SUPREME COURT OF THE UNITED STATES
NO. 141, ORIGINAL

STATE OF TEXAS,	)	
	)	
Plaintiff,	)	
	)	
VS.	)	VOLUME I
	)	
STATE OF NEW MEXICO	)	
AND STATE OF COLORADO,	)	
	)	
Defendants.	)	

TRANSCRIPT OF PROCEEDINGS

The above-entitled matter came on for HEARING before HONORABLE MICHAEL A. MELLOY, SPECIAL MASTER, held REMOTELY via Zoom, on OCTOBER 4, 2021, commencing at 11:02 a.m.;

Proceedings reported by Certified Shorthand Reporter and Machine Shorthand/Computer-Aided Transcription.

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JUDGE MELLOY: All right. We'll get started here. This is in United States Supreme Court Original No. 141, and Texas versus the State of New Mexico and State of Colorado with United States as intervenor. I would ask that we -- well, let me just start with a couple of the ground rules that we talked about in the last few hearings. I would ask that anyone who is not going to be participating in the proceedings this morning, that their camera should be turned off, and I would ask anyone who is not speaking to have their microphones muted until they actually are speaking, with the exception, of course, of the witness who will be examined. As I said earlier, I'm only going to take the appearances today of those folks who are going to be appearing on the hearing, so we'll start with Mr. Somach. Do you want to enter your appearance?

MR. SOMACH: Yes, Your Honor. My name is Stuart Somach. I am the counsel of record for the State of Texas in this case. Part of the day, Sarah Klahn from my office, also representing the State of Texas, and who is currently in Denver at the Department of Justice -- at the Department of Justice, she'll pick up, and I'll -- I'll go ahead and -- and drop off in terms of the picture at that point in

time.

JUDGE MELLOY: All right. Mr. Dubois?

MR. DUBOIS: Good morning, Your Honor, James Dubois for the United States. I will be -- as far as I know, I think I will be the only one speaking today.

JUDGE MELLOY: Mr. Wechsler?

MR. WECHSLER: Good morning, Your Honor. Jeff Wechsler on behalf of the State of New Mexico, and also with your indulgence, we'll ask that Attorney General Hector Balderas be allowed to give a portion of New Mexico's opening statement, and that's why he's appearing on the screen.

JUDGE MELLOY: Happy to have you, Mr. Attorney General. Mr. Wallace?

MR. WALLACE: Good morning, Your Honor. This is Chad Wallace representing the State of Colorado.

JUDGE MELLOY: All right. Well, I think probably we need to start with a little discussion about the status of the exhibits and Mr. Wechsler's e-mail yesterday evening. As I understand it, the issue is who is -- when -- when New Mexico designates exhibits for cross-examination that are either United States exhibits or Texas exhibits, who is supposed to

supply those exhibits to the court? Is that -- is that the gravamen of the dispute, Mr. Wechsler?

MR. WECHSLER: I think that's right, Your Honor, and I wouldn't say it's a dispute. It's simply something that we recognized was an issue after we saw that the United States and Texas would not be providing copies of their exhibits that we had designated.

JUDGE MELLOY: Well, let me ask you this: Under the protocol, you are to exchange -- well, Texas is to designate its exhibits five days before a witness is called, and then you have, what, is it one day, Mr. Wechsler, to respond and designate your cross-examination exhibits?

MR. WECHSLER: That's correct.

JUDGE MELLOY: Okay. Mr. Somach or Mr. Dubois, would you have any objection to including your exhibits that are designated by New Mexico in your packet that you would then send to the court?

MR. DUBOIS: Your Honor, this is Jim Dubois. I mean, the -- the packet that we sent to the court was the exhibits that we designated, and we sent that before we ever saw New Mexico's list, and so what we would have to do is on very short order, send out a new package of exhibits with the ones designated by

New Mexico. I guess it could be done, but it's not going to be on the same time frame. We send out the exhibits to Your Honor in a folder -- or a notebook, I should say, when we send out our exhibit list, which is five days before testimony. Since we don't get their list until a couple of days later, it would actually be a second submission to Your Honor in a separate notebook that would arrive, you know, shortly before trial. Can it be done? Yes, Your Honor. Can it be done when we send out our set of exhibits? No, Your Honor.

JUDGE MELLOY: Well, let me ask you this: One of the things I have been wondering about as we start this process is, is five days the right number? Do -- should that be pushed back maybe to five business days, so that when we have a weekend in there, if it's -- if it's the Monday witness, like today, then you'll be designating exhibits Monday previous. Is -- would that -- would that be a burden on the parties? And maybe -- maybe this whole process is a little too compressed when we talk about five actual days as opposed to five or six working days.

MR. SOMACH: I don't -- I don't think it's the five days that's the problem. I think generally, we're working seven days a week, and so as

a consequence, whether they're calendar days or business days somewhat gets blurred in the distinction. I do think it's a burden on the party that's providing the direct evidence and testimony to also have to compile all these cross-examination materials. I will tell you that I received -- I mean, we sent out a binder with direct evidence for one of our witnesses, and the cross-examination binder when I finally compiled it was twice as large. I just think the party that's going to cross-examine and who discloses these materials ought to be responsible for providing you with -- with the hard copies of the materials. That's the least burdensome way of doing it. Otherwise, when we get the list, we then first have to go back. We have to pull all those documents. We have to compile all those documents, and then we have to Federal Express them, when -- when the cross-examining party already has the documents, they already know what the documents are. They can send those out, quite frankly, at the very same time that they send it to -- to the party that's doing the -- the direct examination, and that's the most efficient way of doing it.

MR. WECHSLER: So, Your Honor, in terms of the most efficient way of doing it, it's the way

you had originally conceived, and that is all of the parties simply provide a full set of the exhibits to the court. In every other virtual hearing, that is the way it was done, and in terms of efficiency, this is exactly the kind of thing that New Mexico was looking to avoid. We're -- we're not interested in having to, every day, be determining what packet to be FedExing or putting in the mail and then having problems with delivery. That's why we thought it better if all of the parties provided a full set of their exhibits and then you can simply have your assistant pull those at the time it makes sense. In terms of whether or not New Mexico should be responsible for U.S. and Texas exhibits, that doesn't seem fair.

JUDGE MELLOY: Well, what is your response, though, to the argument that you know what you're going to be using for cross-examination and then if you -- if you -- if we don't -- if you don't designate those exhibits until one day after the witness lists are -- I mean, exhibit lists are exchanged, they have to scramble to pull them and -- and copy them and send them? I guess it goes back to my question, is this whole process too compressed?

MR. WECHSLER: Well, I don't think it

would be too compressed if Texas and the United States simply provided a full set of exhibits to Your Honor and then you have a full set of everything that we have. Again, we shouldn't be responsible for pulling United States and printing United States and Texas exhibits, and we certainly shouldn't be responsible for then sending those to Your Honor.

MR. SOMACH: These are not --

JUDGE MELLOY: The ones --

MR. SOMACH: Sorry, Your Honor.

JUDGE MELLOY: I was going to say, the one problem with getting a full set is, you know, we received the set that you sent to us, Mr. Wechsler. I mean, it's I don't know how many volumes, 50 or 60 at least -- or notebooks, at least, and not all those exhibits are necessarily going to be admitted, are they?

MR. WECHSLER: Certainly not, no. Certainly not, Your Honor. And had this been an in-person trial, what we would imagine is that there'd be, each day, someone pulling exhibits and providing those to the witness and Your Honor. So, again, in other virtual hearings that we have participated, a full set is provided to the decision maker and then before each day, the parties alert that judge as to

what exhibits will be coming the next day, and they simply have their clerk or their assistant pull all of those exhibits. And so when Texas and the United States, we were quite surprised they decided not to provide you a full set of exhibits and wanted to be doing this daily mailing process. That was not -- we were very concerned about the potential implications, the cost, the burden on our team for doing that. We didn't object because we decided, well, if that's what they want to do with their own exhibits, they ought to have that discretion, but now that we have learned that they're not intending to provide copies of the exhibits that we have identified, we recognized that there was that gap where you would not have a copy of their exhibits for cross-examination.

MR. SOMACH: They're not --

JUDGE MELLOY: Are you -- go ahead. Go ahead.

MR. SOMACH: I just want to correct something. They're not our exhibits. The point being, these are exhibits that New Mexico is going to be using on cross-examination. The first time we even are aware of what exhibits they intend to use on cross-examination is after we send our exhibits to the court. That's not a problem. It also avoids, quite

frankly, the Court having to go through all those boxes to pull the -- the exhibits. We will -- we've done that for the Court by providing exhibits that we are going to use. All we are suggesting is if New Mexico intends to use exhibits on cross-examination, it ought to be New Mexico that provides the Court with their exhibits for cross-examination.

JUDGE MELLOY: All right. Well, let me give this some thought, and I'll let you know what I decide to do.

Let me take up a few other matters before we get into the opening statements. The parties have filed a joint submission of stipulated facts. I will order that to be filed, and those stipulated facts will be binding upon the parties for all further purposes in this trial.

There is the question of this evidentiary stipulation as to authenticity of exhibits with extraneous annotations that was filed this morning. So what I understand that to mean, and I -- correct me if I'm wrong, is that if there is such a historical document that has annotations on it, that the document will be admitted with the understanding that the annotations will be ignored unless there is a further submission or authenticity -- authentication

of the annotations; is that what I understand the stipulation to be?

MR. DUBOIS: Yes, Your Honor. This is Jim Dubois for the United States. Yes, Your Honor, that's exactly correct. There are historical documents. Obviously, these have been pulled from various files from -- from Reclamation from the State of Texas, and there are markings on some of them of basically unknown origin. For the most part, those documents are, I think, being relied on for the underlying historical document, and unless there is some authentication of -- of where those markups came from, those markups are basically to be ignored. That's correct.

JUDGE MELLOY: Okay. All right. Anybody disagree with that understanding of the stipulation?

(No response.)

JUDGE MELLOY: All right. I had indicated or we had discussed at the last hearing, I believe, whether at the opening of the trial, we would just admit all the joint exhibits. At this time, I'm not going to do that for a couple reasons. One is I'm not sure they're all agreed to is the first problem; but secondly, I'm also now, I think, a little bit more

appreciative of Mr. Dubois' concern that there may be some documents that may be irrelevant, so at least at this point in the trial, the joint exhibits will only be admitted as they are used for a particular witness, and at the end, we may have a number of joint exhibits that are not admitted. But at this time as we go through each witness, we will admit the exhibits for that witness. Now, I do have the United States Notice of Exhibit Disclosures and Objections, and when we get to Mr. Esslinger, I will admit all the A exhibits, and we'll go -- go forward from there.

I think that covers most of the preliminary matters I wanted to talk about. Oh, one -- going back to submission of the exhibits. United States -- I mean -- well, Texas or United States, I'm not sure which, has submitted a joint exhibit of -- of the flyover of the drone flyover. You have not actually submitted the -- a DVD or thumb drive or anything with the flyover. Is that going -- is that -- is it my understanding we go to Box.com to look at that or how -- how do you anticipate that being provided to me? That's a demonstrative exhibit, I guess, not a stipulate -- not a joint exhibit.

MR. DUBOIS: Correct. It is a demonstrative exhibit, Your Honor. It is on Box.com.

If you would prefer to have it as -- on a thumb drive, we'd be more than happy to send you that, as well, but it was -- it was uploaded to Box.com. It's a, roughly, 23-minute, I want to say, like, 4 gigabyte or something file.

JUDGE MELLOY: I would -- would you send a thumb drive? I think it'd be --

MR. DUBOIS: Absolutely.

JUDGE MELLOY: -- easier.

MR. DUBOIS: We will overnight that to you, Your Honor.

JUDGE MELLOY: All right. Any other preliminary matters we need to get into before we start the opening statements? If not, unless there's any objection, my -- what I thought I would do for the order of opening would be Texas, United States, Colorado, and then give New Mexico the last word. Any objection to that? If not, then I guess we'll start with opening statements. Mr. Somach?

MR. SOMACH: Thank you, Your Honor. I'm mindful of -- of the Court's admonition with respect to having heard it all before, and I -- I recognize that's the case, so I apologize in advance if I -- if I repeat anything, but I've been at this since 2012, and so I can't tell sometimes when I'm repeating

something that's been rehashed a million times. It seems to me like it's all been hashed and rehashed a million times. But the purpose of the opening statement that we're going to provide is to give, to provide context to the testimony that Texas, in conjunction with the United States, will introduce in the next few weeks and then in the spring, and what I want to do is do a little linking of what we're going to do now in the next few weeks with what we're going to do in -- in -- in the spring so that we can -- we can kind of bridge the gap a little bit and so you'll know how it'll all fit together when we're all done, hopefully, before summer.

The case, from our perspective, the Texas case accepts foundationally the summary judgment order that the Special Master, that you, issued earlier this year and treat it somewhat as law of the case, and the testimony and evidence that we will introduce will, we think, create a solid foundation for your recommendation to the Court, as well as the Court's decision. It'll also do something that the summary judgment order mentions in that it will fill in factual gaps through witness and testimony, and it'll also flesh out the contours of issues that you've addressed and partially decided in the summary

judgment order. The case in chief of Texas focuses on New Mexico actions or inactions that have resulted in the interception through groundwater pumping and use of that groundwater in New Mexico of Rio Grande surface water that otherwise was apportioned to Texas. I mean, that's -- that's the fundamental -- that's our case. That's the most concise way I can articulate our case. Conceptually, I think our case can be best understood with reference to a water budget. That is, the Texas case at its heart is one of arithmetic. It's not even mathematics. It's arithmetic. It's addition and subtraction and the accounting of the various elements within that arithmetic. Now, if I -- if we were there, I would attempt to do what I'm going to do now by maybe whiteboard illustration, but for illustrative purposes, I'd like to put up a little illustration that we've created to kind of demonstrate what I'm talking about here. So can y'all see that illustration? Again, this is not a -- it's not even a demonstrative exhibit. It's not an exhibit. It's just me trying to illustrate a point that -- that I would have drawn on a board. But in -- in the top part of the -- of the illustration, you'll see what we -- what I characterize as a 1938 Condition. Now, the elements of -- of the addition part of this are what's

in the reservoir, whatever is in the reservoir, and in addition to that, the addition includes precipitation, arroyo flows below the reservoirs, as well as return flows. That is the reuse of water that otherwise has been directly released from the reservoir and used -- used once. So in the 1938 Condition, there were depletions. There was always the entitlement that New Mexico has pursuant to treaty, and then as you've noted, the remaining supply, what was remaining, was divided 57/43 between the lands in EBID and the Texas apportionment that initially goes to EP No. 1. This little graphic at the top shows return flows. Return flows were used in New Mexico itself. They -- they were part of what EBID got, although the further down you get into the system, the more return flows are used. Dr. Brandes, in the -- who is one of Texas' hydrologist engineer experts, who will testify in the spring, will go over all of this water budget and -- and supply real numbers that go in here. But one of the things he'll testify to is the fact that as you go down in the system toward Texas, return flows become more significant. It's not that return flows aren't used upstream. It's just that they become of larger proportion of the water that is -- is delivered. Now, simply after pumping -- and -- and so what you see to

the right, except for return flows, are subtractions, and if you stop the equation at EBID, what is left over is what -- what EP No. 1 or what Texas gets. So if you take a look at -- at the after pumping situation, what you get is increased depletions. And we've -- I know we've talked about all of this stuff, but I want to just illustrate it. And that is you'll get increased depletions, which include whatever depletions were analyzed in 1938, but now, you have depletions that are caused by the increased groundwater pumping by the municipalities, by ag within EBID, and then non-EBID ag, and then there's domestic pumping that occurs, also. The Mexico part of this equation is the same, and then what's left over then is allocated 57/43 between EBID and the Texas apportionment. And I note here that the -- the 57 percent that EBID gets is of a smaller hole, just like Texas gets, because what we're doing is reducing surface water supply that is available. A lot of the difference in EBID is made up through groundwater pumping, and that's noted in the depletion portion of -- of this thing.

Go ahead and take that down.

As -- as I think we've indicated in our briefing, we don't argue with the basic concept that

usable water, project water, is divided 57 percent/43 percent, but as is noted in the summary judgment order, the question to focus on is 57/43 of what? That becomes the critical question. Again, I have a simple graphic. I think you'd recognize how simple these are -- that demonstrates the point. Let's put that up. And that's, you know, I think in our briefing referred to this as the pie example, the hundred percent of a 16-inch pizza versus an 8-inch pizza. Here, I just used a box to describe this. In both the 1938 condition -- excuse me -- in the after pumping, you're dealing with a hundred percent of something. Right? So the first thing you have, and you have this in both the '38 condition and the after-pumping condition is you have what Mexico gets pursuant to treaty. Okay. That -- that exists in -- in both the before and the after condition. And so the hundred percent of what you get, gets reduced by -- by that Mexico allocation or diversion.

Just go ahead and knock that off.

Okay. The next thing you have in the 1938 conditions is depletions, which I indicated there were depletions in 1938, but in the after-pumping scenario, you get -- you get increased depletions because of groundwater pumping. You have the surface

water being depleted by all of this extra pumping, which fuels consumptive use. So those become subtractions or -- or reductions to -- to the system. So let's take that off if we can. What is left is 57/43 percent. And, again, this, I think, demonstrates what we're trying to say is that -- that New Mexico's constant harping that we get 43 percent, we don't quibble with the fact that we get 43 percent of something, but what we're entitled to is 43 percent of the conditions that existed in 1938, not the conditions that have been created by New Mexico groundwater pumping.

Take that off now.

With respect to actual numbers at play, and there are actual numbers that I avoided putting them in here because I don't want to testify myself, but there are actual numbers at play. The testimony of Dr. Miltenberger, the historian you'll hear from in a few weeks, as well as Dr. Brandes, who you'll hear from in the spring, will explain that the 790,000 acre-foot number within the Compact, which you talk about in -- in your order, was derived from exactly the type of water budget that -- that I kind of put up there. That is if you wanted to provide respective entitlements to EBID and Texas, you needed to account

for releases from the reservoir, precipitation, including arroyo flows, and -- and return flows from the use of water from EBID lands. That's the -- that's the addition part of the water balance. Then you subtract from that quantity the consumptive use of water on EBID lands, as they existed in 1938, and other losses in the system that existed in 1938, and you -- you -- you arrive at a sum, and that sum is what -- what Texas got. If more water is subtracted for use in New Mexico than the Compact intended, then Texas doesn't receive its apportionment. I think the summary judgment order addresses that. Our testimony and evidence is going to fill in, now, factual gaps that were noted in the summary judgment order, as well as flesh out areas that -- that were there but -- that were noted in the order, also, but the 790,000 acre-foot number was not an arbitrary number. It was negotiated, but it was negotiated derived from -- from what the Compact negotiators had in mind that focus, first, on the Texas apportionment, along with the EBID and Mexico entitlements, and then it worked backwards to figure out how much water New Mexico had to put into the reservoir in order to achieve the apportionment to Texas and the water that EBID was entitled to, as well as accounting for the Mexico

entitlement. The 790,000 acre-foot number that's in the Compact, as well as the index deliveries requirement of New Mexico that are found in -- in Article 4 of the Compact are absolutely tied to what Texas and EBID were intended to get and, in turn, were based upon and relied upon the 1938 depletion condition. I think as you concluded in the summary judgment order, groundwater pumping in New Mexico intercepts return flow, and that has the effect of increasing consumptive use in New Mexico that, in turn, results in more water being subtracted upstream than the Compact intended and allows. This hydrologic condition, this water balance was known, and the analysis was conducted in 1938 as part of developing the Compact. Testimony, again, of Dr. Brandes and -- and Dr. Miltenberger will explain and confirm that -- and, quite frankly, they'll use various exhibits that will refer to all of this analysis that was done. They include the JIR report, the Joint Investigate Report, that you referred to in your order, the engineering reports for 1937 and 1938 that were part of the Compact negotiations, and they'll also refer to the USGS analysis that took place shortly after the Compact by Conover reports all address and confirm what I'm saying. And much of this was discussed,

including reference to many of those exhibits in your summary judgment order.

Again, Dr. Miltenberger, and in a few weeks, Dr. Brandes, in the spring, will also directly address the 1938 hydrologic condition. You know, the New Mexico position, which we're going to have to deal with in our -- in our direct case, as we glean it from their briefing and their depositions, in depositions we took of various experts and parties within New Mexico, most specifically Mr. Lopez, who was their 30(b)(6) witness, as well as the state engineer, Mr. D'Antonio, is that there is no 1938 condition, and that the only limit on New Mexico's use of water in southern New Mexico is either a limit that was put on -- on the taking of water, the diversion of water, and the pumping of groundwater in permits issued by the State of New Mexico or whatever the crops need in order to be grown, whichever is -- is less. New Mexico recognizes neither a Compact-related limit nor an obligation to Texas, and in that context, New Mexico, we believe, ignores the Special Master's summary judgment order, as it addresses the 1938 condition. Now, interestingly, in the New Mexico trial brief, it, instead of recognizing a '38 -- 1938 condition, it, and I quote, accedes to the D2 curve as

a baseline. Now, you're going to hear a lot of testimony from the Bureau and from the EBID EP No. 1 witnesses, and, quite frankly, I know from the New Mexico witnesses about the D2 curve, and as will be described in all of that -- that testimony, the -- the D2 curve derives from project surface water deliveries in the 1951 through 1978 period. It was developed by the Bureau of Reclamation without regard to groundwater pumping and use and focuses on surface water available for the delivery after groundwater was pumped. Because the Bureau can't control New Mexico groundwater pumping, it, in essence, incorporates the effect of groundwater pumping into what had been available to deliver as surface water, but as I'll -- I'll mention in a minute, it does not incorporate or -- or agree with or acquiesce to the groundwater pumping itself. It merely takes what is left over to it to divert, to deliver, and -- and that is where the D2 curve was -- was derived from. By necessity, it includes the effect of groundwater pumping, and so it -- it, in a sense, incorporates all of the groundwater pumping that takes place in -- in that 1951/1978 period, and so acceding to using as a baseline the D2 curve is, in fact, no concession at all because it includes all the groundwater pumping. And it's

certainly no guide or -- or -- or no -- no gage of what the 1938 hydrologic condition was that was intended as part of the Compact. I know parenthetically that, of course, this is the second time that New Mexico has acceded to an adverse ruling without admitting that it was wrong or, in fact, that its current views, its D2 view, is something at odds with -- with what actually was determined in the summary judgment order with respect to -- to -- to the 1938 condition. The first time they acceded was when they lost the motion to dismiss, and the Court denied that motion.

As will be discussed by Drs. Miltenberger and Brandes, the 1938 condition cannot be the D2 curve, which was based upon, as I indicated, the 1951 to 1978 project operations. Those operations took place in a range of from 15 to 40 years post the effective date of the Compact, but as importantly, post all the analysis that went into in terms of developing the Compact. And this idea conflates two issues. It's wrong because it's wrong, but it's also wrong because it attempts to combine two issues in an inappropriate way. New Mexico argues, and the Special Master, your summary judgment order deals with this, argues that they will put on evidence associated with

course of performance. What that means -- you know, what course of performance means, of course, is both a legal, as well as factual in nature. Texas, in conjunction with the United States, will present testimony and evidence during the initial stage of trial regarding how the Bureau of Reclamation, how EBID, how EP No. 1 understood what -- what was occurring historically, why they acted as they did or why they didn't act with respect to certain issues. Indeed, I'm -- as a preview on all of the U.S./Texas testimony in the next few weeks to a greater or lesser degree deals with that very issue, that course of performance with respect to the project. But with -- but this testimony and related evidence draws a clear distinction between course of performance related to the operation in the project, and course of performance related to groundwater pumping. What occurred and what was known with respect to groundwater pumping and project -- and what was known with respect to project operations are two different things, notwithstanding that groundwater had an effect on project operations, that effect was not clearly understood. What was understood was how the project was to operate. There's little dispute about how the Reclamation project was operated from its inception

until today, and testimony will be provided by the Bureau of Reclamation, EBID, and EP No. 1 witnesses about what was known or should have been known about those project operations over time, but project operations deals with what the project, what the Bureau of Reclamation can control. It deals with surface water, including return flows. The pumping of groundwater, which intercepts surface water and return flows was not apparent, as I indicated, and the operation of the project doesn't deal with groundwater pumping at all. What was apparent to the Bureau of Reclamation, EBID, and EP No. 1 is what they had control over, and that was what was left over after New Mexico's groundwater pumping. Texas and the United States will offer testimony that the Bureau of Reclamation and EBID do not have control over groundwater pumping in New Mexico, and that only the State of New Mexico has the authority to address the impact of groundwater pumping on surface flows and on the project and on the Texas apportionment. That's an authority no matter how much they talk about it in their testimony, that to date, they have refused to exercise.

We've grappled -- "we" almost meaning you and I, but -- but the parties have grappled over

time, and the summary judgment order addresses the question of characterizing the water that EBID gets with respect to its contract with the Bureau of Reclamation, and we accept that the summary judgment determined that it was apportionment to New Mexico that was defined by the EBID contract with the United States. We accept it for the purpose of this trial in any event. The Bureau of Reclamation witnesses, and Mr. Esslinger, who we will put on in -- in a few days, who is the treasurer/manager of the Elephant Butte Irrigation District, will explain the reason for the view that has been expressed with regard to water below Elephant Butte Reservoir being a Texas apportionment. That view is rooted in the historic operations of the project itself. Texas will present testimony that at its inception, the project was wholly owned by the United States and operated by the Bureau of Reclamation. The Elephant Butte Irrigation District and EP No. 1 were formed for the primary purpose of repaying the cost of the construction of the project and to cover the cost of operation and maintenance of the -- of the project. As Mr. Esslinger will call -- will talk about, their primary function at that point was to -- to produce revenue in order to repay the United States for the

Reclamation project. It was the Bureau of Reclamation that operated all of the project facilities, and they operated it as a single unit, and it directly derived water and delivered water to farmers within EBID and EP No. 1, not the districts, and they delivered water without regard to the Texas/New Mexico state line. In fact, facilities for the distribution of water were constructed without regard to the state line, and that unified project, for Compact purposes, and regardless of the legal correctness of this conclusion, was considered and had always been considered to be within Texas. That's where the phrase that you've heard Compact Texas comes from. That's the phrase. And you'll see that kind of reference, that -- that notion that the project is a unity. And many of the exhibits that will be produced both by New Mexico, as well as Texas and the United States during the course of -- of this trial, that is the reason for that, and that's the historically -- important historical background behind that. You'll hear testimony from Mr. Miltenberger and Mr. Esslinger about all of that. Indeed, there's evidence that would be introduced that New Mexico should've known that this was the view that they -- and that they took no action to address that view. For example, in early versions, around 1985 of

the operating agreement -- or an operating agreement, Texas is defined for Compact purposes to include Sierra and Dona Ana counties in New Mexico, as well as the Texas counties of El Paso and Hudspeth. This unique view is dictated, again, by the logic of making deliveries to Elephant Butte Reservoir -- New Mexico making deliveries to Elephant Butte Reservoir, and treating the Rio Grande project as a unit and effectively Texas, rather than dividing the project artificially in terms of the way it operated at the Texas/New Mexico state line.

As noted, the technical case that we will bring and the United States will bring will be in the spring, but in its trial brief, and I -- I want to address this very briefly, and in arguments before the Special Master, before today, New Mexico has often referred to the robustness of their evidence and the robustness of their model of the Rio Grande, and they've denigrated, quote unquote, the simple nature of the Texas model. I believe in its trial brief, the Texas model was described by New Mexico as robotic. In the spring, we'll present testimony and related evidence that addresses these New Mexico contentions. Now, in modeling, as in everything else, there is a rule, the rule of parsimony. And that rule states

that a model should be constructed sufficiently to answer the questions being addressed, but not greater or more complex than necessary to answer those questions. As Mr. Coors, who is our expert with respect to surface water modeling, Ms. Moran, the -- the United States expert on hydrology, Dr. Hutchison, the creator of the Texas model, Dr. King, the expert consultant, hydrologist, and engineer for EBID, Dr. Blair, the expert hydrologist and engineer for EP No. 1 will explain, the Texas model adheres to the rule of parsimony, and the New Mexico model does not. You will hear testimony from Dr. Hutchison, King, Blair, and Mr. Coors in the spring about all the errors in the New Mexico model that are caused because of the violation of the rule of parsimony. You'll also hear, ironically, that the adverse impact that New Mexico groundwater pumping has on project supply and on the Texas apportionment is so significant and obvious that even the faulty New Mexico model demonstrates this fact. And I think the summary judgment order notes that as part of its determinations. In addition, Dr. Brandes, Mr. Coors, Dr. Hutchison, and Dr. King, and Dr. Blair will testify that the New Mexico model, which was created according to New Mexico to reflect project operations

and show that the harm that project operations and accounting has caused to New Mexico, in fact, shows that there has been no harm to New Mexico at all.

This leads me to two final points. First, I recognize that I've made this point to you before, but except for the allegations of adverse impact to New Mexico due to groundwater pumping in Texas, none of the New Mexico allegations focus on actions or inactions of the State of Texas. All the actions are related to actions taken by third parties over which Texas neither has control or which are in any way related to -- to Texas at all. As New Mexico testimony in this regard is introduced, it will be of note that New Mexico attempts to avoid what I just said and -- or they either ignore the distinction or they attempt to attribute those actions to -- to Texas. Now, I did pull out groundwater pumping. I just want to say that we recognize that groundwater pumping in the Mesilla groundwater basin does have an effect, and Ms. Estrada-Lopez, shortly, and Dr. Blair and Dr. King will also address the allegations associated with groundwater pumping in the Mesilla portion of Texas and will explain to you what is being done and what has been done with respect to addressing those -- those impacts.

There are also allegations by New Mexico that groundwater pumping in Texas in the Hueco Bolson -- that's the groundwater basin underlying the El Paso valley -- has had impact upon New Mexico. Dr. Hutchison, and quite frankly, the New Mexico model itself, will demonstrate that that just simply is not the case.

Finally, during this first stage of the trial, New Mexico apparently will attempt to put on testimony focused on the alleged injury that actions, as I've just described, by Texas have had on New Mexico. While we'll object to this testimony, to the extent it's not been revealed before, it will nonetheless be of note that in no case will New Mexico be able to claim that farmers or municipal users of water in New Mexico had insufficient water supply because of actions of Texas or, in fact, at all, other than drought-related shortages. And in the spring, there will be no expert witness that testimony by -- by New Mexico that will properly address injury. Texas, in contrast, through the City of El Paso witnesses that you're going to hear shortly in the next few weeks, farmers' testimony, and testimony of EP No. 1, all that testimony will, at least in part, focus on the injury to Texas caused by New Mexico

groundwater pumping, and in the spring, Dr. David Sunding, the Texas expert economist, will present expert testimony about Texas' injury that have been caused directly by New Mexico's actions and the shortages in water caused by the shortage in -- in -- in water associated with the Texas apportionment.

Unless you have any questions, that's all I have for an opening, and I thank you. I can't hear you.

MR. DUBOIS: You're on mute, Your Honor.

JUDGE MELLOY: I knew I was going to do that. Thank you, Mr. Somach. I'll turn to Mr. Dubois now. I do have to say, Mr. Dubois, while I was mainly getting ready for this hearing earlier today, I did have the audio of the Supreme Court argument on in the background, and interesting to listen to the justices talk about another original action involving water rights. I don't know if it'll have any impact upon this case or not, but I did note that you were on the brief for -- for the United States in that case, as well, but -- but be that as it may, you're up next, and you may proceed when ready.

MR. DUBOIS: Thank you, Your Honor. And, yes, I was on the brief, and I did not unfortunately get a chance to listen this morning.

I've heard -- I've heard from Ms. Coleman, who was listening, who's also on the briefs in that case, that it was interesting, and particularly, I think if -- if you are from Mississippi.

May it please the Court, James Dubois for the United States of America. Your Honor, I will be brief. This case revolves around a single fact, groundwater pumping in New Mexico is impacting the flows of the Rio Grande that were apportioned by the Rio Grande Compact. There's a huge problem. It's interfering with the long-term operation of the Rio Grande project. New Mexico has known it is a problem for years, and they have done nothing to address it. Instead, they're attacking the one action, the 2008 operating agreement, that has tried to actually address the problem. In sum, the United States intervened because New Mexico has failed to administer groundwater use to prevent interference with the water supply of the Rio Grande project. The project that's relied upon to effectuate the apportionment contemplated by the Compact. Water from the Rio Grande project also serves to meet the United States' obligations to the county of Mexico under a 1906 Convention, and the continued deterioration of the river and the aquifer system poses a potential threat

to United States' ability to deliver the obligated water. First, much of the bases for the United States' claim -- claims in this case have already been established by prior rulings. The United States, as I said, intervened in this case because it believes that New Mexico has a Compact-level duty to avoid interference with the programmatic apportionment established by the Compact. United States believes that the historical documents and testimony of the historians this fall, particularly Mr. Miltenberger, will establish that the programmatic apportionment is through the Rio Grande project and conditions akin, as you've put it, akin to 1938 conditions. The evidence presented at trial will show that New Mexico has not fulfilled its duty. The evidence presented by Texas' expert historian will demonstrate that the -- the Compacting states intended to protect the baseline operation condition for the project that includes the availability of return flows undiminished by the new and additional water resource development after the entry of the Compact. Your conclusion on summary judgment that the groundwater and surface waters below Elephant Butte Reservoir are interconnected will be further supported by the testimony of expert witnesses presented by the parties next spring. United States

believes that the evidence will show, and I don't think that New Mexico even denies it, that pumping in New Mexico impacts and depletes the surface water supply of the Rio Grande apportioned by the Compact. It simply takes the position that it should not have to account for those impacts against whatever the Compact apportioned. The impact of groundwater pumping on deliveries to Texas, in particular, is at this point undisputed. You've already concluded that in summary judgment, the pumping interfered with the delivery of -- of the Compact apportionment to Texas in the early 2000s. New Mexico has not taken a single meaningful step to address that problem in the two decades sense. Indeed, by New Mexico's own admission, groundwater pumping has continued pace or even increased, threatening the long-term viability of the water supply. The foundation of the United States' claims have been established as a matter of law at summary judgment. On summary judgment, you've made clear that the Compact protects the baseline operating condition for the project and that New Mexico has, of course, Compact-level duty to prevent the capture of surface water, drain return flows, and hydrologically-connected groundwater, to an extent inconsistent with Compact deliveries to Texas or the

extent it interferes with the long-term operations for the project. The fundamental question at issue in this case is really pretty straightforward. The Court has to determine the apportionment of the flows of the Rio Grande below Elephant Butte reservoir between Texas and New Mexico. As you framed it, the question is what conditions did the Compact intend to protect? Those akin to the conditions on which the Compact was based and signed, or those in existence 40 years later? The baseline of project supply that's to be protected and how far we are away from that condition are the core issues. Everything else follows from that determination, including whether or not the current conditions are consistent with the apportionment determined by this Court, which leads us to the third, to the operating agreement. Despite what we believe you're likely to hear, this is not a case about the 2008 operating agreement. First, the operating agreement is, as you will hear, simply an agreement among the districts and the United States regarding what the districts believe to be the fair management of water that's available to the project. It certainly does define how water is allocated between the districts. That's true. But the operating agreement itself is -- is part of a long

history of Reclamation and the districts trying to adapt the changing conditions and problems, including those caused by groundwater pumping in -- in New Mexico and the impacts of that. In particular, the operating agreement reflects an effort within the project to adapt to the un-relate -- unregulated pumping in New Mexico. While you will undoubtedly hear much about the 2008 operating agreement, it is simply not the threshold issue you have to determine. The operating agreement merely defines where the water is going within the system. Evidence this fall and analyses to be presented in the spring will show that operation of the project has not been static, but has evolved changing circumstances to meet the needs of the project water users, for instance, that the transfer of -- of operation of the project facilities and the need to go from delivering water directly to the farmers by Reclamation to delivering an allotment to the districts to manage to their farmers within each of the districts. So the operating -- the operating -- the 2008 operating agreement is simply a continuation of that evolution.

You'll also hear that the Compact does not give New Mexico or the Compact commission roll and control within the Rio Grande project. New Mexico has

never been involved in the operation of the project. It's never had a contract with Reclamation for project water, and it's never been involved in water allocation by the project. New Mexico does not use the water delivery, in New Mexico, only Elephant Butte Irrigation District, or EBID, has that relationship with the project, and you've recognized it. New Mexico's apportionment is defined by EBID's delivery under the project. Reclamation alone, or in conjunction with the districts, has always had control over the management and use of the project water and made decisions responsive to changing circumstances and needs, including the operation of transfers, as I've mentioned, as well as hydrologic issues. Reclamation and the districts have made decisions responsive to addressing problems arising from consequences of pumping alone by New Mexico; therefore, even if you determine that current conditions do not meet the Compact apportionment that either you or the Court ultimately determines, it is a matter to be addressed first by the districts of the United States, not by the State of New Mexico. It is -- it is the province of the project to come within the -- the boundaries and the -- the guidelines that you ultimately provide. As the testimony to be

presented, this fall, you will be presented testimony establishing a factual overview of the Rio Grande project and its operations starting with Ms. Estrada-Lopez, who later this morning will give you an overview of the project and its current operations. You'll also hear from Mr. Cortez, the past Reclamation manager, about project operations in the recent past, and with Mr. Cortez here, recent spans some 40 years. You will hear from Ms. Spener about the -- from the International Boundary and Water Commission. She will explain IBWC's role in assuring water deliveries to New Mexico, and you will hear from representatives of the two irrigation districts, which are intended to be the beneficiaries of the project. This will include Dr. Phil King, EBID's consulting engineer, and Dr. Al Blair, EP No. 1, the El Paso County Water Improvement District No. 1, their engineer. The evidence presented both this fall through Mr. Cortez, Mr. Esslinger, and others in the spring through technical analyses, will show that the impacts of groundwater pumping have sufficiently interfered with the long-term project operations to cause the United States and the irrigation districts to evolve project operations partially offset that interference. The testimony by witnesses from the irrigation districts,

including Drs. King and Blair, will begin to show that groundwater withdrawals sanctioned by New Mexico have adversely impacted the long-term operation of the project and irreparable injury to federal interests. Finally, this fall, you're going to hear from expert testimony from Texas' historian Mr. Miltenberger regarding the history of the Rio Grande Compact. The evidence will show that the Compact negotiators fully understood both the importance of return flows in defining the Compact's delivery schedules and the relationship between groundwater and surface water. The evidence will show that the water supply available to the projects in 19 -- the project, singular, in 1938, included water release from the Rio Grande project storage, tributary inflows, and return flows from initial irrigation use undiminished by groundwater and water developments initiated after the time of the Compact. The witnesses this fall will give -- will give you some detail regarding the district's operation and provide context and background for the technical analyses to be presented by Doctors King and Blair and others next spring. In the spring, you will hear from the experts, hopefully live in Cedar Rapids. The testimony -- that testimony will show that the groundwater pumping in the Rincon

and Mesilla valleys -- the Rincon and Mesilla valleys in New Mexico deplete and diminish the Rio Grande surface water flows available to the Rio Grande project and materially interfering with the deliveries to Texas and interfering with the long-term operations of the project. Testimony to be presented in the spring by Ms. Moran, expert for the United States, will show that both the Texas and the New Mexico groundwater models demonstrate the groundwater pumping has significant impacts on the apportioned flows of the Rio Grande and the availability of -- of -- and the ability of the project to deliver water to two districts whose contracts effectuate the apportionment. Technical analyses by Drs. King and Blair as well as Dr. Ferguson will support the conclusion in the 2008 operating agreement does not create the windfall for Texas claimed by New Mexico. Indeed their analyses supports the conclusion that the operating agreement has, at best, returned Texas to something close to the project water delivery made to Texas during the 1950s. The United States, therefore, requests the Supreme Court to enjoin New Mexico to exercise its authority under state law to prevent New Mexico water uses from causing ongoing irreparable injury to long-term operations of the Rio Grande

project. Thank you, Your Honor.

JUDGE MELLOY: Thank you, Mr. Dubois.

Mr. Wallace, we'll hear from you next.

MR. WALLACE: Thank you, Your Honor. I'll be brief. Colorado understands that the scope of this trial is going to be limited to issues surrounding the distribution of impacts to water from the Rio Grande project. With that understanding, the State of Colorado does not anticipate any impact to Colorado's water or to its Compact interests. Consistent with our trial brief, Colorado will not be presenting a case in chief, therefore, I really have nothing much more to say in opening statement because we will not be presenting direct witnesses. Thank you.

JUDGE MELLOY: Thank you, Mr. Wallace.

Mr. Wechsler, how do you and General Balderas plan to divide up your argument?

MR. WECHSLER: Your Honor, General Balderas will take the first portion of the argument, and I will follow after him.

JUDGE MELLOY: All right. General Balderas, you may proceed.

MR. BALDERAS: Good morning, Your Honor. May it please the Court. This case is about fairness,

fairness as defined by how we all agreed in 1938 to divide the surface water of the Rio Grande below Elephant Butte Reservoir. This case is about making sure that farmers, families, and municipalities below Elephant Butte get what the states collectively thought was fair, regardless of which state or state line they lived on. I know firsthand the struggles of a small community. I'm from a community of 300 people on a good day, and not only the first attorney from that community, but was the first attorney in the entire era of homesteading in that community in many generations, and it's not an exaggeration that many of the small rural communities are not only the backbone of New Mexico's economy, but we are potentially risking New Mexico's entire backbone of that economy, considering that pecan farming, chile farming make up nearly 10 percent of our GDP. Nearly 50,000 jobs in a state of only 2 million in population, that impact cannot be overstated. But this case isn't about those numbers. To really give us a complete picture, you'll be hearing testimony about why this case is so important, meaning those farmers and families that rely on the actual surface water of the Rio Grande for their livelihoods. They make this case important. Later in the trial, you'll hear from several of those

New Mexico farmers personally. They've been working that lab in the lower Rio Grande for generations, but families can never farm without water. We are at a critical juncture in our history, and unless New Mexico starts to receive its fair share of water, we may see a situation where New Mexico farmers don't have enough to tend their own fields. You'll also hear from witnesses that describe the impact to the City of Las Cruces, and the City of Las Cruces is the second largest city in New Mexico. They've also been an integral part of the lower Rio Grande for more than a century. Last and finally, this case is important to New Mexico because we really enter into a very uncertain climate future. We know that climate is not changing by itself, but we have seen less and less water as the years go on, and it's critical that this case that we get as a result a clear and unambiguous understanding of the obligations of each state, and also how surface water that remains must be allocated. Oddly enough, this case didn't start when Texas filed a bill of complaint with the court. This case started before that in 2011, when New Mexico sued the U.S. Bureau of Reclamation because New Mexico was not receiving its fair share of water, and I believe during that course, over the course of this trial, you

will see that New Mexico is still not receiving its fair share of water. It's not Texas that is being harmed in this case; it is New Mexico. Before I turn it back over to Mr. Wechsler for the remainder of this opening, I want to personally assure you that New Mexico, in this proceeding, is not asking for more than its fair share of water. We are asking only that Texas be bound to its word and that the project be operated in a way that allows New Mexico to receive its fair share. I want to kick it over to Mr. Wechsler, but thank you, Your Honor, for this opportunity to address this Court.

JUDGE MELLOY: Thank you, General Balderas.

Mr. Wechsler?

MR. WECHSLER: Thank you, Your Honor. With your permission, we'll share our screen to walk through our remainder of our opening statement. May it please the Court, and thank you, General Balderas. As General Balderas just explained, this case is about whether the states have enjoyed the benefit of the Compact by receiving their fair share of project supply. You'll hear throughout the course of the trial that New Mexico has not received that equitable apportionment since 2006. It's a daunting task to

summarize the evidence that you'll hear from approximately 55 witnesses spread out over the course of seven months, so today, I will limit my discussion to the evidence related to five issues on which the case depends. The protective Compact baseline, the technical modeling efforts by the parties, the regulatory scheme of the two states, the D3 plus carryover methodology for dividing water between the lands and the two states, and whether Texas or New Mexico have received their equitable apportionment. So the first question, what is the protected Compact baseline? You have rightly focused much of this trial -- this phase of the trial on the baseline or what I would call the test for Compact compliance. Contrary to what Texas suggests, we embrace the summary judgment order, which we think supports our position in this case, and it's helpful in that regard to recall what has already been decided because those principles will guide our trial. First, the Compact incorporated the project as the mechanism by which the Compact apportionment below Elephant Butte is made. As you have found, and as the United States has conceded, it necessarily follows that project operations and allocations must be consistent with the Compact; second, New Mexico is entitled to 57 percent

of project supply; and third, unlike the index flows in Articles 3 and 4, the apportionment below Elephant Butte, to use your word, is programmatic, in other words, based on the project operations. So turning to the principles establishing the baseline, Texas offers a theory that's not supported by the Compact, and it's not supported by the evidence. In contrast, New Mexico's theory of the principle of the Compact baseline is based entirely on the evidence. Now, because of the interaction between the Compact and the project, New Mexico enlisted the help of Mr. Estevan Lopez, a former United States commissioner of Reclamation and interstate stream director. He will explain the operational and reclamation principles underlying the project in the Compact, and he is also the only expert offered in this case with expertise in interstate water allocations.

So then turning to the principles that define the protected baseline, and I'll discuss four this morning. The first is that the project is operated as a single unit. You've already heard Texas concede this point. I think they called this a unified project in the way it was operated. Now, you'll hear from Dr. Stephens, New Mexico's historian, and Mr. Lopez, as well as the Reclamation witnesses,

that in 1938, when the Compact was adopted, the project was operated as a single unit with the same rules applying throughout the project, and that same principle is inherent in the Compact baseline. As an example, the Compact provides for a normal release of 790,000 acre-feet and that amount of water is intended to meet irrigation demands for all acreage in both states. That 790,000 acre-feet forms part of the baseline in that it establishes the amount of water on which the -- the division is set.

Turning to the second principle underlying the Compact baseline, we know that New Mexico is entitled to 57 percent of project supply. The principle underlying that rule is that every project acre is entitled to an equal amount of water. Now, the evidence on this point is too voluminous to discuss this morning, but I'll point to just a couple of things. You're already familiar with the letters from Texas Rio Grande Commissioner Frank Clayton from the briefing. Dr. Stephens will explain how those letters and other historical evidence show that negotiating states intended to base the apportionment below Elephant Butte on an equal amount of water per project acre. Second is the Convention of 1906. Now, we're looking at a slide here from that Convention.

In fact, the article -- the treaty with Mexico formed some of the background principles of the Compact. In fact, Article 16 specifies that the Compact shall not effect the United States' obligations to Mexico. This is important because of the provision of the Convention that is shown here. You can see that below the table, in times of extraordinary doubt -- drought, the amount of water delivered to the Mexican Canal, quote, shall be diminished in the same proportion as the water delivered to lands under said irrigation system in the United States. As you'll hear from Reclamation witnesses, in order to ensure the Convention is followed, every year Reclamation performs a status check to make sure that the amount of water allocated to each project acre is reduced in the same proportion as the water allocated to Mexico, thus supporting that principle. In addition, you're familiar with the 1938 downstream contracts, and we know that the Court has found that these contracts were incorporated by reference into the Compact as the mechanism -- as -- as part of explaining the division of the water. Many witnesses throughout the trial will testify that this contract requires that each acre of project land receive an equal amount of water in times of shortage or at least an equivalent amount

in the aggregate. And -- and turning to the project operations from 1938 to 1979, Dr. Barroll, Mr. Lopez, and numerous Texas and U.S. witnesses will explain that from 1951 to 1979, Reclamation operated the project so that every acre was allotted an equal amount of water, and from 1980 to 2005, Reclamation used the D1 and D2 curves that you've heard about to ensure that each district was allocated an amount of water equivalent to -- to that equal amount per acre, up to 3.024, which was considered the full supply, and to this day is considered the maximum amount of water that each acre can receive. On this basis, the water was allocated 57 percent to New Mexico and 43 to Texas, but unfortunately, as the slide we're looking at here shows, the evidence will show that project supply is no longer allocated on that basis or on the principle of an equal amount per acre. You can see here in the orange, the EP No. 1 allotments each year where they max out at 4 acre-feet per acre compared to the amount of project supply that EBID has allotted, which is significantly less -- less than half of that allotted to EP No. 1.

So turning to the third principle underlying the baseline condition, and that is about waste. Mr. Lopez will explain that this third

principle and that the project should be operated to -- in a way to limit waste. As I said, the project operates as a unified whole. You'll hear from both Reclamation witnesses and Hudspeth representatives that at the end of the project is Hudspeth, and Hudspeth is not a project beneficiary and is entitled, therefore, only to waste. New Mexico experts will explain that limiting waste is an established principle of Reclamation projects, and that principle is particularly important for the Compact because excess waste out the bottom impacts other articles of the Compact, including Articles 7 and 8. But as illustrated in this slide, waste increased significantly once EP No. 1 began operating the project in the 1980s. In fact, you'll hear that EP No. 1 has contracts in place to sell excess water to Hudspeth, meaning they have more water than they think they need. Now, this matters to the Compact because if the water were not wasted flowing out the bottom or sold to Hudspeth, then it would be in project storage, and if it were in project storage, it would be available for division and use in New Mexico and Texas, as well.

All right. So turning to the fourth principle underlying the Compact baseline, and that is

of conjunctive use and the idea that supplemental groundwater pumping has always been allowed to meet irrigation demands. Now, the evidence will show that supplemental groundwater use has always been a part of the project, and, in fact, the project's very survival depend on it. Supplemental groundwater pumping forms the background principle of the Compact and the course of performance establishes that the states always understood that the Compact did not prohibit supplemental groundwater pumping below Elephant Butte. As what -- as but one example shortly after the Compact was adopted, the first drought arose, and the parties reacted by pumping groundwater as a supplemental supply to meet irrigation demands in both states. Now, at this time, there were people involved who had negotiated the Compact, as you'll hear from Dr. Stephens. But even that was true, no party complained that groundwater pumping was not allowed. In fact, it was encouraged, as we'll see on the next slide. And you'll hear witness after witness testify that the groundwater is an accepted feature of the project. So we know that, and you've heard before that Reclamation actually encouraged groundwater. Witness after witness will explain that that happened, and that the use of groundwater wells was encouraged

throughout the project. Now, we're looking at a single exhibit from 1954. This is Joint 227. But it's just one of many documents that you'll see that -- that look like this. Witness after witness will confirm that the states, the districts, and Reclamation all understood that groundwater pumping effected surface flows, and yet you'll see no evidence that any state complained that groundwater pumping constitute a Compact violation until very recently. In fact, you'll hear that the City of El Paso tried to appropriate New Mexico groundwater in the 1980s. Now, Texas -- Texas and the United States' own witnesses will tell you that when Reclamation developed its allocation procedures, it grandfathered in groundwater pumping up to 1978 through the use of the D2 method and even in the 2008 operating agreement, that method is based on the D2 allocation for Texas lands, not New Mexico, but for Texas lands, which incorporates the effects of groundwater pumping in its allocation, as I think Texas and the United States conceded in their opening statements. Now, the operating agreement goes onto specifically reference the Compact, and it says that it, meaning the operating agreement, including its allowance for groundwater pumping, is not inconsistent with the Compact. In short, you'll hear

that groundwater pumping has always been a part of farming and municipal use in both New Mexico and in Texas, and the evidence will show that the communities and economies in both states have grown around the mutual understanding that groundwater pumping is permitted by the Compact. So before I -- this slide that we're looking at here illustrates the concept of how groundwater use was used throughout the -- the project, and you can see on the left, the municipal and industrial wells in the El Paso Valley, and on the right, the green line there that you can hardly see is the river, and the reason you can't see it is because of all the blue irrigation wells, again, in the El Paso Valley. Now, New Mexico has modeled multiple aspects of this Compact baseline, and this will allow you to understand the impact of different types of water use. For example, the modeling will show the impact of different infrastructures or levels of groundwater pumping to support your decision. I think Mr. Somach recognized in his opening statement that Texas' model actually doesn't have that ability. Mr. Somach also mentioned that D2 -- New Mexico is willing to accept the D2 method as the standard for Compact compliance, and we did indicate that in our trial brief. Now, the -- the longstanding D2 method,

which was utilized from 1980 to 2005, is -- is generally consistent with the baseline principles that I just outlined. It's consistent in that it's based on operation of the project as a single unit. It's consistent in that it allocated water based on an equal amount of water per acre. It's consistent in that during that period, they limited waste, and it's consistent in that it incorporates the effects of groundwater pumping. Given that the states both accepted this D2 division for decades, and given that it is generally consistent with the Compact, New Mexico is willing to accept the D2 curve as that baseline. We think that it's historically significant.

Before I move on from the -- the Compact baseline, I do want to say just a word about the Texas 1938 Condition. Let me say that the evidence does not support Texas' theory that all depletions were set in 1938, their so-called 1938 Condition. Again, the evidence will be abundant and very one-sided on this point. The theory is not consistent, in fact, with the way the project was operated from day one. Instead, there have been a large number of changes in both states that have lasted over many years and that affect the amount of water available for lands in each

state. Those, in fact, conditions can change on a regular basis. As just one example, you're looking at the authorized acreage in over the years, and you can see that in 1938, the acreage in EBID wasn't even fully built out, even though the project clearly always intended to have a full build out of the authorized acreage. Again, this -- this completely undercuts the Texas theory of a 1938 Condition. As another example, you'll hear directly from the farmers that they have always been allowed to change their crops and their irrigation methods, something that the Texas condition would prohibit and something that Texas' position on this point is inconsistent with Supreme Court precedent. And the evidence will show that the project and the basin form a dynamic system that demands the flexibility of the programmatic approach that you have said is required.

All right. So turning, now, to the next issue that I said I would discuss, is it -- is it necessary to model the impact of project operations to determine whether actions are in compliance with the Compact? We think the answer is clearly yes. The Court and you have both confirmed that the project is the mechanism by which the apportionment is accomplished. It's, therefore, necessary to model and

understand these project operations. Texas has constructed a simple model that fails to answer the questions posed in this case. Because it cannot model project operations or the effective changes to those operations, the answers provided by the Texas model are simply not useful. You'll hear even from some of Texas' own witnesses, the flaws in its modeling and its expert analysis. On the other hand, as you can see shown in the model, the -- the New Mexico integrated model simulates the entire project area. It simulates operations from all of the relevant parties. It's rule based. It includes operation of the Elephant Butte and Caballo reservoirs, something that Texas experts initially began to evaluate, but weren't able to complete. It uses a monthly time step, and it's able to evaluate things like changes in reservoir operations and the impact on water users, changes in project water allocations, which is at the heart of the equitable apportionment and irrigation demands. In short, it's a reliable tool on which you can base your decision. Moving to the next issue, do the states have a regulatory scheme in place that are consistent -- that is consistent with the Compact? So let's start with New Mexico. New Mexico has always made every effort to comply with the Compact, and part

of that effort is a robust scheme for administering water both above and below Elephant Butte. It helps that the New Mexico state engineer is also the Compact commissioner for the state. He, therefore, has broad authority to monitor and control water use to comply with the Compact, and as part of that control, New Mexico declared the relevant basins, groundwater basins, in 1980 and 1982. You're looking at the front page of the 1980 declaration, which is a trial exhibit. That action was protested by the Texas commissioner at the time, and Texas was arguing that farmers needed unrestricted groundwater pumping, and New Mexico should not limit that groundwater pumping, but that action by New Mexico had the effect of preventing new depletions caused by groundwater pumping in New Mexico, and the timing is also significant because 1980 is approximately the time that the D2 curve was put into place, and as you've heard, D2 incorporates all of that data, including the effects of groundwater pumping, up through 1978.

You'll also hear from Rolf Schmidt-Petersen, the director of the New Mexico Interstate Stream Commission. He will explain that the ISC is a unique body charged with ensuring that New Mexico complies with all of its interstate water

responsibilities, and he'll describe the work and communications that we had with the State of Texas over the years over Compact issues. And you will hear from Ryan Serrano, the water master in the lower Rio Grande. He will explain how he and his team monitor and regulate all groundwater use in the lower Rio Grande, ensure that all water use, surface and groundwater, is in conformance with the adjudication and applicable rules, and prevent -- and prevent over diversions. So let's turn to Texas then. Now, in contrast, Texas takes the position that nothing happens in the El Paso Valley matters. In fact, we looked at a slide earlier from Mr. Somach that completely ignored Texas. We saw no mention of the Texas district on that slide. They've acted like nothing matters in -- in Texas, but Texas is not correct. You'll hear that actions in Texas impact project supply in the exact same way that actions in New Mexico do, and that's true because the project is operated as a single unit, and so anything that reduces supply or reduces the overall amount in project storage and, therefore, the amount available to be divided. To make matters worse, the operating agreement charges New Mexico water users with depletions caused by Texas water users. So turning to

the New Mexico -- the Texas regulatory regime, unlike New Mexico, the Compact commissioner for Texas is not a water official and has no authority over water administration at all, and unlike New Mexico, Texas has no applicable rules and conducts no meaningful water regulation. There's simply no limits on groundwater use in Texas. A Texas water user can pump as much groundwater as she wants without any oversight, and since there's no monitoring in Texas, we don't even have a way to track the amount that's pumped, and the -- the effects can be seen in the slide that you're seeing. We're looking at the groundwater levels in 1938 in the blue area in Texas, but if we click on 2017, we can see that the lack of regulation in Texas has caused significant drawdowns in groundwater levels, some as high as in the hundreds of feet. Now, one of the concerns that New Mexico has with the operating agreement is it has forced New Mexico water users to rely on groundwater pumping. We do not want to mine our aquifer in New Mexico. It has long-term potential impacts. So we're trying to avoid exactly what has happened in Texas.

Turning to the next issue, is the current methodology for dividing the project supply consistent with the Compact requirement that New

Mexico receive 57 percent? And here, we think that the answer is clearly no. Reclamation ignored unanimous requests from the Rio Grande Compact Commission, and when it's unanimous, that means it also came from the State of Texas, to consult on the project allocation process when it adopted the operating agreement and the D3 methodology. You will hear New Mexico State Engineer John D'Antonio describe the way that the operating agreement turned New Mexico into the downstream state. Now, it did that by adopting a process that awards EP No. 1 its allocation first every year so that EP No. 1 is guaranteed its entire D2 allocation. But the same is not true for EBID. Instead, EBID gets whatever is left over. It allocation is set by using the diversion ratio, which charges all deviations from the D2 curve to New Mexico. Now, what does that mean? It means if you look at this slide, the blue line represents the D2 curve, basically the historic operations from 1951 to 1978. It was used as the baseline for the division of water until 2005, and it's still used as the basis for EP No. 1's allocation. Now, due to accounting changes, water supply changes, and other activities in the basin, including groundwater in Texas and New Mexico, releasing the same amount of water today

results in a little less being delivered. That's referred to as the gap. And you can see the gap illustrated on this slide in that little green arrow there, the difference between the red triangle and the blue line, the blue line being D2 and the red being the amount that can be delivered for those particular years. Now, the assumption in this methodology that I just described is that it is only -- actions in New Mexico and only actions in New Mexico that caused the gap, but Reclamation did not analyze the source of the deviations before adopting the operating agreement, and, in fact, it does not analyze the cause of the gap even today when it does its allocations. Dr. Barroll is the only expert in the case to have analyzed the deviations from D2, and she will show that much of the gap comes from actions that occur in Texas or Mexico, the lack of river maintenance, or sweetheart accounting agreements that benefit El Paso No. 1 and not EBID. So let me give you an example. This slide shows effluent being released from the Haskell wastewater treatment plant. You saw this location on the basin tour. During the irrigation season, much of the water comes from project supply that goes into the treatment plant, and then it's discharged into the American Canal Extension. During the D2 period, that

supply, along with the effluent that was discharged, form part of project supply. Now, in New Mexico, there also is effluent from the City of Las Cruces and other entities. In New Mexico, that effluent is charged against EBID's allocation, in other words, it forms part of project supply. But a different rule applies in Texas. Due to a change in the accounting methodology to which New Mexico did not agree, EP No. 1 is not charged for this effluent from Haskell, even though it's still being used by EP No. 1 farmers. In essence, that -- that water no longer counts as project supply, and because the water was used during the D2 period, when it was actually charged, it forms part of that curve we looked at, and it -- and -- and then the water not being charged today forms part of the gap that I just mentioned. In other words, New Mexico is -- is essentially charged for effluent -- the lack of effluent being charged in Texas, and, therefore, it reduces the EBID allocation. New Mexico bears no responsibility or -- or any connection whatsoever to that effluent, and it is fundamentally unfair to charge New Mexico with depletions that are caused in Texas and Mexico, and more importantly, that whole principle is contrary to the Compact. Now, if you believe that any of the departures from D2 are

caused by something other than groundwater pumping in New Mexico, then the only conclusion is that New Mexico is not receiving its equitable apportionment. So let's turn to the equitable apportionment, and I'll separate this discussion into Texas and New Mexico. So are there any years in which Texas did not receive its equitable share of project supply, that 43 percent? Well, there's a number of reasons to think or there's a number of reasons that the technical evidence in this case will show that Texas was not harmed. First, the slide you're looking at here goes to show that New Mexico water use has been remarkably stable. What you're looking at here is the amount of water, surface water and groundwater, so it includes groundwater, that has been applied to each project acre in New Mexico. Now, you can see dating all the way back to 1940, that amount has not really changed. That amount is represented by the black line there, and it's a hair over three. It looks like in some years, it might have gone as high as 3.5. Now, that number under four is significant because as you will learn, as part of the trial, EP No. 1 actually allocates, or allots, I should say, 4 acre-feet per acre as a full supply to its water users, but as you can see, New Mexico has never gotten near that, and,

in fact, the adjudication prevents that from happening.

You can also see from this slide the impact of surface water supply. So in years of abundant surface water, the surface water being shown in the blue lines here, you can see that there's significantly less irrigation pumping shown by the gray. But then in those years where there's less surface water supply, well, now, you have more groundwater pumping, and that is consistent with the Compact's purpose of ensuring that the project survives and that irrigation demands are satisfied.

I want to show you another slide here that helps illustrate the impact of the operating agreement on how water was applied in New Mexico, and here you can see the D1/D2 period, the level of groundwater pumping, that actually dropped during that period of 1979 to 2005 because there was, as you'll learn, a full supply during most of those years, but then once the new methodology for allocating water came into place, New Mexico farmers were forced to rely on groundwater, and you can see on the right side of this figure, the increased groundwater that -- that had to occur in the State of New Mexico. This forced farmers, and many against their better judgment, to

rely more heavily on groundwater.

And, finally, to finish the thought about the stability of water use in New Mexico, Texas' theory about this 1938 depletion limit is based on this idea that there were increased depletions, but as you can see from this slide, New Mexico's annual crop consumption, again, has remained remarkably stable over the years where it's essentially flat there, at least as an average. So other reasons that -- to understand that Texas was not really harmed will be shown in the next slide. So, first, let me talk about the concept of -- of full supply. So project water is divided by Reclamation, and you'll hear that Reclamation sets those allocations every year and that those allocations represent the maximum amount that either district is entitled to in any given year, and based on the 790,000 acre-feet of water that's released in a normal supply set by the Compact, there's a certain amount of water that's allocated each year as a maximum. It's -- it's essentially a -- a cap there on the amount of water that each district is entitled to, and that full supply is shown here in the black line on this slide. The yellow lines show the amount of supply for EP No. 1. So you can see from 1985 until 2002, there were full supplies. In

other words, the maximum amount that EP No. 1 is entitled to. There's no dispute on that issue. You'll hear from multiple witnesses that those years were full supply. You also see in 2005, there was a full supply, and I'll mention those other yellow bars after 2006. In some of those years, EBID received significantly less than a full supply, but EP No. 1 still not more than a full supply, in part because of this methodology I mentioned, and in part because of carryover, which ends up giving significantly more than an equal amount of water per each acre in Texas. The other thing that's interesting about this slide is you can see in the red line here, the amount of water that was actually charged to, so actually taken by EP No. 1, and in a number of those years, you can see that it's significantly less than they had available. Now, they had all of that water available in storage, but they chose not to call for it. In other words, they made a determination unrelated to New Mexico that they basically didn't need that water. Now, it's hard to imagine how Texas could have been injured or had damages in those years. It had a readily available supply of water that it chose not to take. And you'll learn that after 2006, so we can see there a line shown here with the new methodology, Texas has

received significantly more than 43 percent of project supply. Now, the -- another thing to illustrate on this slide, before moving on, there's only two years here, 2003 and 2004, in which Texas did not receive either a full supply or significantly more than 43 percent of -- of project supply, and so due to project operations, those two years are the only two where Texas supply could have been reduced by New Mexico groundwater pumping. Now, as we've explained before, we'll explain through the course of the trial, we don't think that even in those years, there was a Compact violation, because the states have always allowed groundwater pumping to supplement project supply. But even under Texas' theory, if you accepted Texas' theory, the impact to Texas during those years was only approximately a hundred thousand acre-feet. So let's turn, now, to the apportionment in -- in New Mexico. So were there any years in New Mexico -- when New Mexico did not receive its equitable share? And here, we think the answer to that question is very clearly yes. So this figure that you're looking at has the dotted line set at 57 percent/43 percent for Texas and New Mexico. The green bars are represent -- represent EBID's allocation, and the orange bars represent EP No. 1's allocation. You can see here

that from 1979 up to 2005, it was, again, remarkably stable. New Mexico received 57 percent of project supply, and I'll tell you that Dr. Barroll will testify, also, that even before the period showing that, that also was true. You had a period 57/43. But as you can see, after 2006, that drastically changes. Now, what we're looking at is the green bars represent significantly less than 57 percent of project supply. The orange bars represent significantly more than 43 percent. You can see it going up above that dotted line there. And as will be explained by New Mexico modelers, Mr. Sullivan and others, since 2006, New Mexico farmers have been deprived of an average of 94,000 acre-feet of project water per year. That's 94,000 acre-feet per year. And that means that during those years, New Mexico received significantly less than 57 percent. Now, we heard from Texas, in its opening statement earlier, that Texas bears no responsibility for this inequity. I guess the argument is that, sure, Texas receives more water and New Mexico less and, sure, this might be a Compact violation, but it's not our fault. But that argument is not true to the court's established rules in this area that hold that Texas is responsible, parens patriae, for the actions of its

water users, and for Compact compliance, and it doesn't take into account that Texas receive the benefits of all of that extra water. And what's more, it's also true that the operating agreement was negotiated under the careful watch and participation of the Texas Compact commissioner and with the involvement of Texas in some parts of the negotiation. So that -- that argument simply is not valid. And so turning to the next slide, we can see that New Mexico experts have quantified the losses to Mexico in -- in a couple of different ways. First, the -- what you're looking at here represents the paper records, the records from Reclamation, and we've totalled that up. Dr. Barroll will testify to this at length. And as you can see, this -- this is simply showing the period 2006 to 2019, and during that period, lands in Texas were -- had available to them 57 percent of project supply. That's based on Reclamation's own records. Meaning New Mexico only had available to it 43 percent of supply. Now, from the modeling, and there's reasons to think that the modeling is more accurate because it takes into the account changes in operations, the total losses into Mexico -- to New Mexico have also been calculated, but those have been calculated at over 1.1 million acre-feet. Now,

lawyers are notoriously bad at math, but it's a simple matter of comparison to see that the claimed loss in Texas of a hundred thousand acre-feet is significantly less than the -- the loss to New Mexico of over 1.1 acre-feet, and that loss to New Mexico is growing every year. Which takes us to the impact of all of this on -- on New Mexico. Now, New Mexico farmers will explain that being forced to rely on groundwater by Reclamation has resulted in additional costs from pumping costs to well maintenance to adding soil amendments, and those additional costs in the aggregate total millions of dollars, and those costs have been accepted by the U.S. Supreme Court in cases like Kansas versus Colorado, as -- as appropriate to award to a state. Worse yet is what is being shown here in this slide. What we're seeing here are the groundwater levels in New Mexico represented by a couple of monitoring wells in the New Mexico portion of the basin. What you can see in the red line reflects an equilibrium, and that is in times of low surface water supply, the groundwater levels dropped. You see that happening. And then when the surface water rebounded, then so did the groundwater levels. And that created a system, as I said, in equilibrium. But since the operating agreement, what you see on the

right-hand side of this figure, is those groundwater levels in New Mexico are not rebounding, and they may never re -- rebound, and if those don't recover, that could have potential long-term implications for the State of New Mexico for which we are very concerned. At the end of the trial, we will ask you to, No. 1, find in New Mexico's favor; No. 2, give clear guidance that the project must be operated in compliance with the Compact so that New Mexico receives 57 percent of project supply; and No. 3, set the remedies phase as quickly as possible so that New Mexico can seek an appropriate remedy.

Thank you.

JUDGE MELLOY: Thank you, Mr. Wechsler.

Well, we're -- it's 12:50 my time. I think this is probably a good time to take a break before we start with our first witness, so let's -- let's take a 20-minute recess, and when we come back, we'll start with -- and you're going to lead off, Mr. Dubois?

MR. DUBOIS: Yes, Your Honor.

JUDGE MELLOY: Okay.

MR. DUBOIS: I'll be calling Ms. Estrada-Lopez.

JUDGE MELLOY: All right. We'll come

back in 20 minutes and take your witness then.

MR. DUBOIS: Thank you.

JUDGE MELLOY: Thank you.

(Recess.)

JUDGE MELLOY: All right. Are you ready to call your witness?

MR. DUBOIS: Yes, Your Honor.

JUDGE MELLOY: All right. You may proceed.

MR. DUBOIS: The United States calls Michelle Estrada-Lopez to the stand.

JUDGE MELLOY: Just a second. Is she -- all I'm getting is a screen with a -- just a second. Now, Ms. Estrada-Lopez is on the camera, right?

MR. WECHSLER: She is, Your Honor.

JUDGE MELLOY: All we're seeing is slides. Is she screen sharing?

MR. WECHSLER: That's likely coming from the tech from the U.S. Jim, you're on mute.

MR. DUBOIS: Yeah. Sorry about that. I went back on mute. No. The -- Ms. Estrada-Lopez is not running a slideshow. One of our paralegals is running that stuff, and Michelle will just be testifying.

We see the PowerPoint from

Estrada-Lopez.

JUDGE MELLOY: I'm not even getting the PowerPoint.

MR. WECHSLER: There may be, Your Honor, if someone from Worldwide is on --

TRIAL ADMIN: If you have Ms. Estrada-Lopez please speak, she should pop up for you so you can see her.

THE WITNESS: This is Michelle.

JUDGE MELLOY: All right. Okay. All right. If you raise your right hand, please. Do you swear or affirm that the testimony you're about to give will be the truth, the whole truth, and nothing but the truth?

THE WITNESS: I do.

JUDGE MELLOY: All right. For the record, would you state your name and spell your name, please?

THE WITNESS: Michelle Estrada-Lopez, M-I-C-H-E-L-L-E, E-S-T-R-A-D-A hyphen L-O-P-E-Z.

JUDGE MELLOY: All right. Now, Ms. Estrada-Lopez, we've agreed that we're going to be asking each of the witnesses some preliminary questions, so don't take any offense. You're just the first one up. Let me ask, is anyone in the room with

you?

THE WITNESS: No.

JUDGE MELLOY: Do you have any materials that you will be referring to during your testimony?

THE WITNESS: Just the PowerPoint that's being displayed.

JUDGE MELLOY: The PowerPoint? Anything else? Do you have any notes or -- or --

THE WITNESS: Oh, no.

JUDGE MELLOY: -- notebooks or records? All right. We would ask that you not access any computer or any other device that would allow e-mail, texting, or instant messaging or any other form of communication, and that if you do have any communication with the attorneys during your testimony, that those communications would be on the record.

Let me ask counsel, anything else you think we should ask Ms. Estrada-Lopez before we start?

MR. WECHSLER: Not from New Mexico, Your Honor.

JUDGE MELLOY: All right.

MR. DUBOIS: Not that I'm aware of, Your Honor.

JUDGE MELLOY: All right. Then

Mr. Dubois, you may start.

MR. DUBOIS: Thank you, Your Honor.

MICHELLE ESTRADA-LOPEZ,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. DUBOIS:

Q. Good afternoon, Ms. Estrada-Lopez. How are you?

A. Fine.

Q. Is it all right if I call you Michelle?

A. Yes, it is.

Q. All right. Thank you. Michelle, who are you employed by?

A. By the Bureau of Reclamation.

Q. Which office?

A. The Albuquerque Area Office.

Q. Okay. What's the general subject matter that you've been asked to testify about today?

A. An overview of the Rio Grande project and the water operations as related to allocation and accounting of the water.

Q. All right. Have you testified in court before?

A. No, I have not.

Q. Can you please tell the Court about your

educational background?

A. I have a bachelor's of science and master's of science in civil engineering.

Q. From what university?

A. New Mexico State University.

Q. So both your bachelor's and your master's were from NMSU?

A. Yes.

Q. What was your undergraduate degree?

A. It was civil engineering, master -- bachelor of science with a focus in water resources.

Q. And did you graduate with any honors?

A. Yes. With highest honors, which is equivalent to valedictorian at NMSU.

Q. Okay. You also got your master's from NMSU. What was the emphasis of your master's?

A. It was civil engineering with focus in water resources.

Q. What was the subject matter of your master's thesis?

A. It was looking at Caballo Reservoir evaporation rates and comparing it to the evapotranspiration rates of the surrounding vegetation.

Q. Okay. Let's talk about your employment.

When did you start working for Bureau of Reclamation?

A. In June of 2009.

Q. So essentially right after you finished your master's; is that right?

A. Yes, it is.

Q. Okay. And have you been with Reclamation ever since you graduated from your master's program?

A. Yes, I have.

Q. What was your first full-time job with Reclamation?

A. I was an intern in the water operations group.

Q. And when was that?

A. From 2009 to 2011.

Q. Okay. What was your first full-time job with -- or permanent job with Reclamation?

A. I was converted to civil engineering water operations group in 2011.

Q. And how long were you in that position?

A. I was in water operations until 2013.

Q. What were your responsibilities with the water operations group?

A. I did hydrologic data collection and analysis, and my main focus was the Pecos River. I did the water accounting for the endangered species

operations on the Pecos River. I did the -- I was the backup for water accounting on the San Juan-Chama Project, and I did daily operations decisions as part of my role for the Rio Chama, the middle Rio Grande, and the Pecos River.

Q. What was your -- your next position at Reclamation?

A. I became a project manager.

Q. And what does that mean?

A. I oversaw the program, meaning the budget and implementation of the program work for Reclamation for the Rio Grande Project and the Carlsbad project, and that included --

Q. When did --

A. Oh, sorry.

Q. No, go ahead. Go ahead.

A. That included leaving projects and programs and purchasing all of the water for the endangered species program for the Pecos River and then becoming the allocation committee member for the Rio Grande Project.

Q. And how long were you a project manager?

A. Until last year.

Q. Okay. What responsibilities did the project manager position entail?

A. I oversaw the budget and the repayment contracts for the Rio Grande Project and ensuring the implementation of the work each year for the full program, and then for the Rio Grande Project, I became the allocation committee member so the representative for Reclamation under the operations agreement.

Q. Okay. So you were a representative on the allocation committee from 2013 until the present?

A. I didn't get assigned to the allocation committee until after 2013. I believe it was 2015.

Q. Okay. And what's your current position at Reclamation?

A. I'm the lead civil engineer in the water operations group.

Q. You indicated that you've had that position since last year?

A. Yes.

Q. All right. What responsibilities does your current position entail?

A. I am still the allocation committee member for the Rio Grande Project. I work as part of the water operations team making decisions on releases for the Rio Grande Project and our reservoirs on the Rio Chama and the Pecos River. I review the water accounting for the Pecos River and San Juan-Chama

projects, and then I am responsible for the developments of the reports from our office to the Rio Grande Compact Commission and the Pecos River Compact Commission, as well as doing hydrologic data analysis for our reservoirs for any projects that are ongoing in our office that are assigned to me.

Q. Are you familiar with the facilities and operations of the Rio Grande project?

A. Yes, I am.

Q. How did you develop your familiarity with the -- with the -- with the Rio Grande project and its operations?

A. I grew up in Las Cruces, New Mexico, which is within the Rio Grande project area, then when I was getting my master's degree, I took a course that was solely focused on the Rio Grande project, looking at it from all aspects, including farmers, irrigation districts, the federal government, and wildlife entities. My master's thesis was on Caballo, which is one of two storage reservoirs for the Rio Grande project, then when I joined Reclamation as an intern in the water operations group, I started to do some hydrologic analysis and assignments related to the Rio Grande project, then when I became a project manager, I oversaw the Rio Grande project as a whole and became

the allocation committee member, and now that I'm back in water operations, I participate in the decisions of releases from Elephant Butte and Caballo Reservoir.

Q. To lay some basic groundwork, I -- I would like you to -- to walk the Special Master and Court through a description of the physical layout of the Rio Grande project. On the screen, you've got in front of you a slide which has been marked -- previously been marked Estrada-Lopez Demo, for demonstrative, 01. Do you have that up in front of you?

A. Yes, I do.

Q. All right.

JUDGE MELLOY: Mr. Dubois, let me interrupt for just a second here. One thing I failed to do when we started with Ms. Lopez -- Ms. Estrada-Lopez's testimony was I think we had agreed that at the beginning of the -- of each witness, any exhibits that were going to be used by that witness and that are designated as an A exhibit, that is those that can be admitted without further foundation or testimony, would automatically be admitted, and I failed to do that. So since you're going to start using the exhibits now, if -- if I understand the list correctly, all of the

Estrada-Lopez demonstrative exhibits 1 through 37 are being offered and can be admitted without objection, so they will be admitted. Estrada-Lopez video clips 1, 2, 3, 4, 5, 6, 7, and 8 can be admitted without objection and are so admitted. Texas Exhibit 84 is admitted. United States Exhibit 55 is admitted. United States Exhibit 116, 367, 436, 458, 511, 512, and 661 are all admitted. Then for the New Mexico cross-examination exhibits to which there are no objections, there are three demonstrative exhibits numbered New Mexico Demo 2, 3, and 4. They will be admitted. Colorado Exhibit 214 will be admitted. Joint Exhibit 206 will be admitted, Joint Exhibit 363, 391, 395, 402, 409, and 428 will be admitted. Joint Exhibit 439 will be admitted. Joint Exhibit 470 will be admitted. Joint Exhibit 10 -- excuse me, New Mexico Exhibit 1055 and New Mexico Exhibit 1061 will be admitted. New Mexico Exhibit No. 512 will be admitted. New Mexico 697, New Mexico 2270 -- 2270 -- New Mexico 2373, New Mexico 2464 will all be admitted. U.S. Exhibit 10, U.S. Exhibit 36, U.S. Exhibit 41, U.S. Exhibit 46, 47, 54 will be admitted. U.S. Exhibit 67, 200, 275, US-380, which I understand is also New Mexico 2265, will be admitted. US-547 and 556 will be admitted. US-561, which is also New

Mexico 2394, will be admitted. US-563, 564, 565, 595 will all be admitted.

I think that covers all the ones that I have on the sheets.

MS. KLAHN: Your Honor, could I ask for clarification? This is --

JUDGE MELLOY: Yes.

MS. KLAHN: -- Sarah Klahn on behalf of the State of Texas. Some of the exhibits, perhaps many of the exhibits on New Mexico's cross-examination exhibit list may not actually be used with Ms. Estrada-Lopez. There's a lot of exhibits there. Is it the Court's intention that if there's just zero objections, that all such exhibits would be admitted?

JUDGE MELLOY: Yes.

MS. KLAHN: Okay. Thank you.

JUDGE MELLOY: All right.

MR. WECHSLER: One last question, Your Honor. For those demonstrative exhibits, I assume it's for demonstrative purposes and not evidentiary purposes?

JUDGE MELLOY: Correct.

MR. WECHSLER: Thank you.

JUDGE MELLOY: All right. Unless -- unless somebody wants to move their admission for

evidentiary purposes and lay the necessary foundation, but -- but at this point, they're just for demonstrative purposes only.

All right. Sorry for the interruption, Mr. Dubois. You may proceed.

MR. DUBOIS: That's all right, Your Honor. Thank you.

Q. (BY MR. DUBOIS) Michelle, you have Demonstrative Exhibit 01 up on the screen in front of you?

A. Yes, I do.

Q. All right. Can you first describe the general location of the Rio Grande River itself?

A. Yes. If you look at the slide at the inset, if you zoom in here, we can see that the Rio Grande begins in southern Colorado. It travels through New Mexico towards the border with Texas. It crosses the border several times, and then it becomes the border between the United States and Mexico, and then it enters the Gulf of Mexico near Brownsville, Texas.

Q. Okay. So what is the Rio Grande Project?

A. The Rio Grande Project is Reclamation's federal irrigation project.

Q. All right. Expanding back on to the larger map, can you explain essentially what the project is

and where it's located indicated on the -- on the map that's Demo 1?

A. The Rio Grande Project stores inflow into our project reservoirs and then delivers water to irrigation fields in southern New Mexico indicated on the map in the green cross hatching, and far west Texas indicated in the pink cross hatching and also makes a delivery to the country of Mexico.

Q. When was the project authorized?

A. It was originally authorized as part of the 1902 Act for Reclamation, and then it was expanded into Texas in 1905.

Q. What part of the Rio Grande is within the boundaries of the Rio Grande Project?

A. We can see on the maps, the Elephant Butte Reservoir starts in the north Sierra County and goes up into Socorro County and then is part of -- the lands are in Sierra County and Dona Ana County in New Mexico and in El Paso County in Texas and stop at the El Paso County line.

Q. Why does the map that is up here, this Demonstrative No. 1, go through Fort Quitman, Texas?

A. So there's two reasons. The Fort Quitman gaging station is an important gage in the Rio Grande Compact which is in an affected area, and then also

Reclamation's drainage and wastewater is rented to Hudspeth County Conservation and Reclamation District, which is in Hudspeth County, Texas, and is indicated in that pea green color cross hatching.

Q. Is Hudspeth County Conservation and Reclamation District within the project boundaries to the Rio Grande project?

A. It is not.

Q. How many storage reservoirs serve the project?

A. There's two storage reservoirs.

Q. And what are they?

A. Elephant Butte and Caballo.

Q. On Demonstrative 2, can you please indicate the -- the general location of Elephant Butte Reservoir?

A. Yes. You can see on the map, we've bolded the first blue arrow pointing towards Elephant Butte Reservoir, which is in the northern part of Sierra County.

Q. Okay. I'm going to show the Court a short video clip that is from the drone flyover commissioned by Texas. As we play it, can you describe for the Special Master what he is seeing?

A. Yes. Okay. So initially, you can see on the

left-hand side of the screen, the yellow arrow indicating the location of where this video clip is starting. So we are far south into the reservoir, and then as the video clip plays, you will pan further towards the dam and then see the actual facility. Play the clip, please.

(The video was played.)

A. Okay. So it pans up to the north, and we can see that the reservoir is quite low, and we can tell this by the change in color in the surrounding lands. The lighter color indicates where water used to be stored for the reservoir. Now, it's going to rotate slightly, and then we'll be headed towards the facility, which is Elephant Butte Dam. Oh, it's going to pan back north real quick. Okay. As we turn, we can see the Elephant Butte, which is the large land mass there and the marinas here at Elephant Butte, then it turns, and if we can pause here. So this is the upstream face of Elephant Butte dam, which is -- we saw on the tour with the Special Master, and we can see that coming out of the dam in this video still, you can see the Rio Grande coming out, and that would be indicated by the vegetation line that's kind of sinuous coming towards the north of the screen.

Play the clip, please.

(The video was played.)

A. Okay. So, now, we've switched to the other side of the dam. This is called the downstream face of the dam, and you can see the marina and Elephant Butte in the background of the reservoir, and we can see our facility and the building in the lower right-hand corner, this is our power plant. This is where the water from Elephant Butte is released through to generate power. Most of the water that we release goes through this power plant.

MR. DUBOIS: Is that the end of the clip?

MR. ALLISON: Yes.

MR. DUBOIS: All right. Thank you. Next slide, please.

Q. (BY MR. DUBOIS) Michelle, on the screen is what has been marked as Estrada-Lopez Demonstrative No. 3. Can you tell the Special Master, what's the source of these photos?

A. These are Reclamation photographs.

Q. All right. And what do these two photographs show?

A. These are both aerial photographs of Elephant Butte dam. The one on the left is looking north and east. You can see the Rio Grande coming off to the

right-hand side of the still, and then on the right-hand photograph, we're looking at the downstream face of the dam with the reservoir in the background and the Rio Grande in the foreground. If we zoom in, we can actually see in this photograph water is being released to the river, and the white area in the Rio Grande, that is the water coming through the power plant and being released downstream. The concrete structure to the left of the river connected to the dam, that is one of the spillways for the dam.

Q. How big is Elephant Butte Reservoir?

A. It can hold about 2 million acre-feet.

Q. And when was it completed?

A. The initial construction was completed in 1916.

Q. Can you describe the functions of Elephant Butte Reservoir?

A. The primary function of Elephant Butte Reservoir is to store the water delivered by New Mexico for the Rio Grande Project. We also have flood control storage at this facility, and we can store other types of water, which we call accounts. One of them is San Juan-Chama project water, and the other type is Rio Grande Compact credit water for New Mexico and Colorado.

Q. All right. And you've also said that there's a power generation facility in the project?

A. Yes.

Q. How does the timing and rate of release for power production compare to the timing and rate of release needed for irrigation?

A. So irrigation releases need to be quite variable as the crop demand changes and hydrologic conditions change in the basin. As for power production, it needs to be steady so that we can market that power. So when we make releases out of Elephant Butte, they are much more steady than is needed for an irrigation release.

Q. And how are the competing demands for the -- for the timing of release between power production and irrigation reconciled?

A. Reclamation has a storage facility just downstream of Elephant Butte dam, and as the water from Elephant Butte dam is released at a steady rate, it is captured in Caballo dam, and at Caballo dam is where we make the daily or marked adjustments for irrigation releases.

Q. Okay. Next slide, please. Going back to what has been marked as Estrada-Lopez Demonstrative No. 4, can you use this map to indicate to the Special

Master where the location of the Caballo dam is relative to the rest of the system?

A. Yes. So on the map, we've bolded the second blue arrow pointing towards the location of Caballo Reservoir, and you can see it is just downstream of Elephant Butte reservoir and still in Sierra County, New Mexico.

Q. About how many river miles is Caballo downstream from Elephant Butte?

A. I believe it's 15 to 20. I don't recall.

Q. All right. I'm going to have another short video clip played. Again, this is from the -- the drone flyover commissioned by Texas and taken, I believe, in August of 2021. Is -- I believe, isn't that what is -- is that what is indicated in the upper right-hand corner of the -- of the video?

A. Yes. That's what it says.

Q. Okay. All right. Thank you. So if you would describe for the Special Master what he is seeing as we play this clip, please.

A. So this clip, we are facing south, and we are starting in the bottom portion of the Caballo reservoir. It's going to fly towards the Elephant -- the Caballo dam. Play the clip, please. Thank you.

(The video was played.)

A. So as we are moving closer to the dam, you can tell that Caballo Lake is much shallower than Elephant Butte because you can start to see some of the land forms beneath the water. As we come closer to the dam, you'll see it's this linear structure that we can start seeing. Can you pause real quick? Thank you. So the body of water is Caballo Lake, Caballo reservoir in the foreground, and in the background, you can see a water feature that is the Rio Grande, and that is the water being delivered to the Rio Grande project entities. As we move closer, you're going to see the water is all diverting to the left-hand side of the upstream, so we'll see where the gates are. We're going to rotate around. So, now, everything is on the top, but when we rotate all the way around, the releases are on the right-hand side of the dam. The concrete structure, that's the spillway, but where the water is coming out for the releases is this triangle-looking area between the concrete structure and the rest of the dam. That's where the releases are being made to the river. The white line at the toe of the dam, that is Bonita Pipe. We saw this on the tour with the Special Master, and this is where water is delivered to the Bonita lateral. If we can zoom in on the lower left-hand part of the screen,

so if the Special Master recalls, when we were at Bonita lateral, we saw the concrete structure in Bonita lateral and then we saw part of the structure going back towards the Rio Grande. This is the wasteway, and this is actually showing water being sent back to the Rio Grande in -- at this time is where that white water is coming out from the -- the vegetation area. We can finish the clip if there's any more.

Q. (BY MR. DUBOIS) Okay. I believe that's it.

A. Okay.

Q. All right. Next slide, please. Michelle, you've now got on the screen what has been marked as Estrada-Lopez Demo 05. What's the source of these photos?

A. These are Reclamation photographs.

Q. And can you explain to the Special Master what these are showing you?

A. These are both aerial photographs from the downstream side of the dam and facing the reservoir, so the larger body of water in the background, that is Caballo Lake. The body of water coming out of the dam, that is the Rio Grande. We can see by the white coloring of the water near the toe of the dam, that water is being released at this time for downstream

use.

Q. Okay. How big is Caballo reservoir?

A. About 350,000 acre-feet.

Q. And what are the functions of Caballo reservoir?

A. Caballo reservoir, as I explained earlier, restores the water that has been released from Elephant Butte for the Rio Grande project. It also collects water from a large amount of arroyos that come into the Rio Grande at this location so it stores that water, and it also has flood control purposes because of those arroyos.

Q. How does Reclamation measure the outflows from Caballo reservoir?

A. Reclamation has the Caballo gaging station --

Q. Next slide, please.

A. -- which is about a mile downstream from Caballo dam.

Q. On the screen is what has been marked previously as Estrada-Lopez Demo 06. Can you -- what's the source of these pictures?

A. These are Reclamation photographs.

Q. All right. And can you describe for the Special Master what is shown in these photographs?

A. Yes. On the left-hand photographs, both the

top and bottom, these are taken from the east side of the bank where the gaging station is. On the lower photograph, you can see our instrumentation that is at the site and where that is stored and housed. The upper photograph, we can see one of our employees is actually taking a measurement of the velocity in order to compare it to the instrumentation that is instantaneously and continuously taking measurements. On the right-hand photograph, we're on the other side of the bank, so the west side of the bank, and this is right near where we stopped on the tour with the Special Master. So we're looking across the river, and you can even see the -- it looks white, but the pipe that's in the left-hand side coming out of the river, we can see it across the way on that side.

Q. Is that the same pipe with the kind of conical hat that's in the lower left picture?

A. Yes, it is.

Q. And what is that structure?

A. So we use corrugated pipes to protect our instrumentation and instrumentation that is measuring within that.

Q. All right. And the Special Master did see this gaging station on the basin tour?

A. Yes. And he was able to see one of the

district employees taking a measurement at that time.

Q. Is this the only gage maintained by Reclamation below Elephant Butte reservoir?

A. Yes. Well, the only river gage.

Q. Thank you. Who else has flow measurement instrumentation at this site?

A. The irrigation district.

Q. Do each of the irrigation districts have measurement instruments at this site?

A. I believe so, yes.

Q. Where's the water released from Caballo reservoir delivered to?

A. It is delivered downstream at diversion dams and every diversion points.

Q. What's the difference between a storage dam and a diversion dam?

A. A storage dam is quite large with the intended purpose of storing water for at least some period of time, so it can be released later when it's needed for irrigation. A diversion dam is a structure across the river, as well, but it's much smaller with the intended purpose of backing the water up to create pressure or head, so that that water can be diverted off of the river by gravity into the distribution systems for delivery to the farms.

Q. How many diversion dams does the Rio Grande project have on the Rio Grande?

A. We are currently delivering to five diversion dams.

Q. Next slide, please. We've come back to the map. This one is marked as Estrada-Lopez Demo 07. Can you indicate on this map the northernmost and most upstream of the diversion dams in the Rio Grande project?

A. Yes. The bolded green arrow on the map is pointing in a location of Percha Diversion Dam, and we can see it's just downstream of Caballo dam.

Q. What part of the basin -- can you show on the map what part of the basin is served by diversions from the Percha Diversion Dam?

A. Yes. On the screen, we can see green cross hatching indicating the lands for the project in New Mexico. The upper portion that starts about the location of Percha Diversion Dam and then goes through and then pinches back in together, that's Selden Canyon, so that's the location that's known as the Rincon Valley, and it's in both Sierra County and Dona Ana County in New Mexico.

Q. Next slide, please. Next slide has been marked Estrada-Lopez Demonstrative Exhibit 8. Can you

tell me the source of these photographs?

A. Yes. These are Reclamation photographs.

Q. Okay. Can you explain to the Special Master what is shown on these photographs?

A. Yes. The right-hand photograph is taken from the site looking at the downstream face and facing up -- and shooting upstream. You can see water coming through the gates. On the left-hand photograph, we have an aerial photograph, and we can see the -- the dam is spanning the river, and then on the left-hand side of the river, we have two gates. This is where the head or the pressure buildup behind the dam is regulated, that way it can divert water on both sides of the river. To the left, we have the Arrey Canal, which is the main canal for the Rincon Valley for the Percha section, and to the right, we have the Percha lateral. We can also see water coming over the top of the diversion dam and through the gates.

Q. I'm going to show the Court another short clip from the Texas drone flyover. Can you explain to the Special Master what he is seeing in this video as it plays, please?

A. Yes. So in the still right before the video plays, we can already see in the upper left-hand corner of the video is the Arrey Canal. So this is

the canal, I guess, indicated on the previous photograph. So when it plays, we are going to be looking downstream, so the Arrey is coming off to the right. We can go ahead and play.

(The video was played.)

A. Okay. So we can see the gates, and we can see there's no water in the Arrey Canal. All the water is going downstream in the Rio Grande. We can see the Percha lateral off to the left and the upper fields of the Rincon valley are shown in here.

Q. (BY MR. DUBOIS) Does the Percha dam move water to both sides of the Rio Grande?

A. Yes, it does.

Q. Does the Arrey Canal move water to both sides of the Rio Grande?

A. Yes, it does.

Q. How does that happen?

A. The -- there are siphons for the canal that take it underneath the -- the Rio Grande and over to the other side.

Q. And what is a siphon?

A. It is a structure that takes the water from the canal and then underneath the river and then the canal comes back open on the other side.

Q. Approximately -- approximately how many acres

are irrigated by the diversions from the Percha Diversion Dam?

A. There's about 12,000 acres.

Q. Next slide, please. Using the next slide, which has been marked as Demonstrative 9, can you use this slide to tell the Special Master what the next diversion dam in the Rio Grande project is and where in the relative location of that dam?

A. Yeah. So the second arrow has been bolded, the green arrow, pointing to the location of the Leasburg Diversion Dam, and we can see from the map that this is on the downstream side of Selden Canyon, so this is the northern point of, but is called the Mesilla Valley.

Q. Can you indicate on Slide 9 what part of the basin is served by diversions from the Leasburg Diversion Dam?

A. Yes. If you can see the purple triangle that's marked Mesilla Diversion Dam and then kind of go across to the green note for the Mesilla valley, from there up to Leasburg Diversion Dam, that's the approximate location of the fields that are served by the Leasburg diversion.

Q. I'm going to show the Court another clip from the drone flyover. Would you explain to the Special

Master what he is seeing in this video clip?

A. Yes. So we're starting looking north so towards Selden Canyon, and it's going to pan around, and then we'll see the Leasburg Diversion Dam. So we're coming down the Rio Grande, rotating, now we're facing downstream and we can see the Leasburg diversion structure. You can pause there. Thank you. You can see the entirety of the Rio Grande is shifting over towards the left-hand side of the video clip. That's because this is the location of the gates. The gates to the Rio Grande below Leasburg are on this side, as well as the gates to the Leasburg main canal, which is the body of water we can see coming off and starting to parallel the Rio Grande. You can play the clip, please.

(The video was played.)

A. Okay. So we can see that there's water going into the Rio Grande below the dam and into the Leasburg main canal, so we're paralleling both of the facilities, the Rio Grande and the Leasburg main canal. As we come further down, we are going to see an interesting structure. We can pause right here, maybe a little further. No, that's probably fine. Okay. So we can see in the main canal, we can see a structure. This is a check structure, and what it

does is we can kind of see an indication of water coming back towards the Rio Grande. So at this location, water is backed up, and it can be sent out to the Rio Grande. It's called a wasteway.

Q. (BY MR. DUBOIS) What is the wasteway used for at this point?

A. The primary purpose of wasteways is to help with the operation and maintenance of the canal system. So at this location, when we're diverting -- when water is being diverted into the Leasburg main canal, it's taking a lot of sediment and debris with it. At this point, they can back the water up and send the sediment with some water back to the Rio Grande, so that reduces the maintenance in the lower part of the canal system.

Q. Michelle, the next slide has been marked Estrada-Lopez Demonstrative 10. Can you please tell the Court what the source of these pictures are?

A. Yes. These are Reclamation photographs.

Q. All right. And can you explain to the Special Master what's shown in these photographs?

A. On the right-hand side we have an on-the-ground photo looking upstream. You can see the large rock on the right-hand side of the photograph and water coming over the top of the dam. The gates

are just off of the photograph to the right. In the left-hand photograph, this is an aerial view. We can get a better understanding of the function of the facility. We can see that the facility is scanning the entirety of the river here. On the right-hand side of that large rock, we can see water coming through the gates into the Rio Grande downstream, and then we can see water moving off to the right. It's hard to see because of the vegetation, but that's the heading of the Leasburg main canal.

Q. Did the Special Master see the Leasburg Diversion Dam or the Leasburg canal heading on the basin tour?

A. No, he did not.

Q. Okay. What canal does the Leasburg diversion divert water into?

A. To the Leasburg main canal.

Q. And approximately how many acres are irrigated under the Leasburg main canal?

A. There's approximately 30,000 acres.

Q. All right. Moving downstream, next slide, please. Can you use what has been marked as Estrada-Lopez Demonstrative 11 to indicate the next diversion dam in the system and its relative location for the Special Master?

A. Yes. The bolded green arrow, which is the third green arrow, and the first pink arrow that is bolded and pointing towards the location of the Mesilla Diversion Dam.

Q. Okay. And backing up to the map a little bit, can you explain -- go back to the full map. Can you explain to the Special Master what portion of the basin is irrigated under the diversions from the Mesilla Diversion Dam?

A. Yes. The lower Mesilla Valley is irrigated from here, which starts at approximately the location where the Leasburg Diversion Dam area ceases, which is between that Mesilla Valley and Mesilla Diversion Dam and then all of that land that is in the green cross hatching plus that small amount of land that is in the pink cross hatching, that is the Mesilla Valley, but it is in the State of Texas.

Q. Next slide, please. Can you -- can you -- on the screen is what's been marked as Estrada-Lopez Demo 12, and what's the source of the photographs on this slide?

A. These are Reclamation photographs.

Q. All right. And can you describe to the Special Master what is shown by these photographs?

A. Yes. On the right-hand side, this is an

on-the-ground photograph looking at the downstream side of the Mesilla Diversion Dam, and it's from the west side of the bank or the left-hand of the downstream side. On the left photograph, this is an aerial photograph, and it gives us an indication of how the facility functions. We can see, again, that it spans the river. This one also can divert water on both sides of the river. We can see off to the left of the photograph, that is the west side canal. Off to the right of the photograph is the east side canal and the Del Rio lateral, and what we can't see, which is just north or on the top of this photograph, the Mesilla Diversion Dam can back water up enough so that water can be taken by the California extension, which is the lower portion that is typically watered from the Leasburg Diversion Dam.

MR. WECHSLER: Your Honor, I have no objection, but I'm wondering if I could ask Mr. Dubois to just ask the witness if she knows when these photographs were taken.

MR. DUBOIS: I certainly can, Your Honor.

Q. (BY MR. DUBOIS) Ms. Estrada-Lopez, do you know when these two photographs were taken?

A. All of the aerial photographs from

Reclamation were taken, I believe it was in 2018, during a helicopter tour that was specifically contracted for Reclamation to take photographs of its facilities, and the one on the right was taken by myself during one of my trips. I don't recall which one.

MR. WECHSLER: Thank you.

Q. (BY MR. DUBOIS) Was that -- was that -- was that helicopter trip to take pictures of the facilities, was that in relation to this case?

A. No. We have it done for all of the Albuquerque office projects.

Q. All of the which projects? I'm sorry.

A. The ones under the Albuquerque office.

Q. Oh.

A. It was just for our --

Q. Thank you.

A. -- use.

Q. All right. And am I correct that the -- that it -- in the left-hand photo, you've got sort of some white areas below the dam in four different places; is that correct?

A. Yes.

Q. So it appears that -- does -- is it correct that the Mesilla dam has more gates built into it for

releasing water to the Rio Grande?

A. Yes. Each of those rectangular dark spots is a gate that can be adjusted.

Q. Okay. I'm going to play -- well, a couple more questions, and then I'll play the video clip. What canals does the Mesilla Diversion Dam divert water into?

A. The west side canal, the east side canal, the Del Rio lateral, and the California extension.

Q. And approximately how many acres are irrigated by the water diverted for the Mesilla Diversion Dam?

A. About 40,000 acres.

Q. Okay. Next clip, please. I'm going to play another clip from the -- from the drone flyover, and if you would explain to the Special Master what he is seeing as this clip plays, I'd appreciate it.

A. Yes. So as we're starting, we are looking downstream, so downstream or south is going to the top of the clip and then north is going to the bottom. We can see on the right-hand side, that is the west side canal, and on the left-hand side, we see the east side canal and Del Rio laterals. You can play the clip.

(The video was played.)

A. So as the clip moves forward, you just get a

better shot of the water that is being passed downstream into the Rio Grande. It's that whitish-colored water that is moving down, and then we're going to travel the west side canal and the Rio Grande, which is on the left-hand side. We just can see that there's vast amounts of acreage that is in this portion of the valley.

Q. (BY MR. DUBOIS) Okay. Approximately how many acres did you say were irrigated by diversions from the Mesilla canal -- the Mesilla Diversion Dam?

A. About 40,000.

Q. Okay. Are the lands irrigated by the Mesilla Diversion Dam located in both New Mexico and Texas?

A. Yes, they are.

Q. And how -- and are the diversions to each state tracked by the irrigation districts?

A. Yes. There's gages on the project facilities that are indication of how much water is delivered across the state line through the distribution facilities.

Q. Are the Percha, Leasburg, and Mesilla diversion dams all located in New Mexico?

A. Yes, they are.

Q. Who operates the Percha, Leasburg, and Mesilla diversion dams?

A. They're operated by Elephant Butte Irrigation District, or EBID.

Q. Did the Bureau of Reclamation ever operate these diversion dams?

A. Yes, we did.

Q. When did Reclamation stop operating these -- these three diversion dams?

A. In the late 1980s.

Q. All right. Next slide, please. On what has been marked Estrada-Lopez Demo 13, can you indicate or -- or the slide to the Special Master the name and relative location of the next diversion dam within the Rio Grande Project?

A. Yes. The bolded pink arrow, the second arrow, is pointing to the location of the American Diversion Dam, and it is in the -- what is known as the El Paso Narrows, so the Mesilla Valley ends and then we're transitioning to the El Paso Valley.

Q. What part of the Rio Grande Basin is served by the American Diversion Dam?

A. The rest of the EP1 lands, or El Paso County Water Improvement District lands, that's indicated on this map by the pink cross hatching, so the larger area is in the El Paso Valley, and that's what's watered by the water that's diverted at American

Diversion Dam.

Q. Next slide, please.

JUDGE MELLOY: Mr. Dubois, can I get clarification on one thing if I could? Did I understand you to say, Ms. Estrada-Lopez, that there is a gage that measures the amount of water that crosses over into Texas from -- from New Mexico that comes from the Mesilla Diversion Dam.

THE WITNESS: Yes. We have -- the irrigation districts have gages in the project facilities at certain locations, and it doesn't -- because the state line wiggles back and forth a lot, it's not every single crossing, but it has been determined that these three sites are an approximation of the volume of water that is going to the Texas lands.

JUDGE MELLOY: And do I understand correctly that there are gages also at each of the diversion dams that measure the amount of water that's diverted into the various canals and laterals?

THE WITNESS: Yes. That's correct.

JUDGE MELLOY: Okay. All right. Thank you.

MR. DUBOIS: Thank you, Your Honor.

Q. (BY MR. DUBOIS) Michelle, looking at

Estrada-Lopez Demonstrative 14, do you know the source of these pictures?

A. Yes. These are also Reclamation photographs.

Q. And do you know when these were taken?

A. The one on the right was during the helicopter tour that I mentioned, and the one on the left was taken by myself, and I don't recall which time I took it.

Q. Which time to the American Dam?

A. Yeah. I've been there many times.

Q. Okay. Thank you. All right. Can you describe to the Special Master what is shown on these two photographs?

A. Yes. On the left-hand side of this is a photograph taken on the ground at American Diversion Dam. It is facing upstream. You can see in the background, the railroad bridge crossing the river. The body of water in the background, that is the Rio Grande coming down into the El Paso Narrows, and the water in the foreground, that is water that's going into the American Canal heading. On the right-hand photograph, we have the aerial photograph so this is the opposite direction so we're facing downstream. So from the north looking south. We can see the American Diversion Dam spanning the Rio Grande. There -- in

this -- when this photograph was taken, you can see that there is water in the Rio Grande below the dam, and by the white color indicated near the left-hand side of the Rio Grande, that's telling me that water is going through those gates and being delivered down the Rio Grande. Off to the left, we see a body of water. That is the American Canal, and we can see in the background, that is the country of Mexico. To the left, that is El Paso County in Texas, and in the bottom right-hand corner, that is in New Mexico.

Q. So the large municipality that has sort of been the center background of -- of this photograph, what city is that?

A. That's Cuidad Juarez.

Q. Thank you. I'm going to show the Court another short video clip, and I'd like you to tell the Special Master what he is seeing as we -- as we view this clip, please.

A. So at the start of this clip, we're looking north. We can see the two railroad bridges that we see in the background of the previous photo. It's going to pan around and start facing the diversion dam. Let's play the clip.

(The video was played.)

A. Okay. So we're panning around and coming

down the Rio Grande. It's going to spin around again. So, now, we're going to be facing downstream, or south, and this is where we can pause. Go back a few seconds.

Q. (BY MR. DUBOIS) Do you need --

A. Thank you.

Q. There we go.

A. So, again, from this vantage point, you can see the diversion dam crossing the entirety of the Rio Grande, water being diverted, and appears at this point in time all of the water in the Rio Grande is being diverted into the American Canal, and no water is being delivered downstream to the Rio Grande.

Q. Is that the end of the clip? Go ahead and play the clip.

(The video was played.)

A. Okay. So we can see the likeness in the water that's indicating the water moving into the American Canal, then the American Canal parallels the Rio Grande in this portion and then we'll see it disappear for us because of the roadway that is in this area.

Q. (BY MR. DUBOIS) What canal does the American Diversion Dam divert water into?

A. Into the American Canal, which is eventually

going to deliver to the heading of the Franklin Canal and through the American Canal extension to the heading of the Riverside Canal.

Q. The heading -- is the heading of the Riverside Canal on the Rio Grande River?

A. No. It is off the river.

Q. All right. And approximately how many acres are irrigated by the -- by the American Canal system from the -- to American Dam?

A. The rest of EP1, which is about 50,000 acres.

Q. Who operates the American Dam?

A. The International Boundary and Water Commission, or IBWC.

Q. Has Reclamation ever operated the American Dam?

A. No, we have not.

Q. And can you please explain to the Special Master how diversions at the American Dam operate?

A. Yes. All of the water in the Rio Grande upstream of American Diversion Dam is diverted into the American Canal, except for the water needed to make the delivery to Mexico or if the volume of water is greater than that, that the American Canal can hold, then that water is passed to the Rio Grande.

Q. Is that different than how the prior dams

that you've described operate?

A. Yes, it is.

Q. In what way?

A. At the upstream facilities, the diversions are made related to the orders needed for irrigation.

Q. Okay. Does the American Dam divert only that water that EP1 requested from the project?

A. No, it does not.

Q. Okay. All right. Can you -- next slide, please. Can you indicate on what has been marked Estrada-Lopez Demo 15, the location of the next diversion dam in -- on the -- on the Rio Grande?

A. Yes. This is the fifth diversion dam and the last diversion dam that we currently deliver to, and it's located where this darker bolded gray arrow is pointing, and then it is known as the International Diversion Dam.

Q. Next slide, please. The next slide I've put up has been marked Estrada-Lopez Demo 16. Can you -- what's the source of these two photographs?

A. These are Reclamation photographs from the helicopter tour.

Q. And the helicopter tour was what year?

A. I believe it was 2018, but I'm not sure.

Q. All right. And can you describe what's shown

on Demonstrative Slide 16?

A. Yes. So these are both aerial photographs. The one on the left is looking north, and the Rio Grande upstream is in the background, and then we can see on the right-hand side kind of in the center of the photograph, that is part of the American Canal that we saw earlier being diverted into American Diversion Dam instead of parallel the river. Here it comes back out where we can see it again. Then the diversion dam is the structure that's crossing the Rio Grande, and we can see that there are four gates there that can release water downstream into the bed of the Rio Grande, but we can see there's not much water in the Rio Grande at this location. If we look on the American Canal, you can see it's widened in spots. This is how they can manage the sediment in the American Canal before it's being delivered into the Franklin Canal heading and the American Canal extension. The larger concrete structure that crosses American Canal, that is sending storm water from the urban area across the American Canal and into the Rio Grande, and then we can see two gates at the bottom end of this, and that is where we can send our -- they can send water back to the Rio Grande for operational needs from the American Canal.

Q. Okay. We're going to show you -- I'm sorry. Go ahead.

A. I was just going to say if we could go to the other slide, so I can show --

Q. Yes.

A. -- the rest of how it works.

Q. Yes.

A. Okay. So, now, we are looking at the diversion dam from the Mexican side, and we can see we're upstream of the dam, and it's crossing the river. What we could see in this one that we couldn't see in the other is if we look in the bottom lower right-hand corner, we can see a body of water. This is the Acequia Madre, which is the main canal for Mexico diversion. It's actually diverted underneath this roadway over near the Rio Grande, and it goes under this roadway, and then now we can see it on the other side of the roadway.

Q. Anything else you'd like to mark on this picture?

A. No.

Q. Okay. I'm going to show the Special Master another short video clip from the Texas drone flyover. As this plays, can you tell the Special Master what he is seeing in this clip?

A. Yes. So we're facing upstream, so towards the north. We can see the Rio Grande is the body of water on the left, and the American Canal is the browner body of water on the right. Play the clip, please.

(The video was played.)

A. Okay. So we are panning around. We are going to try and pause it when we can see a red truck on the Mexican side.

Q. (BY MR. DUBOIS) Pause.

A. Right there. Okay. So what we couldn't see in the Reclamation photographs that we can see here is actually the inlet to the gates for the Acequia Madre, and that is that darker rectangle below that red truck that's in Mexico on the left-hand side of the photograph. Can you play the clip?

(The video was played.)

A. So that's the American Canal. We can see the storm water crossing and then it's facing downstream towards the city of El Paso.

Q. (BY MR. DUBOIS) What's the function of the International Dam?

A. To deliver the water to Mexico.

Q. Who operates the dam?

A. IBWC.

Q. And what water is passed through the International Dam to the bed of the Rio Grande?

A. Only floodwaters or operational spills.

Q. Okay. Are both the American Dam and the International Dam in -- in Texas?

A. No. They are partially in Texas and partially in Mexico.

Q. Okay. Are there any other structures on the Rio Grande below International Dam that the project releases water to?

A. Not anymore.

Q. Are you familiar with the Hudspeth County Conservation and Reclamation District?

A. I am.

Q. Do they have a contract with Reclamation to pay for the use of project wastewater?

A. Yes, they do.

Q. Okay. Next slide, please. The next slide has been marked -- previously marked Estrada-Lopez Demo 17. Do you have that in front of you?

A. Yes.

Q. Okay. Can you indicate on Demonstrative Slide 17 where Hudspeth County Conservation and Reclamation District picks up water and where the lands located -- where the lands irrigated by Hudspeth

County are located?

A. Yes. So if we can zoom in to the Hudspeth County area, the golden orange arrows pointing towards Hudspeth County, that pea green cross hatching indicates the irrigated lands for Hudspeth County Conservation and Reclamation District. We can see at the El Paso County and Hudspeth County lines, there's a pinch point. This is where the Rio Grande project facilities are ending, and water is then taken across the state -- county line into Hudspeth County and allowed to be used by them under our contract.

Q. All right. Moving on from the diversion storage structures. Are there other structures that are project facilities used to convey or move water through the irrigation or project system?

A. Yes.

Q. And what kind of structures are those?

A. There are canals, laterals, wasteways, and drains.

Q. All right. Next slide, please. I'm showing you what has been marked Estrada-Lopez Demonstrative 18. Do you have that in front of you?

A. Yes.

Q. What's the source of these two photos?

A. These are Reclamation photos that were taken

during the tour with the Special Master.

Q. Did you take these photos?

A. Yes, I did.

Q. Okay. Can you tell the -- the Special Master what is shown on the left-hand photo?

A. Yes. On the left-hand side is a canal that we saw on the tour in El Paso Valley.

Q. What is on the right-hand photograph?

A. On the right-hand photograph, this is a lateral that we saw in the Mesilla Valley.

Q. How does the elevation of the canals and the laterals compare to the -- to the grade or elevation of the surrounding farmland?

A. As we saw on the tour, and we can kind of tell from these photographs, the canals and laterals are at a similar elevation or just above grade. Because this is a gravity-delivered system, they need to be slightly elevated in order to get the water to the farms.

Q. How many miles of canals and lateral ditches are there in the project?

A. There is about 140 miles of canals and 450 miles of laterals.

Q. Does that include the farm ditches and the -- and the farm laterals?

A. No, it does not.

Q. Okay. What are wasteways?

A. Wasteways, we saw earlier, are typically connected to a canal, and they're used to help with the operation and maintenance of the delivery system. Mostly it's used to get sediment using the water back to the Rio Grande. Also, they can use it if they need to divert more water at the canal headings to get the water moving because it's a gravity feed system, then they can send that water back to the Rio Grande for delivery elsewhere because it's -- after it gets the water moving, it's not needed for irrigation in that section.

Q. Within the project, are the flows from the wasteways measured?

A. Some of them are.

Q. Who measures the flows in the wasteways?

A. The irrigation districts do.

Q. And are the flows from the -- how are the flows from wasteways represented in project accounting?

A. There are bypass orders, when we get the orders, and then in the allocation accounting, for some of the waste, there is a reduction in the charges to the irrigation district, if it was an ordered

bypass, and then we charge them whichever is -- or we reduce their charge by whichever is less, the requested bypass or the measured wasteway delivery.

Q. Okay. And why the difference? Why is it the lesser of those two?

A. To encourage efficiency.

Q. All right. Next slide, please. Michelle, you referred to orders, and I'm showing you what's been marked as Estrada-Lopez Demonstrative Slide 19. Can you -- how do the order sheets received from the districts reflect the use of wasteways?

A. So we can see on the left-hand side of this order sheet, there's a number of rows labeled "bypass" or "bypass WW" and then the number. That is to indicate water that will be moved through the wasteways.

Q. What does WW32 mean?

A. It means Wasteway 32, and this would be in the Mesilla section.

Q. Okay. What are drains, and how do they differ from canals?

A. Drains are not part of the delivery system. They are, as the name indicates, for drainage, and they are much deeper in elevation than the canals and laterals, because they are using gravity to move the

water through the root zone of the irrigated acreage into the drains for reuse. They create the return flows to the Rio Grande or they're delivered to canals for use downstream in the project.

Q. Next slide, please. Michelle, the slide on the screen is now -- is one that's previously marked as Estrada-Lopez Demonstrative 20. Can you explain to the Special Master what he's seeing in the picture on the left?

A. Yes. This is the photograph of the Del Rio drain that I took on the tour with the Special Master.

Q. Okay. Now, you were talking about the -- the -- the depth of the drains relative to the surrounding land. Can you explain that using this photograph and -- and what the drains are designed to do?

A. Yes. We can see the orchards off to either side of the drain, and the drain is much deeper than the surrounding lands. My understanding is most of them are around 10 feet below the grade. They'd be more in some spots. So in the right-hand bracket, we can see just a small portion of the Mesilla Valley part of the project. The green lines are indicating the location of drains. The blue lines are indicating the location of canals. So you can see we have constructed many drains throughout the system. This

is to help move the water, once the farmers are irrigating. The water is going into the root zone for the crop. Not all of it is used by the crop, so the drains are constructed to help move that water more quickly back to the Rio Grande. So we're collecting it at all of these various locations, and it is traveling by gravity downstream. We can see in this bracket, some of the drains are hitting the Rio Grande, and some of them are hitting the headings of other canals and laterals.

Q. Generally speaking, where's the water that flows into the drains go?

A. To the Rio Grande for reuse in the project.

Q. Okay. Do these drains tend to cover substantial areas?

A. Yes. It covers large areas of the project.

Q. Okay. I'm going to show you one more video clip, No. 9, and can you explain to the Special Master what is shown in -- in this next video clip? Again, this clip is from the Texas drone flyover shot in August of this year.

(The video was played.)

A. Okay. So as we pause at the beginning part of this clip, we're looking at the Rio Grande. We're facing north upstream, and we can actually see two

drains for sure on this video clip. The first one I wanted to point out is on the left-hand side. We can see the drain is actually leaving the Rio Grande, so this would be the terminus of the drain. What we are going to follow is the Del Rio drain, and it's going to be off to the east side of the river, and then we're going to turn and follow it for part of the ways. Play the clip, please.

(The video was played.)

A. So on the left-hand side, they've highlighted the structure that we're following. So we have the Del Rio drain here, and then we're going to turn and follow the Del Rio drain. You can see how it cuts through lots of the acreage in this section of the project. It's going to turn right here. And we can see it's going through these acres of pecan trees, and eventually, it will go further down, and that water will be reused in the project for irrigation.

Q. (BY MR. DUBOIS) Okay. Do you know why the drains are included into the project?

A. Yes. They were not part of the original construction, and there was issues within the farmlands with water logging for the crops and so Reclamation went in and constructed hundreds of miles of drains throughout the project to help the water

move through the root zone more quickly.

Q. What's the importance of the drains to the project?

A. They are what we -- we create the return flows that come back at a more quick rate after they were constructed, and they also help the crops and the farmers with their irrigation because it moves the water through the root zone more quickly.

Q. About how many miles of drains are there in the project?

A. There's hundreds of miles.

Q. Okay. Are the flows -- are all the structures you mentioned, the canals, the laterals, the drains, are all those considered to be project facilities?

A. Yes, they are.

Q. Are all of these facilities currently owned and controlled by the United States?

A. No, they are not.

Q. What structures are owned and controlled by the United States at this point?

A. United States owns the five diversion dams and the two storage dams. We operate the two storage dams and the -- the two diversion dams in Texas and New Mexico.

Q. I've got a few questions about general project operations I'd like to shift to. Does Reclamation require contracts in order to receive water from the Rio Grande project?

A. Yes, we do.

Q. And are there more than one type of contract that relate to water service -- service or rental from the Rio Grande project?

A. Yes, there are.

Q. Okay. Next slide, please. Using the next slide, which has been marked Estrada-Lopez Demonstrative 21, can you describe for the Special Master the types of contracts that you deal with that deal with water -- project water delivery?

A. Yes. The five types of contracts that we deal with are the repayment contracts, the transfer contracts, the operating agreement, the 1920 Act, the miscellaneous purposes contract, and a Warren Act contract.

Q. Okay. Let's start walking through these contracts and describe for the Special Master the various categories of contracts. I'm showing you what has been marked as U.S. Exhibit 367. Have you seen this contract before?

A. Yes.

Q. Have you had occasion to use it as part of your job or to refer to it as part of your job, I should say?

A. Yes, I have.

Q. All right. Can you tell the Court what this document is?

A. This is what we refer to as the repayment contract for EBID.

Q. And what is the repayment contract?

A. This contract set forth the terms for the farmers in New Mexico or in Elephant Butte Irrigation District to repay the federal government for the construction of the project facilities.

Q. Is this 1937 repayment contract still considered to be in effect?

A. Yes, it is.

Q. All right. I'm showing you what's been identified next as Exhibit US-458. Can you identify this document?

A. Yes. We've referred to this as the repayment contract for EP1.

Q. Okay. And, again, what does -- what is -- is this a document that you have referred to and used in -- as part of your job?

A. Yes, I have.

Q. And, again, is this contract also considered still to be in full effect -- or in effect, I should say?

A. Yes, it is.

Q. Okay. I'm going to show you next what's been identified as -- so backing up a second. So the US-367 and US-458, are those what you referred to as the repayment contracts?

A. Yes, they are.

Q. All right. Showing you what's been identified as U.S. Exhibit 511. Okay. Pardon me for -- for -- needed to check tech there for a second. Can you identify what's been -- what is in front of you as US-511?

A. Yes. This is what we call the transfer contract for EBID.

Q. And is this a full and complete copy of the entire transfer contract for EBID?

A. No. It's missing the attachments, which have all of the land survey and physical descriptions of the transferred properties.

Q. So what is missing is the individual land description for the, I think you've described it as hundreds of miles of drains and 400 miles or so of laterals and all of -- or at least that portion of it

in EBID; is that correct?

A. Correct.

Q. Have you ever had, as part of your job, occasion to refer to the -- to those legal descriptions?

A. No, I have not.

Q. Do you use the portion of the -- have you had occasion to refer to and rely on the -- the portion of the contract that is included in US-511?

A. Yes, I have.

Q. Okay. I'm sorry. So this was the 1979 EBID transfer contract; is that correct?

A. Yes.

Q. And how -- and I'll point you to US-511 underscore 009, what's been Bates labeled as 511 underscore 0009. Does -- does this contract relate to and define the United States' obligation with respect to making allocations of water to EBID?

A. Yes, it does, under the water control section.

Q. All right. And what does that provide?

A. This says that the United States will make allocation of available stored project water among EBID, EP1, and Mexico. And then it also states that we will ensure the delivery of the allocated water to

the canal headings at other diversion points and then make accounting of that water.

Q. All right. Thank you. I'm showing you what's been identified now as Exhibit 512 -- U.S. Exhibit 512. I'm sorry. Can you identify this document?

A. Yes. This is the -- what we call the transfer contract for EP1.

Q. And what does the transfer contract for EP1 do?

A. It transfers the canals, laterals, wasteways, and drains in Texas part of the project to EP1 for them to operate and maintain.

Q. And is this a full and complete copy of the entire contract?

A. No. It's also missing the attachment that describes all of the land survey information.

Q. And have you had occasion to review the land survey information as part of your job?

A. No, I have not.

Q. Have you referred to the portion of the contract that is included as US-512 in relation to your job functions?

A. Yes, I have.

Q. Okay. And how does -- how does the transfer

-- the -- the 1980 EP1 transfer agreement relate to water deliveries?

A. It also has stipulations for water control obligating the United States.

Q. All right. I'll point you to US-512 underscore 0011, and can you point to the paragraphs that you're referring to?

A. Yes. 6A and 6B.

Q. All right. And does the -- the asterisk in handwriting, do you know the source for that?

A. No, I do not.

Q. Have you ever relied on that for any information or -- or for any other purpose?

A. No, I have not.

Q. Okay. All right. Thank you. Now, I'm showing you what's been identified as Exhibit NM-2373. Can you identify this document, please?

A. Yes. This is the operating agreement for the Rio Grande project from 2008.

Q. Okay. So this is what's referred to as the 2008 operating agreement in sort of the common parlance?

A. Yes.

Q. All right. And what is the 2008 operating agreement?

A. It is an agreement between Reclamation, EBID, and EP1, and it's going to be the basis of how we do the allocation and accounting for the Rio Grande Project for the U.S. districts.

Q. Was an operating agreement required by the transfer contracts that are previously discussed as US-511 and 512?

A. Yes. That was part of the terms.

Q. Okay. How does the 2008 operating agreement relate to water deliveries?

A. This is the basis for the allocations for the U.S. districts, and they can only order water based on those allocations, and Reclamation makes delivery of those orders.

Q. Okay. Is EBID the only entity in New Mexico with the contract entitling it to demand and receive water from the Rio Grande Project?

A. Yes, it is.

Q. Does the State of New Mexico have a contract with the United States for under which it can demand water from the Rio Grande Project?

A. No, it does not.

Q. Does the State of New Mexico have a contract with the United States that allows it to use Rio Grande Project water?

A. No, it does not.

Q. Has the State of New Mexico ever had a contract with United States under which it could demand release or use of project water?

A. No, it has not.

Q. Okay. I'd like to switch to the other kinds of contracts that you referred to.

JUDGE MELLOY: Mr. Dubois, maybe this might be a good point to take a break. We've been going for a little while now. Why don't we take about a 20-minute break and come back at -- at 3:15 our time. All right?

MR. DUBOIS: Yes, Your Honor. We will be back at 3:15.

JUDGE MELLOY: All right. Thank you, everyone.

(Recess.)

JUDGE MELLOY: All right. Are we all back? Can you hear me, Mr. Dubois?

MR. DUBOIS: Yes. Ms. Estrada-Lopez and I are back, so if --

JUDGE MELLOY: Before you proceed, let me just mention one thing. I don't know if this is an oversight, but you had Ms. Estrada-Lopez testify about the operating agreement New Mexico 2373, but that has

not been -- was it your intent to move that into admission, because that's not one that has been admitted. It's a B objection, and I understand the basis of the objection was completeness.

MR. DUBOIS: No. I believe that -- was that a B objection? I thought the completeness was on 511 and 512. You're right.

MR. WECHSLER: The list I'm looking at does indicate New Mexico 2373, which is the operating agreement, is an A category with no objection, and we do not object to that. The rule of completeness was on US-511 and 512, and our understanding is the United States has looked. We asked them to go and look for a complete copy. When none could be found, we determined that the -- the exhibit that Ms. Estrada-Lopez identified as missing simply wasn't important enough to keep it out, so we withdraw any objections to those two exhibits.

JUDGE MELLOY: So 511 and 512 have not been previously admitted, but they can?

MR. WECHSLER: They can be, Your Honor. We heard this morning that you had included them on the list that had been identified as admitted, and I didn't stop the flow of testimony because we had already made that determination ahead of time that we

were not going to object to it, and we didn't think it was worth raising.

JUDGE MELLOY: All right. Okay. Then I think we're all set then.

MR. DUBOIS: Yeah. It may be -- it may be just that -- excuse me -- somehow the -- the rule of completeness thing got -- got moved. I -- I don't know exactly how that happened. My apologies if it was on our end.

JUDGE MELLOY: All right. We know 2373 is in evidence, just so there's no misunderstanding.

MR. DUBOIS: Correct.

JUDGE MELLOY: Okay. All right. You may proceed, Mr. Dubois.

MR. DUBOIS: Thank you, Your Honor.

Q. (BY MR. DUBOIS) All right. Ms. Estrada-Lopez, we were shifting onto talking about the 1921 -- 1920 Miscellaneous Purposes Act contracts. Do you recall that?

A. Yes, I do.

Q. Okay. Can you tell the Special Master what 1920 Miscellaneous Purposes Act contracts are?

A. Yes. We enter into contracts under the 1920 Act to convert water from the original project use of irrigation to something other than irrigation, and in

this instance, it would be for municipal and industrial use.

Q. All right. So it is -- it is converting a portion of the project water from irrigation to essentially M&I in this particular case; is that correct?

A. Yes.

Q. Okay. Are 1920 Miscellaneous Purpose Act contracts currently just contracts with the municipal entity wanting to use the water?

A. No. They have to be with the original project entity.

Q. Okay. Can you explain to me how Miscellaneous Purposes Act contracts work, how does an entity obtain -- how does an entity like El Paso, the City of El Paso, obtain access to the water to be converted to M&I?

A. In this case, EP1 got a contract with Reclamation to convert part of their water from irrigation to M&I, then it can be entered into a contract with a third party in order to use that water.

Q. All right. What entity has 1920 Miscellaneous Purposes Act contracts under the Rio Grande project?

A. EP1 and the City of El Paso.

Q. All right. I'm showing you what's been identified as Texas Exhibit 0084. Can you identify this document?

A. Yes. This is a conversion contract for the 1928 contract for part of the water for EP No. 1 to convert it from irrigation to miscellaneous purposes.

Q. All right. Does the actual contract start on the next page? Actually, two pages, I believe. Oops.

A. This one starts at the beginning.

Q. Okay. I'm sorry. It does. All right. Have you had occasion as part of your responsibilities to work with this contract?

A. Yes, I have.

Q. Okay. And what's the function of this contract?

A. It converts a part of EP No. 1's allocated water to be used for purposes other than irrigation.

Q. All right. And is there a subsequent contract that is necessary to -- to implement the use of that converted water by municipality?

A. Yes. We call them the third-party contracts that allows for the implementation of the converted waters use.

Q. All right. I'm going to show you what's been

marked as US-116. Can you identify that document, please?

A. Yes. This is the 2001 implementing contract. It actually starts a few pages in.

Q. The next page. Is that the contract itself?

A. Yes.

Q. And have you had occasion as part of your job responsibility to utilize and refer to this contract?

A. Yes, I have.

Q. And what is this contract -- what is the function of this contract?

A. This is the contract between Reclamation, EP1, and the City of El Paso that allows for the use of the converted water under EP1's allocation to be delivered to the water treatment plant in El Paso and the use of sewage effluent by the EP1.

Q. Is this the only 1920 Miscellaneous Purposes Act contract that allows El Paso Water Utilities to use converted project water?

A. No, it's not.

Q. How long -- how long have there been 1920 Miscellaneous Purposes Act contracts allowing the City of El Paso to use a portion of the project irrigation water?

A. Since 1941.

Q. Is the water provided to El Paso Water Utilities part of the EP1 allotment?

A. Yes. It comes from the EP1 allocation.

Q. Why is it treated as part of the EP1 allotment or allocation?

A. Because it is the converted portion of EP1's allocation to M&I uses.

Q. What is the -- is it based on conversion of water from particular acreage?

A. Yes, I believe so.

Q. Is El Paso Water Utility the only entity in either state to have 1920 Miscellaneous Purposes Act contract for the conversion and use of irrigation water for non-irrigation purposes?

A. Yes. The City of El Paso can use it for that.

Q. Is there a 1920 Miscellaneous Purposes Act contract that allows the City of Las Cruces to use project irrigation water for M&I purposes?

A. No, there is not.

Q. Can Las Cruces use project irrigation water for M&I -- for -- I'm using an acronym, M&I. What does M&I mean?

A. Municipal and industrial.

Q. Thank you. Can Las Cruces use project

irrigation water for municipal and industrial purposes without a 1920 Miscellaneous Purposes Act contract?

A. No, they cannot.

Q. Okay. You also referred to contracts or a contract held by the Hudspeth County Water Conservation and Reclamation District. Do you recall that?

A. Yes, I do.

Q. Is that what is referred to as a Warren Act contract?

A. Yes, it is.

Q. And what is a Warren Act contract?

A. A Warren Act contract is a contract that Reclamation enters into for the use of project facilities by non-project entities or for the use of, in this case, renting project water once the project is done with it.

Q. And does Hudspeth County Conservation and Reclamation District have a Warren Act contract with the United States?

A. Yes, we do.

Q. I'm showing you what's been marked as US-436. Can you identify this document, please?

A. Yes. This is what we refer to as the Warren Act contract with Hudspeth County Conservation and

Reclamation District from 1951.

Q. Is this the current contract -- Warren Act contract in effect with Hudspeth County?

A. Yes, it is.

Q. And does Warren Act contract entitle Hudspeth to demand a release from storage or guarantee a delivery of any set amount of water?

A. No, it does not.

Q. Does this contract identify the source of water rented to Hudspeth County?

A. Yes, it does.

Q. Where is that located?

A. In the whereas marked 7.

Q. And what does it provide as far as what water the -- the Hudspeth County is renting?

A. Project return flow, drainage, and operational waste that is available to them at the terminus of the Tornillo main canal, the Fabens Waste Channel, and from the Tornillo Drain outlet.

Q. Do you know about how long Hudspeth County Water -- Hudspeth County Conservation and Reclamation District has had Warren Act contracts for the use of project LR?

A. Yes. Since 1924.

Q. Does the project deliver water to any entity

other than those under the contracts you've just described?

A. Yes, we do.

Q. And to what entity is that?

A. To the country of Mexico.

Q. Okay. I'm showing you the next slide, please.

JUDGE MELLOY: Could I ask just a real quick question?

MR. DUBOIS: Absolutely.

JUDGE MELLOY: Why do they call it rental of water to Hudspeth County as opposed to sale of water to Hudspeth County?

THE WITNESS: I don't know the answer to that.

JUDGE MELLOY: Just what they do. All right. Thank you.

MR. DUBOIS: And it may be, Your Honor, that it's simply a way of describing that it's not an ownership interest in any amount of water, but just the -- the use of water. But it's -- it's an old set of contract language.

Q. (BY MR. DUBOIS) All right. Ms. Estrada-Lopez, we were just talking about the delivery of Mexico. How much water is delivered to Mexico?

A. We can deliver up to 60,000 acre-feet.

Q. And is 60,00 acre-feet delivered in each year?

A. No, it is not.

Q. In what circumstances can that be reduced?

A. Under the treaty between the U.S. and Mexico, we can reduce the amount of water that we deliver to Mexico if there is an extraordinary drought or serious accident to the irrigation system in the United States.

Q. Is Reclamation the entity that has historically determined the allocation to Mexico?

A. Yes, we are.

Q. Is Reclamation the entity that makes the releases from storage to meet any obligation to deliver water to the Acequia Madre?

A. Yes, we do.

Q. Okay. I'd like to switch gears a little bit and talk about operation and maintenance role of Reclamation. You listed a number of structures previously, the dams, the canal headings, the laterals and drains and wasteways. What was the United States' responsibility for operating and maintaining project facilities prior to 1979?

A. Reclamation operated and maintained the

entirety of the project facilities from the storage dams and delivered the water all the way to the farms.

Q. What changed Reclamation's role of responsibility for operation and maintenance?

A. The irrigation districts met the terms of their repayment contracts, so the operation and maintenance of the distribution facilities and drains was transferred to the irrigation districts. So that would change our responsibility from delivering water to the farms to delivering water to the irrigation districts.

Q. These are the contracts that we talked about before, US-511 and 512?

A. Yes, they are.

Q. In what way did the U.S. responsibilities for operation and maintenance of the facilities change with transfer?

A. Reclamation was no longer operating and maintaining the canals, wasteways, drains, and the irrigation districts were taking over that and then the irrigation districts also took over taking the order from the farmers and delivering the water from the diversion points to the farmers. So Reclamation was only delivering water to the diversion points.

Q. Does Reclamation have any responsibility for

maintaining any part of the channel of the Rio Grande below -- Rio Grande below Elephant Butte Reservoir?

A. Yes, we do.

Q. And what responsibility is that?

A. Reclamation maintains the channel between Elephant Butte Dam and Caballo Reservoir and from Caballo Dam down to Percha Diversion Dam.

Q. Did the transfer to the districts of the operation and maintenance responsibility also affect Reclamation's role in the water delivery management?

A. Yes, it did.

Q. In what way?

A. Reclamation was previously allotting water to the farmers and taking their orders and delivering it to them, and now, we are allocating water to the irrigation districts and taking orders from the irrigation districts for delivery at the diversion points.

Q. Does the United States have any responsibility for management and delivery of water below the diversion dams to the two districts?

A. No.

Q. I'd like to talk about Reclamation's role in the project water operations during the course of the year. Next slide, please. Can you -- using what's

been marked as Estrada-Lopez Demo No. 23, can you walk the Special Master through a summary of the Reclamation's role through a water year?

A. Yes. We have three distinct roles during a water year, before the releases, during the releases, and after the releases. Before the releases, Reclamation is making an initial allocation to Mexico and the irrigation districts in the U.S., and we are updating that allocation as water is being delivered to the Rio Grande Project. During the irrigation season, we are the ones making the releases from the project storage to the districts in Mexico, and we are doing this by confirming and executing the orders from the irrigation districts in Mexico, and we track the diversion at those delivery points for us. We are continuing to make allocation updates as long as water is coming into the Rio Grande project, and the irrigation season has not ceased, and we are getting preliminary accounting data from the irrigation districts and IBWC and reviewing that, then after the releases have completed for the year, we are working on collecting all of the final hydrologic data and developing the accounting charges and credits against the allocations and determining the allocation balance that will be available for the following season.

During the aftertime, we are also developing our reports to the Rio Grande Compact Commission on the operations of the Rio Grande Project.

Q. Okay. Going back to the beginning of the season, what do you mean by initial allocation?

A. This is the first allocation that we make to Mexico and the irrigation districts for the upcoming season.

Q. And what is usable water?

A. Usable water is water that's available to the Rio Grande Project for release and delivery to its beneficiaries.

Q. What is Reclamation's role in determining how much water is available as usable water in Elephant Butte Reservoir?

A. That is Reclamation's role to determine that.

Q. Has the Compact commissioner of New Mexico ever had a role in making realtime determination of the usable flow available for allocation to the irrigation districts in Mexico?

MR. WECHSLER: Objection; foundation.

Q. (BY MR. DUBOIS) All right. To your knowledge --

JUDGE MELLOY: Do you want to rephrase or do you want me to rule on that, Mr. Dubois?

MR. DUBOIS: I'll try and rephrase first, Your Honor.

Q. (BY MR. DUBOIS) In your -- in your -- in your experience, has the Compact commissioner of New Mexico ever had a role in making a realtime determination of the usable flow available for allocation to the irrigation districts and Mexico?

A. No, they have not.

Q. In your review of allocation records of Reclamation, have you ever found any evidence that the Compact commissioner of New Mexico ever had a role in making determinations of the usable flow available for allocation to the irrigation districts or Mexico?

MR. WECHSLER: I'm going to object to that, Your Honor. I don't mind the question. I would like to know what review we're talking about. So it's a foundational one until I understand what records she was -- she has reviewed.

MR. DUBOIS: All right.

JUDGE MELLOY: All right. Why don't you give us a little more foundation, Mr. Dubois.

MR. DUBOIS: All right.

Q. (BY MR. DUBOIS) Michelle, can you tell me what -- what records that you've reviewed regarding allocation process -- historical allocation process of

Reclamation and determinations of allocations to the districts?

A. I have reviewed the allocation documents from the 2008 operating agreement period, and I have reviewed some of the allocation letters from the pre-2008 operating agreement period.

Q. And in any of those records, is there any indication that the Compact commissioner in New Mexico ever had a role in making decisions about the usable flow available for allocation to the irrigation districts in Mexico?

A. No.

Q. And is -- is Reclamation's determination of the amount of water available as usable water in Elephant Butte Reservoir for -- for allocation to irrigation districts the same as Compact accounting for New Mexico's deliveries to Elephant Butte Reservoir?

MR. WECHSLER: Objection; foundation. I haven't heard a foundation, Your Honor, for any understanding of the Compact-to-Compact accounting of the Rio Grande Compact Commission.

JUDGE MELLOY: Well, I'm going to overrule that objection. I believe that this witness, as the manager, would be qualified to testify to that.

I do want to clarify one thing, though, Mr. Dubois. When you were asking about New Mexico's Compact commissioner having a role, I think I heard you say Mexican allocation. Did you mean Mexican or New Mexico?

MR. DUBOIS: No. Actually, Your Honor, I was -- I was referring to allocation to the districts or Mexico.

JUDGE MELLOY: Okay.

MR. DUBOIS: So as we will get to, there is an allocation to the districts and to Mexico.

JUDGE MELLOY: So you're talking about both?

MR. DUBOIS: Yes.

JUDGE MELLOY: Okay. All right. Why don't you restate the question, and the witness can answer.

Q. (BY MR. DUBOIS) Is the -- is Reclamation's determination of the water available as usable water in Elephant Butte Reservoir the same as Compact accounting for New Mexico's deliveries to Elephant Butte Reservoir?

A. No, it's not.

Q. Okay. How is it different?

A. Reclamation is determining the usable water

for the project during the release season and prior to the release season, and the Compact is looking at data from the prior year by a calendar year basis.

Q. And how do you know that?

A. Because I have attended Compact commission engineering advisors meetings and Compact commission meetings.

Q. Does the -- does the Compact commission use data that is similar to the data that is used by Reclamation in making its determination of usable flow that's available for allocation?

MR. WECHSLER: Foundation.

MR. DUBOIS: Your Honor, she just said that she's been -- that she has been attending these Compact accounting matters, and she makes the reports. She's familiar with the -- with the general data they use.

MR. WECHSLER: She hasn't said the latter part, and I've attended many school board meetings, and yet I'm not familiar with their data.

JUDGE MELLOY: I'm going to overrule. The witness can answer.

A. Yes. It's similar data. Reclamation provides our data to the Compact commission.

Q. (BY MR. DUBOIS) All right. What's your role

in determining the usable water available for allocation?

A. I'm the one that makes that determination.

Q. All right. Next slide, please. Michelle, we've got up on the screen what's been marked as Estrada-Lopez Demonstrative No. 24. Can you please explain, using this slide, for the Special Master, the general process for determining allocations?

A. Yes. First, we -- I need to determine the water that's available for release to the project for the allocation, and this is the water that's available for release and what has already been released in the current year, then we determine river conveyance efficiencies. This is going to be based on expected return flows from drains and wasteways above the additional diversion points for the project, and also anticipated river gains and losses, and that is how we can determine an allocation for each irrigation district in the U.S. and for Mexico that will be available to them for them to order and deliver.

Q. When's the initial allocation made?

A. It's typically in December or January, but it can be later.

Q. Do you make that allocation based on projections of inflow and water coming into Elephant

Butte Reservoir during the runoff season?

A. No.

Q. Was the -- what is the -- what is the allocation based on?

A. It is based on the water that is in storage at the time the allocation is made.

Q. Okay. So you're looking at a point in time for volume of storage?

A. Yes.

Q. All right. Next slide, please. So can you explain to the Special Master how you make the starting determination of water in storage that's available for release?

A. Yes. On the slide, we put the different items that go into the calculation of water available for release. We start with the total water in storage at Elephant Butte and Caballo.

Q. And how is that determined?

A. This is measured by measuring the water surface elevation at both reservoirs and then determining what volume is being stored at that water surface elevation.

Q. How does the water surface elevation tell you the volume of water in storage?

A. Reclamation conducts geographic surveys of

the land below the Reservoir, approximately every ten years, and we developed a relationship between the water surface elevation and the volume that is being stored at that elevation.

Q. So it's a -- a -- a measured elevation multiplied by a measured capacity for that elevation; is that correct?

A. Yes.

Q. All right. So you first determine the total water in storage. Is there -- and I believe you said earlier that there is more than one account in storage in the Elephant Butte Reservoir; is that correct?

A. Yes. There are different accounts.

Q. All right. What other accounts are there in storage in Elephant Butte Reservoir?

A. Aside from the usable water for the Rio Grande project, there is San Juan-Chama water and Compact credit water for the states of New Mexico and Colorado.

Q. What is San Juan-Chama water? Can you explain that for the Special Master, please?

A. Yes. San Juan-Chama water is water from Reclamation's project that is run by my office, and this water is diverted from the San Juan River, which is in the Colorado River basin, and it is diverted

into tunnels and transported to Heron Reservoir, which is in the Rio Grande Compact basin, and it is delivered via the Chama River, so that is why it's called the San Juan-Chama Project.

Q. Okay.

A. This water is then used by our project beneficiaries for the San Juan-Chama project.

Q. How do you determine the amount of San Juan-Chama water that's in storage in Elephant Butte Reservoir?

A. Reclamation in my office, we are tasked with tracking all of the San Juan-Chama water in the Rio Grande Compact basin. We do this with an accounting model, and it is a RiverWare model called the upper Rio Grande water operations accounting model or we call it the URGWOM accounting model. This has representation of all of the storage reservoirs and rivers for the delivery of this water. We track the volume and location in each reservoir of the San Juan-Chama water and the non San Juan-Chama water, or native water, and there are set methodologies for the tracking of the evaporation and losses in transporting the water between reservoirs for this type of water. Elephant Butte is in this accounting model, and that is where I get the information for how much San

Juan-Chama water is in Elephant Butte.

Q. And the output, is the -- is the URGWOM accounting model based on measured data within the system?

A. Yes. We take hydrologic data measured at different gages and the reservoirs and weather stations and include that in the calculations in the accounting model.

Q. Does the State of New Mexico use that model, as well?

A. Yes, they do.

Q. Does that model -- so that model tracks evaporative losses from San Juan-Chama water on a daily basis; is that correct?

A. Yes, it does.

Q. Did the State of New Mexico approve the methodologies in the model?

A. Yes. They are part of the team that developed and approved this model.

Q. Does the -- does that model, as part of this methodology, also track evaporative losses from any credit water in storage in Elephant Butte Reservoir?

A. Yes, it does.

Q. Is that determination done on a daily basis?

A. Yes, it is.

Q. All right. And you've mentioned Compact credit water in storage. What is Compact credit water in storage?

A. Under the Rio Grande Compact, the water delivered by Colorado and New Mexico that is greater than that that is required for the year is stored as wet water in Elephant Butte, and that is what I'm referring to as the Compact credit water in storage at Elephant Butte.

Q. And where does your initial assessment of Compact credit water in storage come from for purposes of your initial calculation of water available for release?

A. The Rio Grande Compact provides Reclamation with the volume of water to be stored in Elephant Butte for January 1st.

Q. And if you're making a determination before you get that information from the Compact commission, where do you obtain the data for the Compact credit water?

A. It is estimated based on the calculations in the URGWOM accounting model that is run continuously throughout the year.

Q. All right. So explain then how you move -- explain then how you move from total water in storage

to usable water in storage?

A. I take the total water in storage and subtract out the San Juan-Chama water in storage and the Compact credit water in storage, and that is my determination of usable water in storage for the Rio Grande Project.

Q. All right. What other adjustments are made to get from the usable water in storage to the water available for release?

A. After I've determined the usable water in storage, I subtract out the minimum pools volume for the reservoirs and an evaporation reserve.

Q. And what are the minimum pool volumes?

A. Reclamation has made a determination of a volume of water for each reservoir that we will not release, and that is to protect our facility and our staff. When we get to very low volumes of water, loss of sediment and debris can be transported through the outlet works causing a lot of damage to our facility and possibly causing it so much damage that we could have trouble releasing water in a future year. This also puts our staff at greater risk because they would have to address the problem.

Q. All right. What's the evaporation reserve?

A. The evaporation reserve is a volume of water

that I hold back due to the potential evaporation that is greater in the next few months than the inflow into the reservoirs. So when I'm making the initial allocation, it's December or January, and the water is not going to be used until March or later, and so that water will be physically evaporating. And since we don't know exactly how much water will come into the reservoirs during the runoff season, I make a determination of how much water to hold back to make sure that I don't over allocate water that I cannot deliver.

Q. All right. So as the usable water in storage is adjusted for minimum pools and evaporative reserve, then that leads you to the water available for release in this chart; is that correct?

A. That's correct.

Q. So after you determine the amount of water available for release, can you explain the next step in the initial allocation process? Next slide, please.

A. So after I determine the water that is available for release for the allocation process, we're looking at the river conveyance efficiencies to determine the allocations.

Q. What do you mean by -- what do you mean

by "river conveyance efficiencies"?

A. I mean, the volume of water that we can release from Caballo will be a different volume that we can then deliver at the diversion points. So we have some methods to estimate how much of the water that we release can be delivered to the diversion points.

Q. All right. So how is the efficiency -- is the efficiency of the system for purposes of allocations, is the same calculation of river efficiencies -- river conveyance efficiencies applied to the allocation to Mexico as is -- as applied to the allocations to the irrigation districts?

A. No. We have two different methods.

Q. Can you describe the -- the method that applies to the allocation to Mexico?

A. Yes. We are using the Convention of 1906, which is the treaty between the U.S. and Mexico, for the process to determine the allocation for Mexico.

Q. Next slide, please. Can you use what is marked -- has been marked as Demonstrative 27, can you use this slide to explain to the Special Master the process for applying river conveyance efficiencies in determining the allocation to Mexico?

A. Yes. As we discussed earlier, under the

Convention of 1906, we need to deliver to Mexico 60,000 acre-feet or that can be reduced in the case of an extraordinary drought. So I have to answer the question, is it an extraordinary drought? And the way I -- we determine that lately is by looking at the water available for release. If it is greater than 600,000 acre-feet, we say no, it's not an extraordinary drought, and we allocate 60,000 acre-feet to Mexico. If the answer is yes, then we are going to reduce Mexico's allocation, and the process that we use is called the D1 equation or the D1 curve, and we assign a proportion of that to the allocation for Mexico.

Q. Can you explain -- next slide, please. Can you explain the D1 curve to the Special Master, please?

A. Yes. On this slide, we have put a graphic of the D1 equation or the D1 curve. From this graphic, you can see that we are using data for the total annual release from project storage, which is the yearly release from Caballo Reservoir, and the total annual delivery to lands in the United States and the heading of the Acequia Madre, which is the Mexican canal.

Q. Why all lands in the United States?

A. Because of the language in the Convention of 1906, it refers to a proportionate decrease in the Mexican allocation based on the proportionate decrease to the lands in the United States.

Q. All right. So how do you make the calculation for the amount of water owed to Mexico for the IBWC based on the D1 curve?

A. So the D1 curve has data from 1951 to 1978. That's indicated by the red diamonds. And then using a regression analysis, we developed an equation called the D1 equation, and that is represented by the blue line. So, now, we have a mathematical formula that relates the total annual release from Caballo to what can be delivered to the lands in the U.S. and the heading of the Mexican canal, the Acequia Madre.

Q. Who did you notify regarding the initial allocation calculation for Mexico?

A. I provide that information, first, to IBWC.

Q. Is a report made to both IBWC and Mexico?

A. Yes. Reclamation provides official correspondence to IBWC notifying them of the initial allocation, and then IBWC invites Reclamation to a meeting called the 1906 meeting where we meet with Mexico and provide them the information in a presentation.

Q. You said that a different equation is the starting point for allocations between the EBID and EP No. 1; is that right?

A. That's correct.

Q. All right. Next slide, please. Michelle, I'm showing you what's been marked as Estrada-Lopez Demo 29. Can you use this slide to explain to the Special Master how the river conveyance efficiency estimates are determined in relation to the calculation of allotments to EBID and EP1 under the operating agreement?

A. Yes. So we used the 2008 operating agreement as the basis for the development of the allocations for EP1 and EBID. We used a D2 equation and a proportion of that equation for both irrigation districts, and then it's adjusted based on some operating agreement adjustments is what I call them, and that's added to the prior year's allocation balance, and that is how we determine the current year allocation for those districts.

Q. All right. Let's start with D2. Can you use the next slide, please, which is Demonstrative 29 -- 30, excuse me. Can you use this slide to explain what the D2 equation -- to explain to the Special Master what the D2 equation is?

A. Yes. You'll notice that this graph looks very similar to the D1 equation that we just discussed. There is similar data that is part of this graph. The data represented in the red diamonds is in relationship between the total annual release from project storage, which is the yearly Caballo release, but on the Y axis, instead of the delivery to the lands in the U.S. and the heading of the Acequia Madre, we have the total annual delivery to the project headings. So that is the difference in the data where D1 was delivery to lands, and this one is delivery to the project headings. Like D1, we did a regression analysis and developed this equation per the relationship between the release and how much we can deliver to the project headings, and that is represented by the blue line. And then --

Q. And --

A. -- there's the --

Q. -- what is a regression analysis?

A. It is a determination of an equation that best fits the data. So in this case, it's a linear equation that best fits the data. So it comes up with algebraic formula that is known as a linear equation that fits the data from the historic data.

Q. All right. Can we return to Demonstrative

29, please? So under the operating agreement, you start with the D2 equation, and then you said that you make operating agreement adjustments. Can you explain what the operating agreement adjustments are?

A. Yes. There's two that I put together in that term, one is the drought correction factor. The drought correction factor reduces the D2 output from the historic equation based on extraordinary -- or drought conditions that we're seeing in the project. The other one is based on an adjustment to EBID's D2 portion of their allocation, and the difference between the historical D2 portion for EBID and the adjusted D2 portion for EBID is split proportionately between the two districts.

Q. All right. Can you explain to the Special Master how the D2 river conveyance efficiency is applied to EP1 in making allocation?

A. Yes. We take the volume of water available for release and put it into the D2 equation, then we subtract out the volume that we've allocated to Mexico, and then approximately 43 percent of that answer is allocated to EP1.

Q. All right. Now, the -- is the D2 equation directly applied with respect to EBID?

A. Yes. And then we adjust it with the

diversion ratio.

Q. All right. Explain to me the -- the -- explain to the Special Master the estimated diversion ratio adjustment to the D2.

A. The diversion ratio is a ratio of the total annual charges for the deliveries for the project, divided by the total release for the year. So that's the charges for two irrigation districts in Mexico divided by the release for the entire year. Since we don't know that information at the beginning of the year, we use an estimate for that diversion ratio. That adjusts the volume that is put into the D2 equation, and then once we get that answer from the D2 equation, then approximately 57 percent of that volume is allocated to EBID.

Q. And who makes the initial calculation of the operating agreement adjustments that you referred to?

A. I make the initial allocation for Mexico and then a preliminary initial allocation for the irrigation districts.

Q. And do you -- who does the -- who does the -- the preliminary initial allocation to the districts get conveyed to?

A. I send it to the allocation committee.

Q. And what's the allocation committee?

A. The allocation committee is the technical representatives to the three parties of the 2008 operating agreement so that's Reclamation, EBID, and EP1.

Q. And who are the members of the -- of the -- of the allocation committee at present?

A. I am the member for Reclamation; Dr. Phil King, the consulting engineer for EBID is their representative; and Dr. Al Blair, the district engineer for EP1, is their representative.

Q. How often does the allocation committee meet?

A. We typically meet monthly or more frequently if needed.

Q. And what matters are discussed within the allocation committee?

A. We discuss the allocation, the determination of the allocations. We discuss the charges that will be applied to the allocations, and we also discuss hydrologic conditions that will impact either the allocation or the irrigation season.

Q. How are decisions made within the allocation committee?

A. By consensus.

Q. And what are your responsibilities on the allocation committee?

A. I determine the water available for release from the project, then I'm also responsible for the initial allocation to Mexico and the development of the preliminary allocation for the districts. I send that to the allocation committee. I collect the data from the irrigation districts for their charges under the allocation and review that. As the representative for Reclamation, I'm also responsible for the documentation of the allocation and accounting for the operating agreement.

Q. Does the allocation committee make the final determination of allocation to the districts?

A. Yes, it does.

Q. Does the allocation committee make the final determinations on the estimated diversion ratio applied to EBID?

A. Yes, it does.

Q. You mentioned you start the initial allocation determination in December or January earlier. Do changes in flow and usable water in storage require updating of the allocations to the districts and Mexico?

A. Yes, it does.

Q. How often are those allocation calculations done?

A. I calculate them monthly. Sometimes more frequently.

Q. After you made those calculations, do you convey those to the other members of the allocation committee?

A. Yes, I do.

Q. As a general matter, what's the first thing that needs to be determined in making an amended allocation? Next slide.

A. I need to update the water that's available for release as the conditions have changed at the storage reservoirs.

Q. What inputs the determination of usable water available for release vary with time over the year?

A. The total volume of storage and the other accounts in storage change physically over the year, as well as how much we've released.

Q. Okay. Can you go through the boxes highlighted on what has been marked as Estrada-Lopez Demonstrative 31 and explain how the amounts of water in the highlighted boxes have physically changed?

A. The total water in storage at both reservoirs has changed due to inflows from the deliveries from New Mexico, due to precipitation and evaporation, and, also, due to releases. The San Juan-Chama water has

changed because it has evaporated, and there might have been additional deliveries into Elephant Butte from the inflow, and there might have been an exchange of water. The Compact credit water has physically evaporated, as well as there might have been changes due to Compact relinquishment or finalized Compact accounting. The --

Q. How's the -- I'm sorry. Go ahead. Finish.

A. The evaporation reserve changes because I have less risk, and the water released to date is just that, how much water we've released to date.

Q. So the evaporation reserve does not really physically change; you make a risk adjustment change; is that correct?

A. That's correct.

Q. Okay. How is inflow to Elephant Butte Reservoir determined? Is there a -- is there a single gage to -- to read or record?

A. No, there's not. We have to calculate it.

Q. Okay. So, generally, how is the determination of available water in storage adjusted to account for inflow?

A. We take the volume of water in storage prior and the volume of water in storage now, and that is the -- and the difference is the change in storage,

then we've measured the water released, and we've measured precipitation and evaporation, and from that, we can determine how much water has come into the reservoir as inflow.

Q. If you know the total amount in storage, how do you determine the amount available for release? Next slide, please.

A. Because there's different accounts in Elephant Butte, we have to make a determination on each of those type of accounts, how much it has changed, in order to determine how much the project water has changed. So for San Juan-Chama water, we have to deduct for its proportion of the actual evaporation at Elephant Butte, and then if there has been any inflow, I would be able to determine that from the URGWOM accounting model for San Juan-Chama water that was delivered from upstream, and there's also the possibility of an exchange of this water in Elephant Butte for water upstream, and that would reduce the volume of San Juan-Chama water and increase the usable project water.

Q. How are changes to the Compact credit water account determined? Next slide.

A. Similarly, for the Compact credit water, we need to determine the proportion of the evaporation

that occurred on -- from that physical water, and I get that information from the URGWOM accounting model, and then other changes to this -- those accounts would come from a relinquishment under the Rio Grande Compact, and we would be informed of that from the Compact states, and then final accounting would also change the volume of water in Elephant Butte.

Q. Is -- are the results from the URGWOM accounting model shared with the State of New Mexico?

A. Yes, they are.

Q. How often are the URGWOM accounting model results sent to the State of New Mexico?

A. We send them to our FTP site that they download from every day that we run the model.

Q. And how often do you run the model?

A. We run it on almost every single workday.

Q. Okay. Why does Reclamation determine the amount of evaporation that is occurring from the San Juan-Chama and the Compact credit water in storage?

A. That is the only way that we can determine the volume of inflow into the reservoir that's available for the Rio Grande Project.

Q. And why do you need to determine that?

A. Because that water is legally available to our customers, and I need to use that in the

development of the allocation.

Q. And once you have your -- next slide. What is the next step in determining the -- the updated usable water in storage?

A. I take the new total water in storage and subtract out the updated San Juan-Chama water at Elephant Butte and the updated Compact credit water at Elephant Butte and that gives me the updated usable water for the project allocation process.

Q. All right. So once you have the updated usable water in storage, as shown on Demonstrative 34 -- let's go to Demonstrative 35 -- what else goes to updating the total water available for release?

A. So as we discussed just a few minutes ago, I changed the evaporation reserve based on the -- there's less risk. So time has passed. We are closer to the irrigation season or we are in the irrigation season so we know how much water has come in during the runoff or the runoff to date, and there's less chance of evaporation occurring prior to the release from storage. Then I also have a measurement of the water released to date, and that is added to the water available for release that's in storage, and that gives me an updated water available for release.

Q. Why do you add the water released to the

water in storage to get an updated water available for release?

A. Because the methodologies for the allocations needs the total volume for the year for Caballo release. So that's why we add what we've already released for the year to what's available for the continued release to get the annual release.

Q. All right. Next slide. Michelle, I've put up what's been marked as Estrada-Lopez Demo No. 36. How does the calculation of the updated water available for release effect allocations to the districts and Mexico?

A. If the water available for release has increased from the last allocation, it would increase their allocations.

Q. If you artificially underestimate the actual inflow to Elephant Butte Reservoir, how would it impact the deliveries to Mexico?

A. It would under allocate water to them if we were following the D1 methodologies, and, therefore, we would deliver less water than is owed to them.

Q. Is there anything you do in updating allocations that is treated differently than the initial allocation?

A. Yes. In the following an updated

allocations, we update the estimated diversion ratio through the allocation committee.

Q. And how is that update done?

A. Once we are in the release season, the districts have information on how much water has made it to their diversion point, and Reclamation has information on how much we have released from Caballo. So we're making preliminary calculations of how the project is performing, and, therefore, we can make an update to the estimated diversion ratio based on what we're observing in the river.

JUDGE MELLOY: Excuse me, Mr. Dubois. Could you explain diversion ratio one more time, please?

MR. DUBOIS: I will let Ms. Estrada-Lopez do that.

JUDGE MELLOY: I'm sorry. I meant -- I meant Ms. Estrada-Lopez. Could you explain diversion ratio one more time?

THE WITNESS: Yes. Diversion ratio is a ratio of the total annual delivery charges. So that is the charges for the delivery to Mexico plus the charges for the delivery to EP1 and EBID summed up and then it's divided by the annual release from Caballo. So the actual calculation would be for the entire

year, but since we're in the middle of the season, it's an estimate of what it's going to be for the entire year.

Q. (BY MR. DUBOIS) And what's the --

JUDGE MELLOY: What's the purpose of the diversion ratio? What does that tell you?

THE WITNESS: It gives us a ratio of how much water has been delivered compared to how much water was released, and then it is applied in the operating agreement methods to shift the D2 equation for the EBID allocation.

JUDGE MELLOY: So -- so it's only applied to EBID, as I understand it; is that correct?

THE WITNESS: Directly, yes. And then in the operating agreement adjustments, the difference between the adjusted EBID D2 allocation and the historic one, that difference, there's the proportion is split between the two districts.

JUDGE MELLOY: Okay. All right. Thank you.

Q. (BY MR. DUBOIS) So, Michelle, are you familiar with how -- to your knowledge, is the Compact commission bound by Reclamation's calculation of -- of inflows to Elephant Butte Reservoir in their Compact accounting?

MR. WECHSLER: Foundation.

JUDGE MELLOY: Why don't you lay a little more foundation --

MR. DUBOIS: Okay.

JUDGE MELLOY: -- Mr. Dubois.

Q. (BY MR. DUBOIS) Are you familiar how -- with how the Compact commission determines the -- New Mexico's actual Compact deliveries to Elephant Butte Reservoir?

A. Yes, I have reviewed the Compact accounting spreadsheets.

Q. And are you familiar with Reclamation's monthly determinations of -- or periodic determinations of inflow to Elephant Butte Reservoir?

A. Yes, I am. I'm part of those determinations.

Q. Okay. Does the Compact accounting stick to or is bound by your determinations of inflow to Elephant Butte Reservoir?

A. No, it's not.

Q. Does the Compact commission do a monthly accounting for New Mexico's delivery into Elephant Butte Reservoir?

A. No, they do not.

Q. When's the Compact accounting done?

A. It is in the following calendar year of the

release season, so it's typically in late January and February, and finalized in March.

Q. Okay. So the accounting for inflows from New Mexico to the Elephant Butte Reservoir for 2021 would occur in 20 -- in the spring or late winter of 2022; is that my understanding?

A. Yes, that's correct.

Q. Okay. Let's talk about the role of BOR, of Reclamation, during the period when releases of water are being made from storage. You previously testified that -- that allocation adjustments continue through the -- through the year or at least as long as there are inflows coming into -- into Elephant Butte Reservoir and releases are being made from Caballo. What other responsibilities does Reclamation have while releases are being made from Caballo Reservoir?

A. Reclamation is receiving orders from the irrigation districts and Mexico, and we review them and determine a release from Caballo to meet those orders, and we execute that release, then we are tracking the diversions at the diversion points for the project and Mexico, and we are also getting preliminary accounting for those diversions and the charges associated with them from the irrigation districts and IBWC and starting to review those.

Q. What triggers the releases of water from Caballo Reservoir?

A. An order from the irrigation districts or Mexico.

Q. And does Caballo Reservoir make any releases for diversions by the project prior to getting an order from the districts or Mexico?

A. No, we do not.

Q. I'm going to show you what has been previously marked as U.S. Exhibit 661. Can you identify this document?

A. Yes. This is an order form that is for the Rio Grande Project.

Q. And is this an order form actually received by Reclamation?

A. Yes, it is.

Q. And when was this particular order form received?

A. This is from July 15th of 2019.

Q. All right. Is this the -- the sort of order form or order sheet that you -- that Reclamation receives and that triggers releases from Caballo Reservoir?

A. Yes, it is.

Q. So how does Reclamation determine what

releases to make from Caballo Reservoir based on these order sheets?

A. You can see on the order sheet, on the left-hand side, the irrigation districts and IBWC have put in their orders for the diversion points, and then on the right-hand side, there's terms for river boost and then a requested Caballo release is on this order form. So Reclamation is reviewing this, and then if we determine that the requested release for Caballo is accurate, then we will execute the release by making the change at Caballo Reservoir.

Q. Who does Reclamation get the order sheet from?

A. We get it from EP1.

Q. What's EBID's role in creating the order sheets?

A. EBID is getting orders from its farmers and determining the flow rate needed at their diversion points to meet those orders, and they provide that information to EP1.

Q. What's EP1's role in creating the order sheets?

A. EP1 is getting orders from its farmers and from the City of El Paso and they are determining how much flow they will need at their diversion points and

they put it into this order form. They are also collecting the order from EBID and from IBWC from Mexico, and they are responsible for collating it into this form and sending it to Reclamation.

Q. You mentioned IBWC. What's IBWC's role in the order sheets?

A. They are providing the value for the Mexico order.

Q. And what is Reclamation's role once the order sheets are received?

A. We're reviewing the order sheet to see if there might be an error. If there's no errors, the other thing they are reviewing is the requested river boost and determining if that makes sense for the hydrologic conditions that we are seeing at the gages in the river, and then if it does, then we accept the requested Caballo release and make a gate change.

Q. And what is river boost?

A. River boost is a volume of water or flow rate that is needed to get the Caballo release to the diversion points at the volumes requested.

Q. And what causes the need for river boost?

A. Losses in the rivers and system.

Q. All right. Who determines the amount of river boost to request?

A. EBID and EP No. 1 coordinate and develop the river boost request.

Q. And what do they base the river boost request on?

A. They base it on how much water they are seeing show up at their diversion points.

Q. How often does Reclamation get the order sheets?

A. We get them almost daily. Sometimes we get them more than once a day.

Q. Do the districts determine the releases from storage needed to meet the allocation delivery requests?

A. No. They have an estimated request. Reclamation is the one who makes the determination on what the release will be.

Q. And who manages the releases from Caballo Reservoir?

A. Reclamation does.

Q. Does Reclamation coordinate releases with the districts?

A. We do in that they provide us an estimated release. If we agree with it, then we execute it. If we have a concern with the requested release, we will call them and confer with them, and then they can

release. Once we've made the release and it has been greater than a 100 CFS change, Reclamation will make a measurement of that change at our Caballo gaging station. Once we get that measurement, we provide that information to the irrigation districts. If they make a measurement at the Caballo gage, they provide that information to Reclamation.

Q. Can we go back to --

JUDGE MELLOY: While you're thinking Mr. Dubois, let me ask a question to clarify something --

MR. DUBOIS: Certainly.

JUDGE MELLOY: -- if I could. On these order sheets and -- and at various points in your testimony today, Ms. Estrada-Lopez, you indicated that you're delivering to diversion points, but is it my understanding that you only have control, so to speak, of the water until it gets to the Percha Dam, and then from that point south, it's up to the irrigation districts to manage the diversions?

THE WITNESS: I would say operationally speaking, once we make the release from Caballo, we probably still have control over it when it's in the river, but operationally, once the irrigation districts start diverting, we can't and we don't tell

them to not divert that unless it is not part of their allocation.

JUDGE MELLOY: I mean, you monitor it, and if they divert more than they're allocated, you know that, and you may say something to them, but you -- you don't have any real control over it except after the fact to admonish them for doing something they shouldn't have done; is that -- is that the way it works?

THE WITNESS: Yes.

JUDGE MELLOY: Okay. That's what I thought.

Mr. Dubois?

Q. (BY MR. DUBOIS) Can we go back to Slide 37, Demonstrative 36, for a second? I missed a question or two here regarding the estimated diversion ratio, Michelle. What causes the -- the estimated diversion ratio or the recalculated diversion ratio to vary? What is causing the changes in the diversion ratio?

A. The gains and losses through the river to the diversion points.

Q. And what sort of things drives the gains and losses to the river -- to the river?

A. The return flows from the drains and the wasteways, as well as the amount of water from the

river that seeps through the streambed into the surrounding groundwater.

Q. And what causes that loss of water from the streambed?

A. It's based on gravity, so if the groundwater surrounding the river is lower than the -- than the river, it pulls water out of the river, and the lower the groundwater, the more it will pull to a certain point.

Q. Okay. All right. What's the role of Reclamation in accounting during periods when releases are being made from Caballo Reservoir?

A. We are collecting preliminary charges against the allocation from the irrigation districts, and we are reviewing it related to the agreed-upon methodologies, which are based in the operating agreement and operations manual.

Q. Okay. I'm going to show you what's been marked as New Mexico Exhibit 2464. Can you identify this document, please?

A. Yes. This is the 2018 Operations Manual for the Rio Grande Project.

Q. Okay. And what is the Operations Manual?

A. It is a document that provides procedures for implementing the operating agreement.

Q. Okay. Who created -- who created this operations manual?

A. The three entities to the operating agreement, so that's Reclamation, EBID, and EP1.

Q. And how do you use this operation manual -- or operations manual in performing your duties?

A. When I get the preliminary charges for the irrigation districts, I am reviewing them for accuracy and to ensure that the methodologies used in the preliminary charges align with the agreed-upon methodologies that are based upon the operations manual.

Q. Okay. So is this the document you're talking about when you said you compared the information received from the districts to the -- to the processes set forth in the operations manual?

A. Yes.

Q. Okay. Do the districts and IBWC send monthly reports to Reclamation?

A. Yes, they do.

Q. What information do they send to Reclamation?

A. They provide us with the gage data for the specified locations that go into the allocation charges for each district and for Mexico's delivery.

Q. So in addition to providing you the

information to verify the process for the information, what else does the operation -- the operations manual define for purposes of accounting?

A. It defines the locations, the charges should be taken from. It defines when orders for the allocation should be made and when Reclamation should make the gate changes. It defines the exchange of information amongst the parties. It defines how we can update the operations manual, and then it has some specific methodologies for the accounting of the charges.

Q. Is information -- is the data regarding Caballo Reservoir releases shared with the public?

A. Yes. Our gaging station takes instantaneous readings, and that is collected by a satellite, and then it is posted to the public via Reclamation's Website, the U.S. Army Corps of Engineers Website, and the IBWC's Website, and I'm pretty sure both irrigation districts also display it on their Websites, so that is the ways I know it goes out to the public.

Q. All right. I'd like to talk briefly about Reclamation's role after the end of the -- of the period of releases from storage. Next slide, please. I'm showing you what's been marked as Demonstrative

37. Using Demonstrative 37, can you explain what Reclamation's role is after the completion of releases and prior to the start of the next water year?

A. Yes. I'm working through the allocation committee to finalize the allocation charges for the year, then calculate the final allocation, and then what's of that allocation is going to be available the following season.

Q. So how are the final allocation charges determined?

A. Well, EBID and EP1, again, they send us to the allocation committee their preliminary calculation of the final allocation charges, and IBWC provides Reclamation, who then provides it to the allocation committee, the deliveries to Mexico.

Q. Are there any charges included in the final determination of allocation charges that were not in the preliminary accounting kept by the allocation committee prior to that time?

A. Yes, there are.

Q. And what are those?

A. The final month of deliveries is not included in the preliminary accounting. It was included in the final accounting, as well as a charge for the Canutillo well field.

Q. And what is the charge for the Canutillo well field?

A. The Canutillo well field charge is a charge against EP1's allocation for groundwater pumping in the Mesilla Valley in Texas for the City of El Paso, and it is a proportion of the volume pumped during the release season and -- which is decreased by the volume of water returned to the river from the northwest wastewater treatment plant.

Q. Why is that charge only calculated after the end of the release season?

A. That's when we have the data for it, and that was the agreed-upon methodology.

Q. What does the allocation committee do with the updated data from the districts?

A. We review it similarly to the way I have been through the release season and looking at the calculations for any errors and also comparing it to ensure that it is matching the methodologies that had been agreed to in the operations manual.

Q. Are there set procedures and methodologies defined for determining the final allocation charges?

A. All of them have a basis in the operations manual, and some of them are fully described in the operations manual.

Q. All right. What do you do after -- what is the -- what do you do, and what does the allocation committee do after you finalize the allocation charges?

A. Once we have finalized the allocation charges, then we can determine the final allocation, and we take the final allocation charges, and we put them into the calculation for the diversion ratio. So now that the year has concluded, we can actually calculate the diversion ratio for the year, so we take the sum of the final allocation charges and divide it by the total release from Caballo Reservoir for the project. That is put into the allocation process under the operating agreement, and then we also add in the American Canal extension conservation credit and calculate the final allocation.

Q. What's the American Canal extension conservation credit?

A. It is a credit applied to EP1 for a volume of water that is delivered through the American Canal extension to the heading of the Riverside Canal instead of delivering it through the Rio Grande, and it's because there's water saved by doing that through a concrete-lined canal extension instead of the Rio Grande.

Q. How is the American Canal extension conservation credit determined?

A. It's determined based on the volume of water that's moved through that canal extension for the year and a proportion of that based on an estimate of how much water was saved is credited to EP1 and included in their final allocation.

Q. And why is that credit only determined after the completion of the release season?

A. That's the agreed-upon methodology, and that is going to have the data.

Q. Does the water calculated under the American Canal extension conservation credit always go only to EP1?

A. No. It -- when it's calculated, it is added to the EP1 allocation, and if the allocation balance for EP1 is greater than the limit called for in the operating agreement, that volume is transferred to EBID.

Q. So maybe the question I sort of missed is how -- how is the -- how is the -- the American Canal extension conservation credit applied to the end-of-the-year accounting?

A. It's included in the determination of the final allocation and added to EP1's allocation for the

year.

Q. Okay. So it's in addition to the allocation, not -- it's in addition to the allocation?

A. Yes.

Q. And if EP1 is over its carryover credit, how is the American Canal extension conservation credit applied or accounted for?

A. It gets transferred to EBID if they are over the limit for their allocation balance.

Q. So that would be then an increase -- similarly, that would be an increase in the allocation to EBID for that year?

A. Yes.

Q. Okay. After the allocation committee has calculated the final allocations to the districts, are there any other end-of-the-season adjustments that are made to the accounting?

A. Yes. There is an adjustment for any over delivery to Mexico, and also in the allocation balance transfers.

Q. What is the -- what is the adjustment for the over delivery to Mexico?

A. When Reclamation is making the determination for the allocation to Mexico, it is based on the water available for release, and that is what we allow to be

delivered to them. When we get to the end of the year, we know the actual volume that has been released. We put that into the D1 equation. If the volume delivered to Mexico is greater to the -- than the calculation under D1 using the final data, that's considered an over delivery to Mexico, then that volume is charged proportionately to EBID and EP1.

Q. Okay. And what is the -- what is the allocation of balance transfers?

A. Under the operating agreement, there is a limit to the allocation balance that each irrigation district can carry into the next season, so if the balance is greater than the limit called for under the operating agreement, that volume gets transferred to the other district and available for them in the following season.

Q. How does the end-of-the-year accounting affect the allocation balances available to the districts in the following year?

A. We take the final allocation and subtract the allocation charges, and we do the end-of-year adjustments, and then using the math of that, we determine their allocation balance, and that is going to go into their allocation for the following year.

Q. Does the final accounting for the project

occur before the Compact accounting by the Compact commission is done?

A. Typically, yes.

Q. When does Compact accounting occur? I think you -- you covered this earlier. Is it -- am I correct that -- that Compact accounting, or what you've testified as Compact accounting occurs in February or March?

A. Yes, it does.

Q. All right. And why does it occur after the end of the reservoir release and diversion period? Why does it occur in the next year?

A. Under the Rio Grande Compact, accounting is for a calendar year, which would be going through December 31st, so they need data for the entire calendar year in order to calculate their accounting.

Q. And does Reclamation have a role in Compact accounting?

A. Yes. We provide data to the Compact commission.

Q. Okay. I'm going to show you what's been previously marked as U.S. Exhibit 55. Michelle, can you identify what has been previously marked as US-55?

A. Yes. This is a slide deck that was used by Reclamation to present to the engineer advisors to the

Rio Grande Compact. This one is from March of 2020.

Q. Okay. Does this -- is this part of the data that -- or the information that you provide to the Compact commission through the -- through the engineering advisors?

A. Yes, it is.

Q. And is there data that accompanies this report to the engineering advisors?

A. Yes, there is.

Q. What data is supplied to the engineering advisors?

A. Reclamation provides hydrologic data for all of our reservoirs and gages that we are in charge of within the Compact basin, so that include elevation and storage for our reservoirs, weather data, including evaporation at our reservoirs, and releases for all of our reservoirs, as well as the San Juan-Chama project accounting and overview of our operations and maintenance activities at all of our projects within the basin.

Q. And where does the San Juan-Chama accounting come from?

A. My office is in charge of that accounting.

Q. Is that produced -- is that produced from the URGWOM model that you described earlier?

A. Yes. It comes from the URGWOM accounting model.

Q. So are you providing them the model output?

A. Yes. We provide the San Juan-Chama accounting report that comes from the data from URGWOM accounting model, and the accounting model is also provided to the Compact states.

Q. And is the -- is the -- is that just an annual accounting or is -- are they provided the daily accounting?

A. We provide New Mexico the accounting every day that we run it through our FTP site. We also provide it to Colorado and Texas when they ask for it throughout the year, but then the official transmission is through this engineer advisor process the following calendar year.

Q. And -- and what -- what output from that model do you provide the engineering advisors?

A. In the San Juan-Chama report, it is focused on the San Juan-Chama project accounting, but it includes all of the information that goes into that accounting, including the hydrologic data at the reservoirs.

Q. Okay. Do you provide the engineering advisors or the Compact commission any other data that

you know that they use in their accounting?

A. No.

Q. Do you know whether there's an ongoing dispute between Texas and New Mexico for Compact accounting?

A. Yes, I do.

Q. Can you generally describe that controversy?

A. There is a disagreement in the methodology to calculate evaporation on the Compact credit water being stored at Elephant Butte that goes into the Compact accounting.

Q. Does the report to the engineering advisors include computations or accounting for evaporation of San Juan-Chama or credit water?

A. Yes, it does.

Q. So that information is provided to the engineering advisors?

A. Yes. It's in the URGWOM accounting model.

Q. How does Reclamation's determination and calculation of actual inflows for purposes of allocating available water -- strike that. Let me rephrase that.

To your knowledge, does Reclamation's determination and calculation of actual inflow for purposes of allocating available water determine the

Compact commission accounting for evaporation of credit water?

A. No, it does not.

Q. Does Reclamation's determination and calculation of actual inflows for purposes of allocating available water dictate how Texas accounts for evaporation or -- of credit water for purposes of the Compact?

A. No, it does not.

Q. Does the Compact commission methodology for calculating evaporation of credit water tend to actually overestimate the amount of actual evaporation from Compact credit water?

MR. WECHSLER: Objection, Your Honor, foundation, and this also sounds like it's going into an area of expert testimony.

MR. DUBOIS: This is simply comparing the two accounting -- the two methods of accounting, Your Honor. This is not even expert testimony.

JUDGE MELLOY: Well, rephrase your question. It --

MR. DUBOIS: All right.

JUDGE MELLOY: It makes it sound like your question was asking which is the correct method. If you're asking her to compare the two, that's fine.

If you're asking her which is the more accurate, I think that -- I think Mr. Wechsler may have a good point.

MR. DUBOIS: It was not a question of accuracy. It was a question of methodology, Your Honor.

Q. (BY MR. DUBOIS) Ms. Estrada-Lopez, do you know how the Compact commission determines the methods that they use for determining evaporation of Compact credit water?

A. Yes. I've reviewed the methodology.

Q. And what methods do they use?

A. In Compact accounting, they are using a monthly storage value for Elephant Butte Reservoir, and that is the storage value that the evaporation is applied to.

Q. Does Reclamation use a monthly calculation in determining storage values and, therefore, evaporation?

A. No. We are using daily storage values to determine the evaporation.

Q. Do those two methodologies -- can those two methodologies give you a different number for evaporation for the same year?

A. Yes, they do.

Q. All right. Does the methodology used by the Compact commission tend to overestimate the amount of actual evaporation from credit water in contrast to the daily accounting?

MR. WECHSLER: Your Honor, I'm going to object again. I'm also going to object as this being vague. The testimony has gone forward based on this idea that the methodology used by the Compact commission, but I believe Ms. Estrada-Lopez just testified that there's more than one methodology that's being used, so I'm not sure what this is even referring to, whether it's the -- the version from Texas or the version from New Mexico and Colorado.

JUDGE MELLOY: I'm going to overrule. You can answer the question.

A. I'm sorry. Can you repeat the question?

Q. (BY MR. DUBOIS) I probably can't because I don't have realtime -- or I don't have it up, I should say.

JUDGE MELLOY: Do you want me to have the reporter read it back?

MR. DUBOIS: Could you, Your Honor? Thank you.

JUDGE MELLOY: Heather, can you do that, please?

(The requested portion was read.)

A. When you're using one storage value for an entire month to calculate the evaporation compared to the changing daily storage values, you will get a different answer. Some months, it will be greater; and some months, it will be less.

MR. DUBOIS: Okay. Thank you. I have no further questions for this witness, Your Honor.

JUDGE MELLOY: Pretty good timing, Mr. Dubois. It's just about 5:00 our time. Let me ask --

MR. DUBOIS: I aim to please, Your Honor.

JUDGE MELLOY: All right. Let me ask this. I know Texas and the United States are basically working in tandem on these witnesses. Are you going to do the entire examination or do you -- are you going to be asking any questions, Ms. Klahn?

MR. DUBOIS: You're not live.

MS. KLAHN: Sorry. Could you mute?

MR. DUBOIS: Yeah, I'm going to.

MS. KLAHN: At this point, I'm not planning to ask more than one or two questions, and I'm going to try and funnel those through Mr. Dubois for redirect. That's the plan for this witness.

JUDGE MELLOY: All right. And then what about Mr. Wallace, are you going to be asking any questions?

MR. WALLACE: Your Honor, at this point, I'll need to evaluate what New Mexico does on cross, but the United States may have raised some issues that are a direct interest to the State of Colorado.

JUDGE MELLOY: All right. Well, then we'll -- we'll adjourn for the evening, and we'll do -- start the cross first thing in the morning, and so I'll see everyone tomorrow morning. Thank you, everyone.

(The proceedings adjourned at 5:00 p.m.)

CERTIFICATE

I, HEATHER L. GARZA, a Certified Shorthand Reporter in and for the State of Texas, do hereby certify that the facts as stated by me in the caption hereto are true; that the foregoing pages comprise a true, complete and correct transcript of the proceedings had at the time of the hearing.

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