been considered, Dr. Hutchison's Model is fundamentally unreliable because it completely overlooks crucial variables such as Project operations. It is telling that Texas does not grapple with these fatal flaws in its response.

Instead, Texas retreats to its argument that Dr. Hutchison's Model is relevant and reliable because it addresses the issues raised in Texas's complaint and the questions Texas's counsel asked Dr. Hutchison to consider. As New Mexico explained in its Motion, Dr. Hutchison's Model cannot



address these questions. By failing to model Project operations, Dr. Hutchison's Model cannot reliably simulate flows of water in the Rio Grande under any alternative scenarios, including scenarios of no or reduced pumping. *See* New Mexico's *Daubert* Motion in Limine to Exclude Opinions Offered by Dr. William Hutchison [Dkt. 542] at 6-8. Dr. Hutchison's Model also does not simulate deliveries of water at actual Project delivery points and so cannot evaluate whether Texas's Compact deliveries have been impaired. *Id.* at 5-6. Even setting aside New Mexico's counterclaims, which Dr. Hutchison's Model is incapable of evaluating, or the numerous other flaws with the Model, Dr. Hutchison's Model cannot provide relevant or reliable analysis even of Texas's claims. Dr. Hutchison's opinions on this Model should be excluded from trial.

**B. Texas Has Not Demonstrated Sufficient Indicia of Reliability for Land IQ's Proprietary Methodology.**

Texas has not demonstrated the reliability of Land IQ's methodology because Texas has not disclosed sufficient information about the methodology, the methodology is not peer-reviewed, and it is not public.

***1. Texas Disclosed Insufficient Information Concerning the Land IQ Methodology.***

In its response, Texas describes the Land IQ Methodology as a transparent process involving peer-reviewed, publicly available methods. This stands in stark contrast to Texas's previous description of the Land IQ Methodology as a proprietary trade secret unique to Land IQ and Texas's efforts to secure a restrictive Protective Order to control dissemination of any information about the Methodology. That Texas has now waived the safeguards of the Protective

Order, apparently in an attempt to dispute New Mexico’s characterization of the Land IQ Methodology, does not alter the fact that, when it counted, Texas disclosed far too little information concerning the Land IQ Methodology, including during depositions, for New Mexico’s experts to determine with specificity what Land IQ had done. *See* Declaration of David Jordan ¶ 4, attached hereto as Exhibit 1.

As New Mexico explained in its Motion, the information disclosed on the Land IQ Methodology primarily consisted of a twenty-two page document that clearly indicates, at multiple points, that it merely “summarizes” the Methodology and “outlines” the procedures at a “higher level.” Land IQ Crop and Land Use Mapping Process at 1 (“Land IQ Process Description”), Exhibit D to New Mexico’s *Daubert* Motion in Limine to Exclude Opinions Offered by Dr. Joel Kimmelshue and Mica Heilmann (July 20, 2021) [Dkt. 547] (“Land IQ Motion”); *see also* Deposition of Mica Heilmann (Confidential Portion) at 27:22-24 (June 6, 2020) (“Heilmann Conf. Deposition”), attached hereto as Exhibit 2 (“Q. This document mentions that it’s a high level procedures summary. Would you agree with that? A. Yes.”). The Land IQ Process Description clearly states that “the process is refined and customized for every image, every crop, every date, and every area analyzed and is never exactly the same.” Land IQ Process Description at 1. It also states that, due to the “individual expertise woven throughout the analytical process, it is likely impossible to ever exactly replicate the results.” *Id.* Despite Texas’s statements to the contrary, Ms. Heilmann confirmed this even though she also claimed the process can be repeated “in general.” Heilmann Conf. Deposition at 29:8-24. Finally, the Land IQ Process Description

explained the application of the Land IQ Methodology to only one year of a multi-decadal study period, though it did mention other years, and does not describe the exact steps taken even for that year (2018). *See generally* Land IQ Process Description; Deposition of Joel Kimmelshue (Confidential Portion) at 164:5-15 (June 5, 2020) (“Kimmelshue Conf. Deposition”), attached as Exhibit 3.

Due to the customization and individual judgment Land IQ asserts is employed with “every image, every crop, every date, and every area analyzed,” it is impossible for New Mexico to determine, from this “higher level” outline of Land IQ’s procedures for one year, how Land IQ derived its results. These disclosures are plainly insufficient to allow reproduction of Land IQ’s results, *City of Pomona v. SQM North America Corp.*, 750 F.3d 1036, 1047 (9th Cir. 2014) (primary requirement of *Daubert*’s testability factor is that “someone else using the same data and methods . . . be able to replicate the results” (internal quotation omitted)), rendering Land IQ’s results and opinions on crop mapping generated with the Land IQ Methodology untestable and, therefore, unreliable.

## ***2. The Land IQ Methodology Is Not Peer-Reviewed.***

Texas argues Land IQ “employed peer-reviewed processes in order to develop its opinions in this case.” Tex. Resp. at 12. Specifically, Texas argues the “components of Land IQ’s mapping methodology are all peer-reviewed,” implying that the Land IQ Methodology itself has been peer

reviewed.<sup>3</sup> *Id.* at 10. This is not what Dr. Kimmelshue stated during his deposition. When asked if the Land IQ Methodology had been published in a peer-reviewed article, he replied, “It has not been published in a peer-reviewed article because it’s our proprietary method, and I’m not quite frankly interested in doing that.” Deposition of Joel Kimmelshue (Confidential Portion) at 172:16-18 (June 5, 2020), Exhibit H to Land IQ Motion. While Dr. Kimmelshue went on to assert that review of Land IQ’s results by the California Department of Water Resources Land Use Division was like peer review, *id.* at 172:19-173:3, he also acknowledged this agency didn’t review the process itself, just the results, and that Land IQ sometimes had to adjust its results based on feedback from the agency, *id.* at 173:7-25.

Further, Ms. Heilmann described “some individual components of the analysis” as “not proprietary necessarily,” but she also asserted that the “combination of those pieces and how we pull all of it together . . . it’s unique to us as far as I know.” Heilmann Conf. Deposition at 31:17-21. Further, even if some of the tools Land IQ uses are publicly available, this does not establish how these tools were employed. For example, one of the tools Land IQ used is a publicly available software package called scikit-learn. Land IQ Process Description at 19. Land IQ disclosed that they used scikit-learn, but while they described the general inputs, they did not disclose the actual

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<sup>3</sup> Texas and Dr. Kimmelshue also assert that Land IQ employed the same ground-truthing methodology as New Mexico’s mapping expert in this case, David Jordan (INTERA). Tex. Resp. at 13 (citing Kimmelshue Declaration ¶ 6). While New Mexico acknowledges that both INTERA and Land IQ performed ground-truthing exercises, New Mexico disputes that Land IQ used the same methodology as INTERA. Declaration of David Jordan ¶ 6.

inputs used. *See id.*; Declaration of David Jordan ¶ 7. Moreover, while Land IQ stated that default model parameters were “generally used,” they also state there is a “model parameter tuning process,” suggesting model parameters can be changed at the discretion of the analyst without providing any description of which parameters would change or how. Land IQ Process Description at 20. Without knowing the actual inputs and parameters used, New Mexico cannot replicate Land IQ’s results. Declaration of David Jordan ¶ 7.

Land IQ and Texas went to great lengths in this litigation to assert the confidentiality of this Methodology and prevent information about the Methodology from being disclosed. For Texas to now imply—because the Land IQ Methodology uses “individual components” that are peer reviewed—that the Methodology itself is peer reviewed, contradicts the prior testimony of Dr. Kimmelshue and Ms. Heilmann and numerous prior assertions of the Method’s confidentiality.

### **3. *The Land IQ Methodology Is Not Public.***

Texas also asserts in its response that the Land IQ Methodology “is commonly used by a wide range of governmental and private entities throughout the western United States.” Tex. Resp. at 10. Texas’s description of the Methodology as “ubiquitous” and “commonly used,” *id.* at 14, implies the Land IQ Methodology is publicly available and independently employed by a number of disparate entities. Again, this is false.

The Land IQ Methodology is proprietary to Land IQ, to the extent that Land IQ and Texas requested that the other Parties agree to entry of a restrictive protective order requiring any individual who received information about the Methodology sign a confidentiality agreement.

Stipulated Protective Order (Oct. 9, 2019) [Dkt. 289]; *see also* Kimmelshue Conf. Deposition, Exhibit H to Land IQ Motion, at 172:17 (describing methodology as “proprietary”); Heilmann Conf. Deposition at 33:15 (same). Even then, Land IQ and Texas disclosed only a general description of the Methodology. *See generally* Land IQ Process Description, Exhibit D to Land IQ Motion.

Consistent with the proprietary nature of the Land IQ Methodology, the examples Texas cites in its Response, which are the same examples Dr. Kimmelshue cites in his Declaration filed in support of the Texas response, are instances where Land IQ performed mapping work for these entities using its Methodology, not instances where these entities independently used the Methodology themselves. The fact that entities other than Texas have chosen Land IQ to map crops for them does not demonstrate that Land IQ’s Methodology is in public use. It is not. Only Land IQ employs the methodology.

Texas failed to provide sufficient information to allow New Mexico to test Land IQ’s Methodology and replicate their results. The Special Master should exclude evidence derived using the Land IQ Methodology from trial.

### **C. Dr. Hornberger’s Opinions Lack Sufficient Foundation.**

Texas does little to defend the opinions of Dr. George Hornberger except to claim that New Mexico challenges Dr. Hornberger’s credibility, not the admissibility of his opinions. Texas misses the point. Dr. Hornberger doesn’t just lack credibility, he also lacks the sufficient foundation to offer any expert opinions in this case.

Dr. Hornberger admitted he spent only two hours reviewing the New Mexico experts' criticisms of Dr. Hutchison's Model, did not read all the expert reports addressing the Model, did not review the New Mexico Integrated Model, knew almost nothing about Project Operations, and lacked other basic knowledge necessary to form his opinions. New Mexico's *Daubert* Motion in Limine to Exclude Opinions Offered by Dr. George Hornberger Motion at 2-4 [Dkt. 543] (July 20, 2021). His complete lack of review of the modeling in this case and lack of understanding of the Project render his opinions unreliable. This inquiry is one Rule 702 explicitly requests the trial judge to make. *See* Fed. R. Evid. 702(b) (A qualified expert may testify if, among other things, "the testimony is based on sufficient facts or data."). "The question [under Rule 702(b)] is whether the expert considered enough information to make the proffered opinion reliable." Wright & Miller, 29 Fed. Prac. & Proc. Evid. § 6268 (2d ed. 2021). And "[a]n expert must base their opinion on facts sufficient to form an adequate foundation for the opinion . . . ." 32 C.J.S. Evidence § 799 (2021).

The deposition testimony from Dr. Hornberger leaves no doubt that he did not put in sufficient time or effort to establish a proper foundation for his opinions. Texas does not even attempt to defend the minimal work Dr. Hornberger performed. Therefore, as New Mexico explained in the Hornberger Motion, Dr. Hornberger lacks a sufficient factual basis for his opinions under Rule 702(b) and his opinions should be excluded.

**D. Additionally, Texas Asserts an Improper Standard for Rebuttal Testimony.**

As Texas acknowledges in its response, Dr. Hornberger was not listed on Texas's witness list. Tex. Resp. at 14. However, Texas now argues that Dr. Hornberger could still be called at trial as a rebuttal witness because the Special Master ruled that "parties are not . . . required to list rebuttal witnesses." *Id.* at 14 & n.13 (citing Special Master April 9, 2021 Trial Management Order at 3 [Dkt. 501]). While this is technically true, rebuttal testimony or evidence can only be introduced by a plaintiff to meet previously unknown facts presented for the first time in a defendant's case in chief. *See, e.g., Morgan v. Commercial Union Assurance Companies*, 606 F.2d 554 (5th Cir. 1979). As one court cogently explained:

If the purpose of expert testimony is to 'contradict an expected and anticipated portion of the other party's case-in-chief, then the witness is not a rebuttal witness or anything analogous to one.' *Amos v. Makita U.S.A.*, 2011 WL 43092 at \*2 (D. Nev. Jan.6, 2011) (quoting *In re Apex Oil Co.*, 958 F.2d 243, 245 (8th Cir. 1992)); *see also Morgan v. Commercial Union Assur. Cos.*, 606 F.2d 554, 556 (5th Cir. 1979); *LaFlamme v. Safeway, Inc.*, 2010 WL 3522378 at \*3 (D. Nev. Sep. 2, 2010). Rather, rebuttal expert testimony "is limited to 'new unforeseen facts brought out in the other side's case.'" *In re President's Casinos, Inc.*, 2007 WL 7232932 at \* 2 (E.D. Mo. May 16, 2007).

*Monroe v. Davis*, No. 2:13-CV-00863-GMN, 2014 WL 3845121 at \*6 (D. Nev. Aug. 4, 2014); *see also Faigin v. Kelly*, 184 F.3d 67, 85 (1st Cir. 1999) ("The principal objective of rebuttal is to permit a litigant to counter new, unforeseen facts brought out in the other side's case."); *State of Maine v. McLeod*, 666 A.2d 71, 74 (Me. 1995) (standard for rebuttal evidence is "whether the testimony sought to be rebutted could reasonably have been anticipated prior to trial"); *Turner v.*



*Nelson* 872 P.2d 1021, 2023 (Utah 1994) (precluding the testimony of rebuttal witness where the testimony to be rebutted was reasonably anticipated). It is therefore highly improper that Texas is planning its rebuttal witnesses before trial has even begun.

Here, Texas has signaled it may offer Dr. Hornberger to rebut New Mexico's criticisms of Dr. Hutchison's Model. Yet, Texas has been aware of these criticisms since New Mexico disclosed its expert witnesses in October of 2019. Therefore, Texas cannot offer Dr. Hornberger as a rebuttal expert witness on this issue. Texas's response underscores the urgency of New Mexico's request that the Special Master make clear that any rebuttal testimony or evidence can only be introduced to address previously unknown facts presented for the first time in New Mexico's case in chief. *See* New Mexico's Response in Opposition to the United States' Motion in Limine Regarding Dismissed Counterclaims at 14-15 (Aug. 5, 2021) [Dkt. 554].

### **III. TEXAS'S PROPOSED SCOPE OF TESTIMONY FOR DRS. BRANDES AND HUTCHISON VIOLATES RULE 26 AND THE SPECIAL MASTER'S AUGUST 18, 2020 ORDER.**

Texas admits that the new opinions at issue were not included in an expert report, but argues that its failure to follow Federal Rule of Civil Procedure 26 is excused by the Special Master's explanation that "[i]t is not necessary to file a supplemental report in order to critique or disagree with the opinion conclusions, and facts set out by any other expert to this case." Tex. Resp. at 15-16 (quoting Special Master's August 18, 2020 Order, Dkt. 390 ("Expert Order")). Texas interprets the Expert Order far too broadly, and in a manner inconsistent with the

requirements of Rule 26. Rule 26(a)(2) requires a party to timely disclose a written report containing “a complete statement of all opinions to be expressed and the basis and reasons therefore.” Fed. R. Civ. P. 26(a)(2); *see also, e.g., Reed v. Iowa Marine & Repair Corp.*, 16 F.3d 82, 85 (5th Cir.1994). Expert opinions that are not timely disclosed must be excluded unless the late disclosure is substantially justified or harmless. Fed. R. Civ. P. 37(c)(1); *Salgado v. General Motors Corp.*, 150 F.3d 735, 742 n. 6 (7th Cir. 1998) (Rule 37 imposes a mandatory preclusion sanction); *Gust v. Jones*, 162 F.3d 587, 592 (10th Cir. 1998) (affirming district court's decision to preclude plaintiff's expert from testifying to an opinion not expressed in his report); *In re Indep. Service Organizations Antitrust Litigation*, 85 F. Supp. 2d 1130 (D. Kan. 2000) (excluding declaration of expert that was submitted after the deadline for expert disclosures); *Schweizer v. DeKalb Swine Breeders, Inc.*, 954 F. Supp. 1495, 1510 (D. Kan. 1997) (striking expert affidavit setting forth new opinions in response to summary judgment motion); *Beller v. United States*, 221 F.R.D. 689, 693-94 (D.N.M. 2003) (striking supplemental report submitted after close of discovery).

As the Master explained, an expert need not disclose a supplemental report if she will merely refute an opposing expert *based on her previously disclosed opinions or analysis*. But the opinions Texas is pressing are not based on previously disclosed opinions or analysis, and nothing in the Expert Order permits an expert to offer opinions beyond the scope of his or her previously disclosed opinions. Adopting Texas's interpretation of the Expert Order would render meaningless the requirement for rebuttal expert disclosures and the entire expert discovery schedule.

The topics New Mexico highlighted in its Motion in Limine to Exclude Testimony of Dr. Robert J. Brandes (July 20, 2021) [Dkt. 540] and its Motion in Limine to Limit the Scope of Testimony of Dr. William Hutchison (July 20, 2021) [Dkt. 541] (“Hutchison Motion”) do not reflect simple disagreement between these experts and various New Mexico experts, but rather entirely new topics and opinions that Drs. Brandes and Hutchison never discussed in their expert disclosures or depositions. This is explained more thoroughly in the July Motions, but to list just one example here, Texas’s Witness List, a portion of which is attached as Exhibit D to the Hutchison Motion, states Dr. Hutchison will offer “further analysis of the technical work undertaken by [United States hydrogeology expert] Ms. Moran.” Even Texas’s description of this testimony as “further” analysis is misleading, as Dr. Hutchison never performed any analysis of Ms. Moran’s technical work in either of his disclosed expert reports nor did he mention any analysis or opinions of her work in his depositions. Just as Texas had ample opportunity to properly disclose any opinions Dr. Hutchison might have on New Mexico’s Integrated Model but chose not to do so, Texas could have disclosed any analysis Dr. Hutchison may have done of Ms. Moran’s technical work in one of his reports or in a timely filed supplemental disclosure. It did not.

Allowing Drs. Brandes and Hutchison to offer expert evidence for the first time at trial on subjects well beyond the scope of their prior expert disclosures would amount to trial by ambush. “Trial by ambush is not contemplated by the Federal Rules of Civil Procedure.” *Erskine v. Consolidated Rail Corp.*, 814 F.2d 266, 272 (6th Cir. 1987) (quotation omitted) (granting new trial

where defendant withheld discovery of key evidence it later introduced at trial); *see also Ortiz-Lopez v. Sociedad Espanola de Auxilio Mutuo y Beneficiencia de Puerto Rico*, 248 F.3d 29, 35 (1<sup>st</sup> Cir. 2001) (“[t]he purpose of a ‘detailed and complete’ expert report as contemplated by Rule 26(a) . . . is, in part, to . . . prevent an ambush at trial”). Texas suggests that New Mexico “has been aware” of the new opinions “since the time for submission of summary judgment briefing.” Tex. Resp. at 17. Texas misses the point. By withholding the new opinions until after discovery closed, Texas deprived New Mexico of the opportunity to conduct written discovery on the opinions, receive all of the underlying data, and test the theories in a deposition.

Nor is the proper remedy here for New Mexico to take supplemental depositions of Drs. Hutchison and Brandes prior to trial. Trial will begin in four short weeks, and the Parties are already very busy preparing for trial. There is simply no time for New Mexico to prepare for and take these depositions and then incorporate this new information into its case.

For the foregoing reasons, and the reasons New Mexico expressed in its Motions to Limit the Scope of Testimony of Drs. Brandes and Hutchison [Dkt. 540, 542], the Special Master should limit the testimony of Drs. Brandes and Hutchison to the scope of their properly disclosed reports.

### **CONCLUSION**

The Special Master should grant New Mexico’s Motions in Limine in their entirety.

Respectfully submitted,

/s/ Jeffrey J. Wechsler

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HECTOR H. BALDERAS  
New Mexico Attorney General  
TANIA MAESTAS  
Deputy Attorney General  
CHOLLA KHOURY  
Assistant Attorney General  
ZACHARY E. OGAZ  
Assistant Attorney General  
P.O. Drawer 1508  
Santa Fe, New Mexico 87501  
505-239-4672

JEFFREY J. WECHSLER  
Special Assistant Attorney General  
KALEB W. BROOKS  
MONTGOMERY & ANDREWS, P.A.  
325 Paseo de Peralta  
Santa Fe, NM 87501  
[jwechsler@montand.com](mailto:jwechsler@montand.com)  
[kwbrooks@montand.com](mailto:kwbrooks@montand.com)

JOHN B. DRAPER  
Special Assistant Attorney General  
CORINNE E. ATTON  
DRAPER & DRAPER LLC  
325 Paseo de Peralta  
Santa Fe, NM 87501  
[john.draper@draperllc.com](mailto:john.draper@draperllc.com)  
505-570-4591

MARCUS J. RAEL, JR.\*  
LUIS ROBLES  
SUSAN BARELA  
Special Assistant Attorneys General  
Robles Rael & Anaya  
500 Marquette Ave NW #700  
Albuquerque, NM 87102  
[marcus@roblesrael.com](mailto:marcus@roblesrael.com)  
505-242-2228

*\*Counsel of Record*

BENNETT W. RALEY  
LISA M. THOMPSON  
MICHAEL A. KOPP  
Special Assistant Attorneys General  
TROUT RALEY  
1120 Lincoln Street, Suite 1600  
Denver, Colorado 80203  
303-861-1963

No. 141, Original

IN THE  
SUPREME COURT OF THE UNITED STATES

\_\_\_\_\_  
STATE OF TEXAS,

*Plaintiff,*

v.

STATE OF NEW MEXICO and  
STATE OF COLORADO,

*Defendants.*

\_\_\_\_\_  
**OFFICE OF THE SPECIAL MASTER**  
\_\_\_\_\_

**STATE OF NEW MEXICO'S CERTIFICATE OF SERVICE**  
\_\_\_\_\_

This is to certify that on August 12, 2021, I caused a true and correct copy of the **State of New Mexico's Reply in Support of New Mexico's Motions in Limine** to be served by e-mail and U.S. Mail upon the Special Master and by e-mail upon all counsel of record and interested parties on the Service List, attached hereto.

Respectfully submitted this 12th day of August, 2021.

/s/ Michael A. Kopp

Michael A. Kopp  
Special Assistant Attorney General  
TROUT RALEY  
1120 Lincoln Street, Suite 1600  
Denver, Colorado 80203  
(303) 861-1963

## **SPECIAL MASTER**

### **HONORABLE MICHAEL J. MELLOY**

*Special Master*

United States Circuit Judge  
111 Seventh Avenue, S.E., Box 22  
Cedar Rapids, IA 52401-2101

[TXvNM141@ca8.uscourts.gov](mailto:TXvNM141@ca8.uscourts.gov)  
(319) 432-6080  
(service via email and U.S. Mail)

### **MICHAEL E. GANS**

*Clerk of the Court*

United States Court of Appeals - Eighth Circuit  
Thomas F. Eagleton United States Courthouse  
111 South 10th Street, Suite 24.329  
St. Louis, MO 63102

[TXvNM141@ca8.uscourts.gov](mailto:TXvNM141@ca8.uscourts.gov)  
(314) 244-2400

## **MEDIATOR**

### **HON. OLIVER W. WANGER (USDJ RET.)**

WANGER JONES HELSLEY PC  
265 E. River Park Circle, Suite 310  
Fresno, California 93720

[owanger@wjhattorneys.com](mailto:owanger@wjhattorneys.com)  
(559) 233-4800 Ext. 203

### **DEBORAH L. PELL (Paralegal)**

[dpell@wjhattorneys.com](mailto:dpell@wjhattorneys.com)

## **UNITED STATES**

### **ELIZABETH B. PRELOGAR\***

*Acting Solicitor General*

### **EDWIN S KNEEDLER**

*Deputy Solicitor General*

### **JEAN E. WILLIAMS**

*Deputy Assistant Attorney General*

### **FREDERICK LIU**

*Assistant to the Solicitor General*

U.S. DEPARTMENT OF JUSTICE

950 Pennsylvania Avenue, NW  
Washington, DC 20530-0001

[supremectbriefs@usdoj.gov](mailto:supremectbriefs@usdoj.gov)  
(202)514-2217

### **JAMES J. DUBOIS\***

[james.dubois@usdoj.gov](mailto:james.dubois@usdoj.gov)

**R. LEE LEININGER**  
U.S. DEPARTMENT OF JUSTICE  
Environment & Natural Resources Division  
999 18th Street  
South Terrace – Suite 370  
Denver, Colorado 80202  
**SETH C. ALLISON, Paralegal**

(303) 844-1375  
[lee.leininger@usdoj.gov](mailto:lee.leininger@usdoj.gov)  
(303) 844-1364

[Seth.allison@usdoj.gov](mailto:Seth.allison@usdoj.gov)  
(303)844-7917

**JUDITH E. COLEMAN**  
**JENNIFER A. NAJJAR**  
U.S. DEPARTMENT OF JUSTICE  
Environment & Natural Resources Division  
P.O. Box 7611  
Washington, D.C. 20044-7611

[Judith.coleman@usdoj.gov](mailto:Judith.coleman@usdoj.gov)  
(202) 514-3553  
[jennifer.najjar@usdoj.gov](mailto:jennifer.najjar@usdoj.gov)  
(202) 305-0476

## STATE OF NEW MEXICO

**HECTOR H. BALDERAS**  
*New Mexico Attorney General*  
**TANIA MAESTAS**  
*Chief Deputy Attorney General*  
**CHOLLA KHOURY**  
*Assistant Attorney General*  
**ZACHARY E. OGAZ**  
*Assistant Attorney General*  
STATE OF NEW MEXICO  
P.O. Drawer 1508  
Santa Fe, New Mexico 87501  
**PATRICIA SALAZAR** - Assistant

[hbalderas@nmag.gov](mailto:hbalderas@nmag.gov)  
[tmaestas@nmag.gov](mailto:tmaestas@nmag.gov)  
[ckhoury@nmag.gov](mailto:ckhoury@nmag.gov)  
[zogaz@nmag.gov](mailto:zogaz@nmag.gov)  
[psalazar@nmag.gov](mailto:psalazar@nmag.gov)  
(505) 239-4672

**MARCUS J. RAEL, JR.\***  
**LUIS ROBLES**  
**SUSAN BARELA**  
*Special Assistant Attorneys General*  
ROBLES, RAEL & ANAYA, P.C.  
500 Marquette Avenue NW, Suite 700  
Albuquerque, New Mexico 87102

[marcus@roblesrael.com](mailto:marcus@roblesrael.com)  
[luis@roblesrael.com](mailto:luis@roblesrael.com)  
[susan@roblesrael.com](mailto:susan@roblesrael.com)  
[chelsea@roblesrael.com](mailto:chelsea@roblesrael.com)  
[pauline@roblesrael.com](mailto:pauline@roblesrael.com)  
[bonnie@roblesrael.com](mailto:bonnie@roblesrael.com)  
(505) 242-2228



**CHELSEA SANDOVAL** - Paralegal  
**PAULINE WAYLAND** – Paralegal  
**BONNIE DEWITT** – Paralegal

**BENNETT W. RALEY**  
**LISA M. THOMPSON**  
**MICHAEL A. KOPP**  
*Special Assistant Attorneys General*  
**TROUT RALEY**  
1120 Lincoln Street, Suite 1600  
Denver, Colorado 80203

[braley@troutlaw.com](mailto:braley@troutlaw.com)  
[ltompson@troutlaw.com](mailto:ltompson@troutlaw.com)  
[mkopp@troutlaw.com](mailto:mkopp@troutlaw.com)  
(303) 861-1963

**JEFFREY WECHSLER**  
*Special Assistant Attorney General*  
**MONTGOMERY & ANDREWS**  
325 Paseo De Peralta  
Santa Fe, NM 87501  
**DIANA LUNA** – Paralegal

[jwechsler@montand.com](mailto:jwechsler@montand.com)  
(505) 986-2637

**JOHN DRAPER**  
*Special Assistant Attorney General*  
**DRAPER & DRAPER LLC**  
325 Paseo De Peralta  
Santa Fe, NM 87501  
**DONNA ORMEROD** – Paralegal

[john.draper@draperllc.com](mailto:john.draper@draperllc.com)  
(505) 570-4591

[donna.ormerod@draperllc.com](mailto:donna.ormerod@draperllc.com)

## **STATE OF COLORADO**

**PHILIP J. WEISER**  
*Attorney General of Colorado*  
**ERIC R. OLSON**  
*Solicitor General*  
**LAIN LEONIAK**  
*Acting First Assistant Attorney General*  
**CHAD M. WALLACE\***  
*Senior Assistant Attorney General*  
**PRESTON V. HARTMAN**  
*Assistant Attorney General*  
**COLORADO DEPARTMENT OF LAW**

[eric.olson@coag.gov](mailto:eric.olson@coag.gov)

[chad.wallace@coag.gov](mailto:chad.wallace@coag.gov)  
(720) 508-6281 (direct)  
[preston.hartman@coag.gov](mailto:preston.hartman@coag.gov)  
(720) 508-6257 (direct)

Ralph Carr Judicial Center  
7<sup>th</sup> Floor  
1300 Broadway  
Denver, CO 80203  
**NAN EDWARDS**, Paralegal II

[nan.edwards@coag.gov](mailto:nan.edwards@coag.gov)

**STATE OF TEXAS**

**STUART SOMACH\***  
**ANDREW M. HITCHINGS**  
**ROBERT B. HOFFMAN**  
**FRANCIS M. GOLDSBERRY II**  
**THERESA C. BARFIELD**  
**SARAH A. KLAHN**  
**BRITTANY K. JOHNSON**  
**RICHARD S. DEITCHMAN**  
SOMACH SIMMONS & DUNN, PC  
500 Capital Mall, Suite 1000  
Sacramento, CA 95814-2403  
**CORENE RODDER - Secretary**  
**CRYSTAL RIVERA - Secretary**  
**CHRISTINA GARRO – Paralegal**  
**YOLANDA DE LA CRUZ - Paralegal**

[ssomach@somachlaw.com](mailto:ssomach@somachlaw.com)  
[ahitchings@somachlaw.com](mailto:ahitchings@somachlaw.com)  
[rhoffman@somachlaw.com](mailto:rhoffman@somachlaw.com)  
[mgoldsberry@somachlaw.com](mailto:mgoldsberry@somachlaw.com)  
[tbarfield@somachlaw.com](mailto:tbarfield@somachlaw.com)  
[sklahn@somachlaw.com](mailto:sklahn@somachlaw.com)  
[bjohnson@somachlaw.com](mailto:bjohnson@somachlaw.com)  
[rdeitchman@somachlaw.com](mailto:rdeitchman@somachlaw.com)  
(916) 446-7979  
(916) 803- 4561 (cell)  
  
[crodder@somachlaw.com](mailto:crodder@somachlaw.com)  
[crivera@somachlaw.com](mailto:crivera@somachlaw.com)  
[cgarro@somachlaw.com](mailto:cgarro@somachlaw.com)  
[ydelacruz@somachlaw.com](mailto:ydelacruz@somachlaw.com)

**KEN PAXTON**  
*Attorney General*  
**JEFFREY C. MATEER**  
*First Assistant Attorney General*  
**DARREN L. McCARTY**  
*Deputy Attorney General for Civil Litigation*  
**PRISCILLA M. HUBENAK**  
*Chief, Environmental Protection Division*  
OFFICE OF ATTORNEY GENERAL  
OF TEXAS  
P.O. Box 12548  
Austin, TX 78711-2548

(512) 463-2012  
(512) 457-4644 Fax

[Priscilla.Hubenak@oag.texas.gov](mailto:Priscilla.Hubenak@oag.texas.gov)

**AMICI / FOR INFORMATIONAL PURPOSES ONLY**

**ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY**

**JAMES C. BROCKMANN\***

(505) 983-3880

**JAY F. STEIN**

[jcbrockmann@newmexicowaterlaw.com](mailto:jcbrockmann@newmexicowaterlaw.com)

STEIN & BROCKMANN, P.A.

[jfstein@newmexicowaterlaw.com](mailto:jfstein@newmexicowaterlaw.com)

P.O. Box 2067

[administrator@newmexicowaterlaw.com](mailto:administrator@newmexicowaterlaw.com)

Santé Fe, New Mexico 87504

**Administrative Copy**

**PETER AUH**

(505) 289-3092

ALBUQUERQUE BERNALILLO COUNTY

[pauh@abcwua.org](mailto:pauh@abcwua.org)

WATER UTILITY AUTHORITY

P.O. Box 568

Albuquerque, NM 87103-0568

**CITY OF EL PASO**

**DOUGLAS G. CAROOM\***

(512) 472-8021

**SUSAN M. MAXWELL**

[dcaroom@bickerstaff.com](mailto:dcaroom@bickerstaff.com)

BICKERSTAFF HEATH DELGADO

[smaxwell@bickerstaff.com](mailto:smaxwell@bickerstaff.com)

ACOSTA, LLP

2711 S. MoPac Expressway

Building One, Suite 300

Austin, TX 78746

**CITY OF LAS CRUCES**

**JAY F. STEIN \***

(505) 983-3880

**JAMES C. BROCKMANN**

[jcbrockmann@newmexicowaterlaw.com](mailto:jcbrockmann@newmexicowaterlaw.com)

STEIN & BROCKMANN, P.A.

[jfstein@newmexicowaterlaw.com](mailto:jfstein@newmexicowaterlaw.com)

P.O. Box 2067

[administrator@newmexicowaterlaw.com](mailto:administrator@newmexicowaterlaw.com)

Santé Fe, New Mexico 87504

**Administrative Copy**

**JENNIFER VEGA-BROWN**

(575) 541-2128

**ROBERT CABELLO**

LAW CRUCES CITY ATTORNEY'S OFFICE  
P.O. Box 20000  
Las Cruces, New Mexico 88004

[jvega-brown@las-cruces.org](mailto:jvega-brown@las-cruces.org)  
[rcabello@las-cruces.org](mailto:rcabello@las-cruces.org)

#### **ELEPHANT BUTTE IRRIGATION DISTRICT**

**SAMANTHA R. BARNCASTLE\***  
BARNCASTLE LAW FIRM, LLC  
1100 South Main, Suite 20 (88005)  
P.O. Box 1556  
Las Cruces, NM 88004

(575) 636-2377  
(575) 636-2688 (fax)  
[samantha@h2o-legal.com](mailto:samantha@h2o-legal.com)

**JANET CORRELL – Paralegal**

[janet@h2o-legal.com](mailto:janet@h2o-legal.com)

#### **EL PASO COUNTY WATER IMPROVEMENT DISTRICT NO. 1**

**MARIA O'BRIEN\***  
**SARAH M. STEVENSON**  
MODRALL, SPERLING, ROEHL, HARRIS  
& SISK, PA  
500 Fourth Street N.W., Suite 1000  
Albuquerque, New Mexico 87103-2168  
**CHARLIE PADILLA – Legal Assistant**

(505) 848-1803 (direct)  
[mobrien@modrall.com](mailto:mobrien@modrall.com)  
[sarah.stevenson@modrall.com](mailto:sarah.stevenson@modrall.com)

[charliep@modrall.com](mailto:charliep@modrall.com)

**RENEA HICKS**  
LAW OFFICE OF MAX RENE HICKS  
P.O.Box 303187  
Austin, TX 78703-0504

[rhicks@renea-hicks.com](mailto:rhicks@renea-hicks.com)  
(512)480-8231

#### **HUDSPETH COUNTY CONSERVATION AND RECLAMATION DISTRICT NO. 1**

**ANDREW S. "DREW" MILLER\***  
KEMP SMITH LLP  
919 Congress Avenue, Suite 1305  
Austin, TX 78701

(512) 320-5466  
[dmiller@kempsmith.com](mailto:dmiller@kempsmith.com)

#### **STATE OF KANSAS**

**DEREK SCHMIDT**

(785) 296-2215

*Attorney General of Kansas*  
**JEFFREY A. CHANAY**  
*Chief Deputy Attorney General*  
**TOBY CROUSE\***  
*Solicitor General of Kansas*  
**BRYAN C. CLARK**  
*Assistant Solicitor General*  
**DWIGHT R. CARSWELL**  
*Assistant Attorney General*  
120 S. W. 10th Ave., 2nd Floor  
Topeka, KS 66612

[toby.crouse@ag.ks.gov](mailto:toby.crouse@ag.ks.gov)  
[bryan.clark@ag.ks.gov](mailto:bryan.clark@ag.ks.gov)

#### **NEW MEXICO PECAN GROWERS**

**TESSA T. DAVIDSON\***  
DAVIDSON LAW FIRM, LLC  
4206 Corrales Road  
P.O. Box 2240  
Corrales, NM 87048  
**JO HARDEN – Paralegal**

[ttd@tessadavidson.com](mailto:ttd@tessadavidson.com)  
(505) 792-3636

[jo@tessadavidson.com](mailto:jo@tessadavidson.com)

#### **NEW MEXICO STATE UNIVERSITY**

**JOHN W. UTTON\***  
UTTUN & KERY, P.A.  
P.O. Box 2386  
Santa Fe, New Mexico 87504

(505) 699-1445  
[john@uttkery.com](mailto:john@uttkery.com)

*General Counsel*  
New Mexico State University  
Hadley Hall Room 132  
2850 Weddell Road  
Las Cruces, NM 88003

[gencounsel@nmsu.edu](mailto:gencounsel@nmsu.edu)  
(575) 646-2446

#### **SOUTHERN RIO GRANDE DIVERSIFIED CROP FARMERS ASSOCIATION**

**ARNOLD J. OLSEN\***  
HENNIGHAUSEN OLSEN & MCCREA, L.L.P.  
P.O. Box 1415

(575) 624-2463  
[ajolsen@h2olawyers.com](mailto:ajolsen@h2olawyers.com)

Roswell, NM 88202-1415  
**Malina Kauai, Paralegal**  
**Rochelle Bartlett, Legal Assistant**

[mkauai@h2olawyers.com](mailto:mkauai@h2olawyers.com)  
[rbartlett@h2olawyers.com](mailto:rbartlett@h2olawyers.com)

No. 141, Original

IN THE  
SUPREME COURT OF THE UNITED STATES

\_\_\_\_\_  
STATE OF TEXAS,

*Plaintiff*

v.

STATE OF NEW MEXICO and  
STATE OF COLORADO,

*Defendants*

\_\_\_\_\_  
**DECLARATION OF DAVID JORDAN, M.S., P.E. IN SUPPORT OF THE STATE  
OF NEW MEXICO'S MOTION IN LIMINE TO EXCLUDE OPINIONS OFFERED BY  
DR. JOEL KIMMELSHUE AND MICA HEILMANN**

I, David Jordan, M.S., P.E., hereby declare as follows:

1. I am a Principal Hydrogeologist and Vice President with INTERA, an internationally recognized firm consulting in water resources, environmental services, coastal engineering, mining, and waste isolation. I have over 30 years of experience consulting on water and water resources, and one of my areas of specialization is the use of remote sensing methods to evaluate irrigated acreage, typically within large irrigation districts in the western United States.
2. I have been retained by the State of New Mexico to study irrigated acreage in the Rio Grande basin from Caballo Reservoir in New Mexico to Fort Quitman, Texas from 1936 to 2018 to support studies to quantify overall water usage within this area and in this time period.
3. The State of New Mexico also requested that I evaluate work performed by the State of Texas's experts at Land IQ in estimating and mapping irrigated areas within a similar study area within New Mexico and the Mesilla Bolson portion of Texas.
4. In performing this review, I was unable to determine, from the information Texas disclosed concerning Land IQ's methodology for determining and classifying irrigated acreage, including the deposition testimony of Texas experts Dr. Joel Kimmelshue and Mica Heilmann of Land IQ, which I witnessed in the case of Dr. Kimmelshue and transcripts of which I reviewed for both Dr. Kimmelshue and Ms. Heilmann, how Land IQ was able to obtain their results.

5. The information Land IQ provided described their process only at a general level, and indicated at multiple points in the process that intermediate and final results were the product of human decisions and professional judgment, rather than clearly defined parameters.
6. I have also reviewed the Declaration of Dr. Joel Kimmelshue dated August 5, 2021. In paragraph 6 of this declaration, Dr. Kimmelshue states that Land IQ performed a ground-truth survey to calibrate their mapping results in two years, 2014 and 2018. Dr. Kimmelshue also states that this is the same ground-truth method I used for my mapping work in this case. This is incorrect. INTERA's ground-truthing surveys diverged from Land IQ's in a number of significant respects. As one example, INTERA visited each field a minimum of three times throughout the growing season. This is important because many fields, particularly in the Rio Grande Project area, are planted for only part of a growing season, or may grow different crops in the early season than they do later in the season. Multiple visits also reveal whether irrigation of a field is discontinued partway through the growing season, which can occur for a variety of reasons. Land IQ performed ground-truthing visits only two times in 2014 and once in 2018, which is insufficient to capture such changes.
7. In his declaration, Dr. Kimmelshue also states in paragraph 7 that Land IQ used a random forest methodology. He states this is a peer-reviewed method. In general, there are peer reviewed random forest methods. But the fact that Land IQ used a peer-reviewed method does not mean they used it correctly or disclosed enough information for me to evaluate their use of the method. As an example, Land IQ used a publicly available software package known as scikit-learn. However, Land IQ described only in general terms the inputs and parameters they provided to the scikit-learn software. They did not disclose the specific inputs and parameters they used. In addition, they stated that the general parameters they did provide were subject to tuning by the analyst, but did not provide any detail about how such adjustments would be made. Without knowing this information, I cannot evaluate their use of this software or replicate their results using it.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 12, 2021

A handwritten signature in black ink, appearing to read 'David Jordan', with a long horizontal line extending to the right.

---

David Jordan, M.S., P.E.



IN THE SUPREME COURT OF THE UNITED STATES  
BEFORE THE OFFICE OF THE SPECIAL MASTER  
HON. MICHAEL J. MELLO

STATE OF TEXAS	)	
	)	
Plaintiff,	)	
	)	Original Action Case
VS.	)	No. 220141
	)	(Original 141)
STATE OF NEW MEXICO,	)	
and STATE OF COLORADO,	)	
	)	
Defendants.	)	

\*\*\*\*\*

ATTORNEYS' EYES ONLY  
CONFIDENTIAL PORTIONS TO THE  
REMOTE ORAL AND VIDEOTAPED DEPOSITION OF  
MICA HEILMANN  
JUNE 6, 2020

PAGE 26 LINE 13 THROUGH PAGE 52 LINE 20

\*\*\*\*\*

1     **okay?**

2         A.     Yes.   That's fine.

3         **Q.     And do you have it there available to you?**

4         A.     I do.

5         **Q.     Great.   Good.   So, Ms. Heilmann, for this**  
6     **document here, the title of it is, "Land IQ crop and**  
7     **land use mapping process."   Was this document**  
8     **developed specifically for this case to be disclosed**  
9     **to the State of New Mexico or was this document, did**  
10    **it exist prior to this case?**

11        A.     Some of the content existed prior to this  
12    case, but the document and this compilation was  
13    developed just for this purpose.

14        **Q.     And who prepared this document?**

15        A.     It was prepared by me and Joel Kimmelshue and  
16    some of our remote sensing and photo interpretation  
17    staff.

18        **Q.     Are there other more detailed summaries or**  
19    **analysis of the process that you use for the crop and**  
20    **land use mapping process?**

21        A.     No.

22        **Q.     This document mentions that it's a high level**  
23    **procedures summary.   Would you agree with that?**

24        A.     Yes.

25        **Q.     It also mentions that the processes are**

1 **services group?**

2 A. We -- we have a partnership where we both  
3 lead our firm and so I wouldn't say we have a very  
4 hard delineation. He also leads our remote sensing  
5 folks on specific projects, but on this project, I was  
6 specifically the team leader of our group for this  
7 project.

8 Q. There's a statement in the document also that  
9 because of the individual expertise woven throughout  
10 the analytical process, it is likely impossible to  
11 ever exactly replicate the results; is that true?

12 A. Where is that statement?

13 Q. It's on the first page near the bottom of the  
14 first paragraph.

15 A. I'm sorry. Did you say the first paragraph  
16 on the first page?

17 Q. I did say that. I apologize. I meant to say  
18 the second paragraph.

19 A. Yes. The expertise and the specific  
20 individual decision points in the process do result  
21 in -- it -- it would never be exactly replicated  
22 because of the individual photo interpretive  
23 components of the process, but the process, in  
24 general, can be replicated closely.

25 Q. And how would somebody replicate it?

1           A.    By following the steps in this process. I  
2    could go into detail.

3           Q.    Well, I mean, if you don't have the  
4    **algorithms, you know, if you don't have the exact code**  
5    **that you're using, could you really replicate it?**

6           A.    Yes. I mean, I think that the term algorithm  
7    can be confusing. Our use of the term algorithm is a  
8    case of process and that process is outlined in this  
9    document and so a person following a similar --  
10   similar steps here with imagery and -- and pulling the  
11   components from that imagery and inserting it into  
12   models that have been listed here, random forest and  
13   principal component analysis crop model that are  
14   actually publicly available, they could produce the  
15   same types of results. The steps that are made by  
16   analysts, decisions on exactly where to stop that  
17   modeling process and where to hand it off to the --  
18   the remote sensing or the photo interpretive analyst,  
19   those are decision points that -- that would be  
20   different with different humans, but ultimately should  
21   be able to get to very similar results.

22          Q.    And do you have to have what you were saying  
23    **a variety of different people with different expertise**  
24    **to get to the same accuracy that Land IQ gets to?**

25          A.    Yes.

1           Q.    And so if you don't have all those people  
2 with all those expertise, you're not going to get --  
3 you're going to get a lower accuracy, I would presume;  
4 would you agree?

5           A.    I would agree. I think that you need both  
6 remote sensing and agronomic expertise.

7           Q.    And walk me through the -- the proprietary  
8 portion of this because on Page 1, it's listed kind of  
9 a summary bullet of the steps?

10          A.    Uh-huh.

11          Q.    And as I mentioned to Dr. Kimmelshue  
12 yesterday, there's a number of steps -- it was  
13 particularly early on, like, image acquisition, field  
14 boundary delineation that in review of this document,  
15 didn't appear proprietary, and I wanted to understand  
16 if you agreed with that?

17          A.    Some individual components of the analysis  
18 themselves are not proprietary necessarily. It's the  
19 combination of those pieces and how we pull all of it  
20 together that is -- it's unique to us as far as I  
21 know.

22          Q.    So which piece in particular is something  
23 that you don't want to get out in the public, that you  
24 don't -- you know, what's the secret here?

25          A.    It's -- it's the whole. It's the whole of

1 the process. So there are others that may try mapping  
2 with different approaches that starts at field  
3 boundary delineations. I mean, just having accurate  
4 field boundaries is a very important component of our  
5 accuracy. Ground truth data flush is an important  
6 component. All of those pieces together are what  
7 allow us to be as accurate as you can be.

8 **Q. Are there any modeling algorithms, though, or**  
9 **anything related to the modeling that Land IQ has**  
10 **specifically developed that they don't want to**  
11 **disclose to the public?**

12 A. Yes.

13 **Q. And what is that?**

14 A. I mean, our -- the -- the -- it's just the  
15 steps of the way that we sample the data and how we  
16 choose and use what are publicly-available analysis  
17 tools, how we use them and the data that we use and  
18 then the way that we review and -- and refine that  
19 initial classification.

20 **Q. And when you were mentioning the models**  
21 **earlier, that they're publicly available, do you take**  
22 **those publicly-available models, though, and input**  
23 **your own algorithms or do you do -- what is it that**  
24 **you do to make it unique?**

25 A. We input our own data, and it's the way that

1 we summarize those data and input them, and we adjust  
2 some parameters of those models.

3 Q. So Dr. Kimmelshue told me yesterday I  
4 shouldn't use the word algorithm, that I was not using  
5 that correctly. Do you agree with him?

6 A. At this point, I probably would, I think.  
7 Our use of the term algorithm in discussion on this  
8 project meant process, but a lot of people tend to  
9 think it means super special math equation black box,  
10 and that's not what it is in this case.

11 Q. Okay. So there's no mathematical equation,  
12 and there's no code that you feel is proprietary?

13 A. There is code and there are equations and the  
14 use and the steps, the way we use them together is  
15 proprietary, but the individual pieces are not  
16 necessarily unique or not ever used in a different  
17 setting in a different way.

18 Q. Explain --

19 MS. KLAHN: Can you hear me?

20 MS. THOMPSON: Yes. Sarah, we can hear  
21 you. Can you hear us?

22 MS. KLAHN: I can hear you, Lisa, but I  
23 couldn't hear Mica.

24 THE WITNESS: Oh, sorry.

25 MS. THOMPSON: Mica, I heard you.

IN THE SUPREME COURT OF THE UNITED STATES  
BEFORE THE OFFICE OF THE SPECIAL MASTER  
HON. MICHAEL J. MELLO

STATE OF TEXAS	)	
	)	
Plaintiff,	)	
	)	Original Action Case
VS.	)	No. 220141
	)	(Original 141)
STATE OF NEW MEXICO,	)	
and STATE OF COLORADO,	)	
	)	
Defendants.	)	

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JOEL KIMMELSHUE  
JUNE 5, 2020

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1 the field boundaries. So yes, it's GID digitization,  
2 but when you do that many field boundaries, you're  
3 going to learn some things, and those things enhance  
4 our analysis.

5 Q. And in the document on the thumb drive,  
6 there's a description really of how you apply the  
7 method for the year 2018, correct?

8 A. Yes.

9 Q. There's no description, though, about how you  
10 applied the method for any other year, correct?

11 A. There's -- there's some discussion about how  
12 we approached other years, but we used 2018 as an  
13 example of a most recent year of how we applied what I  
14 would probably say the full suite of approaches within  
15 the overall process.

16 Q. And there's a list in there of 2018 imagery  
17 that was specifically used for that 2018 method,  
18 correct?

19 A. Can you tell me what page that's on?

20 Q. I can't. I'd have to switch over to my other  
21 computer to pull it up, but it's okay.

22 A. I have it. I have it. I'm sorry. I have  
23 it. Yes, there's a list of images that we use, yes,  
24 for 2018.

25 Q. I just wanted to check and make sure, any