Republican River Compact Administration
Annual Meeting

Binder for Nebraska Representatives
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August 11-12, 2010
Burlington, Colorado
Burlington Community and Education Center

PROPOSED AGENDA FOR

ENGINEERING COMMITTEE WORK SESSION

Republican River Compact Administration

2:00 p.m. August 11, 2010

Burlington Community and Education Center, Burlington Colorado

1) Introductions/Role Call (as needed)

2) Engineering Committee report and discussion
   a) Proposed spreadsheet using five years of input data
   b) Revisions to accounting procedures
      i) Correction to Mainstem accounting
         (1) Riverside Canal Return Flows
         (2) Kansas mainstem groundwater CBCU
   c) Ground water model accounting points
      i) Guide Rock accounting point
      ii) North Fork accounting point
   d) Accounting
      i) Calendar Year 2009
         (1) Draft final version of accounting spreadsheet (based on 2005 Accounting Procedures).
         (2) Draft Engineering Committee report
      ii) Status of Calendar Year 2008
      iii) Status of Kansas data requests
   e) Items discussed during prior meetings:
      i) User Manual
      ii) Recharge and Return Flow Methods
      iii) Colorado meter data
   f) Propose that RRCA retain Principia Mathematica Contract for Maintenance and Operation of RRGWM during 2011
   g) Courtland Canal data
      i) Proposal to use USBR data
   h) Missing data for precipitation gages
   i) Other Business
   j) Work Assignments and Follow Up Actions

3) Conservation Committee Meeting (beginning at about 4 PM)

4) Annual Report discussion

5) Adjourn

AGENDA FOR

50TH ANNUAL MEETING OF THE
REPUBLICAN RIVER COMPACT ADMINISTRATION
August 12, 2010, 9:00 AM MST
Burlington Community and Education Center, Burlington, Colorado

1. Introductions
2. Modification and Adoption of the Agenda
3. Approval of Previous Annual and Special Meetings Reports and Transcripts from 2008 and 2009
4. Report of Chairman and Commissioner's Reports
    a. Nebraska
    b. Colorado
    c. Kansas
5. Federal Reports
    a. Bureau of Reclamation
    b. U.S. Army Corps of Engineers
    c. U.S. Geological Survey
6. Committee Reports
    a. Engineering Committee
        i. Assignments from 2009 Annual Meeting
        ii. Committee Recommendations to RRCA
        iii. Other Matters
        iv. Recommended assignments for Engineering Committee
        v. Response to Kansas data requests
    b. Conservation Committee
7. Old Business
    a. Status of Dispute Resolution
    b. Status of 2006, 2007 and 2008 Final Accounting
    c. Status of RRCA regulation regarding the approval of a diversion in one state that is used in another state
    d. Status of the Lower Republican River Feasibility Study
8. New Business and Assignments to Compact Committees
    a. Action on Engineering Committee Report and assignments
    b. Additional Items
        i. Resolution for Lee Rolfs
9. Remarks from the Public
10. Future Meeting Arrangements
11. Adjournment

2009 Meetings and Reports

(Annual Report)

2009 NEBRASKA REPORT
for the
Republican River Compact Administration
August 12, 2009

While conflicts over past events may have captured recent headlines, I am pleased to begin by informing you all that the State of Nebraska is in compliance with the Republican River Compact. Using current accounting procedures, Nebraska has had positive balances during 2007 and 2008, resulting in a positive five-year average for the period ending in 2008. Based on preliminary estimates, it appears Nebraska will again be in compliance for the five-year compliance period ending in 2009. This is a testament to the work conducted to date in partnership with Nebraska's Natural Resources Districts, its surface water users and the people of the Republican River Basin.

During the past year, the States of Colorado, Kansas, and Nebraska have spent considerable time and effort to resolve a dispute centered on events that occurred in 2005 and 2006. Much of that dispute arose from or involved regulatory measures Nebraska implemented originally in the wake of the Final Settlement Stipulation. However, those measures and the results occasioned by them is old news and does not merit further attention. Indeed, as evidenced by the outcome of the recent Arbitration, there is little to be gained from revisiting the past, and our focus should be directed toward the future.

In the future, Nebraska will remain in compliance with the Republican River Compact. The primary NRDs, in partnership with the Department of Natural Resources, have had new Integrated Management Plans in place for a year and a half. These IMPs appear to be working well. Among other things, the IMPs clearly state that each of the NRDs cannot deplete more than their share of the water of the Basin. This is not merely a goal, but rather a requirement of each plan.

That said, Nebraska is aware the IMPs would benefit from additional detail. At last year's RRCA annual meeting, I stated "the Department and the Natural Resources Districts feel that it is important to investigate other options and further regulations that can be incorporated into future plans addressing water short years." To that end, my staff and I have met on many occasions with the managers of the NRDs and with their boards. The purpose of these meetings has been to lay out how the Department calculates the allowable depletion in each district, and to begin the discussion of specific situations in which additional regulatory measures need to be taken. It was our desire to implement these changes prior to this meeting. However, the many hours of staff time taken up by the arbitration process delayed implementation. We expect these additional controls to be in place early next year.

In the future, we also must address Colorado's proposal to augment streamflow by pumping groundwater supplies directly to the North Fork of the Republican River. To date, the states have been unable to agree on several issues. Nebraska's principal concern remains rooted in proper accounting for the augmentation water and will need to be resolved before Nebraska can endorse that plan.

In the future, we also must work toward resolution of certain accounting issues, some of which are, in turn, essential to a proper evaluation of the Colorado plan. Nebraska proposed a number of changes to the RRCA Accounting Procedures that were a part of the recent arbitration, and I would like to comment on what I believe to be a most important finding by the arbitrator: The current method of calculating streamflow depletion leads to significant errors when the streams become dry. The arbitrator agreed with Nebraska that the best measure of the total streamflow in a sub-basin is obtained by subtracting the results of a groundwater model run with all stresses on from the results of a model run with all stresses off. This concept was originally proposed by Kansas, which identified it as the *Virgin Water Supply Metric*. The arbitrator suggested that the states continue to discuss how to implement this estimate of total streamflow. It is our hope that this can be done in a timely manner.

In the future, we will need to work closely with our friends who rely on surface water diversions and, in turn, the health of the Republican River system. While streamflow may not return to levels seen fifty years ago, we will continue to see improvement over time as the IMPs take hold. It is our belief that a healthy surface water system will contribute to Nebraska's ability to comply with the Compact. I'd like to publicly recognize the successful partnership that we have seen in the past with a number of surface water districts, including (but not limited to) the Frenchman Valley Irrigation District, managed by Don Felker, the Frenchman Cambridge Irrigation District, managed by Brad Edgerton, and the Nebraska Bostwick Irrigation District, managed by Mike Delka. These and other districts, and their respective boards, will continue to play an important role in the basin.

The future also holds continuing participation in the Conservation Reserve Enhancement Program and the Environmental Quality Incentives Program. Nebraska will continue to explore stream augmentation. Vegetation management has increased streamflow and the capacity of the stream channel. Nebraska will continue to take an active role in the Engineering Committee, and will always work with the other states to improve existing accounting methods and ensure they accurately reflect water use in the Basin.

Finally, in the future - the very near future - we must resolve an issue presented by Nebraska concerning the proper way to recognize in the Accounting any damages paid for past non-compliance. Resolution of this so-called "Crediting Issue" is key to ensuring that when a state is wronged, it is made whole, but not overcompensated, and that the offending state is not inadvertently punished by paying for the same violation twice. As counsel for Kansas indicated in an arbitration hearing on this issue in December 2008, we might not even have a disagreement about the Crediting Issue. It is time we found that out, and if we can agree, it must be resolved.

In closing, I wish to assure you all, as well as my counterparts from our neighboring states, that Nebraska will continue to comply with the Republican River Compact. The State will continue to evaluate needs of the basin and make changes as necessary to stay in compliance, in a spirit of openness, transparency, and partnership. We expect to continue to work with all stakeholders in the basin, including the other states, the NRDs, the surface water districts and individual users, and the Bureau of Reclamation. As I recently explained during the Arbitration, non-compliance is not an option for the State of Nebraska.

REPORT OF WATER ADMINISTRATION ACTIVITIES IN NEBRASKA FOR THE CALENDAR YEAR 2008

Republican River Compact Administration Annual Meeting
August 12, 2008, Lincoln, Nebraska

Integrated Water Management Analyst
Nebraska Department of Natural Resources

August 2006 the Bureau of Reclamation placed a call on all appropriated reservoirs located above Swanson Lake, Enders Reservoir and Hugh Butler Lake. This call continued throughout 2008. July 2008 a call was placed on all users on Red Willow Creek. This call included Meeker-Driftwood, Culbertson and Bartley Canals. July 8, 2009 a call was placed on all junior permits above Cambridge. The call was removed above Cambridge July 16, 2009.

2009 continues the call on Swanson Lake, Enders Reservoir and Hugh Butler Lake. July 11, 2009, a call was placed on all junior permits on Medicine.

In 2008 the Irrigation supply in Harlan County Reservoir was estimated by Reclamation to be more than 130,000 acre-feet. Water Short Year Administration was not in effect during 2008.

Pioneer Irrigation District, Red Willow, Cambridge, Naponee, Franklin, Franklin Pump, Superior and Courtland Canals irrigated during 2008.

Surface water irrigators on Riverside Canal were compensated not to irrigate in 2008. The estimated consumptive use portion of Riverside canal's natural flow was protected through Harlan County Lake.

2008 Canal Diversions	**acre-feet**
Haigler Canal	5,460
Hale Ditch	0
Riverside Canal	0
Culbertson Canal	0
Culbertson Canal Extension	0
Meeker-Driftwood Canal	0
Red Willow Canal	4,089
Bartley Canal Diversion	0
Cambridge Canal Diversion	19,387
Naponee Canal Diversion	316
Franklin Canal Diversion	16,085
Franklin Pump Canal	576
Superior Canal	5,666
Courtland Canal At Headgate	32,224
to Nebraska Courtland	313

REPUBLICAN RIVER COMPACT ADMINISTRATION

SPECIAL TELEPHONIC MEETING

The above-entitled telephonic meeting took place at 1313 Sherman Street, Denver, Colorado, Room 318, at 9:05 a.m., on Tuesday, April 28, 2009.

P R O C E E D I N G S

COMMISSIONER DUNNIGAN: This is Brian Dunnigan; I'm the current chairman of the RRCA.

This is a special meeting of the RRCA and it is being conducted from ten call-in locations. We would request that at those locations you place your telephones on mute, if possible. There should be a sign-in sheet. These are to be faxed to the attention of James Williams at the Nebraska Department of Natural Resources, (402)471-2900, or you can scan those and e-mail them to James Williams.

This meeting is on the record utilizing a court reporter in Denver and will be included in the annual RRCA report. We ask that you speak clearly for the court reporter. Any spelling of your names would be greatly appreciated, if you're likely -- if you're going to speak. Each commissioner should acknowledge key staff and those that are with them today, and I already did that. I have Justin Lavene with me, James Schneider and Jim Williams.

Commissioner Barfield.

COMMISSIONER BARFIELD: Yes, thank you.

Yes, on the phone at the other locations, John Draper was mentioned, Dale Book, Scott Ross, our number of staff that are on. In addition here in

Topeka, we have a number of people around the table. I'll just -- it's such a large group, I will just mention who they are. Sam Speed with the Attorney General's Office; Chuck Beaver with our Kansas Department of Wildlife & Parks; Chris Beightel of my staff; Burke Griggs of the Department of Agriculture; Leland Rolfs, Katie Tietsort of our Topeka field office; Hongsheng Cao, Hank Ernst with our Kansas Water Office and myself. That is who is here in Topeka.

COMMISSIONER DUNNIGAN: Thank you, Commissioner Barfield.

Commissioner Wolfe.

COMMISSIONER WOLFE: Yes, good morning. This is Commissioner Dick Wolfe with the State of Colorado, and some of the key staff here with me today: Pete Ampe, First Assistant Attorney General at the Attorney General's Office of Colorado; Megan Sullivan, engineer advisor for Colorado; Mike Sullivan, Deputy State Engineer; Willem Schreuder, consultant to Colorado. And we have some other staff members here in the audience as well. And Alex Davis is also joining us. She's the assistant director for the Department of Natural Resources for Water. And we do have other folks here that I may mention in my introductory remarks when we get to that part of the agenda.

COMMISSIONER DUNNIGAN: Thank you, Commissioner Wolfe.

The second agenda item is to redo the agenda.

Are there any comments on the agenda that was distributed, I believe, yesterday?

Hearing none, we'll move on.

Commissioner Wolfe, the next agenda item is Colorado's Compact Compliance Pipeline. I will have you introduce that and discuss that.

COMMISSIONER WOLFE: Thank you, Commissioner Dunnigan.

First, I would like to just take this opportunity to thank a number of folks who have participated in this process certainly over the last few years, just quickly for recognition. A number of the staff members that I have already mentioned so far in my introductory remarks. We have some additional staff that have helped us out here. Keith Vander Horst and Chris Grimes of our Denver office have worked diligently on a lot of the activities in the basin, as well as Dave Keeler and Devan Ridnor in the Republican River Basin. And there is certainly a number of other staff as well that have participated in that, but those folks are here today with Katie Radke, who has been an integral part of

our CREP and EQIP programs on behalf of the State of Colorado.

I would also like to thank the Republican River Conservation District and their staff and counsel who are with us today for their efforts over the last few years, as well as CAPA and their legal representation; the Bureau of Reclamation, Division of Wildlife and the Division of Parks and the Colorado Water Conservation Board, as well, for their help and assistance in financing part of the activities in the Basin.

And, of course, there are many other stakeholders who have been represented by counsel as well who represent individual water users in the Basin who have assisted Colorado over the past few years to achieve Compact Compliance and, in particular, developing the proposed Compact Compliance Pipeline, which is the subject of our meeting today.

I would also like to thank Kansas/Nebraska for their corporation during the past year providing feedback on our proposal. Colorado is committed to taking the appropriate steps to achieve Compact Compliance as soon as possible and has demonstrated that willingness as follows.

I'm going to touch on a few of the brief, a

little bit of the history of brief steps that we have taken over the past years to achieve Compact Compliance.

First and foremost, the Republican River Conservation District has been integral in this effort to assist Colorado in its efforts to achieve Compact Compliance.

One of the things that they have done is instituted a water use fee, which is currently at $14.50 per irrigated acre, to generate sufficient revenue to implement a number of programs, including CREP and EQIP land retirement programs, and through those efforts they have taken out approximately 30,000 acres since 2007 and have -- working on another additional 30 acres through an amendment that is planned to take place through 2009 and beyond.

They have also undertaken a number of leases of surface water rights, including a combination lease purchase with the Yuma County Public Improvement District of $20 million for most of the senior water rights on the North Fork of the Republican River.

And lastly, the development and proposed construction of the Compact Compliance Pipeline, which is a $71 million project.

And all of these efforts by the Republican River Conservation District represent over $90 million

that they have committed today as part of the Compact Compliance efforts, and we appreciate all that they have done.

The State has also moved forward in terms of promulgating well measurement rules in 2008 that require all wells to have meters or to approve power conversion coefficient to operate in 2009. We believe that this has effectively been accomplished and again, through the efforts of the users in the Basin that have worked cooperatively with us on this effort to get those rules in place and also our staff who has been integral in approving those testing and improving of those meters.

We've also started drafting Compact Compliance rules. These efforts started in 2006. This is another effort that gives the authority to the state engineer to administer wells in the Basin. We have also made efforts over the last couple of years on releasing water from Bonny Reservoir for out-of-priority storage.

And I would like to next just touch on a little bit of brief history of the Compact Compliance Pipeline proposal that we'll be presenting today.

This proposal was initially submitted to the RRCA in March of 2008. We have continued discussions with Kansas/Nebraska since then with formal

meetings in April, May, August and November of 2008. Colorado originally addressed this proposal as a fast-track issue before the RRCA under Section 7.a. of the FSS, or the Final Settlement Stipulation, in April of 2008.

While we recognize that we are continuing productive negotiation towards a resolution of the issues for approval of the Compact Compliance Pipeline, we also recognize the need to proceed on a parallel path of the general dispute resolution process as provided for under Section 7.b. of the Final Settlement Stipulation.

We can no longer afford a delay in seeking ultimate approval of the Compact Compliance Pipeline so that Colorado can fulfill its obligations under the Republican River Compact.

What I would like to next do is confirm for everyone the proposed resolution exhibits that we've distributed to the two States. We are seeking action by the Republican River Compact Administration today on the proposed Compact Compliance Pipeline in order to facilitate a number of other transactions that must occur prior to the Republican River Water Conservation District closing on a loan with the seller of the water rights that will be used for augmentation. This

represents an approximately $50 million transaction, principally funded by a loan from the Colorado Water Conservation Board.

What I would like to do is, for those of you who have the set of documents that represents the proposed resolution that was prepared by Colorado and the attached exhibits, I would like to just step through those briefly so that everyone knows and we have on the record what those documents represent.

First, the resolution that's titled "Resolution by the Republican River Compact Administration Regarding Approval of Colorado's Augmentation Plan and Related Accounting Procedures Submitted under Subsection III.B.1.k of the Final Settlement Stipulation," dated April 2009. There is a number of Whereas's that starts out in that proposed resolution. I would like to just highlight on top of page 2 three of the Whereas's which I think principally identify the introductory part of this resolution.

The first states, "Whereas, Subsection III.B.1.k of the Final Settlement Stipulation further provides that augmentation plans and related accounting procedures submitted under Subsection III.B.1.k shall be approved by the Republican River Compact Administration," or the RRCA, "prior to implementation."

Secondly, "Whereas, Section I.F. of the FSS also provides that: The RRCA may modify the RRCA Accounting Procedures or any portion thereof, in any manner consistent with the Compact and this stipulation."

And third and lastly, "Whereas, the State of Colorado and the RRWCD Water Activity Enterprise have submitted an augmentation plan and related accounting procedures to account for water delivered to the North Fork of the Republican River for the purpose of offsetting stream depletions in order to comply with Colorado's Compact Allocations."

Next, I would like to talk about the rest of the resolution which introduces the exhibits. First, the augmentation plans described in the application submitted by the State of Colorado and the Republican River Water Conservation District Water Activity Enterprise, which is attached to the resolution and identified as Exhibit 1.

The related accounting procedures are included in the revised RRCA Accounting Procedures and Reporting Requirements, and this is in parenthetical, Revised RRCA Accounting Procedures, end parenthetical, which are attached to this resolution and identified as Exhibit 2. The approval of the augmentation plan, the

related accounting procedures will be subject to some following terms and conditions, and I would like to just highlight those in general terms for everyone here today.

First, what's identified paragraph 1 is that we provided that the average annual historic consumptive use of the groundwater rights that will be used for augmentation are listed in Exhibit C -- 3, excuse me, and shall not exceed the historical consumptive use amounts shown in column 7 of Exhibit 3.

Second, the net depletions from Colorado's Compact Compliance Wells shall be computed by the RRCA Groundwater Model and included in Colorado's Computed Beneficial Consumptive Use of groundwater pursuant to paragraph III.D.1 of the revised RRCA Accounting Procedures.

Third, the diversions from any individual Compact Compliance Well shall be limited to no more than 2500 acre-feet per year.

Fourth, there is -- the fourth provision in this resolution provides limitations on the Augmentation Water Supply Credit and there is a calculation of the projected Augmentation Water Supply Delivery to determine the limit on Augmentation Water Supply Credit. Those procedures are spelled out on pages 3 and 4 of the

proposed resolution, and the example of this limitation is also provided for in the attached Exhibit 4.

Other salient provisions outlined in items 5 through 9 of the proposed resolution to ensure Compact -- excuse me, to ensure compliance with the other provisions of the FSS and the Compact and to recognize that this approval does not set precedence for any other State seeking approval of any future proposed augmentation plan and related accounting procedures.

What I would like to do at this time is also mention for the record those individuals who have provided in writing to us a support of this proposed Compact Compliance Pipeline. They have done so and provided these letters in writing because we knew that we would have this telephonic meeting today and felt that it would be more effective and efficient to just provide those letters to support in writing.

We're not going to read those into the record; however, I would like to identify, if I could, for the record those individuals or entities who have provided those letters of support. We do have those letters on record here, and I think each of them have been provided to both Commissioners Dunnigan and Barfield as well.

And if there are any folks, when we get to

the public comment section, that would like to provide any additional comments beyond those letters of support, we would welcome those at that time.

Those that have provided those letters of support for approval of the Compact Compliance Pipeline include the Arikaree Groundwater Management District; Central Yuma Groundwater Management District; the City of Burlington; the City of Holyoke; the City of Wray; the City of Yuma; the Colorado Agricultural Preservation Association, or CAPA; the Colorado Corn Growers Association; the Farm Credit of Southern Colorado; the Frenchman Groundwater Management District; the Highline Electric Association; Kit Carson County; Logan County; the Marks Butte Groundwater Management District; Phillips County; the Plains Groundwater Management District; Quality Irrigation; the Republican River Water Conservation District through its Water Activity Enterprise; the Sandhills Groundwater Management District; Sedgwick County; the South Platte Basin Roundtable; Stratton Equity Group; the Town of Julesburg; and lastly, the W-Y Groundwater Management District.

At this time, I would welcome if there are any public comments that would like to be made, we would entertain those at this time.

Anything from Burlington?

MS. DANIEL: Yes, Dick. We have three people who would like to speak.

COMMISSIONER WOLFE: Could you identify yourself, please.

MS. DANIEL: I'm sorry. This is Deb Daniel. I'm the manager of the Plains and East Cheyenne Groundwater District in Colorado and there are three people from this location that would like to speak.

COMMISSIONER WOLFE: Okay, please proceed.

MS. DANIEL: Okay. First of all, I will introduce Dennis Corryell.

MR. CORRYELL: This is Dennis Corryell. I'm president of the Republican River Water Conservation District.

Specifically, I would like to urge you three commissioners, specifically Commissioner Dunnigan and Commissioner Barfield, to allow the Republican River Water Conservation District to construct this pipeline. All of our financing is in place and has been for a rather lengthy period of time.

And we really want to do everything that we have committed to do to help get Colorado into Compact Compliance, so I would just like to urge the commissioners to give us the go-ahead, give us the green

light.

I know that you want to make sure that all of the technicalities are taken care of, but we really, really need to move forward with this pipeline so that Colorado is in compliance.

And I thank you for the opportunity to speak.

COMMISSIONER WOLFE: Thank you, Dennis.

Who is next? Could you please identify yourself for the record.

MR. PAUTLER: My name is Tim Pautler from Stratton. I represent the Plains Groundwater Management District on the RRWCD and I am its secretary.

I, too, would like to urge the Compact Administration to approve the efforts that Colorado is trying to put in place to meet Compact Compliance.

We're kind of caught between a rock and a hard spot here. We've implemented the fee assessment to pay for the pipeline and we have producers out here now that are taking a look at these tax notices that they're paying or have paid by this point in time and are wondering where the project is at.

We would certainly encourage full consideration of this issue by the States of Nebraska and Kansas and we would hope for a favorable outcome.

Thank you.

COMMISSIONER WOLFE: Thank you, Tim.

Who is the last one that would like to speak for the record, please.

MS. DANIEL: Again, this is Deb Daniel. I'm the manager of the Plains and East Cheyenne Groundwater District, and on behalf of the District I've been asked to speak.

First of all, I want to thank you for this opportunity to speak and participate during this important meeting. I know that all of the States have been diligent in trying to come into an agreement on how to reach compliance with Republican River Compact. I know you've analyzed all the values and statistics, but I hope you have not overlooked the original reason of the Compact.

At one time, 75 years ago, the residents of our three states knew that they had to make a difference for the good of all, and the residents came together, they worked out the fine solution. We're asking that Nebraska, Kansas and Colorado work in unity again and allow the residents of the Republican River Basin and Colorado to comply with the Compact and build this pipeline.

The people of this area have come together

and found solutions. The well owners of the Basin in Colorado recognize that we must comply with the Compact and with your approval through the Republican River Conservation District, we will be funding this project.

So on behalf of the residents and the 3,766 well owners in the basin of Colorado we ask that Mr. Brian Dunnigan of Nebraska and Mr. David Barfield of Kansas to stand together with Dick Wolfe of Colorado and approve this augmentation plan.

Thank you.

COMMISSIONER WOLFE: Thank you, Deb.

Anybody from the Wray location that would like to provide public comment?

MR. KEELER: This is Dave Keeler, the Republican River Water Commissioner. I have Robin Wiley.

MR. WILEY: Good morning, Dick.

COMMISSIONER WOLFE: Good morning, Robin.

MR. WILEY: I can't hardly talk, I have a cold here, but I'm not sure what happened to the letters of support from Yuma County. I did just want to say the Yuma County and Yuma County Water Authority do also support the Compact Compliance Pipeline.

COMMISSIONER WOLFE: Okay. I apologize if I overlooked in my listing of who else provided those

letters, we apologize. If that is, in fact, that those letters were submitted, we apologize that we failed in listing them.

MR. KEELER: I do have two others that have come forward.

The first one is Byron Weathers.

COMMISSIONER WOLFE: Okay. Could you identify yourself for the record, please.

MR. WEATHERS: This is Byron Weathers and I'm a producer here in Yuma County, Colorado and also president of the Colorado Corn Growers Association.

One of the issues that probably isn't very well known is that 70 percent of the corn that is raised in the state of Colorado is raised in the Republican River Basin here. And if Colorado does not come into Compact Compliance, we stand a chance of losing a lot of this irrigated ground that produces this crop. So it would be a very devastating thing to the State of Colorado and also to the corn industry itself if we did lose this.

And I thank the commissioners for this opportunity to come and visit and be at this meeting.

Thank you.

COMMISSIONER WOLFE: Thank you, Byron.

MR. KEELER: And our last one is Terry

Hall.

MR. HALL: Good morning, my name is Terry Hall. I'm manager of Y-W Electric Association. We also thought we sent in a letter of support, but since it wasn't on the list, I'll go ahead and give comments now.

Y-W Electric is a rural electric co-op that serves about 1500 irrigation wells in the Republican River Basin, mainly in Yuma and Washington County. And we support the construction of the Compliance Pipeline.

The alternative, as I see it, would be to shut off a large number of wells for Compact Compliance. Most of those are served by our electric co-op and that would be devastating financially to us.

So we support the efforts of the Republican River Water Conservation District and Yuma County and everything they have done to attempt to find a solution for Compact Compliance and we strongly support the construction of the compliance of the pipeline.

Thank you.

COMMISSIONER WOLFE: Thank you, Terry.

At this time I would entertain, are there any public comments from the location in Colby?

MR. LUHMAN: No, there are not.

COMMISSIONER WOLFE: Who was that that spoke, please? If you could identify yourself when you

respond.

MR. LUHMAN: Ray Luhman.

COMMISSIONER WOLFE: Is it -- Ray, could you repeat that name, please.

MR. LUHMAN: Yes. It's R-A-Y L-U-H-M-A-N.

COMMISSIONER WOLFE: Thank you. Courtland, Kansas.

MR. NELSON: This is Kenny Nelson. No comments from Courtland.

COMMISSIONER WOLFE: Thank you.

Stockton, Kansas.

MR. ROSS: This is Scott Ross. No comments from here.

COMMISSIONER WOLFE: And I -- I'll leave comments for David Barfield and Brian Dunnigan as separate because I know they will have specific comments, but are there any other besides them at Topeka that would like to make public comments beyond David's subsequent remarks?

COMMISSIONER BARFIELD: This is David Barfield. I confirm there is no public comments from here in Topeka.

COMMISSIONER WOLFE: All right.

Grand Island, Nebraska.

MR. THOMPSON: This is Aaron Thompson with

the Bureau, and there are no public comments or people that have come forward in this office.

COMMISSIONER WOLFE: Thank you, Aaron.

McCook, Nebraska.

MR. SWANDA: This is Marv Swanda with the Bureau. We have one individual that would like to comment.

COMMISSIONER WOLFE: All right, could you identify yourself for the record, please.

MR. EDGERTON: Thank you. My name is Brad Edgerton. I'm the manager of the Kansas Irrigation District located in southwestern Nebraska.

We have water rights dating back to 1890 and serve nearly 46,000 acres from Trenton to Alma, Nebraska. Of those, 40,000 acres receive water from Swanson Reservoir.

For the past six years zero water has been released from irrigation from Swanson Reservoir. During the same time Colorado has continued to illegally divert more than 66,000 acre-feet that has been appropriated to either Frenchman-Cambridge direct flow permits or reclamation storage permits. If this plan is not adopted today, then we encourage Colorado to adopt rules to administer wells.

Thank you.

COMMISSIONER WOLFE: Thank you, Brad.

Other than Commissioner Dunnigan in Lincoln, are there any folks there that would like to provide public comment at this time?

COMMISSIONER DUNNIGAN: There are not any people here in Lincoln that will provide other public comments.

COMMISSIONER WOLFE: Those that are just -- excuse me. I'm sorry, was someone wanting to speak?

Okay. Are there any others who are not at those locations who have just joined us by phone that would like to provide any public comment at this time?

Okay. Hearing none, I would like to at this time allow the commissioners from Nebraska and Kansas to provide any of their comments before we take action on the proposed resolution that we have presented today.

So, Commissioner Dunnigan, would you like to go next? Is that fine?

COMMISSIONER DUNNIGAN: That's fine. Thank you, Commissioner Wolfe.

I do have two points of clarification. Could you clarify whether the exhibits that you discussed were part of the e-mail that was sent on April 21 for Mike Sullivan, for the record, please.

COMMISSIONER WOLFE: Yes, they were attached to that e-mail. The proposed resolution, as well as Exhibits 1 through 4, should have been attached and I believe were attached to that e-mail that was sent out.

COMMISSIONER DUNNIGAN: Thank you.

Could you also clarify on the accounting procedures that those would be the latest version with the revision of April 2009?

COMMISSIONER WOLFE: That is correct. Those that were attached to that April 21 e-mail identified as Exhibit 2 are the latest proposed revisions to the accounting procedures and reporting requirements.

COMMISSIONER DUNNIGAN: Thank you.

COMMISSIONER WOLFE: And just for the record, it should reflect on the cover page these were originally revised July 27, 2005, updated November 7, 2008, and then updated again on January 26, 2009. And I think there was some recent discussion between Mike Sullivan and James Williams about some changes on page 27 that, I think, the -- this exhibit should reflect.

And, Mike Sullivan, could you confirm that for the record, please, if that is, in fact, the case.

MR. SULLIVAN: This is Mike Sullivan. The

slight revision I made on, I believe, April 21 and was sent out should be the latest version. I made a correction that James Williams had found in the accounting procedure.

COMMISSIONER WOLFE: So I would like the record to reflect, even though I did read off on page 1 that they were updated January 26, that version should actually reflect changes as of April 21, 2009.

MR. SULLIVAN: Thank you, Commissioner Wolfe.

COMMISSIONER WOLFE: Thank you for those clarifications.

COMMISSIONER DUNNIGAN: The Nebraska Department of Natural Resources believes that streamflow augmentation may be a useful tool for achieving Compact Compliance and continues to support Colorado's efforts to achieve approval within the RRCA.

The three states have put considerable efforts into discussions of Colorado's plan. In addition to a multitude of e-mail messages and conference calls among the technical staff of the three states, the CCP was discussed during six RRCA engineering committee meetings during 2008.

At the most recent face-to-face meeting, Kansas and Nebraska traveled to Denver at Colorado's

request for the primary purpose of discussion of the CCP. The RRCA contracted with a mediator to assist with the discussions so that it could be conducted in a more productive manner and lead to resolution of a number of issues.

In the Colorado proposal we do not see language that adequately addresses the following items: First, protection for Nebraska's surface water users on the North Fork Republican River; and second, effective limits on the water volumes pumped into the North Fork Republican River.

Regarding the first item, Nebraska has repeatedly stated that its surface water users cannot be harmed in the short-term or long-term by our approval of Colorado's augmentation proposal. Nebraska has not attempted to dictate a solution to Colorado, although we have put several ideas forward that have apparently been discarded by Colorado.

Water deliveries to Nebraska's portion of the Pioneer Ditch, known as Haigler Canal in Nebraska, have declined in recent years to levels that have been a cause for concern to the landowners. Nebraska has requested that Colorado implement a plan that does not lead to increased impact for this canal.

Recently, Colorado proposed the following

language be added to the resolution under discussion. Quote, Nothing in this resolution shall reduce or otherwise alter the water rights that were the subject of Weiland, et al. v. the Pioneer Irrigation Company, 259 U.S. 498 (1922), and specifically recognized in Article V of the Compact. If at some future time streamflows are reduced to levels that may interfere with such water rights, the States of Colorado and Nebraska agree to confer at such time to seek resolution of the issue, end quote.

While we appreciate Colorado's recognition of the need to protect Nebraska's water users along the Haigler canal, deferring the solution to a problem which already has manifested itself is not acceptable to Nebraska.

Regarding the second item, Nebraska has favored a number of proposals that would limit the volume of Augmentation Water Supply Credit available. One such proposal would limit the credit to Colorado's deficit within the subbasin. Separate but related proposals would limit the negative impact in the mainstem due to Colorado's pumping.

Nebraska is concerned because, under the proposed accounting, the State of Nebraska will be responsible for conveying the augmentation water to

Hardy, in spite of the fact that much of it will be lost in transit.

We, therefore, do not believe that it is appropriate for Colorado to make up deficits on the South Fork Republican or the Arikaree Rivers by placing large volumes of water in the North Fork Republican River and asking Nebraska to take responsibility of the entire volume.

We understand, based on our discussions, that Colorado is planning on an operational period of two or three decades, and we are concerned that if pumping is not decreased during this time, the compliance will be even more difficult for Colorado to achieve at the end of that time.

Those are my prepared comments. Thank you.

COMMISSIONER WOLFE: Thank you, Commissioner Dunnigan.

Commissioner Barfield, would you like to provide your comments at this time?

COMMISSIONER BARFIELD: Yes, Commissioner Wolfe. Thank you.

On behalf of Kansas, I would like to say that Colorado's efforts here represent a positive step towards developing a plan to achieve compliance for the Republican River Compact and the Final Settlement

Stipulation.

Kansas recognizes that Colorado has invested significant efforts to develop this plan and to communicate that plan to both its stakeholders and other states. Kansas has no desire to delay Colorado's efforts to achieve compliance with its Compact obligation.

Kansas and Nebraska, as Brian has indicated, have worked diligently to respond to Colorado's efforts to develop its plan. I, my staff, and our consultants have taken part in numerous meetings with Colorado and Nebraska. Kansas has provided specific details and analysis to explain our concerns and has set forth concrete alternatives to address those concerns for Colorado's consideration.

As your resolution provides, subsection III.B.1.k of the FSS provides that augmentation plans and related accounting procedures shall be approved by the RRCA prior to implementation.

Despite diligent work, significant concerns remain regarding Colorado's interpretation of its requirements for complying with the Compact, especially on the South Fork tributary. Concerns remain related to details of Colorado's proposed accounting and to the operational limits Colorado proposes, among other

things.

For these reasons, Kansas will be voting no regarding your request to approve this proposal. I would note for the record that Kansas has expressed its view that this subject is not appropriate to submit the FSS's dispute resolution process.

Despite today's vote, Kansas continues to believe that the States can reach agreement on Colorado's plan through additional negotiations and we would urge us to continue to do so.

Thank you.

COMMISSIONER WOLFE: Thank you, Commissioner Barfield.

I think at this time as far as the agenda goes, it's still under the item 3.C. in regards to action on Colorado's Compact Compliance Pipeline Resolution. Colorado recognizes there are still unresolved issues raised by Kansas and Nebraska, which may lead to an unfavorable approval today of the current proposed Compact Compliance Pipeline, but we also recognize the continuing settlement negotiations between the States and we appreciate your comments that you have provided today.

At this time, Colorado would entertain a formal motion to approve the Colorado Compact Compliance

Pipeline Resolution that was introduced today.

I move to have that approved.

COMMISSIONER BARFIELD: I would second the motion.

COMMISSIONER WOLFE: David Barfield seconded the motion.

I'm sorry, go ahead, Dave.

COMMISSIONER DUNNIGAN: Excuse me. I would ask for any discussion on the motion.

Hearing none, all those in favor say "aye."

COMMISSIONER WOLFE: Aye.

COMMISSIONER DUNNIGAN: All those opposed.

COMMISSIONER BARFIELD: Kansas votes no.

COMMISSIONER DUNNIGAN: Nebraska votes no.

Motion fails.

COMMISSIONER WOLFE: Given the vote that just occurred, Colorado would request that we continue this meeting for an additional two weeks, two to three weeks at least, to continue negotiations that have been ongoing between the three states.

Is there any discussion in regards to that? And we can certainly take that as part of discussion on the agenda on future process and schedule, and I would ask for any comments from Commissioner Dunnigan or Commissioner Barfield.

COMMISSIONER DUNNIGAN: Commissioner Wolfe, this is Commissioner Dunnigan, and Nebraska would be agreeable to that position to move forward.

COMMISSIONER BARFIELD: Dave Barfield here, and Kansas, as I indicated in my statements, it stands ready to continue to work toward resolving the issues that remain.

COMMISSIONER WOLFE: I could certainly offer up a proposed time and date if it is acceptable to continue our discussions to 9:30 a.m. Mountain Time on May 12, which is a Tuesday, which is two weeks from today, if that's acceptable to both Kansas and Nebraska, by phone again. And that would be to continue this special meeting.

COMMISSIONER BARFIELD: Dick, this is Dave Barfield. I am going to be, most of that week, in North Dakota for some other meetings. Maybe Brian is in that same meeting, but I can't -- I haven't conferred with my team as to the exact time that will work with us.

COMMISSIONER WOLFE: Okay. We -- I guess if it's acceptable, given that we might need to coordinate some schedules, that we could continue this meeting to an appropriate time in the next two to three weeks that will be confirmed by e-mail between the three states and notice would be provided of that continuation

of the public meeting once it is set.

COMMISSIONER BARFIELD: This is Dave Barfield. That would be fine with us here.

COMMISSIONER WOLFE: Commissioner Dunnigan?

COMMISSIONER DUNNIGAN: That would be fine with us.

COMMISSIONER WOLFE: Colorado will take the lead in initiating that coordination of the meeting, the continuation of the special RRCA meeting, in two to three weeks by e-mail with the follow-up of public notice of the time and location. I would expect that it would be maybe a similar call-in like we have done today for that meeting.

And Commissioner Dunnigan, at this time that concludes Colorado's portion on the agenda. We would turn it back to you as the chairman to conclude the rest of the agenda.

COMMISSIONER DUNNIGAN: Thank you, Commissioner Wolfe.

Are there any other comments?

Commissioner Barfield?

COMMISSIONER BARFIELD: No, there are not.

COMMISSIONER DUNNIGAN: Hearing none, I would ask for motion to adjourn.

COMMISSIONER WOLFE: I think we would like

to make the motion to continue the meeting until we establish the next meeting in two to three weeks.

COMMISSIONER DUNNIGAN: That would be fine. Thank you.

COMMISSIONER BARFIELD: Is that a motion?

COMMISSIONER WOLFE: That's a motion by me, Dick Wolfe.

COMMISSIONER BARFIELD: All right, I'll second.

COMMISSIONER DUNNIGAN: All those in favor?

COMMISSIONER BARFIELD: Aye.

COMMISSIONER DUNNIGAN: Aye.

COMMISSIONER WOLFE: Aye.

COMMISSIONER DUNNIGAN: Opposed?

We'll continue the meeting at a later date. Thank you.

COMMISSIONER WOLFE: All right, thank you all. We are going to discontinue or disconnect on this end at this time.

(The meeting was adjourned at 9:43 a.m.)

STATE OF COLORADO)
) Ss. REPORTER'S CERTIFICATE
COUNTY OF DENVER)

I, Dyann Labo, do hereby certify that I am a Registered Professional Reporter and Notary Public within the state of Colorado.

I further certify that this telephonic meeting was taken in shorthand by me at the time and place herein set forth and was thereafter reduced to typewritten form, and that the foregoing constitutes a true and correct transcript.

I further certify that I am not related to, employed by, nor of counsel for any of the parties or attorneys herein, nor otherwise interested in the result of the within action.

In witness whereof, I have affixed my signature this 6th day of May 2009.

_____
PATTERSON REPORTING & VIDEO
Dyann Labo
Registered Professional Reporter
and Notary Public

RESOLUTION BY THE REPUBLICAN RIVER COMPACT ADMINISTRATION REGARDING APPROVAL OF COLORADO'S AUGMENTATION PLAN AND RELATED ACCOUNTING PROCEDURES SUBMITTED UNDER SUBSECTION III.B.1.k OF THE FINAL SETTLEMENT STIPULATION

April __, 2009

Whereas, the States of Kansas, Nebraska, and Colorado entered into a Final Settlement Stipulation ("FSS") as of December 15, 2002, to resolve pending litigation in the United States Supreme Court regarding the Republican River Compact ("Compact") in the case of *Kansas v. Nebraska and Colorado*, No. 126 Original;

Whereas, the FSS was approved by the United States Supreme Court on May 19, 2003;

Whereas, the State of Colorado's Computed Beneficial Consumptive Use of the waters of the Republican River Basin exceeded Colorado's Compact Allocation using the five-year running average to determine Compact compliance from 2003 through 2007, as provided in Subsection IV.D of the FSS;

Whereas, the Republican River Water Conservation District is a water conservation district created by Colorado statute to assist the State of Colorado to comply with the Compact;

Whereas, the Republican River Water Conservation District, acting by and through its Water Activity Enterprise ("RRWCD WAE"), has contracted to acquire fifteen Compact Compliance Wells in the Republican River Basin in Colorado for the sole purpose of offsetting stream depletions in order to comply with the State of Colorado's Compact Allocations;

Whereas, the RRWCD WAE has contracted to purchase groundwater rights in the Republican River Basin within Colorado and proposes to pump the historical consumptive use of all or some of these water rights from the Compact Compliance Wells into a pipeline and deliver that water into the North Fork of the Republican River near the Colorado/Nebraska State Line to offset stream depletions in order to comply with Colorado's Compact Allocations ("Colorado Compact Compliance Pipeline");

Whereas, the States of Kansas, Nebraska, and Colorado adopted a Moratorium on New Wells in Subsection III.A of the FSS, with certain exceptions set forth in subsection III.B of the FSS;

Whereas, Subsection III.B.1.k of the FSS provides that the Moratorium shall not apply to wells acquired or constructed by a State for the sole purpose of offsetting stream depletions in order to comply with its Compact Allocations, provided that such wells shall not cause any new net depletion to stream flow either annually or long term;

Whereas, Subsection III.B.1.k of the FSS further provides that augmentation plans and related accounting procedures submitted under this Subsection III.B.1.k shall be approved by the Republican River Compact Administration ("RRCA") prior to implementation;

Whereas, Subsection I.F of the FSS also provides that: "The RRCA may modify the RRCA Accounting Procedures, or any portion thereof, in any manner consistent with the Compact and this Stipulation;" and

Whereas, the State of Colorado and the RRWCD WAE have submitted an augmentation plan and related accounting procedures to account for water delivered to the North Fork of the Republican River for the purpose of offsetting stream depletions in order to comply with Colorado's Compact Allocations.

Now, therefore, it is hereby resolved that the RRCA approves the augmentation plan and the related accounting procedures submitted by the State of Colorado and the RRWCD WAE under Subsection III.B.1.k of the FSS, subject to the terms and conditions set forth herein. The augmentation plan is described in the application submitted by the State of Colorado and the RRWCD WAE, which is attached hereto as Exhibit 1. The related accounting procedures are included in the revised RRCA Accounting Procedures and Reporting Requirements ("revised RRCA Accounting Procedures"), which are attached hereto as Exhibit 2. This approval of the augmentation plan and the related accounting procedures shall be subject to the following terms and conditions:

1. The average annual historical consumptive use of the groundwater rights that will be diverted at the Compact Compliance Wells shall be as determined by the Colorado Ground Water Commission pursuant to its rules and regulations, provided that the average annual historical consumptive use of the groundwater rights listed on Exhibit 3 shall not exceed the 1corrected historical consumptive use amounts shown in column (7) on Exhibit 3. Annual diversions during any calendar year under the groundwater rights included in the augmentation plan shall be limited to the total average annual historical consumptive use of the rights, except as provided in paragraph 3 below.

2. Net depletions from the Colorado Compact Compliance Wells shall be computed by the RRCA Groundwater Model and included in Colorado's Computed Beneficial Consumptive Use of groundwater pursuant to paragraph III.D.1 of the revised RRCA Accounting Procedures. Groundwater pumping from the Compact Compliance Wells shall be measured by totalizing flow meters, and the measured groundwater pumping from such wells shall be included in the base "run" of the RRCA Groundwater Model in accordance with paragraph III.D.1 of the revised RRCA Accounting Procedures.

3. Diversions from any individual Compact Compliance Well shall be limited to no more than 2,500 acre feet per year. Banking of groundwater shall be permitted in accordance with the rules and regulations of the Colorado Ground Water Commission, subject to the limit on Augmentation Water Supply Credit in paragraph 4 below.

4. The Augmentation Water Supply Credit due to deliveries from the Colorado Compact Compliance Pipeline that will be applied against the Computed Beneficial Consumptive Use of water to offset stream depletions in order to comply with Colorado's Compact Allocations during any calendar year shall be limited as follows:

   Calculation of Projected Augmentation Water Supply Delivery to Determine the Limit on Augmentation Water Supply Credit

   Each year, using the procedures described below, Colorado will determine the Projected Augmentation Water Supply Delivery ("Projected Delivery") for the upcoming accounting year (the "subject accounting year") to estimate the volume of Augmentation Water Supply that will be delivered from the Colorado Compact Compliance Pipeline during the subject accounting year. The RRWCD WAE will begin deliveries from the Colorado Compact Compliance Pipeline during the subject accounting year based on the Projected Delivery, but actual deliveries will be adjusted during the course of the year based on hydrologic and climatic conditions and the need to offset stream depletions in order to comply with Colorado's Compact Allocations, subject to the limit on the Augmentation Water Supply Credit set forth below.

   The steps to determine the Projected Delivery and the limit on the Augmentation Water Supply Credit are as follows:

   A. Step 1. By March 31st of each year, Colorado will calculate Colorado's total Allocation and Colorado's Computed Beneficial Consumptive Use ("CBCU") for the previous accounting year using the procedures described in the revised RRCA Accounting Procedures, but using preliminary data where necessary.

   B. Step 2. Colorado will determine the Projected Delivery, which shall be the largest annual deficit or difference between Colorado's total annual Allocation and Colorado's CBCU during the 10 accounting years immediately preceding the subject accounting year; provided, however, that accounting years in which Colorado's total annual Allocation exceeds Colorado's CBCU shall not be used in determining the Projected Delivery.

   C. Step 3. The Colorado RRCA Member shall provide notice of the Projected Delivery determination to the Kansas and Nebraska RRCA Members by April 1 of each year.

D. Step 4. The Augmentation Water Supply Credit for the subject accounting year shall be limited to the Projected Delivery plus 4,000 acre-feet, or 140% of the Projected Delivery, whichever is greater.

Examples of how this limitation shall be applied are attached as Exhibit 4.

5. The preliminary design for the Colorado Compact Compliance Pipeline is described in the application attached hereto as Exhibit 1. The State of Colorado and the RRWCD WAE shall submit the final design for the Colorado Compact Compliance Pipeline to the RRCA and any changes to the final design after the Colorado Compliance Pipeline has been constructed. If the final design or changes to the final design of the Colorado Compliance Pipeline as constructed differ from the preliminary design in a way that would materially change the location of the Compact Compliance Wells or the river outlet structure, the RRCA may modify the terms and conditions of this approval.

6. The RRWCD WAE may acquire additional groundwater rights to be pumped through the Compact Compliance Wells upon the terms and conditions of this resolution. The State of Colorado and the RRWCD WAE shall file a notice with the RRCA identifying the additional groundwater rights and the historical consumptive use of the groundwater rights. The RRCA members shall have sixty days from the date the notice is given to review the information. If no objection is made within sixty days from the date the notice is given, the additional groundwater rights may be pumped through the Compact Compliance Wells upon the terms and conditions of this resolution. If an objection is made by any RRCA member, the objection shall be shall be given in writing to the RRWCD WAE within 60 days from the date the notice is given and the notice shall be treated as an application for approval of an augmentation plan and related accounting procedures under Subsection III.B.1.k of the FSS and the State of Colorado and the RRWCD WAE may submit any additional information to address the objection.

7. The approval of this augmentation plan and the related accounting procedures shall not govern the approval of any future proposed augmentation plan and related accounting procedures submitted by any other State under Subsection III.B.1.k of the FSS.

8. The approval of this augmentation plan and the related accounting procedures shall not waive any State's rights to seek damages from any other State for violations of the Compact or the FSS subsequent to December 15, 2002.

9. Except for the approval of the augmentation plan and the related accounting procedures as provided herein, nothing in this Resolution shall relieve the State of Colorado from complying with the obligations set forth in the Compact or FSS.

Approved by the RRCA this ____ day of April, 2009.

_____	_____
Brian Dunnigan, P.E. Nebraska Member Chairman, RRCA	date
_____	_____
David Barfield, P.E. Kansas Member	date
_____	_____
Dick Wolfe, P.E. Colorado Member	date

AGENDA FOR

49TH ANNUAL MEETING OF THE REPUBLICAN RIVER COMPACT ADMINISTRATION

August 12, 2009, 8:00 AM - 11:30 AM
The Cornhusker Hotel, Lincoln, Nebraska

1. Introductions
2. Modification and adoption of the agenda
3. Approval of previous Annual Meeting summary and transcript from August 13, 2008
4. Report of chairman and commissioner's reports
    a. Nebraska
    b. Colorado
    c. Kansas
5. Federal Reports
    a. Bureau of Reclamation
    b. U.S. Army Corps of Engineers
    c. U.S. Geological Survey
6. Committee Reports
    a. Engineering Committee
        i. Assignments from 2008 Annual Meeting
        ii. Committee recommendations to RRCA
        iii. Other matters
        iv. Recommended assignments for Engineering Committee
        v. Response to Kansas data requests
    b. Conservation Committee
7. Old Business
    a. Dispute Resolution
        i. Arbitration
        ii. Colorado Compliance Pipeline (augmentation) proposal
        iii. Nebraska crediting issue
    b. Lower Republican Feasibility Study
    c. Compact compliance
8. New business and assignments to compact committees
    a. Action on Engineering Committee Report and assignments
    b. Additional items
9. Remarks from the public
10. Future meeting arrangements
11. Adjournment

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WATER RESOURCES

Bill Ritter, Jr.
Governor

Harris D. Sherman
Executive Director

Dick Wolfe, P.E.
Director/State Engineer

August 5, 2009

Mr. David Barfield, P.E.
Kansas Commissioner, Republican River Compact Administration
Kansas Chief Engineer
Kansas Department of Agriculture
109 S.W. 9th Street
Topeka, KS 66612-1280

Mr. Brian Dunnigan, Director
Nebraska Commissioner, Republican River Compact Administration
Nebraska Department of Natural Resources
301 Centennial Mall South, 4th floor
P.O. Box 94676
Lincoln, Nebraska 68509-4676

SUBJECT: Renewal of Fast-Track Issue

Dear Commissioners Dunnigan and Barfield:

Pursuant to Section VII.A.3 of the Final Settlement Stipulation, *Kansas v. Nebraska and Colorado*, No. 126 Original (December 15, 2002), the State of Colorado hereby confirms its intent to continue to raise the following issue for RRCA determination as a "fast-track" issue:

> Pursuant to Section III.B.1.k of the Final Settlement Stipulation, approval of the State of Colorado's plan to offset stream depletions by introducing water directly to the stream.

As you recall, I, as Commissioner to the RRCA for the State of Colorado, first raised this as a "fast-track" issue by submittal to the RRCA on April 11, 2008. Since that time, the three states have engaged in substantial negotiations regarding aspects of this issue. Colorado brought this issue to a vote at the April 28th Special RRCA Meeting. Colorado's Resolution was not approved at that time, but all states agreed to, and did continue to have, discussions regarding this issue.

By previous letter dated July 23, 2009, I requested this issue be added to the agenda for the August 12, 2009 Annual Meeting. Therefore, I, as Commissioner to the RRCA for the State of Colorado, shall bring this "fast-track" issue to be Addressed by the RRCA after Reasonable Opportunity to investigate and act on this request at the scheduled August 12, 2009 Annual Meeting of the RRCA in Lincoln, NE.

The State of Colorado has previously provided the above issue, proposed resolutions and supporting documentation to the RRCA and such previously provided documents are incorporated into the above matter.

As this issue has been and is still under discussion among the three states, the State of Colorado will provide revised resolutions to the States of Kansas and Nebraska after this date, but with sufficient time before the August 12 meeting to allow Reasonable Opportunity to investigate and act on these resolutions. These resolutions will reflect the discussions the states have had regarding Colorado's proposal over the last few months.

Although I do not believe it is strictly necessary to renew Colorado's previous submittal to the RRCA, to the extent necessary, upon receipt of this letter by the Commissioners of Kansas and Nebraska, this matter shall be deemed a renewal of the previous submittal to the RRCA.

If you have any questions or concerns, please contact me.

Sincerely,

Dick Wolfe

Dick Wolfe, P.E.
Colorado Republican River Compact Commissioner
Director/State Engineer

cc: James J. Dubois, Esq.

RESOLUTION BY THE REPUBLICAN RIVER COMPACT ADMINISTRATION REGARDING APPROVAL OF COLORADO'S AUGMENTATION PLAN AND RELATED ACCOUNTING PROCEDURES SUBMITTED UNDER SUBSECTION III.B.1.k OF THE FINAL SETTLEMENT STIPULATION

August 12, 2009

Whereas, the States of Kansas, Nebraska, and Colorado entered into a Final Settlement Stipulation ("FSS") as of December 15, 2002, to resolve pending litigation in the United States Supreme Court regarding the Republican River Compact ("Compact") in the case of *Kansas v. Nebraska and Colorado*, No. 126 Original;

Whereas, the FSS was approved by the United States Supreme Court on May 19, 2003;

Whereas, the State of Colorado's Computed Beneficial Consumptive Use of the waters of the Republican River Basin exceeded Colorado's Compact Allocation using the five-year running average to determine Compact compliance from 2003 through 2007, as provided in Subsection IV.D of the FSS;

Whereas, the Republican River Water Conservation District is a water conservation district created by Colorado statute to assist the State of Colorado to comply with the Compact;

Whereas, the Republican River Water Conservation District, acting by and through its Water Activity Enterprise ("RRWCD WAE"), has contracted to acquire fifteen Compact Compliance Wells in the Republican River Basin in Colorado for the sole purpose of offsetting stream depletions in order to comply with the State of Colorado's Compact Allocations;

Whereas, the RRWCD WAE has contracted to purchase groundwater rights in the Republican River Basin within Colorado and proposes to pump the historical consumptive use of all or some of these water rights from the Compact Compliance Wells into a pipeline and deliver that water into the North Fork of the Republican River near the Colorado/Nebraska State Line to offset stream depletions in order to comply with Colorado's Compact Allocations ("Colorado Compact Compliance Pipeline");

Whereas, the States of Kansas, Nebraska, and Colorado adopted a Moratorium on New Wells in Subsection III.A of the FSS, with certain exceptions set forth in subsection III.B of the FSS;

Whereas, Subsection III.B.1.k of the FSS provides that the Moratorium shall not apply to wells acquired or constructed by a State for the sole purpose of offsetting stream depletions in order to

comply with its Compact Allocations, provided that such wells shall not cause any new net depletion to stream flow either annually or long term;

Whereas, Subsection III.B.1.k of the FSS further provides that augmentation plans and related accounting procedures submitted under this Subsection III.B.1.k shall be approved by the Republican River Compact Administration ("RRCA") prior to implementation;

Whereas, Subsection I.F of the FSS also provides that: "The RRCA may modify the RRCA Accounting Procedures, or any portion thereof, in any manner consistent with the Compact and this Stipulation;" and

Whereas, the State of Colorado and the RRWCD WAE have submitted an augmentation plan and related accounting procedures to account for water delivered to the North Fork of the Republican River for the purpose of offsetting stream depletions in order to comply with Colorado's Compact Allocations.

Now, therefore, it is hereby resolved that the RRCA approves the augmentation plan and the related accounting procedures submitted by the State of Colorado and the RRWCD WAE under Subsection III.B.1.k of the FSS, subject to the terms and conditions set forth herein. The augmentation plan is described in the application submitted by the State of Colorado and the RRWCD WAE, which is attached hereto as Exhibit 1. The related accounting procedures are included in the revised RRCA Accounting Procedures and Reporting Requirements ("revised RRCA Accounting Procedures"), which are attached hereto as Exhibit 2. This approval of the augmentation plan and the related accounting procedures shall be subject to the following terms and conditions:

1. The average annual historical consumptive use of the groundwater rights that will be diverted at the Compact Compliance Wells shall be as determined by the Colorado Ground Water Commission pursuant to its rules and regulations, provided that the average annual historical consumptive use of the groundwater rights listed on Exhibit 3 shall not exceed the 1998-2007 average annual amounts shown on Exhibit 3. Annual diversions during any calendar year under the groundwater rights included in the augmentation plan shall be limited to the total average annual historical consumptive use of the rights, except as provided in paragraph 3 below.

2. Net depletions from the Colorado Compact Compliance Wells shall be computed by the RRCA Groundwater Model and included in Colorado's Computed Beneficial Consumptive Use of groundwater pursuant to paragraph III.D.1 of the revised RRCA Accounting Procedures. Groundwater pumping from the Compact Compliance Wells shall be measured by totalizing flow meters, and the measured groundwater pumping from such wells shall be included in the base "run" of the RRCA Groundwater Model in accordance with paragraph III.D.1 of the revised RRCA Accounting Procedures.

3. Diversions from any individual Compact Compliance Well shall be limited to no more than 2,500 acre feet per year. Banking of groundwater shall be permitted in accordance with the rules and regulations of the Colorado Ground Water Commission, subject to the limit on Augmentation Water Supply Credit in paragraph 4 below.

4. The Augmentation Water Supply Credit due to deliveries from the Colorado Compact Compliance Pipeline that will be applied against the Computed Beneficial Consumptive Use of water to offset stream depletions in order to comply with Colorado's Compact Allocations during any calendar year shall be limited as follows:

   Calculation of Projected Augmentation Water Supply Delivery to Determine the Limit on Augmentation Water Supply Credit

   Each year, using the procedures described below, Colorado will determine the Projected Augmentation Water Supply Delivery ("Projected Delivery") for the upcoming accounting year (the "subject accounting year") to estimate the volume of Augmentation Water Supply that will be delivered from the Colorado Compact Compliance Pipeline during the subject accounting year, with a minimum annual delivery of 4,000 acre-feet. The RRWCD WAE will begin deliveries from the Colorado Compact Compliance Pipeline during the subject accounting year based on the Projected Delivery, but actual deliveries will be adjusted during the course of the year based on hydrologic and climatic conditions and the need to offset stream depletions in order to comply with Colorado's Compact Allocations, subject to the limit on the Augmentation Water Supply Credit set forth below.

   The steps to determine the Projected Delivery and the limit on the Augmentation Water Supply Credit are as follows:

   A. Step 1. By March 31st of each year, Colorado will calculate Colorado's total Allocation and Colorado's Computed Beneficial Consumptive Use ("CBCU") for the previous accounting year using the procedures described in the revised RRCA Accounting Procedures, but using preliminary data where necessary.

   B. Step 2. Colorado will determine the Projected Delivery, which shall be the largest annual deficit or difference between Colorado's total annual Allocation and Colorado's CBCU during the 10 accounting years immediately preceding the subject accounting year; provided, however, that accounting years in which Colorado's total annual Allocation exceeds Colorado's CBCU shall not be used in determining the Projected Delivery.

   C. Step 3. The Colorado RRCA Member shall provide notice of the Projected Delivery determination to the Kansas and Nebraska RRCA Members by April 1 of each year.

D. Step 4. The Augmentation Water Supply Credit for the subject accounting year shall be limited to the Projected Delivery plus 4,000 acre-feet, or 140% of the Projected Delivery, whichever is greater.

Examples of how this limitation shall be applied are attached as Exhibit 4.

5. The preliminary design for the Colorado Compact Compliance Pipeline is described in the application attached hereto as Exhibit 1. The State of Colorado and the RRWCD WAE shall submit the final design for the Colorado Compact Compliance Pipeline to the RRCA and any changes to the final design after the Colorado Compliance Pipeline has been constructed. If the final design or changes to the final design of the Colorado Compliance Pipeline as constructed differ from the preliminary design in a way that would materially change the location of the Compact Compliance Wells or the river outlet structure, the RRCA may modify the terms and conditions of this approval.

6. The RRWCD WAE may acquire additional groundwater rights to be pumped through the Compact Compliance Wells upon the terms and conditions of this resolution. The State of Colorado and the RRWCD WAE shall file a notice with the RRCA identifying the additional groundwater rights and the historical consumptive use of the groundwater rights. The RRCA members shall have sixty days from the date the notice is given to review the information. If no objection is made within sixty days from the date the notice is given, the additional groundwater rights may be pumped through the Compact Compliance Wells upon the terms and conditions of this resolution. If an objection is made by any RRCA member, the objection shall be shall be given in writing to the RRWCD WAE within 60 days from the date the notice is given and the notice shall be treated as an application for approval of an augmentation plan and related accounting procedures under Subsection III.B.1.k of the FSS and the State of Colorado and the RRWCD WAE may submit any additional information to address the objection.

7. The approval of this augmentation plan and the related accounting procedures shall not govern the approval of any future proposed augmentation plan and related accounting procedures submitted by any other State under Subsection III.B.1.k of the FSS.

8. The approval of this augmentation plan and the related accounting procedures shall not waive any State's rights to seek damages from any other State for violations of the Compact or the FSS subsequent to December 15, 2002.

9. Except for the approval of the augmentation plan and the related accounting procedures as provided herein, nothing in this Resolution shall relieve the State of Colorado from complying with the obligations set forth in the Compact or FSS.

Approved by the RRCA this 12th day of August, 2009.

_____	_____
Brian Dunnigan, P.E. Nebraska Member Chairman, RRCA	date
_____	_____
David Barfield, P.E. Kansas Member	date
_____	_____
Dick Wolfe, P.E. Colorado Member	date

RESOLUTION BY THE REPUBLICAN RIVER COMPACT ADMINISTRATION REGARDING MODIFICATIONS TO THE ACCOUNTING PROCEDURES TO REFLECT FUTURE OPERATIONS OF BONNY DAM

August 12, 2009

Whereas, storage levels in Bonny Reservoir have trended downward for several years and it appears that this trend will continue in the future;

Whereas, due to changing hydrologic conditions and other factors, Bonny Reservoir is planned to be operated as a "run of the river" dam without active storage;

Whereas, operating Bonny Dam as a run of the river dam will allow all baseflows and non-flood surface flows to be passed through the former reservoir area and such water will continue to flow down the South Fork of the Republican River;

Whereas, Bonny Dam will continue to provide valuable flood control benefits to the State of Kansas while operated as a run of the river dam, and releases of any temporarily stored flood flows will be as the maximum volume that will avoid damage to the dam or downstream property;

Whereas, the area now comprising Bonny Dam and Reservoir was simulated in the RRCA Ground Water Model for the years 1918 to 1950 as a stream segment;

Whereas, currently when Bonny Dam is simulated in the RRCA Ground Water Model, the inflow from the upstream portions of the South Fork and Landsman Creek are removed from the Model. The reservoir segment is essentially a specified head in the Model. Below the reservoir, outflow from the toe drain below the Reservoir is simulated by setting a set flow volume into the stream segment to a constant 10 cfs, regardless of Reservoir stage;

Whereas, when there is no longer active storage the current representation of Bonny Dam and Reservoir in the RRCA Groundwater Model will no longer represent the physical and hydrogeological characteristics of the South Fork of the Republican River to a reasonable degree;

Whereas, for purposes of this Resolution, the term "active storage" shall mean water stored behind Bonny Dam above the level of the outflow works at an elevation above 3635.5 msl.

Now, therefore, it is hereby resolved that in order for the RRCA Groundwater Model to represent the physical and hydrogeological characteristics of the South Fork of the Republican River to a reasonable degree:

1. While there is still an active storage pool in Bonny Reservoir, no changes will be made to the current representation of Bonny Reservoir in the RRCA Ground Water Model or the RRCA Accounting Procedures; if Bonny again stores water in the active storage pool in the future, the representation of Bonny Reservoir in the RRCA Ground Water Model or the RRCA Accounting Procedures shall return to the procedures used prior to August 12, 2009 while water remains stored in the active pool;

2. The State of Colorado shall report to the RRCA when the active storage pool in Bonny Reservoir is empty and shall further report when the outflow gates in Bonny Dam have been left open so as to pass all inflow reaching the gates;

3. When there is no longer an active storage pool in Bonny Reservoir, the State of Colorado shall report to the RRCA the surface area and elevation of the dead pool, if any, remaining in the Reservoir. Such reporting shall continue as part of the data required by the RRCA Accounting Procedures, Subsection V.C.1.b;

4. When there is no longer an active storage pool in Bonny Reservoir, calculation of evaporation from the dead pool, if any, or temporary storage of flood flows, if any, shall be made in the same manner as for storage in the other Federal Reservoirs, and;

5. When there is no longer an active storage pool in Bonny Reservoir, in order to represent the physical and hydrogeological characteristics of the South Fork of the Republican River to a reasonable degree in the absence of active storage in Bonny Reservoir, the RRCA Groundwater Model shall be returned to the stream network package of the pre-1950 condition. This shall be accomplished by setting the stream conductance and elevation to the pre-1950 values and the Manning's roughness coefficient to 0.030 as in the pre-1950 simulation so that stage is calculated as a function of discharge for stream segment 150. In addition the stream routing will be modified so that the inflow from the upstream segments is routed through segment 150, and the outflow from segment 150 is routed to the downstream segment and the 10 cfs inflow from the toe drain shall be removed.

Approved by the RRCA this 12th day of August, 2009.

_____	_____
Brian Dunnigan, P.E. Nebraska Member Chairman, RRCA	date
_____	_____
David Barfield, P.E. Kansas Member	date
_____	_____
Dick Wolfe, P.E. Colorado Member	date

STATE OF NEBRASKA

Dave Heineman
Governor

DEPARTMENT OF NATURAL RESOURCES
Brian P. Dunnigan, P.E.
Director

June 15, 2009

IN REPLY TO:

Sent Via Mail and E-Mail

David Barfield
Kansas Commissioner
Republican River Compact Administration
Kansas State Engineer
Division of Water Resources
109 SW 9th St., 2nd Floor
Topeka, KS 66612-1283

Dick Wolfe
Colorado Commissioner
Republican River Compact Commission
Colorado State Engineer
Colorado Division of Water Resources
1313 Sherman St., Room 818
Denver, CO 80203

RE: Submission of Dispute to the Republican River Compact Administration Pursuant to Section VII of the Final Settlement Stipulation

Dear Commissioners Barfield and Wolfe:

In the course of the current Republican River Arbitration, an issue has arisen which Nebraska seeks to resolve pursuant to the "Fast Track" provisions of the Final Settlement Stipulation (FSS). The issue concerns an adjustment Nebraska submits must be made to Compact accounting to properly acknowledge damages paid for past Compact violations. Nebraska attempted to address this issue in the context of the current Arbitration; however, in his January 22, 2009 Final Decision on Legal Issues, the Arbitrator concluded that the issue (identified colloquially as the "Crediting Issue") had not been submitted to the Republican River Compact Administration (RRCA) for resolution. While Nebraska maintains the Crediting Issue was properly before the Arbitrator, Nebraska hereby submits the Crediting Issue to the RRCA to ensure its speedy resolution.

Limited Applicability of the Crediting Issue

As she has made clear during recent communications, Nebraska has implemented concrete measures to remain in Compact compliance in the future. Moreover, based on the States'

April 15, 2009 information exchange, preliminary data indicate Nebraska will be in Compact compliance for the 2004-2008 compliance period regardless of whether any credit is applied in that period. Therefore, insofar as Nebraska is concerned,[1] application of the Crediting Issue is limited to the following compliance periods:

- 2005 – 2006 Two-year average above Guide Rock;
- 2006 – 2007 Two-year average above Guide Rock; and
- 2003 – 2007 Five-year average for the Republican River Basin.

The Concept Defined

As you know, Compact compliance is determined based on averaging of multi-year annual determinations of Computed Beneficial Consumptive Use (CBCU.) Under Water Short Year Administration, annual CBCU determinations are averaged over a two-year period, while under Normal Year Administration, annual CBCU determinations are averaged over a five-year period. Running averages are employed in both cases.

Nebraska submits that when a State is found to be in violation of the Compact and pays damages based on that violation, that State should receive a credit in the Compact accounting to reflect the payment made. Specifically, the Compact accounting should be adjusted by reducing the annual CBCU calculation for the year in which payment is made by that amount of water of which the downstream state was deprived according to the official RRCA accounting spreadsheets.

The Concept as Applied to a Hypothetical Water Use Scenario

Thus, for example, if Nebraska were made to pay damages to Kansas for a shortage under 2005-2006 Water Short Year administration, the 2006 annual CBCU should be reduced on a prospective basis by the volume of water on which the damage payment was based. Table 1 illustrates the importance of providing a credit in this manner. Table 1 assumes, for illustrative purposes only, that in 2006 (a Water Short Year Administration year) Nebraska's average overuse for the 2005-2006 accounting period was 37,490 acre feet [(44,234 + 30,745) ÷ 2]. Damages theoretically could be awarded on this amount.[2] Assuming a full credit were provided

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[1] Whatever rule is established in this process presumably will apply equally to the State of Colorado for any damage payments associated with any Colorado overuse.

[2] Nebraska does not concede that damages should be awarded on this amount and does not by this example waive any defense to the payment of damages in the current Arbitration or any other proceeding. Nor does Nebraska waive any argument it may make concerning the need to institute changes to the accounting on which this example is based.

for payment of an award based on that violation, the annual 2006 determination would be a positive 6,745 acre feet [37,490 – 30,745].

Proposed Compliance and Damages Flow Chart

Nebraska Dept. Natural Resources

Year	Allocation - (CBCU - IWS above Guide Rock) Two year Average 2005 - 2006	2-Year Average (Payoff to KS)	Allocation - (CBCU - IWS Credit) two year compliance test 2006 - 2007 with 2006 modified due to water short year payoff for to Kansas	Two year running average with 2006 payoff to Kansas	Allocation - (CBCU - IWS Credit) Five year compliance test 2003 - 2007	Payoff to Kansas in 2006	Allocation - (CBCU - IWS Credit) Five year compliance test 2003 - 2007 with 2006 modified due to water short year payoff for to Kansas	5-Year Average and our payoff to Kansas in 2007	Allocation - (CBCU - IWS Credit) revised due to water short year payoff for to Kansas	Allocation - (CBCU - IWS Credit) Five year compliance test 2004 - 2008 with water short year payoff for 2006 to Kansas
2003					(25,418)		(25,418)		(25,418)	
2004					(36,634)		(36,634)		(36,634)	(36,634)
2005	(44,234)				(42,324)		(42,324)		(42,324)	(42,324)
2006	(30,745)	(37,490)	6,745		(31,512)	(37,490)	5,978		5,978	5,978
2007	17,142		17,142	11,943	30,683		30,683	(13,543)	44,226	44,226
2008										28,754
2009										
2010										

Note: 2006 Numbers are adjusted for a 37,490 AF damage payoff to Kansas

Note: 2007 Numbers are adjusted for a 13,543 AF damage payoff to Kansas

Note: 2008 Estimated AF need for 2004 thru 2008 Compliance test.

All values are from estimates made using the RRCA Accounting Procedures, version July 27, 2005

Table 1: Proposed Compliance and Damages Flow Chart—illustrative example taken from Nebraska's Opening Brief Re: Issue III.A.2 As Identified In Exhibit 4 Of The Arbitration Agreement (Nov. 10, 2008).

The importance of accounting for Nebraska's payment is further illustrated by calculating the two-year running average for the 2006-2007 accounting period, first with, and then without, the credit just discussed. If the credit were provided, the two-year running average for the 2006-2007 accounting period would show Nebraska remained well within her allocation, with a positive 11,943 acre feet [2006 annual determination of 6,745 plus the 2007 annual determination of 17,142 ÷ 2]. If the credit were not provided, however, the two year running average for 2006-2007 would show Nebraska still in violation (negative 6,802 acre feet). Thus, Nebraska could be required to pay both in 2006 *and* in 2007 for violations arising from overuse occurring in 2006 [2006 annual determination of negative 37,490 plus the 2007 annual determination of 17,142 ÷ 2]. This means Kansas would receive an unreasonable double recovery for the same violation that occurred in 2006.

As further shown in Table 1, providing a credit ensures a state to whom an award is made does not double recover when the Basin transitions from Water Short Year Administration accounting to Normal Year Administration accounting. Carrying the earlier analysis forward (tan columns), if a credit were provided, the 2006 annual determination under Normal Year Administration would be positive 5,978 acre feet, and the five-year running average for the 2003-2007

accounting period would show a deficit of just 13,543 acre feet.[3] If no credit were provided, the 2006 annual determination under Normal Year Administration would be negative 31,512 acre feet, and the five-year running average would show a deficit of 21,041 acre feet.[4]

Given the Crediting Issue's impact on Compact accounting, we believe you will agree that its immediate resolution is warranted. As counsel for the State of Kansas indicated at the December 10, 2008 Hearing on Legal Issues, we might not even have a dispute about the Crediting Issue. Nebraska hopes this is the case, and stands ready to resolve it with the RRCA's cooperation.

Sincerely

Brian P. Dunnigan, P.E.
Director

[3] [2003 annual determination of negative 25,418 + 2004 annual determination of negative 36,634 acre feet + 2005 annual determination of negative 42,324 + 2006 annual determination of positive 5,978 + 2007 annual determination of positive 30,683 ÷ 5]

[4] [2003 annual determination of negative 25,418 plus the 2004 annual determination of negative 36,634 acre feet plus 2005 annual determination of negative 42,324 plus the 2006 annual determination of negative 31,512 plus the 2007 annual determination of positive 30,683 divided by 5]

Attachment 1

Designated Schedule for Resolution

CREDITING ISSUE

Republican River Compact Administration
April 2, 2009

June 15, 2009	Nebraska submits Crediting Issue proposal to RRCA.
July 15, 2009	By this date, the RRCA meets to resolve the dispute.
August 15, 2009	If the RRCA fails to resolve the dispute, Nebraska invokes nonbinding arbitration.
December 31, 2009	Completion of Arbitration and decision rendered.
Thereafter	If the dispute is not resolved, Nebraska considers appropriate filings in the U.S. Supreme Court.

RESOLUTION OF THE REPUBLICAN RIVER COMPACT ADMINISTRATION

NEBRASKA'S CREDITING ISSUE

Whereas, the States of Kansas, Nebraska and Colorado entered into a Final Settlement Stipulation (FSS) as of December 15, 2002, to resolve pending litigation in the United States Supreme Court regarding the Republican River Compact (Compact) in *Kansas v. Nebraska and Colorado*, No 126 Original;

Whereas, the FSS was approved by the United States Supreme Court on May 19, 2003;

Whereas, by letter dated June 15, 2009, the State of Nebraska identified a concern regarding the appropriate mechanism by which to recognize in the annual accounting a payment for damages based on a past failure to comply with the Compact;

Whereas, the States agree that Nebraska's proposed resolution of the "Crediting Issue" is acceptable and that the Republican River Compact Administration should adopt Nebraska's proposal; and

Whereas, the Crediting Issue has been properly presented and Submitted to the Republican River Compact Administration the Crediting Issue Pursuant to Section VII of the FSS.

Now, therefore, it is hereby resolved that the Republican River Compact Administration approves and adopts the proposal set forth in Nebraska's June 15, 2009 letter, a copy of which is attached hereto as Exhibit A and incorporated as if the same were set forth fully herein.

Approved by the Republican River Compact Administration this 12th day of August, 2009.

_____ _____

Brian Dunnigan, P.E. Date
Nebraska Member
Chairman

_____ _____

David Barfield, P.E. Date
Kansas Member

_____ _____

Dick Wolfe, P.E. Date
Colorado Member

49TH ANNUAL MEETING OF THE
REPUBLICAN RIVER COMPACT ADMINISTRATION

The Cornhusker Hotel
333 South 13th Street
Lincoln, Nebraska

Convened, pursuant to notice at 8:07 a.m.

on August 12, 2009,

BEFORE:

Chairman Brian Dunnigan, Director, Nebraska Department of Natural Resources; Commissioner David W. Barfield, P.E. Chief Engineer, Division of Water Resources; Commissioner Dick Wolfe, P.E., State Engineer, Director, for Colorado Department of Natural Resources.

A P P E A R A N C E S

For the State of Nebraska: Justin Lavene
Assistant Attorney General
2115 State Capitol
P.O. Box 98920
Lincoln, NE 68509

For the State of Colorado: Peter J. Ampe
First Assistant Attorney General
Office of the Attorney General
1525 Sherman Street,
7th Floor
Denver, CO 80203

For the State of Kansas: Burke Griggs
Counsel, Division of Water Resources, Kansas Department of Agriculture

- - -

Kelly S. Horsley
ACE Reporting, NE
(402) 416-4882

I N D E X

I N D E X (Cont'd)

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EXHIBITS	Marked	Offered	Ruled On	Found
1 Resolution Package	79	79	79	Appendix
2 Resolution and Letter	79	79	79	Appendix

- - -

REPORTERS CERTIFICATE:

I, KELLY S. HORSLEY, reporter for ACE REPORTING, certify that I reported the proceedings in this matter; that the transcript is a true, accurate and complete extension of the recording made of those proceedings.

IN TESTIMONY WHEREOF, I have hereunto set my hand at Lincoln, Nebraska, this 31st day of August, 2008.

Reporter

- - -

PROCEEDINGS:

CHAIRMAN DUNNIGAN: Good morning. Welcome to Lincoln, Nebraska. My name is Brian Dunnigan, and I'm the Director of the Department of Natural Resources, and I also serve as the Chairman of the Republican River Compact Administration this year, actually until the end of the second meeting you have this morning.

At this time I would like to call to order, the continuation of the April 28th, 2009, Special Meeting of the Republication of the Republican River Compact Administration. The remaining issues to be discussed will be handled in the annual meeting.

At this point, I would entertain a motion to adjourn that special meeting.

COMMISSIONER BARFIELD: I move to adjourn the special meeting.

CHAIRMAN DUNNIGAN: So moved.

Second?

COMMISSIONER WOLFE: Second.

CHAIRMAN DUNNIGAN: All in favor?

Aye.

COMMISSIONER WOLFE: Aye.

COMMISSIONER BARFIELD: Aye.

CHAIRMAN DUNNIGAN: Meeting adjourned.

At this time I would to call the 49th Annual Meeting of the Republican River Compact Administration to order.

Again, my name is Brian Dunnigan. There are agendas on the back table. If you didn't get an agenda when you came in the door, please free to pick up an agenda.

Before I introduce my staff, I would like to recognize some of our Nebraska partners in the audience: NRD managers, Jasper Fannin, Mike Clements, John Thorburn and Dan Smith, in the back; irrigation district managers: Brad Edgerton, Mike Delka.

I would like to introduce my staff from the DNR right now. To my immediate right is Jim Schneider, to his right is James Williams. Jason Kepler should be in the room. He was manning the computer yesterday, Jason; Paul Koester; Tom O'Connor. And to my immediate left is Justin Lavene from the Attorney General's Office.

Commissioner Wolfe, if you would introduce your staff and others.

COMMISSIONER WOLFE: Good morning. Dick Wolfe, State Engineer for Colorado and Commissioner for Colorado. And I want to thank Nebraska for

hosting it this year, and for the fine facility. Appreciate the accommodations and our request today under our tight time constraints to do that here, so we do appreciate that.

Again, I would like to recognize some of my staff, but before that I would like to recognize some of the other Colorado delegation that's joined us here today as well in the audience. With the Republican River Water Conservation District, Dennis Coryell is here, the president; and Stan Murphy, I'm not sure -- he's here, but I'm not sure he's in the room yet. He's the manager for the district. And David Robbins, their lead counsel. He's here in the front row. Also representing Colorado here today is William Schreuder, our modeler, for both the state of Colorado and assist the district, as well. And also Tony Magnus is here. He's with the Colorado Agricultural Preservation Association in the basin. And also in the audience is Alex Davis, who is the assistant director in the Department of Natural Resources over water. Here at the table with me is Pete Ampe, to my left. He is the First Assistant Attorney General from the Attorney General's Office over interstate litigation. To my immediate right is Mike Sullivan, my Deputy State Engineer. And to his

right is Meg Sullivan, Engineer Advisor for the state of Colorado. And I think I've probably covered everybody that's here from Colorado. So, thank you.

CHAIRMAN DUNNIGAN: Thank you, Commissioner Wolfe.

Commissioner Barfield?

COMMISSIONER BARFIELD: Thank you, Commissioner Dunnigan. My name is David Barfield. I'm the Kansas Chief Engineer and Commissioner for Kansas. And, again, as Dick has indicated, appreciate your fine hosting of the annual meeting and work session last night.

I'll make the introductions for Kansas. Here at the table to my right is Scott Ross, water commissioner for our Stockton field office that covers much of the basin in the Republican Basin. And to my left is Burke Griggs, attorney with the Department of Agriculture. He replaced Lee Ross who attended these meetings, probably 25 of these meetings. And I was thinking last night as I was getting my remarks together that I -- in view of that 25 years serving the compact administration, probably should have prepared a resolution honoring him. I'll probably take the next opportunity to do so because his work, I think, greatly served this

administration. So, we'll get that done. Others with the state of Kansas in the crowd here, Sam Speed is with our Kansas Attorney General's Office. Normally John Draper, our counsel of record is with us. He is in England. His son is getting married, so he is not with us today. Also here today, Chris Beightel. He is program manager for the water services -- water services management program for the division; Sam Perkins, a modeler. We also have Chelsea Jericek, who is on Scott's staff. She replaced Mark Billinger, who went on to other employment. And Dale Book, consultant for Kansas. That's it.

CHAIRMAN DUNNIGAN: Thank you, Commissioner.

Moving on to Item 2 on the agenda, modification and adoption of the proposed agenda. I would ask if there are any modifications to the agenda at this time.

COMMISSIONER BARFIELD: I know of none. I would move adoption of the agenda as provided.

COMMISSIONER WOLFE: Second.

CHAIRMAN DUNNIGAN: So moved. All in favor?

Aye.

COMMISSIONER WOLFE: Aye.

COMMISSIONER BARFIELD: Aye

CHAIRMAN DUNNIGAN: Agenda approved.

Moving to item 3. Approval of previous annual meeting minutes and transcript from the August 13th, 2008, meeting. Would there be a motion to approve the annual meeting minutes and transcript from the August 13th, 2008, meeting?

COMMISSIONER WOLFE: I just want to make sure I'm clarified on this. We do have an annual meeting summary and was there recently minutes that were drafted up that James had just sent out? I just want to make sure what we have before us that we're trying to act on. Is it the summary or the draft minutes that have just recently been sent out?

COMMISSIONER DUNNIGAN: It would be the meeting minutes and the annual --

MR. WILLIAMS: Let me clarify that. What we are proposing is that the annual report would consist of the minutes and all of the attachments, and so it would be both documents that were sent out. And the attachments would include transcripts from the meeting, the annual meeting and the special meetings that took place ending with the August 13 meeting, 2008.

COMMISSIONER BARFIELD: I would want to table this motion or handle it in some other way. I appreciate the hard work of the State of Nebraska to produce minutes that we received, I think, on the way up here. I believe the best procedure is to review those and in the tradition of the past, provide comments and a markup and eventually jointly developed meeting minutes that we can approve at a subsequent time. That's what I believe is appropriate. I think we ought to review the transcripts and agree on the transcripts of the meeting. I think we've done that, as well. I don't have any objection to reviewing those minutes and having -- I'm sorry, reviewing those transcripts and having agreed-upon transcripts. But I would propose we do both actions and do that with the greatest diligence we can to complete it.

So, do we need a motion to that effect or --

COMMISSIONER WOLFE: I just move that we table the action on the minutes at this time until we continue it at a subsequent meeting.

COMMISSIONER BARFIELD: Okay, I would second.

CHAIRMAN DUNNIGAN: Move and second, any

discussion?

COMMISSIONER BARFIELD: Well, again, I want to see this task completed with as much diligence as we can make it. So, the purpose of the tabling is just to make sure that work can be done.

CHAIRMAN DUNNIGAN: And we'll make sure that that happens, Commissioner.

COMMISSIONER BARFIELD: Right.

CHAIRMAN DUNNIGAN: Thank you.

COMMISSIONER BARFIELD: Hopefully, we'll have a special meeting and approve the minutes in due course here.

CHAIRMAN DUNNIGAN: All those in favor of the motion signify by saying aye.

Aye.

COMMISSIONER BARFIELD: Aye.

COMMISSIONER WOLFE: Aye.

CHAIRMAN DUNNIGAN: Motion carries.

Item 4 on the agenda is a Report of Chairman and Commissioner's Reports. Nebraska will begin followed by Colorado and Kansas.

While conflicts over past events may have captured recent headlines, I'm pleased to begin by informing you all that the State of Nebraska is in compliance with the Republican River Compact.

Using current accounting procedures, Nebraska has had positive balances during 2007 and 2008, resulting in a positive five-year average for the period ending in 2008. Based on preliminary estimates, it appears Nebraska will be in compliance for the five-year compliance period ending in 2009. This is a testament to the work conducted to date in partnership with the Nebraska Natural Resources Districts, its surface water users, and the people of the Republican River Basin.

During the past year, the state of Colorado, Kansas and Nebraska has spent considerable time and effort to resolve the dispute centered on events that occurred in 2005 and 2006. Much of that dispute arose from or involved regulatory measures implemented originally in the wake of the final settlement stipulation.

However, those measures and the results occasioned by them are old news and does not merit further attention. Indeed, as evidenced by the outcome of the recent arbitration, there is little to be gained from revisiting the past, and our focus should be directed toward the future.

In the future, Nebraska will remain in compliance with the Republican River Compact. The

primary NRDs, in partnership with the Department of Natural Resources, have had new integrated management plans in place for a year-and-a-half. These IMPs appear to be working well. Among other things, the IMPs clearly state that each of the NRDs cannot deplete more than their share of the water of the basin. This is not merely a goal, but rather a requirement of each plan. With that said, Nebraska is aware the IMPs would benefit from additional detail. At last year's RRCA annual meeting I stated, quote, the Department and the Natural Resources Districts feel that it is important to investigate other options and further regulations that can be incorporated into future plans addressing water-short years, end of quote. To that end, my staff and I have met on many occasions with managers of the NRDs and with their boards. The purpose of these meetings has been to lay out how the Department calculates the allowable depletions in each district, and to begin the discussion of specific situations in which additional regulatory measures need to be taken. It is our desire to implement these changes prior to this meeting; however, many hours of staff time were taken up by the arbitration process and that delayed implementation. We expect these additional controls

to be in place early next year.

In the future, we also must address Colorado's proposal to augment stream flow by pumping groundwater supplies directly to the North Fork of the Republican River. To date the states have been unable to agree on several issues. Nebraska's principal concern remains rooted in proper accounting for the augmentation water, and will need to be resolved before Nebraska can endorse that plan.

In the future, we also must work toward resolution of certain accounting issues. Some of which, in turn, are essential to the proper evaluation of the Colorado plan. Nebraska proposed a number of changes to the RRCA accounting procedures that were part of the recent arbitration. And I would like to comment on what I believe to be the most important finding by the arbitrator. The current method of calculating stream flow depletion leads to significant errors when the streams become dry. The arbitrator agreed with Nebraska that the best measure of the total stream flow in a sub-basin is obtained by subtracting the results of a groundwater model run with all stressors on from the results of a model run with all stressors off. The concept was originally proposed by Kansas, which

identified it as the virgin water supply metric. The arbitrator suggested that the states continue to discuss how to implement this estimate of total stream flow. It is our hope that this can be done in a timely manner.

In the future, we will need to work closely with our friends who reply on surface water diversions and, in turn, to help with the Republican River system. While stream flow may not return to levels seen 50 years ago, we will continue to see improvement over time as the IMPs take hold.

It is our belief that a healthy surface water system will contribute to Nebraska's ability to comply with the compact. I would like to publicly recognize the successful partnership that we have seen in the past with a number of surface water districts including, but not limited to, the Frenchman Valley Irrigation District, managed by Don Felker; the Frenchman Irrigation District, managed by Brad Edgerton; and the Nebraska Bostwick Irrigation District, managed by Mike Delka. These and other districts and the respective boards will continue to play an important role in the basin.

The future also holds continuing participation in the conservation reserve enhancement

program and the environmental quality incentive program. Nebraska will continue to explore stream augmentation. Vegetation management has increased stream flow and the capacity of the stream channel. Nebraska will continue to take an active role in the engineering committee and will always work with the other states to improve existing accounting methods and ensure they accurately reflect water use in the basin.

Finally, in the future, the very near future, we must resolve an issue presented by Nebraska concerning the proper way to recognize in the accounting, any damages paid for -- paid for past noncompliance. Resolution of this so called crediting issue is key to ensuring that when a state is wrong, it is made whole, but not over compensated, and that the offending state is not inadvertently punished by paying for the same violation twice.

As counsel for Kansas indicated in an arbitration hearing on this issue in December, 2008, we might not even have a disagreement about the crediting issue. It is time we find that out. And if we can't agree, it must be resolved.

In closing, I wish to assure you all, as well as my counterparts from the neighboring states,

that Nebraska will continue to comply with the Republican River Compact. The state will continue to evaluate needs of the basin and make changes as necessary to stay in compliance in a spirit of openness, transparency and partnership. We expect to continue to work with all stakeholders in the basin, including the other states, the NRDs, the surface water districts and individual users and the Bureau of Reclamation. As I recently explained during arbitration, noncompliance is not an option for the state of Nebraska.

At this point, I'll turn to James Williams to give a water administration report for Nebraska for the calendar year 2008.

MR. WILLIAMS: While this water administration report is for the calendar year 2008, I will include a number of other dates in order to place water administration within context.

In August, 2006, the Bureau of Reclamation placed a call on all appropriated reservoirs located above Swanson Lake, Enders Reservoir and Hugh Butler Lake. This call continued throughout 2008.

In July, 2008, a call was placed on all users on Red Willow Creek. This call included Meeker-Driftwood, Culbertson and Bartley Canals.

July 8, 2009, a call was placed on all junior permits above Cambridge. The call was removed above Cambridge, July 16, 2009.

During 2009, the call was continued on Swanson Lake, Enders Reservoir and Hugh Butler Lake.

July 11, 2009, a call was placed on all junior permits, Medicine Creek.

In 2008, the irrigation supply in Harlan County Reservoir was estimated by the Bureau of Reclamation to be more than 130,000 acre-feet. Therefore, water short-year administration was not in effect during 2008.

Pioneer Irrigation District, Red Willow, Cambridge, Naponee, Franklin, Franklin Pump, Superior and Courtland Canals all were able to irrigate during 2008.

Surface water irrigators on Riverside Canal were compensated not to irrigate in 2008. The estimated consumptive use portion of Riverside Canal's natural flow was protected through Harlan County Lake.

CHAIRMAN DUNNIGAN: Thank you, Mr. Williams.

Commissioner Wolfe?

COMMISSIONER WOLFE: Thank you,

Commissioner Dunnigan. Again, Dick Wolfe, commissioner for the state of Colorado.

I would also just to report briefly on some of the hydrologic conditions from Colorado's perspective in 2008 and then also just update the Commission on what Colorado's activities have been in 2008 as far as compact compliance.

I appreciate your fine report. I just want to make one point that Colorado disagrees with Nebraska's interpretation of the arbiter's decision, but we will continue to go forward and address reasonable concerns that have been raised by both Kansas and Nebraska on that.

As far as hydrologic conditions, I'm just going to touch on some of the main tributaries that we typically report on. The North Fork, total stream flow at the state line gage was 21,640-acre fee, which is 9,070 acre-feet less than the 1935 to 2008 average of 30,710 acre-feet.

On the South Fork of the Republican, total stream flow at the Benkelman gage was 1420 acre-feet. This improved over 2007's total flow of 674 acre-feet and the previous three years of zero flow. The average annual flow on the South Fork at Benkelman from 1938 to 2008 is 26,270 acre-feet. And I would

certainly note coming in to 2009, the stream flows on the South Fork have gained as well and we continue to see improved conditions on these tributaries since the drought year starting in 2002. So, we seem to be coming out of that and things are looking favorable.

The Arikaree, total flow at the Haigler gage was 1570 acre-feet. And this, again, continues to be a significant decline from the 12,600 acre-feet annual average for the period 1933 to 2008.

As far as Bonny Reservoir, which is located on the South Fork of the Republican, just north of Burlington, active storage as of Sunday, August 9th, 2009, was 10,200 acre-feet. The capacity at the top, the conservation pool is 41,340 acre-feet. Capacity at the top of the flood pool is 170,160 acre-feet.

Colorado, in its efforts to continue to reach compact compliance and address issues, particularly on the South Fork, has made a number of releases from Bonny Reservoir, some starting in 2007 and then more releases were made starting in August of 2008. We released 1816 acre-feet in August of 2008. In September of 2008, we released 2,207 acre-feet, in all this reporting, though, this is not in the 2008 report. In May of 2009, we released an additional 884 acre-feet; and in June of 2009, an

additional 1,048 acre-feet.

I would like to just touch on some of the efforts that Colorado has undertaken in 2008 as far as compact compliance.

I, first, would like to note that I appreciate both Kansas and Nebraska's cooperation regarding our negotiations that we've had on trying to get our compact compliance pipeline approved that we introduced to the compact administration starting in March of 2008. And we've had numerous discussions, as you know, over this past year. And we do appreciate your continued cooperation and ideas about how we can try to bring this to resolution. And I am confident that we will get there, hopefully, here in the near future.

But in addition to that part of the efforts by, not only Colorado and the Republican River Water Conservation District, there's been numerous activities that the District has undertaken to achieve compact compliance. And I think it's indicative of our annual report, in terms of compact compliance numbers, that we've continued to see a decline in our deficit on an annual basis due to some of these efforts. There's been a number of land retirement programs that the District has undertaken

in the last few years with some of their leveraging of their own dollars that they use from fee assessment, with some of the CREP and EQIP dollars that are available from the federal government. They have taken out, since 2006, currently about 32,000 acres that been enrolled in EQIP and CREP programs, which are -- Twenty thousand acres of those is in the CREP program and about 11,000 acres in the EQIP program.

The District has also moved forward in conjunction with the Yuma County Water Authority to purchase the majority of the senior water rights on the North Fork of the Republican, principally the Pioneer and Laird ditches. The Yuma County Water Authority closed on the purchase of those water rights in December of 2008. And that was a result of a -- also in addition to that, there was a bond issue that was passed by the voters in Yuma County in November of 2008 for about 15 million dollars. Of that 20 million dollar purchase of those water rights, the $5 million is a lease that was entered into by the District, with the Yuma County Water Authority for the lease of those water rights for 20 years.

Colorado also has undertaken the adoption

of measurement rules for the high capacity wells in the basin. They were adopted in 2008. We went through a rule-making process. They were effective December of 2008. And the rules required as of March 1st, 2009, that all the high capacity wells pumping 50 gallons per minute or more to either install a totalizing flow meter or an approved alternative method -- measurement method like the power conversion coefficient method, or to be declared inactive. And so we've -- that has occurred this year. We have approximately 4,000 wells that are subject under -- to those rules and have enrolled into one of those options.

The rules also require that prior to December 1st, well owners must report their annual pumping amounts. And so we are in the process of -- this being our first year of well meter compliance under those rules, we are collecting that data and hope to have additional information certainly next year as part of our report.

Lastly, I would like to just comment on that due to approval of a decision item by the Legislature about a year ago that approved additional staffing in the basin to address our compact compliance efforts, they did approve Colorado to hire

four additional staff members in the basin. We have hired two of those individuals out of the four. But due to budget constraints, we've been unable to fill the last two positions. But the two that we have hired, in addition to the existing staff we already had out there, is a team leader over that group, and that's Megan Sullivan, who successfully was hired into that position; and also a deputy groundwater commissioner position in the basin, in addition to the two staff members we already had there. And we still have two other positions pending that we hope, if economic conditions improve, that we can fill those to help in our efforts in terms of the well measurement and data collection program in the basin in our compact compliance efforts.

And with that, that concludes my report, Commissioner.

CHAIRMAN DUNNIGAN: Thank you, Commissioner Wolfe.

Commissioner Barfield?

COMMISSIONER BARFIELD: Thank you, Commissioner Dunnigan.

With respect to the various assertions that you made related to Nebraska's current compliance and causes for improvement compliance numbers in '07 and

'08 and assertions of the sufficiencies of your current actions, I think there's places on the agenda to speak to those later. We have a very different view of those matters, as well as the arbiter's decision and the crediting proposal, but we'll get to those in due course.

With respect to my report, first of all, I would like to report on a couple of changes in administration. Our former governor, Kathleen Sebelius of Kansas, was confirmed as secretary for the U.S. Department of Health and Human Services earlier this year, and, therefore, our Lieutenant Governor, Mark Parkinson, became Kansas's 45th governor on April 28th. Former Department of Agriculture Secretary, Adrian Polansky, who is my boss, was appointed recently as State Executive Director for the USDA's Farm Service agency in Kansas. As a result, we now have a new Secretary of Agriculture as well, Josh Swaty, a fifth-generation Kansas farmer and three-term state representative, has been appointed Acting Secretary pending senate confirmation.

Climate conditions, I normally have a brief report on that. While conditions vary considerably around our state, 2009, like 2008, on the whole, is a

much closer to a normal precipitation than previous years. One exception, actually, is the north central portion of Kansas, including the main stem Republican River, as well as parts of southwest Kansas that remain dry. In fact, we are currently doing some administration in the main stem Republican River as a result of those shortages.

I normally report a bit on legislative activities of general interest or specific to the basin. This last legislative session in Kansas was dominated by budget issues. We had a shortfall of approximately 700 million in our state budget and have suffered a series of budget reductions over the last year in with the 2010 budget allocations. Staffing for the Division of Water Resources is approximately 20 percent less than a year ago. Despite that we're doing our best efforts to fulfill our legislative mandated responsibilities.

In terms of legislation, there wasn't a significant number of water bills. There was a bill to extend the sunset date on a water appropriation fees. There was additional legislative activity but no resolution to an issue on how intensive groundwater use control areas will be established.

There was one bill, Senate Bill 64, that

required applicants to file a sworn statement for evidence of legal access to or control of their point of diversion when filing water appropriation applications. That has a very interesting history behind it, but I won't go into here.

In terms of litigation with our neighboring states, again, we often report on this. And I'm actually pleased to provide a bit of a report here on the dispute of some 23 years with the state of Colorado on the Arkansas River. We've long been saying that this litigation was nearly complete. I don't know how many years we've brought that report, but it's been a number of years. Last year I did report on this that the states had developed a final decree that the special master had sent to the U.S. Supreme Court early last year. That report was received. The Court , as is its case or its custom in many of these cases, to provide an opportunity for exceptions. Only one exception was filed, and that was not related to the decree itself that we had pretty much worked out between the two states, but Kansas was seeking to recover additional costs. The Court declined to provide those additional costs.

That left only one matter pending before the retained jurisdiction of the Court, and that was

a requirement to have an evaluation of the sufficiency of what are called Colorado's use rules, to determine if they provided sufficient replacements to offset their post-compact well pumping. The sufficiencies of those rules were to be evaluated for the period 1997/2006. Kansas and Colorado spent a significant amount of time looking at those use rules and their sufficiency. And as a result, negotiated some refinements in terms of the administration of those use rules and other related agreements. It's a 15-page document. But as a result of that agreement, the states agreed that the retained jurisdiction of the Court could lapse. That was filed last week with the U.S. Supreme Court and, therefore, ended 23 years of litigation between the two states. We are now operating under that final decree. We actually continue to have issues between us, and are working through those as states and have a similar dispute resolution process there as is here. And we look forward to working with the state of Colorado in a new era on that particular basin.

With respect to the Republican River Basin, Kansas continues to be fully in compliance with our requirements under the Final Settlement Stipulation and the Compact. Much of that is because we closed

our alluvial groundwater use and surface water use within the basin to new appropriations in 1984. Kansas continues to target some of our retirement programs in those basins to assure future compliance.

I'll turn to Scott Ross to provide a bit of a report on some other activities within the basin.

MR. ROSS: Thank you. These activities are localized activities within the basin. As you may recall from last year, Commissioner Barfield reported on -- which is the disposition of any damages that might be collected as a result of that passage. We have two groups: the Northwest Kansas Alliance Group. They are a group of stakeholders, including Groundwater Management District No. 4, County Commissioner's irrigation equipment dealers municipalities and others to review projects and potential opportunities to promote conservation projects in Northwest Kansas in the upstream part of the basin. That includes some recharge projects, water right buyouts and a municipal borrowed plant for potential use for the Dakota aquifer and another one of the smaller projects. A similar group was assembled by the Kansas Water Officer, Lower Republican Stakeholders Group. That includes Kansas-Bostwick Irrigation District and municipal

representatives irrigation interests, Kansas Department of Wildlife and Parks, the livestock industry, the Bureau of Reclamation and the Corps of Engineers. Project review in that area include modifications to Lovewell, to increase the storage. Same off-stream storage sites in Kansas, aquifer recharge, improve pipeline and improve canal system deliveries. Much of this discussion has been focused on the present study done by the Bureau of Reclamation.

I've also been working with Jamestown wildlife area. It's an area in the lower part of the Republican. It's on a tributary of Buffalo Creek. They've proposed to develop an additional marsh habitat there. And this area is becoming an importing and emerging area for migrating waterfowl. Kansas has completed the metering of all the diversions in the Republican River model domain area. That was completed -- In fact, we just completed at our last inspections, so about a week ago. So, that data should be available for the 2009 season.

Kansas completed a model of the Solomon River Basin, which is within the model domain area. The upper portion of that -- Reservoirs intersects the high plains aquifer. And the groundwater

management district No. 4 in conjunction with the division of water resources are exploring the opportunities to use that model identified by the groundwater management district.

That concludes my portion of the report.

COMMISSIONER BARFIELD: That concludes Kansas's reports.

CHAIRMAN DUNNIGAN: Thank you, Kansas.

At this point, we'll move to Agenda Item 5, which are the Federal Reports. And Aaron Thompson, I believe, will give the Bureau of Reclamation Report. Aaron?

MR. THOMPSON: Good morning, Commissioners Dunnigan, Wolfe and Barfield. It's nice to be here this morning.

I'm Aaron Thompson, with the Bureau of Reclamation. I would like to take a minute to introduce the staff that's in the audience. We have Mike Kube from our Grand Island office raising his hand; Jack Wergin, also from our Grand Island office; Craig Scott from our McCook field office. And from our Billings office, with the conservation committee, we have Scott Guenthner and Patrick Erger.

We've prepared two documents: Resources Management Activities for the year; and O&M,

Operation and Maintenance activities for the year. We'll have Brent Esplin, our deputy area manager, go over the resource management activities; and Marv Swanda, McCook field office manager, briefly go over our operations and maintenance activities, in the interest of time.

MR. ESPLIN: Thanks, Aaron. Good morning, Commissioners. I'm going to just hit on a couple of highlights from the report that's there. There's lots of information in there that I'll hit on, but I would just like hit on the Lower Republican Feasibility Study that was authorized in May of 2008. I know that's on the agenda later, so I won't spend much time on it. But it was authorized to look at water conservation and augment -- or storage options in the Lower Republican Basin. That study was authorized but has not yet been funded. There's nothing in the FY 2010 budget to Congress, to my knowledge. And I guess we're under the assumption that the states are still interested in that feasibility study once appropriate -- once federal appropriations are made.

I would like to hit on just two more items. The other item is reclamation continues to work with our irrigation districts in the Republican River

Basin on water conservation activities. Several of those districts have received challenge grants from reclamation to improve water conveyance efficiencies, also do some water measurement.

The third item I'll touch on is the reclamation continues to work with our managing partners in both states, Nebraska and Kansas, on ADA retrofits. That's American with Disabilities Act. We continue to install handicapped, accessible comfort stations and also vault plates and those kind of things. Our plan is to have all that work completed by the end of fiscal year '10. I think we're on our way with that. We just wrote out some contracts recently, some of the basins or some of the reservoirs around Red Willow, Swanson and Enders. And so that's some of the main activities. I'll leave it -- rest of that to the report. And those that want to know more, but there are other activities going on, but I'll just highlight those three items.

THE REPORTER: Could you state your name?

MR. ESPLIN: Oh, sorry, Brent Esplin.

THE REPORTER: Spell your last name, please.

MR. ESPLIN: E-s-p-l-i-n.

THE REPORTER: Thank you.

MR. SWANDA: Good morning. Marv Swanda. I would like to -- I'll just hit some of the high spots on the report. That's available on the back table for those of you that grabbed that. And it addresses the 2008 operations at our reservoirs, including Harlan County. And I'll just kind of bring you up to date on the current status of operations at our facilities for 2009. And so I'll just kind of go through this.

Precipitation in 2008 in the basin varied from 115 percent of normal at Swanson Lake, to 150 percent of normal at the Hugh Butler Lake. Inflows varied from 37 percent of the most probable forecast at Enders, to 192 percent of the most probable forecast at Harry Strunk Lake. Farm deliveries to our irrigation districts in 2008 varied from zero inches to Frenchman Valley, H & RW and two of the canals in Frenchmen-Cambridge. We delivered three inches to Red Willow, six to Cambridge, just under two inches to Almena, two-and-a-half inches Bostwick in Nebraska, and four to five inches down in the Kansas-Bostwick area.

At Bonny Reservoir -- I'll just kind of touch on each reservoir. In 2008, the reservoir

level began the year at 23-1/2 foot below the top of conservation. Above average rainfall during the month of August caused the reservoir level to increase. And beginning on August 15th, releases were made in accordance with orders from the state of Colorado for compact compliance. A total of 4,087 acre-feet of river outflow was recorded for this purpose. And the release was shut off on October 2nd. The release resulted in a reservoir level reaching a new historic low elevation on October 9th.

Enders Reservoir. The 2008 inflow into Enders was 4,700 acre-feet, which is below the dry-year forecast. The reservoir level began the year at about 19.7 feet below top of conservation. Due to extremely low water supply available, no water was released from Enders in 2008. This was the seventh consecutive year that H&RW did not divert water from the reservoir, and the third consecutive year that Frenchman-Cambridge did not -- Frenchman-Valley did not divert water.

Swanson Lake. The average inflow of just over 19,000 in 2008 was between the dry and normal year forecast. Again, due to extremely low water supply there, no water was released from Swanson Lake. Irrigation diversions were not made into

Meeker or Bartley Canals, which is the sixth consecutive year for the Meeker Canal.

Hugh Butler. The annual inflow in 2008 was just over 13,000 acre-feet, which was between the dry and normal year forecast. May precipitation totaled 8.3 inches at the dam, the most ever recorded for the month. Irrigation releases began on June 22nd, and ended early September.

Harry Strunk Lake. The inflow of 69,700 acre-feet was above the wet-year forecast in 2008. The reservoir failed in April, late April, and increased to almost eight feet in the flood pool by May 25th. Lake inflows exceeded historic highs for the month of May. Uncontrolled releases through the spillway reached over 1,000 CFS. Harry Strunk Lake was only -- ended up only about 0.8 foot below the top of conservation at the end of the year, so a very good year for that particular lake.

Keith Sebelius Lake in Kansas, in 2008, total inflow just over 14,000, which was slightly below the wet-year forecast. Irrigation releases were made during July and August reducing the lake level by 2.5 feet. Norton Dam recorded almost nine inches of precip during October, the greatest ever recorded for the month at the dam. Harlan County in

2008. 2008 was -- started out approximately 5 feet below the top of conservation. Runoff from late May storms increased the reservoir level, just over 4 feet. And flood releases began out of the lake near the end of May and continued through June 25th. And the reservoir level reached 2 feet -- approximately 2 feet into the flood pool. The available irrigation supply from Harlan County on June 30th, as we indicated, was above the water-short year number, and we supplied that information to the Commissioners. Harlan County Dam recorded 8.6 inches of precip during October, the greatest ever recorded for the month. A 10-year summary of Harlan County Lake operations is included in this report on Table 3.

Lovewell Reservoir. In 2008, the beginning elevation was about 1.5 feet below the top of conservation. Storms in late May also produced significant runoff that raised the elevation just over 3 feet. And the reservoir level peaked at just under 5 feet into the flood pool.

And now I would like to just touch on where we're at in 2009 and give you kind of an update on that.

Bonny Reservoir level -- we're about 21 feet below the top of conservation. We've had almost

17 inches of precip out there in the first seven months of the year, which is 143 percent of normal. Reservoir inflow for the period is the greatest since 2001, but only half of the historic high. Releases have been made into Hale Ditch and also for compact compliance purposes. The reservoir level is currently .2, just below where we were last year at this time.

At Swanson Lake, the level is currently 14 feet from full and is nearly the same as last year at this time. Precip is running above normal, about 126 percent of normal to this point for this year. Frenchman-Cambridge Irrigation District is irrigating from Swanson Lake for the first time since 2002.

Enders Reservoir. The reservoir level is currently 21 feet below full with normal precip during this period is running about 13 inches. Due to the water supply shortage, H&RW Irrigation District, again, is not irrigating for the eighth year in a row. This is the sixth consecutive year that Frenchman-Valley Irrigation District has not received storage water for irrigation.

At Hugh Butler Lake, the lake level is currently 8 feet below full. Irrigation releases are being made from Hugh Butler this year for diversions

into Red Willow and Bartley Canals by Frenchman-Cambridge Irrigation District.

Harry Strunk Lake. The lake is currently 3 feet below the top of conservation. Reservoir releases for Cambridge Canal began on May 19th. And precip at the dam is running about 124 percent of normal at this time.

Keith Sebelius Lake currently just over 10 feet below full. Irrigation releases began on July 8th from there with very limited delivery expected in 2009 by the Almena Irrigation District.

Harlan County. The current water surface is approximately one foot below full. The available irrigation supply from Harlan County on June 30th was 156,000 acre-feet, as indicated to the commissioners, where a water-short year administration would not be in effect. Irrigation releases began on June 25th.

The reservoir level at Lovewell currently 3.5 feet below the top of conservation. Lovewell recorded only 12.2 inches of precip during the first seven months of the year, which is 71 percent on average. The Corps allowed us 5 percent in the flood pool, just prior to the irrigation season. And the irrigation releases began on May 18th.

One thing, I don't believe the Corps has a

representative here today. So, I would indicate we have been working with them to revise the water regulation manual on Lovewell. And what that will do will allow us in certain years, based on the water supply in Harlan County, it'll allow us to store up to 2 feet of water, additional water in the Lovewell, just prior to the irrigation season when certain triggers are met. And I believe we are to the point they are having a public meeting on August 25th or 26th, I'm not sure, in Belleville, Kansas, to discuss the need -- the activities related to this change in the water manual. And so there'll be a notice, if you have not seen it already, out on that. So, we've very hopeful that we can get that in place, then that will allow us some additional storage in the drier years.

Just a couple of other things I'll quickly mention is our safety of dams' activities. We've had an issue at Norton Dam that should be completed by the fall of this year. And there's two other issues at Enders and Red Willow Dam related to under drains on our -- out in our work structures and we're continuing to work on those and determine a fix for those.

And that concludes my report.

CHAIRMAN DUNNIGAN: Thank you, Mr. Swanda.

Anything else from the Bureau?

MR. THOMPSON: No, nothing else.

CHAIRMAN DUNNIGAN: Thank you very much for your report.

The Corps of Engineers was invited, but they were unable to attend. So, we'll move to the U.S. Geological Survey and Phil Soenksen for USGS's report.

MR. SOENKSEN: My name is Phil Soenksen. I'm the surface water specialist with the U.S. Geological Survey here in Lincoln, Nebraska. And I'm going to be reporting on the stream flow gages that we publish records for from the Republican River Basin.

The sheet that I've handed out, the summary sheet, lists all the stations I'm reporting on. You'll see that they're broken out into three groups. The first group of 10 is primarily based on how they're funded. Those 10 are funded by the National Stream Flow Information Program, which is a federal program through the U.S. Geological Survey. And those are the ones that I refer to as a compact station because that's why they are -- they were received instant funding because of the compact.

Then there are another two stations that are funded through other mechanisms. The Corps of Engineers supports one of them; the Republican River near Orleans; and then the other one, which is funded party by Bureau of Reclamation, partly by us, and I -- and I think partly by DNR.

Then the third group of stations are stations that are operated by the Department of Natural Resources that we then provide -- They cooperate with us to -- We put those on the web and then review and publish those records through our annual publication.

The other thing to take note of is, there's several web sites down at the bottom on the left that -- All the data that I show here is readily accessible on line. The publications that we put out are now done electronically. We don't put out a paper report anymore. That's available.

And, Commissioners, you do have a copy of all of those, what we now call site data sheets, for each of the stations. Those are at the back. And then you have two copies of the actual presentation, and two copies of the summary sheet.

And all of those -- all of that, what we call site data sheets, are available on the web. You

can also get the date in a electronic format, which is what I did, to create the graphs that I'm going show here today.

Okay. Next slide. This shows the summary sheet that you have and the breakout of the three types of stations. Just briefly -- I'm not going to go through all of those. But just briefly, the color coding on the right, the first column, if it's brown, it's less than the long-term mean average flow for that site. If it's green, it was above for the last year. And by the last year, I'm talking about water year, which runs from October, 2007, to September 30th of 2008. That is how we have for years, I'm not sure why, broken things out. It's called the water year. And so you can see that the two stations were above the long-term mean out of those 16 for 2008.

The next column shows the ranking and the number of years. So the first station, Arikaree at Haigler last year was 70th, counting from the top. So, it was the 70th highest out of 76 years of record there. And the green simply means it was more flow than the previous year. And the brown indicates it was less than the previous year in 2007.

Okay, next slide. Okay, this is the first step of stations, again, operated by us, by the U.S.

Geological Survey and funded by the National Stream Flow Information Program.

Next slide, please. Okay, the first station -- and I'm going to go in what's called the downstream order. That's how we number our stations. So if you actually look at the eight-digit number, they'll be getting bigger as we go down through these. And that's done from up -- what's considered upstream to downstream.

So, the first site is the Arikaree River down in the southwest corner of the state of Nebraska, very near the borders with Colorado and Kansas.

Next slide. This shows then -- All of the slides are going to be the same. Just a quick summary slide, I think you can get a good feel for the historic flows of -- Each of the individual years is plotted as the square. And then the black and the red represent the cumulative mean and the cumulative median. So, based on the number of years of record that were available at that point, that was the mean and the median for each of the years. And so then you can see off to the right is -- I think we're getting 2008 on there, maybe not, but pretty close, is the data for the current year. And some of the

same information that's on the summary sheet, then, again, summarized up above just for perspective, giving you the high year, the low year, the mean and the median, the period of record, and the rank, and then the actual flow for last year.

Okay, next slide. Okay. Then the next one is the North Fork Republican River, very near Arikaree on the state line. The picture on the lower right shows the control that we put in. The old control was in pretty bad condition. We tried to repair it. In the process of repairing it, about a year ago, it basically collapsed. And so we had to pump a lot of money into it in short order. And we built a completely new control, which I've heard, is working pretty well, based on the reports from guys in the field, which is good, because that's certainly an important gage, pretty much right on the state line.

Okay, the next slide. Here again, record, for the period of record. A little bit higher flow from last year.

And if you have any questions on a particular station, just -- I won't be -- I may not be able to see if you're -- put your hand up, but speak up if you have any questions. I think the data

just, you know, I'm not going to interpret the data. It is what it is. But if you do have any questions, just stop me.

Next slide, please. The next station is a tributary to the Republican coming in on what we call the left side as we look downstream from the north, Buffalo Creek, near Haigler, a little bit downstream of where the Arikaree and the North Fork come together.

Next slide. And, again, the data there. Is 2008 actually coming on there? Could you -- I'm just wondering if we're getting -- Okay. All right.

Okay, next slide. Okay, thank you. Next station is another left bank trib, Rock Creek, at Park. And I guess nothing -- just a little bit farther downstream and the data for that site. And this is one site where ,if you look at the ranking, it was 68 out of 68, which means it was -- Last year was the lowest on record for that station.

Next slide. South Fork Republican River, near Benkelman, right near the border with Kansas before it comes into -- as it comes into Nebraska. It's been dry for a number of years. We finally had some flow the last few years, but the picture on the lower right shows the channel as it was commonly seen

for quite a while here.

Next slide. And you can see those zero flow years, but we've actually had a little bit of flow here. But last year was No. 68 out of 71 years of record.

Next slide. Okay. Frenchman Creek at Culbertson. This is near the mouth. A little bit later -- The state has a gage up by Palisade, which you can see upstream of there, and we'll be looking at that. But we're going through all the NSIP stations first and then we'll go back upstream and catch the other ones. So this is farther downstream past Swanson Lake and --

Okay, next slide. Now here you -- There's -- Because of the effect of Enders Reservoir, which was not shown on the map, it was a little further upstream, we break the record out on some of those sites that have reservoirs upstream with records before and after so that the dash line represents the mean and the medians after the reservoir went in. And the solid lines represent before it went in. And then some of the statistics on the right also give the mean and the median before and after the reservoir. And, see, the last couple of years, you know, it's had some increased flows,

you know, than compared to the previous number of years.

Okay, next slide. Okay. Now this is the right bank tributary, Driftwood Creek and kind of a poor picture there, but my digital camera wasn't working too well that day, so it looks kind of reddish, but it doesn't really look like that.

Next slide. And this shows a period of record there. Again, some increased flows the last couple of years. Down there we had actually a pretty high peak flow there a couple of years ago.

Next slide. Okay, Red Willow Creek. Back on the left, again, we have a reservoir upstream.

Next slide. And so you can see the change from before the reservoir was in effect to after the reservoir was in effect. And, again, this last year we had some increased flow, so that it's, you know, at least above the mean and median since the reservoir went into effect.

Okay, next slide. Sappa Creek, right bank tributary, that comes in just above Harlan County. Beaver Creek comes into Sappa Creek above the station.

Next slide. And again the record there. A little bit of increased flow the last couple of

years, still below the mean and the median.

Next slide. Okay, Courtland Canal now. We've moved down the basin below Harlan County. And Courtland Canal, which takes out of the Republican and goes down to Lovewell and extends beyond Lovewell.

Next slide. And showing the record for -- Last year was a drop off from the year before.

Okay, next slide. Okay. Now these are the two sites that we operate with other funding, Corps of Engineers and DNR and Bureau of Reclamation help fund some of these sites. There's only two.

Okay, next slide. The first one -- Now we've moved back up the basin to McCook, down below where Frenchman Creek comes in, but upstream of Red Willow Creek, also downstream of Driftwood. Okay. And again the period of record there. Slightly increased flows from the last couple of years but still below the mean and the median.

Okay. Republican River near Orleans above where it goes into Harlan County. And we've had some pretty good flows there the last couple of years. We actually had to make some bridge measurements. We've been making everything with weighting measurements prior to that but had some pretty good flows there.

Okay. The last four then are sites that are operated by Nebraska Department of Natural Resources. They do all the field work. We simply provide some support for the telemetry and put it on the web and then we review it and, hence, publish it then as a site data sheet like the other sites.

And the first one is Republican River at Stanton, up above Swanson Lake, and the record there.

Next slide. Frenchman Creek at Palisade that we referred to before, a little farther upstream from Culbertson, the gage that we operate, and, again, the period of record there.

Okay, next slide. Republican River at Cambridge and just downstream of Medicine Creek. And because of the effect of Medicine Creek, we've put the record before and after Harry Strunk Lake. And you see the last couple of years again approaching the mean and median with some increased flows but still below.

Next slide. Last site is Republican River at Guide Rock. And this site was on the highway and DNR has moved it recently to just below Courtland Canal so they can better document the flows that, you know, that aren't diverted because there are some tributaries in between there, and the period of

record there. And you can see the last -- 2008, you know, again, some flows between the mean and the median there.

And with that, I'll take any questions. The new -- I was the data chief, but we have a new data chief coming in. His name is Jason -- I'm not even sure how to say it -- Lambrecht. He'll be reporting here, I think, the end of the week. So, he would be a contact for you regarding data issues. I'm still there. I'm the surface water specialist and I could still answer questions. So, if anybody has any questions and would like to obtain some of that data, my phone number is on the summary sheet there. And I would be glad to help anybody download data or answer any questions, but Jason would be available as well, so any questions?

COMMISSIONER BARFIELD: Actually, I have a couple of comments, I guess. Appreciate this report and obviously the very useful data of the USGS.

I note in your report that the Hardy gage is not included. I guess that's because the Kansas section is responsible for the maintenance of the record, is that correct?

MR. SOENKSEN: Yeah. Kansas USGS operates that station.

COMMISSIONER BARFIELD: Right. I wonder if it would be possible to coordinate with that office and have that included in your report. The Hardy gage is a, you know, very critical gage to the compact administration.

MR. SOENKSEN: I guess I could have been doing that. I mean, because, like I said, I get the data right off the web. So, it wouldn't be hard to include that, just add that in so...

COMMISSIONER BARFIELD: I think that would be helpful.

MR. SOENKSEN: Okay.

COMMISSIONER BARFIELD: To just create a more complete record.

The Compact Administration has adopted a water year that's the calendar year. The USGS obviously has its water year starting October 1. I think it would be a bit more useful to have these reports reflect the calendar year or the compact year, but I'm not sure how much trouble that would be.

MR. SOENKSEN: I mean, we can do it. It's a matter of -- we'll have to use preliminary data through the end of the year. And that isn't so hard, except that sites that are ice effected, it's hard.

A lot of times we don't get ice effected records worked until after the end of the winter, which makes it a little -- Well, I mean, we can obviously do that but -- We're working on -- The survey is working on a process where we publish our data faster and faster. And so that should become actually easier and easier. Well, it becomes harder and harder, but it should be more doable because we have limitations put on us when to get that data out. And so if this is a priority, we can try to make that a priority to get those records worked and then they can be included in the report, so...

COMMISSIONER BARFIELD: Thank you.

CHAIRMAN DUNNIGAN: Okay.

COMMISSIONER WOLFE: I just wanted to make a brief comment to thank the USGS for their cooperation in working with, particularly Colorado, when we've had requests to check some of gages, particularly this year when we started getting flow at Benkelman. And when we have seen some anomalies there to get right out, so we appreciate your response in this.

And I would be remiss in not also thanking the Bureau after their report for their cooperation this year as well. We've had a lot of activity

regarding operations at Bonny this year and we greatly appreciated their response from this, with Marv and others, and Aaron, in our request to make releases out of the reservoir. So I wanted to thank them as well at this time.

CHAIRMAN DUNNIGAN: Thank you, Commissioner.

I see no other questions. Thank you, Phil.

At this particular point in time, I would like to recognize State Senator Tom Carlson, who walked in a little while ago. Thank you for coming, Senator Carlson.

Moving again to Agenda Item 6, Committee Reports. We'll start with the engineering committee. Mr. Williams, please?

MR. WILLIAMS: Thank you. I would like to recognize Megan Sullivan and Scott Ross as my colleagues on the engineering committee for the second year in a row.

We had a very high level of activity this year. Much of our work was related to the Colorado augmentation plan and discussions related to that. We had a total of three face-to-face meetings and quite a number of conference calls.

I'll go over the work assignments and

agreements and recommendations to the RRCA.

Our first assignment was to complete the users manual for accounting procedures and provide a resolution for its adoption, and this assignment was not completed.

Our second assignment was by September 15, Nebraska will provide data, responding to Kansas, August 1, 2008, letter to Nebraska. In addition, Colorado was to provide a final meter report by the same date. And comments and additional questions were due by October 1 and the information was to be reviewed by October 31.

Working on that assignment, Nebraska provided a response to Kansas's August letter by email and letter on September 15, 2008. Colorado had some data collection issues and was not able to provide a final meter report. And the states did not provide follow-up questions or comments prior to October 31, 2008.

On July 17, 2009, Kansas renewed its request for data necessary to complete the 2007 data exchanges.

Assignment No. 3, we were to exchange by April 15 the information listed in the accounting procedures. And by July 15, the states were to

exchange any updates to that data. The states completed their preliminary data shortly after April 15, and had very minor changes prior to August 7, when the final computer groundwater model run was completed.

The states have not been able to complete an accounting for 2008 due to a number of issues that are in arbitration.

An additional work assignment was to continue efforts to resolve concerns related to varying methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin, and very little progress was made on that assignment.

Another assignment, fifth consignment, was to continue to review Colorado's augmentation proposal. And the states, as I said earlier, have expended a great amount of effort on that.

Our final assignment was to retain Principia Mathematica to maintain the groundwater model and associated web sites, and this was completed.

The committee has a single recommendation for an accounting change to present to the RRCA, and that is, that the accounting point used in the RRCA

groundwater model for the North Fork Republican River Sub-Basin should be moved to the Colorado-Nebraska state line in accordance with Article 3 of the Republican River Compact.

The committee recommends the following assignments for the coming year.

No. 1, finalize work on a users manual for the accounting procedures and provide a recommendation to the administration for adoption at next year's meeting.

No. 2, complete exchange of data request by Kansas in its August 1, 2008, and July 17, 2009, letters by October 15, 2009.

No. 3, exchange by April 15, 2010, the information listed in Section 5 of the accounting procedures. And by July 15, 2010, the states will exchange any updates to the data.

No. 4, continue to review Colorado's augmentation proposal, as appropriate.

No. 5, continue efforts to resolve concerns relating to varying methods of estimating ground and surface water irrigation recharge and return flows. Within 90 days, the states will exchange pertinent information, and the engineering committee will meet to develop recommended steps to resolve the issue.

No. 6, develop a revision to the RRCA accounting procedures to reflect agreements by the RRCA at its 2008 and 2009 annual meetings, and provide the RRCA with recommendation of any appropriate formatting changes.

No. 7, retain Principia Mathematica to perform ongoing maintenance of the groundwater model and periodic updates requested by the engineering committee.

No. 8, continued development of a five-year accounting spreadsheets/database for adoption at the 2010 annual meeting or earlier.

No. 9, review accounting procedures to determine if Kansas groundwater, CBCU and the mainstem is properly included in the mainstem version water supply calculation. And if necessary provide a recommendation to the RRCA at the next annual meeting.

The final item on today's agenda for the engineering committee report is to discuss a response to Kansas's data request. And I believe we had a fruitful discussion yesterday during our working session. And I think we've got a good pathway forward. I wanted to see if there were any other comments related to that one item.

COMMISSIONER BARFIELD: Thank you. Let me just provide a brief response. I would just affirm that. We had a good discussion yesterday during the work session on these requests and the states' responses. We had some good discussion on questions we had regarding the data that's been provided. Colorado provided its assurance that it would provide the meter data we've requested and Nebraska assured us that they would cooperate with us as we review the data they provided and its sufficiency. So, that would be my comments.

CHAIRMAN DUNNIGAN: Thank you. Other questions.

(No response.)

CHAIRMAN DUNNIGAN: Okay. We will have action on Item 8.

We'll move along to the conservation committee that Scott Guenthner will present. Thank you, Scott.

MR. GUENTHNER: Good morning. I'm Scott Guenthner. I'm with the Bureau of Reclamation. I'm here today on behalf of the Conservation Committee to provide you with a status report on the conservation study. If you recall, this study is to quantify the impacts of these non-federal reservoirs and land

terraces in the basin.

I provided the email last Friday, August 7th, a copy of our draft report. It's a 26-page report. Normally we would provide a more substantial report. We haven't done that this year, in the interest of time, but we will be producing that report later in August. I didn't mention this yesterday, but I think you probably ought to consider the email report you got probably a draft version. I don't expect it will change much at all, but we probably should rely on the report we actually produce later in August.

I might mention that on the committee, I should point out, Megan Sullivan, for Colorado; James Williams, for Nebraska; and Scott Ross, Kansas, are also on the committee. And we coordinate the un-kind services through them. And most all the documents we prepare are reviewed through them for the states. I might also mention that much of the real work for the study are done under contract with Reclamation. We provide many of the funds. The states provide un-kind services. Dr. James Koelliker from Kansas State is here in the audience and so is Dr. Derrel Martin. They're providing the field data collection aspect in the modeling aspect of the study.

Since the study is really geared to quantifying the effects of reservoirs and land terraces, you can sort of think of it in two components. The states have identified 716 reservoirs. And of those, we've monitored 32 of those reservoirs for about four-and-a-half years. That data collection, field data collection, is done now. Some of the data has been analyzed and some of that work is presented in the report. We've mapped 2.3 million acres of land terraces in the basin. I think we heard yesterday it was 14 or 15 percent of the land area in the basin. We have collected detailed information in the field at five terrace sites. That's a fairly small number considering there's about 23,000 terraced fields in the basin. But we've collected a lot of intense data. And some of that data is also analyzed and presented in the draft status report. So, we've got all of the field work done and much of that data has been analyzed. There is some remaining to be analyzed.

One of the last big pieces of work was done this year. One of the gaps in the study or gaps in information we had was these terraces, which comprise so much of the basin, have been built over many years. And we didn't really know what the storage

condition of these terraces were. We knew how they were designed, but we didn't really know what the storage condition was. So one of the big efforts in the last year or year-and-a-half was to do a sampling of those terrace sites. We sampled about 167 sites, collected data and determined the storage condition. That's a key element of the work you have to complete. So that field work is also done. We're in the process of summarizing that data. So all the field data we've collected at the reservoir terrace sites and the terrace condition survey, that information will be used in a modeling analysis that will actually quantify the effects. I think we had anticipated that that work would be complete now. It was originally designed as a five-year study. And this is the fifth annual report. So, it should have been done, but it is not. We've identified the tasks that are necessary to complete that. And we expect that by January 15th, we will be able to transmit to you folks the quantified effects of the terraces and reservoirs.

Subsequent to that, between January and June, we expect to produce a users guide for the water balance model, and then other documentation to support the study, and we expect that to be completed

by June.

There are at least four other reports, besides the status reports, that we provided you. Three of them are associated with master's thesis' that have been produced out of UN-L, and one of them is associated with a doctorate thesis that has been produced out of Kansas State. Those are identified in the report.

The only other thing I have to mention is that the Final Settlement Stipulation, which is what really what prompted this particular study, it identified what the study costs are expected to do and that the states' share should not exceed $250,000. You'll notice in the report that we don't have any information today as to what the study costs of the states have been in the last year, but I think, once we get those, we'll see that the states' contribution is in that $250,000 range. Most of that, or all of it, has been provided through un-kind services and the balance of the funding then has come from Reclamation from various sources.

That concludes my report.

CHAIRMAN DUNNIGAN: Scott, I have a question. It sounds like there's still a bit of work to do. But can you relate any preliminary

conclusions that you're finding about this study or are those still yet to be quantified?

MR. GUENTHNER: Well, I think we have some conclusions from modeling. I think there's other conclusions that come directly out of the field work. I think, without getting into too much detail, for the land terraces, they retain almost all the runoff in the terraces, if you look at a long-term situation, 30 years or so. They retain 90 percent of the runoff in the terraces. That water is used up in either ET or goes to some sort of deperculation. I think we can say the same for small reservoirs. They retain upwards of 90 percent or more of the runoff that goes into those reservoirs. Where, at one time, water -- this runoff would become stream flow and go father downstream. Now it's mostly captured in the reservoirs. For the reservoirs, a small percentage of it goes to evaporation. The majority goes to deperculation of some sort.

CHAIRMAN DUNNIGAN: Thank you.

MR. GUENTHNER: And that information is really contained in our draft report.

I should also mention that this draft report that we emailed out to the commissioners is not widely distributed. It was distributed to the

commissioner and to certain -- a certain group that is loosely called the conservation committee. So it is not widely distributed at this point.

CHAIRMAN DUNNIGAN: Commissioner Wolfe?

COMMISSIONER WOLFE: I just want a quick clarification on that. Your preliminary conclusions you just stated are based on this limited set of sites you sampled and is not conclusive of sites that wouldn't be maintained in an adequate condition?

MR. GUENTHNER: Well, it would be based on the information we collect at the sites. And I think it might have been extrapolated out to be representative of the sites across the basin. So they're not -- I guess what I'm getting at is, it's not like you would take a terrace system that was constructed in new condition and is reflective of that. It's reflective of the actual sites in the basin.

COMMISSIONER WOLFE: So it's going to be an assessment of --

MR. GUENTHNER: That's right.

COMMISSIONER WOLFE: -- kind of the conditions as a whole in the basin?

MR. GUENTHNER: That's correct.

COMMISSIONER WOLFE: Thank you.

CHAIRMAN DUNNIGAN: Any other questions?

COMMISSIONER BARFIELD: Well, I have questions or comments, I'm not sure.

Again, I want to just -- appreciate the report that you provided here and commend the committee and the researchers for their work here. I think that there's a lot of interesting insights that are starting to come out of this -- these studies. And I think as you work toward completion of the study, I would encourage the committee to meet more regularly and assure that the report sort of adequately captures the study results and to try and make those as understandable as possible. This study looks at the effects of terraces and non-federal reservoirs or ponds and their effect on hydrologic system, helping us to better understand those. I think it needs to be recognized that the study focuses only on these two practices. They are very significant land treatment practices, tillage practices, for example, and the like that also have a profound effect and maybe arguably more profound that are not being studied. And I guess I would request as you write up the report that you just sort of make more explicit what you looked at, what you didn't look at, and maybe some sort of estimate of sort of

the accuracy or estimates, both, again, what's been studied, what's not been looked at so people can sort of understand maybe better the fuller picture.

MR. GUENTHNER: I think, you know, in our preparation of documentation, which we expect was to be done by next June, we should be able to cover all of those aspects. I think the people doing the work understand that. And I think we've attempted to get that into reports. But we're sort of in the middle of the -- well, we're actually in the end of the study. But in preparing some of these reports, that gets missed occasionally. So we'll try to get that taken care of in our summary documents.

COMMISSIONER BARFIELD: I didn't really see that discussion in the current draft, so I appreciate that. Thank you.

CHAIRMAN DUNNIGAN: Thank you, Commissioner.

Other questions?

(No response.)

CHAIRMAN DUNNIGAN: At this point in the agenda, I would look at the commissioners. It's about 9:30. We could take a five- or ten-minute break and reconvene, or we could keep going, and I would ask the thoughts you may have.

COMMISSIONER WOLFE: I think a five-minute break would be fine.

CHAIRMAN DUNNIGAN: We're going to take a five-minute. And we'll try to be very punctual because we do have a bit of a deadline we're working under today. Thank you.

(A recess was taken from 9:38 a.m. to 9:50 a.m.)

CHAIRMAN DUNNIGAN: We'll go back on the record. We're to Agenda Item 7, Old Business. And the first item is Dispute Resolutions and Arbitration.

And I would look at Commissioner Barfield.

COMMISSIONER BARFIELD: Yes. I agreed to sort of at least start us off here with a brief summary of the arbitration, and I'm sure other states may want to add to it.

So the purpose of this statement is to summarize the non-binding arbitration that ended last month.

By 2007 disputes arose regarding Nebraska's compliance with the 2003 Final Settlement Stipulation and Compact, specifically, for the first water-short year compliance tests for 2005/2006. Nebraska added a number of accounting issues that they saw as

related to the issue of its compliance. These disputes were presented to the RRCA that the compact administration, pursuant to the dispute resolution process, set forth in the Final Settlement Stipulation. The RRCA addressed these disputes but did not resolve them despite a series of special meetings in the first half of 2008.

As a result, the state submitted these disputes to non-binding arbitration in an executed and arbitration agreement on October 23, 2008. Mr. Karl Dreher served as arbitrator.

The arbitration, the first of its kind, under the Compact and FSS was divided into legal issues and factual issues.

On November 5, 2008, the arbitrator conducted -- concluded that there were some legal issues that could be heard. Each of the states filed openings, responses and replied briefs on these issues. The arbitrator heard oral arguments on these legal issues in Denver on December 10, 2008, and issued its final decision on them on January 22, 2009. This decision narrowed the scope of discovery and the hearing on the factual issues.

From December, 2008, to April, 2009, the states conducted discovery and depositions and

submitted expert reports on the factual issues. These issues included the extent of Nebraska's violations for 2005 and 2006, the amount of economic damages to Kansas, as a result of these violations, Nebraska's proposed changes to the RRCA's accounting procedures and the steps that will be necessary for Nebraska's future compliance with the FSS and the Compact.

The arbitrator conducted a hearing on these issues in Denver beginning March 9 and the session on March 19th, 2009.

On April 14, 2009, the arbitrator convened -- reconvened the hearing for one final day to accept testimony and evidence from the Bureau of Reclamation.

On June 30, 2009, the arbitrator issued his final decision on factual issues. This decision concluded with 12 recommendations and incorporated the decision on legal issues of January 22, 2009.

On July 30, 2009, the states issued their responses to the final decisions. As might be expected, the states accepted and rejected the recommendations of the final decision according to their respective positions. The arbitrator's recommendations and the states' respective responses

to them are public information and available from the states.

Kansas believes the arbitration was conducted in a professional and courteous manner, especially given the tight time constraints for discovery, briefing and trial. Kansas trusts that both the arbitration and the states responses to it will not impede the important work of this administration.

That's my statement on it.

CHAIRMAN DUNNIGAN: Thank you, Commissioner.

Commissioner Wolfe?

COMMISSIONER WOLFE: Yeah, I just wanted to thank David for the great summary of that. And I agree, too, that we hope that the arbitration process set out in the FSS is a -- if needed upon, relied upon is accessible and done professionally. And I echo your comments as well, and I appreciate your remarks.

CHAIRMAN DUNNIGAN: Thank you.

The next item is the Colorado Compliance Pipeline proposal. Commissioner Wolfe?

COMMISSIONER WOLFE: Thank you, Commissioner Dunnigan. I'm not going to read the

resolution in its entirety, but basically present it to you. Both Kansas and Nebraska have seen this proposed resolution.

What we have before you is -- and I'll read the title of the resolution. This is a resolution by the Republican River Compact Administration regarding approval of Colorado's augmentation plan and related accounting procedures submitted under Subsection III.B.1.k of the Final Settlement Stipulation, and this is dated August 12th, 2009.

As many know, we had originally submitted Colorado's Compact Compliance Pipeline proposal or its augmentation plan proposal in March of 2008 to the Commission or Administration, and so we've been working on it since then. We had taken initial action on this resolution in April of this year via phone conference. What has changed since the resolution that was presented for action in April were a couple of items. And I'll just highlight those, and I'll just generally, conceptually, present to you, and for the audience, what's embodied in the resolution. Of course, there's a number of typical "Whereas's" that lead into the conditions in the resolution. We have a number of things that we pointed out in here that are pertinent in regards to

our Compact Compliance Pipeline and a number of exhibits associated with that. And I'll just briefly go over those.

Some of the conditions that are in here that I would like to highlight -- We've got conditions about the limitations on the amount of historical consumptive use of the groundwater rights that will be used for conveyance of the water in the pipeline to the North Fork. And there's an attached Exhibit 3 that describes now what the water rights that the District is involved with for that pipeline represents a little over 13,500 acre-feet.

Exhibit 1, that's attached to this, was the original proposal that outlined the whole project that we presented in March of 2008. And it gives a lot of details in there about the construction of the pipeline location and a lot of the characteristics of that.

Exhibit 2, that's attached to this resolution, contains the accounting procedures that have been modified to reflect the conditions that are outlined in this proposal. This proposal also recognizes that the net completions that will be computed from the Compact Compliance Pipeline -- or Compact Compliance Wells will be computed using the

RRCA groundwater model.

We've also put the limitations in here on any individual amount of pumping from an individual well limited to 2500 acre-feet per year.

Condition No. 4, under this proposal, is a step and example of the projected augmentation water delivery from the pipeline to the North Fork.

We've got steps in here that we would go through in terms of the process to determine the projected water delivery and the limitations that would be imposed upon that. We have a minimum delivery that we would be required to make, and we've also got a maximum delivery that we could not exceed underneath Condition No. 4.

We outline in Condition No. 5 in here that the preliminary design that was presented in Exhibit 1, it's the intent of the District to follow that as close as they can but, as you know, through final design process, there may be some minor modifications to that. And this condition just basically says if there's any changes to that, anything that's substantially different from that, certainly the RRCA could take it up for further modifications if they believed that, say, alignment of that was significantly changed to effect the terms and

conditions that are proposed in here.

We also incorporated a provision that would allow the Republican River Water Conservation District to acquire additional groundwater rights because the -- and put into the pipeline. The pipeline has been designed and constructed for obviously a far greater capacity than what is available with the initial purchase of the water rights that the District is involved with. And so this has some conditions in here in which the District in the state can incorporate additional groundwater rights into that pipeline.

We also point out, as we made clear, that the approval of this augmentation plan related to accounting procedures shall not govern any future approval by any other state under Subsection III.B.1.k. And also it doesn't present or waive any other states' rights to claims or seek for damages for any violations under the Compact or the FSS.

And the last condition we have in here is that the -- nothing in the resolution shall relieve the state of Colorado from complying with the obligations set forth in the Compact or the FSS, other than -- except for what's approved under this augmentation plan and related accounting procedures.

And I just wanted to mention, as far as Exhibit -- I think I referenced Exhibits 1 through 3.

The last exhibit that's in here, Exhibit 4, relates to the Condition No. 4 in the proposed resolution that's an example spreadsheet. It shows how this would typically operate with those minimum and maximum delivery limits in there, as well as our projected delivery credit. And it's merely used as an example for purposes of this resolution.

And that's, I guess, in essence, what is contained in our resolution that we bring before this Administration today for action.

CHAIRMAN DUNNIGAN: Thank you, Commissioner Wolfe. Would you like to move?

COMMISSIONER WOLFE: I would certainly at this time -- So we could open it up for discussion, I would request and move that the Commission adopt the proposed resolution that I just discussed dated August 12th, 2009.

CHAIRMAN DUNNIGAN: Second, Commissioner Barfield, discussion?

COMMISSIONER BARFIELD: I'll second it for discussion purposes, or were you seconding it?

CHAIRMAN DUNNIGAN: I would, but I thought you were seconding.

COMMISSIONER BARFIELD: I second it for discussion purposes.

CHAIRMAN DUNNIGAN: Okay.

COMMISSIONER WOLFE: Thank you.

CHAIRMAN DUNNIGAN: Discussion?

COMMISSIONER BARFIELD: If I may, Commission Dunnigan?

Again, I would like to express appreciation to the state of Colorado for its efforts here. Obviously, we recognize the very significant work that you are doing to develop this proposal and very significant resources to develop, you know, a defendable supply to offset your depletions.

Kansas does not wish to impede the state of Colorado from achieving compliance with the Compact via the vehicle of an augmentation plan that is recognized in the Final Settlement Stipulation as one avenue. That being said, the settlement required that argumentation plans have the approval of the RRCA to make sure all the necessary conditions are there to ensure it's done in a way that meets the needs of the states. Kansas has, as you know, Commissioner Wolfe, as well as Nebraska, put a lot of time and resources into this issue. We have diligently met with you on many conference calls and

so forth, numerous meetings, numerous time in analyzing the proposal. We sought to express our concerns as specifically as possible. We've offered counter proposals where proposals of Colorado have not been satisfactory. You know, we're not there yet. Colorado is substantially overusing its South Fork allocation, as you know, including the use of Kansas's specific allocation on the South Fork, and this issue must be addressed.

In addition, there remain a number of details in the plan that we believe require additional work. Those were discussed, I think, at some level of detail in our discussions and, I think, summarized at our April meeting.

I think, while Colorado may need to initiate the dispute resolution process at this stage, I still want to continue to encourage the states to continue to work towards finding solutions on these matters because I think they're best found through negotiations, and I still think they're possible.

As I suggested in the past, one possible possibility I think we need to explore is extending the North Fork Pipeline into the South Fork Basin in Kansas. I think that has the potential for settling

a number of key factors that have kept us at an impasse. So, that's my comments.

CHAIRMAN DUNNIGAN: Thank you, Commissioner.

The resolution before us today is essentially unchanged from the one voted on during the special meeting in April. Nebraska stated her concerns and reasons for voting no for the record during that meeting. Our concerns were also set forth to Colorado in Nebraska's letter of April 10th, 2009. Our position has not changed, and for that reason, we'll have to vote no today, as well.

Any other discussion?

(No response.)

CHAIRMAN DUNNIGAN: Call a vote.

COMMISSIONER WOLFE: Sorry, maybe just a followup comment. Just for the record and appreciate an echo of Commissioner Barfield's comments about trying to continue to seek resolution of this through an informal process. And we recognize the -- what's provided for under the FSS is maybe a backstop, if nothing else, to continue this process along the lines of dispute resolution, if needed.

And as you're aware, I remember our discussion yesterday and the correspondence in the

last couple of weeks, that we are working to address the South Fork issue and the tributary issue and will continue to explore options out there.

And, likewise, I guess, in terms of Nebraska's positions on that, I think we've made it clear that we think some of the issues that we're trying to address, as far as the South Fork issues, addresses one of your two issues in your letter from April. The second one in regards to the Haigler Canal, I think Colorado is still taking the position that we believe that this is not a Compact-related issue because it is a decreed water right in Colorado. And it's afforded all the same protection as any other water right in Colorado in terms of our administration in accordance with the law to protect it against any injury, and we've attempted to address that through a separate, maybe, agreement, if you will and we'll continue to support that.

I think I would like to also point out for the record that through the efforts of many of the Colorado water users and the purchase of many, if not almost all of the senior water rights on the North Fork, this has made a significant amount of the supply available, but it is available and has been taken, certainly this year is evident of that, by the

Haigler Canal to satisfy their water rights. So I think Colorado has taken significant steps to address the concerns that Nebraska has raised about potential impacts to the Haigler Canal. I think it's evident by what has transpired in the last year and the operation of that, those rights on the North Fork this year. So I would like to just make the record reflect that. And we will continue to administer the Haigler Canal water right in accord with the law, but we still think this is a separate issue from the Compact Compliance Pipeline.

CHAIRMAN DUNNIGAN: Thank you.

Any other discussion?

(No response.)

CHAIRMAN DUNNIGAN: I'll call for a vote. All those in favor for the motion as presented by Commissioner by Wolfe please signify by saying aye.

COMMISSIONER WOLFE: Aye.

CHAIRMAN DUNNIGAN: Opposed, same sign?

COMMISSIONER BARFIELD: No.

CHAIRMAN DUNNIGAN: No.

Motion fails.

COMMISSIONER WOLFE: Thank you.

COMMISSIONER WOLFE: And we do have a complete package available for the recorder, if

needed, that's here, of all the -- of the resolution and all the attached exhibits, if needed. We'll make that part of the record, please.

(Exhibit No. 1 was marked, offered and received in evidence. See Index.)

And if you guys need to look at that, what we're submitting, make sure it's in accordance with what we voted on.

CHAIRMAN DUNNIGAN: The next item under Old Business is Nebraska's crediting issue. Nebraska's position on this issue is clearly outlined in a June 15th, 2009, letter to the commissioners. Nebraska revised it's time line and restated its commitment to this issue in a letter dated July 29th, 2009. The resolution would approve the proposal to resolve the crediting issue, as outlined in the June 15th, 2009, letter. I will distribute that again. It's the same resolution that we discussed during the working session last night.

I would ask for the resolution and the letter to be made part of the record.

(Exhibit No. 2 was marked, offered and received in evidence. See Index.)

At this time, I would move to approve this resolution. Is there a second?

COMMISSIONER WOLFE: Second.

CHAIRMAN DUNNIGAN: Discussion?

COMMISSIONER BARFIELD: Commissioner Dunnigan, I have some discussion here. I guess, as I said last night, I want to state that I strongly disagree with this resolution, the characterization that this issue has been properly been presented to the RRCA in accordance with the dispute resolution provisions of the FSS.

As you noted, Commissioner Wolfe and I received your letter on June 17th. It raises this issue of concern and asks the RRCA to address it stating the states may or may not be in agreement on it.

Nebraska asked for a fast track determination on this matter. It seems to have little urgency, in my opinion. The schedule indicated an expectation the RRCA would need to resolve the matter by July 15th. In transmitting the proposal, you indicated you would call to discuss the matter, which did not occur. As the deadline approached and with the arbitrator's decision on this matter, I wrote to inquire about Nebraska's intent. I received the reply, again, you noted, affirming Nebraska's intent to move forward.

Until last night there had been no discussion of this matter by the RRCA or its engineering committee, other than a brief procedural discussion by the engineering committee. Despite Nebraska raising the matter and Nebraska chairing this administration with it bearing the responsibility to call the meeting. Even after our discussion last night, I'm not particularly clear on exactly what Nebraska is seeking to accomplish with this resolution as it related to past violations, as related to potential future violations that Nebraska is pursuing.

Now with regard to the substance of the matter, it appears, to me anyway, in putting forth this issue before the Administration, Nebraska is proposing to substitute money for water. This proposal flatly contradicts the Compact and so Kansas must oppose it. The Compact actively apportions the waters of the Republican Basin, binds the states to remain within its allocations. The Compact, the settlement, have no provision for exchanging water for money as Nebraska seems to be suggesting here. Consequently, Nebraska's crediting proposal is alien to the Final Settlement Stipulation and the RRCA accounting procedures, which serves the Compact of

providing agreed upon methods for calculating water supply and the use within the basin. Remedies for Compact violations are not specified by the Compact, by the Administration, by the Final Settlement Stipulation or its accounting procedures. Hydrologic calculations and remedies for violations must remain separate if the accounting procedures are to remain with their integrity. Nebraska's proposal attacks that integrity by requesting that the issue of remedy for violations be included in the calculations.

Nebraska's crediting issue is also procedurally defective. It's a request that is not an appropriate subject for this meeting or for action by the RRCA.

Kansas disagrees with the arbiter's decision that the crediting issue can be brought before the RRCA. It's beyond the RRCA's purview.

Nebraska, in it's June 15th letter, maintains a crediting issue was done properly before the arbitrator, and the arbitrator resolved these issues against Nebraska.

In addition, this issue cannot be decided. It is a solution to dispute that at this point is only hypothetical.

In summary, the crediting issue contradicts the Compact and the FSS by attempting to rationalize

noncompliance. In doing so, it fundamentally distorts the FSS and the accounting procedures.

In addition, it's procedurally improper and unright. Therefore, we strongly oppose it.

CHAIRMAN DUNNIGAN: Commissioner Wolfe?

COMMISSIONER WOLFE: Thank you, Commissioner. Colorado recognizes the significance of the issue. And to the best of our knowledge, this type of issue has never been dealt with in any state or compact commission. Obviously, somehow double penalizing a state is not acceptable. However, considering both the novelty and the importance of this issue, Colorado cannot support Nebraska's resolution at this time.

We would like to continue to work with Nebraska and Kansas to determine how to solve the issue. And in the end, Nebraska's proposal may be the best. We understand Nebraska wants to vote on this today and we understand to support that desire whether or not Nebraska votes non-binding arbitration. Colorado will continue to work with Nebraska and Kansas to better understand the Nebraska proposal and so all states can fully understand the effects of the various ways that this issue can be resolved. Thank you.

CHAIRMAN DUNNIGAN: Thank you, Commissioner.

Nebraska disagrees with Kansas's assertion that it has not been properly presented -- this issue has not been properly presented to the RRCA.

If there is no other discussion, I'll call for a vote. All those in favor of the resolution before us, please signify by saying aye.

Aye.

Those opposed, same sign?

COMMISSIONER BARFIELD: No.

COMMISSIONER WOLFE: Aye.

CHAIRMAN DUNNIGAN: Motion fails.

The next item on the agenda under Old Business is the Lower Republican Feasibility Study.

Commissioner Barfield?

COMMISSIONER BARFIELD: Just give me a moment. Well, let me attempt without my notes here.

A couple matters related to the feasibility study. I think the Bureau briefly reported on this matter in their report. This feasibility study is sort of an outgrowth of some work that was done jointly by the states and the Bureau of Reclamation in assessing some alternatives to improve management in the Lower Basin. The study is anticipated to be a

joint study between the Bureau and the states of Kansas and Nebraska. We have been working to find -- obtain federal authorization for the feasibility study, as well as funding. And so far, that was -- We've got authorization in the last year but have not obtained federal funding. The state of Kansas has had funding in its budget year for many years now. And I believe that -- Well, I won't speak for the state of Nebraska on this matter.

Last year I noted in reviewing the transcript that we had committed to jointly developing a letter that could be used to support obtaining the federal appropriation, if necessary. I note that that did not occur this year. I would encourage us to get that on the agenda and get that completed for the coming year.

The state of Kansas is interested in some of the alternatives that were evaluated in the predecessor to the feasibility study that identified a number of potential alternatives to improve the use of the water supply in the Lower Basin. One of those included raising the Lovewell Dam. And we have been working to determine whether some of the work in the feasibility study could potentially be started while we wait for those appropriations at the federal level

in view of the funding that we have available. The state of Kansas is working with the Corps of Engineers through a similar cost share program to conduct these sorts of studies. And this last year, we worked with the Corps and in coordination with the Bureau of Reclamation to do one specific study task in the feasibility study plan of study, and that was accomplished. And we're currently in discussions with the Bureau and the Corps about maybe other additional work that can be done while we wait the appropriation through the Bureau of Reclamation. So, I wanted to, I guess, make sure that the Administration was apprized of this. We've been working to make sure the state of Nebraska, in particular, is aware of the activities and invited and to participate in any way that you think is meaningful. So, I guess I give that report and take any questions you have.

CHAIRMAN DUNNIGAN: I don't have any questions. But I did attend the engineering committee meeting and the briefing by the Bureau on the status of the feasibility study going forward. And Nebraska will continue to evaluate the appraisal study , the scope of work for the feasibility study and Nebraska's role in this study with the hope that it will provide tangible benefits to both states, especially during

dry years when the Bostwick Irrigation District may experience a limited irrigation supply.

And I guess just to clarify, I think last year, Commissioner Barfield, you were going to draft that letter up. Will you be drafting that letter up this year --

COMMISSIONER BARFIELD: Yes.

CHAIRMAN DUNNIGAN: -- and circulating it to the Commission -- to other commissioners?

COMMISSIONER BARFIELD. Yes, I will. I was the one that was to do that task and I did not get it complete and I will endeavor to get that done as soon as possible and circulate it to you all.

CHAIRMAN DUNNIGAN: Any other comments or questions on that agenda item?

COMMISSIONER WOLFE: No comments, but we appreciate the update on the study. Thank you.

CHAIRMAN DUNNIGAN: Seeing none, that moves us to Agenda Item 8, New Business and Assignments to Compact Committees.

COMMISSION BARFIELD: Excuse me. We had one more item under Old Business, I believe.

CHAIRMAN DUNNIGAN: Excuse me. I already crossed it off. We do. It was inadvertent.

Compact Compliance.

COMMISSIONER BARFIELD: Thank you, Chairman Dunnigan.

CHAIRMAN DUNNIGAN: Yes, thanks.

COMMISSIONER BARFIELD. I'll try and keep this short. Well, you know, Kansas does continue to recognize and appreciate the efforts of both the state of Colorado and Nebraska to achieve compliance. We recognize that these matters are difficult. It's now been six years since the State signed the Final Settlement Stipulation and the Court entered the decree approving that settlement.

First, with respect to Colorado, you know, Colorado has reported on its various efforts to achieve compliance, yet it has been unable to do so for the past six years, overusing almost 60,000 acre-feet during that period. Again, as I stated earlier, we appreciate the very significant efforts that Colorado makes to develop a defendable supply to offset its completions via this augmentation plan. But in the meantime, Kansas farmers, and particularly those on the South Fork Basin continue to suffer water shortages and the inability to develop their allocation fully due to their consistent overuse of the South Fork allocations. You know, Colorado is required to take all actions necessary to eliminate

its excessive depletions on the South Fork and elsewhere. Although the Compact Compliance Plan has been approved -- although, if and when, the Compact Compliance Plan is approved, may help, Kansas points out that the Compact does not excuse violations when a state is crafting a plan. Each state is responsible for meeting its compliance obligations under the Compact and the FSS. And the state that knows the status quo will inevitably lead to violation must take firm action to meet its Compact obligations.

With respect to Nebraska, it's been, again, six years since the FSS was signed. Nebraska has also taken steps, but Kansas remains concerned about the sufficiencies of those actions. The arbiter accepted Kansas's calculations that Nebraska exceeded its' 2005 allocation by 42,680 acre-feet and its 2006 allocation by 36,100 acre-feet.

In addition, during the first four years of the accounting the FSS, Nebraska overused its allocation by approximately 140,000 acre-feet. These are years of diminished supply in the basin and Nebraska's violations were extreme and resulted in damages to Kansas users, as I've reported to this Administration previously.

As a result of very wet years in 2007 and in

2008, the pattern of overuse of Nebraska's allocation has been temporarily suspended. In Nebraska, the 2007 year, precipitation was 91 percentile. That was not the case for Kansas and Colorado that actually remained experiencing less than median precipitation in those years.

2008, the precipitation of Nebraska was 71 percentile. You know, we see that a principal cause, if not the principal cause for Nebraska's improved numbers to be precipitation that is substantially above normal, producing additional water supply and reducing pumping and surface water use. Kansas is concerned that with renewed dry conditions that Nebraska will, again, be overusing its allocations.

Nebraska asserted earlier in the meeting, in your opening statement, that it was in compliance for the five-year average of 2008. Kansas does not accept this statement. If Harlan County Reservoir evaporation is shared in 2006 and 2007, as we believe is appropriate, Nebraska would not be in compliance for that period.

As I testified in the arbitration trial, continued allocations allowed by the Republican River Basin Natural Resource District under their Integrated Management Plan will not reduce groundwater depletions

as is required to achieve compliance but will result in increases in groundwater depletions in the future.

Again, Kansas's main concern here is that in drier years when a Kansas farmer needs the reliable surface water supplies most, Kansas's approach to compliance is designed to fail again despite its assertions otherwise.

Again, the arbitrator agreed with Kansas here finding Nebraska's Integrated Management Plans to be inadequate and serve compliance with the Compact, that additional groundwater reductions were necessary to achieve compliance.

He also found that Nebraska, in addition to making additional cuts to groundwater, needed to develop additional firm supplies to provide water during critical dry periods.

As we noted in the past, the majority of Nebraska's consumptive use is attributable to groundwater pumping. Thus, groundwater pumping is a double threat to compliance, as it has an immediate effect on the water supply, but its legacy effects will hamper Nebraska's future compliance, as well. Kansas continues to urge Nebraska to take the hard actions necessary, to reign in its unsustainable groundwater consumption.

That concludes my statement.

CHAIRMAN DUNNIGAN: Thank you, Commissioner.

Commissioner Wolfe, anything?

COMMISSIONER WOLFE: No, no further comments.

CHAIRMAN DUNNIGAN: Nebraska categorically denies and disagrees with Kansas's assertion regarding their interpretation of the arbitrator's decision and adequacy of Nebraska's regulatory measures, including Nebraska's IMPs. Nebraska currently is in compliance with the Compact according to the current accounting rules. Harlan County evap is not shared. Much, if not all of Kansas's report, was based on years prior to 2006.

For the record, I would like to note that in 2007, Nebraska underused its allocation by 31,000 acre-feet and in 2008 by almost 86,000 acre-feet. Wet and dry periods happen. That is why we have averaging under the Final Settlement Stipulation.

Any other comments?

COMMISSIONER BARFIELD: I just note the numbers you reference are Nebraska's estimates, as the engineering committee has not concluded any estimates, correct?

CHAIRMAN DUNNIGAN: As were Kansas's

numbers, yes.

COMMISSIONER BARFIELD: That's correct as well. I agree.

CHAIRMAN DUNNIGAN: Moving to Agenda Item 8 now in order. New Business and Assignments to the Compact Committees. Action on the Engineering Committee Report and Assignments. I would entertain a motion to approve the engineering report and their assignments for the coming year. Is there a second?

COMMISSIONER WOLFE: So moved.

CHAIRMAN DUNNIGAN: Second.

Discussion?

COMMISSIONER BARFIELD: I just have one additional item, I guess. I agree with the report and all the assignments contained therein. Again, I appreciate the diligent work of the engineering committee and the cooperation there.

Last night we had a discussion about this Harlan County evaporation issue. Kansas presented to the working session an alternative -- a new alternative that we had presented by a letter, I think, to the state of Nebraska, during the dispute resolution process, the RRCA portion of that, but had, to my recollection anyway, never been discussed by the Administration or its engineering committee. And so I

sort of brought forward that discussion and asked that the administration consider assigning to the engineering committee additional discussion on this matter. I probably had agreement to that matter, but I guess I would just ask if continued discussion of alternatives to address Harlan County evaporation splits would be appropriate for the engineering committee.

CHAIRMAN DUNNIGAN: If there was a misunderstanding on that item being assigned back to the engineering committee, I'll take responsibility for that. It was our understanding that that wouldn't go back to the engineering committee. We certainly could have discussions about it at the RRCA level. We feel that it's already been in the engineering committee and would probably be referred back up anyway. So in the context of that particular item, and the other items under arbitration, we would be glad to discuss it through the Compact Administration and not assign it back to the engineering committee. So if there is confusion on that --

COMMISSIONER BARFIELD: Okay. Well -- So how would you like to proceed on the matter?

CHAIRMAN DUNNIGAN: We can discuss it through a special meeting or something else. And as I

said, we would want to discuss it in terms of the other issues, accounting issues that were arbitrated.

COMMISSIONER BARFIELD: Okay, that's fine.

CHAIRMAN DUNNIGAN: Any other discussion?

COMMISSIONER WOLFE: I would just like to comment on that. I agree, maybe it would be best to address this at a special meeting or a continuation of this meeting, since we'll have other matters and recommendations from the engineering committee to look at, maybe we'll just contain that in part of the future meetings. Probably no point to send it back down to the engineering committee at this point.

CHAIRMAN DUNNIGAN: At this time, I would call for a vote on the motion, unless there's other discussion.

COMMISSIONER BARFIELD: Well, my attorney here is -- We sort of left something hanging there. And I think he's suggesting it maybe isn't -- I guess with respect to the Harlan County evaporation issue then, let's just leave -- I asked a question as to whether that should be discussed by the engineering committee. I've heard you indicate not, and that's fine. So we'll vote here in a moment on approving the engineering committee report and assignments to the engineering committee based on the report we have in

front of us, correct?

CHAIRMAN DUNNIGAN: Correct.

COMMISSIONER BARFIELD: And let's just leave other action on the Harlan County or other accounting disputes without any particular assignment at this point. Is that the intention?

COMMISSIONER WOLFE: Yes.

COMMISSIONER BARFIELD: Okay, thank you.

CHAIRMAN DUNNIGAN: All right.

Call for a vote on the motion. All those in favor signify by saying aye.

Aye.

COMMISSIONER WOLFE: Aye.

COMMISSIONER BARFIELD: Aye.

CHAIRMAN DUNNIGAN: Opposed, same sign.

(No response.)

Motion carries.

The next item on the agenda is additional items.

And at this point, I would ask Commissioner Barfield if you have any additional items or closing remarks?

COMMISSIONER BARFIELD: I don't have any additional items or closing remarks.

CHAIRMAN DUNNIGAN: Commissioner Wolfe?

COMMISSIONER WOLFE: None at this time, Commissioner. Thank you.

CHAIRMAN DUNNIGAN: I don't have any either.

Moving to Agenda Item 9, Remarks from the public. If there are any remarks from the public, I would ask you to step up to the podium. Please give your name and spell your name for the court reporter. Thank you.

MR. EDGERTON: My name is Brad Edgerton, E-d-g-e-r-t-o-n. I'm the manager of Frenchman Cambridge Irrigation District. Thank you for the opportunity to speak today.

The past decade has been a struggle for the Frenchman Cambridge Irrigation District, which, by the way, is the largest irrigation district in the Republican River Basin. Frenchman Cambridge serves nearly 46,000 acres, using four separate canal systems. The District holds 41 natural flow permits with priority dates ranging from 1890 to 1987. The State has granted the District the right to divert 531 CFS from the rivers and streams. In addition to the District's natural flow permits, the Federal Government holds storage use permits on the District's project acres. The District has contract agreements with the Federal Government to deliver a total of

143,217 acre-feet of storage water from three federal reservoirs.

The largest of the three reservoirs is Swanson Lake, near Trenton, Nebraska. Prior to this year, the last time water was released from this reservoir was six years ago. During the same period, Colorado has repeatedly overused her annual compact allocation which, to date, exceeds 65,000 acre-feet during this period.

I am encouraged by the efforts Colorado is taking to comply with the Republican River Compact. Its obvious the folks in Eastern Colorado are willing to do what is necessary to achieve compliance. I know there are several issues to resolve before the Colorado pipeline can be constructed.

Frenchman Cambridge needs Colorado to comply with the Compact. Therefore, I offer the following suggestion so that everyone can move off center on this issue.

Colorado was granted 22.4 percent of the water supply on the North Fork of the Republican River. If Colorado did pump water into the stream without an approved augmentation plan, more than likely the small percentage would not justify the construction expense of the pipeline.

However, Colorado is allocated 78.5 percent of the supply on the Arikaree Sub-Basin. This percentage may justify the construction of the pipeline without an approved augmentation plan.

I would suggest to Kansas and Nebraska to allow Colorado to pump augmentation water into the North Fork and receive an equivalent of the Arikaree River allocation.

Kansas and Nebraska would retain some leverage over Colorado with the remaining 21.5 percent loss in pipeline water credit.

The second major concern of Frenchman Cambridge is the amount of water currently being mined from the aquifer above the federal reservoirs in Nebraska. In February, 2009, Frenchman Cambridge petitioned Nebraska DNR asking that the Republican River Basin be reevaluated to correctly identify whether the Basin is fully appropriated, which is the current designation, or, if, in fact, the basin should be designated as over-appropriated. Frenchman Cambridge Irrigation District's petition asked the DNR to look at the stream reach upstream of the Cambridge Diversion Dam. Our petition was denied. We have since requested a hearing and received notice July 21st this year that we have been granted a hearing.

No date has been set for this hearing.

An over-appropriated designation would require the State and the NRDs to develop IMP plans that would bring the basin back to the fully appropriated level of development. Frenchman Cambridge is simply asking the State to evaluate the basin once so that the state leaders and resource managers can develop and implement the appropriate rules for the area that have seen the greatest declines in the basin's water supply.

Karl J. Dreher recently recommended that Nebraska's IMPs for the upper, middle and the lower NRDs are inadequate to ensure compliance with the Compact and the FSS during prolonged dry conditions, such as occurred from 2002 through 2006. Nebraska and the Republican River NRDs should make further reductions in consumptive groundwater withdrawals beyond what's required in the current IMPs and obtain permanent interruptible supply contracts with surface water irrigators to ensure compliance with the Compact and FSS during prolonged dry conditions.

Frenchman Cambridge agrees that further reductions in groundwater consumptive pumping must occur. As far as the permanent, interruptible water supply, the reality is that even with the above normal

precipitation the past two-and-a-half years, Frenchman Cambridge cannot tell its water users today that they will receive an eight-inch supply from the District in 2010. This doesn't allow for long term planning or long term agreements.

To date, neither the State nor NRD officials have sat down with the District to discuss long term agreements.

I thank you for the opportunity to address you today. Thank you.

CHAIRMAN DUNNIGAN: Thank you, Mr. Edgerton.

Others from the public?

MR. MURPHY: My name is Stan Murphy from the -- I'm actually the manager for the Republican River Water Conservation District.

THE REPORTER: Spell your last name, please.

MR. MURPHY: M-u-r-p-h-y.

I would like to speak as an individual, not on behalf of the water district. To come down here and -- it's very frustrating to watch the political tap dance. We've got 4,000 irrigators -- irrigation wells out there, 20-some municipalities. These people are all being assessed 14, 15 acre-feet for irrigation compiling a lot of money, putting a lot of effort into this, trying to go to the bank to pay the debt. And

we walk in here and Kansas says, "Well, you don't have enough to pay the whole debt so we're not going to take any of it, you know. South Fork's an issue, so we can't take this money so you can't build your pipeline." Nebraska says, "We've got the Haigler Canal. We want to protect that and make sure we get water down there to the people on the Haigler Canal." At the same time, you don't want the water to be delivered to Nebraska because Swanson Reservoir could collect it and then irrigators are going to use it and increase your consumptive use. How are we going to solve this problem, people, if we can't get together and actually look at it logically and sort out what's really pertinent to the issue here, the pipeline? We're just trying to get this thing built to take care of that part of it. Now the other issues, kick them aside and let's get this thing solved. I would request from the other states, if you would send me in writing what your objections are to the pipeline so that I can put them on our website so people can see what they're actually being -- trying to confront here. Any questions, I would be glad to answer them, but it's very frustrating. Thank you.

CHAIRMAN DUNNIGAN: Mr. Murphy, did you sign the sign-in sheet with your address?

MR. MURPHY: I did, yes.

CHAIRMAN DUNNIGAN: Thank you.

Others from the public?

MR. MANGUS: I'm Tony Mangus, M-a-n-g-u-s. I represent CAPA. CAPA is an organization of farmers, ranchers, and we try to work with the state and our WRCD and whatever we can do.

The South Fork is an issue. And I guess I'll go back to maybe personal. That's my area down there. The South Fork has some issues, Bonny Reservoir one of them. And the state is recognizing the issue of the inflow in the Bonny. My point being is there's issues from the state line in Kansas on up to Benkelman. And my point being, Kansas needs to take some responsibility in the condition of the river from there up as far as invasive species. And I'm kind of with Stan on this. I mean, nobody -- You guys cannot sit down and -- I've been here three years, Junction City, and I really haven't seen nothing get done. I mean, it's just a dog and pony show. Kansas and Nebraska wants their cake and to eat, too, and the icing, and you name it. And Colorado is trying to do something. And I believe that you're impeding our efforts for it. That's all I have to say.

THE REPORTER: Could you spell CAPA for me?

MR. MANGUS: Colorado Agriculture Preservation Association.

THE REPORTER: Thank you.

CHAIRMAN DUNNIGAN: Thank you.

Other remarks from the public?

(No response.)

Seeing none, we'll move to Agenda Item 10, Future Meeting Arrangements. The next annual meeting will be hosted by Colorado.

Commissioner Wolfe, do you have any tentative dates in mind at this particular time?

COMMISSIONER WOLFE: We don't have any particular dates. I mean, in light of our discussion yesterday, having this by August 1, I guess we can still attempt to do that. We'll probably, within the very near future here in the next couple weeks or so, send out some dates to see if we can get that set up. We anticipate we're going to have that -- the location in Burlington, Colorado, just due to facilities, hotel arrangements, that type of thing. It's the most -- probably our best accommodations to do it in Burlington. So, we'll confirm that, but that's tentatively -- We'll have to find some dates and locations that -- or dates with availability for our location in Burlington. So that's why we don't have

anything exact at this point, but we'll get that sent out.

Since this does turn to Colorado now, as far as conducting these meetings, we will also facilitate any special meetings that need to take place. in light of the discussion today and continuation of our discussions on -- settlement discussions on the pipeline proposal. I would anticipate, since there was action items under the engineering committee assignments, that we had had some follow up things there, that it would be my recommendation that we not adjourn this meeting today, but actually continue it to address those issues there, if that is appropriate.

COMMISSIONER BARFIELD: Maybe we need to talk about that. I mean, you're suggesting we have a special meeting some time before -- between now and the annual meeting? Is that what I heard you say?

COMMISSIONER WOLFE: Yes, that's correct, or...

COMMISSIONER BARFIELD: Is it necessary to sort of continue this meeting to make that happen or do we --

COMMISSIONER WOLFE: Well, I think -- You could do it -- handle it a couple of different ways. I mean, there were some assignments on there that we

could take up as commissioners at a continuation of this meeting or discussions on -- as far as the Compact Compliance Pipeline or adjourn it and have it as a special meeting but, yeah, form over substance so either way is fine with us.

COMMISSIONER BARFIELD: I think I would prefer to just sort close the annual meeting and just -- if you want to state for the record that we intend to have a special meeting this fall, I think that would be appropriate.

COMMISSIONER WOLFE: That's fine. Procedurally, we get there either way, so we're fine with that.

CHAIRMAN DUNNIGAN: Okay. I would look for a motion to adjourn the annual meeting.

COMMISSIONER WOLFE: So moved.

COMMISSIONER BARFIELD: Second.

CHAIRMAN DUNNIGAN: Second.

CHAIRMAN DUNNIGAN: All those in favor?

Aye.

COMMISSIONER WOLFE: Aye.

COMMISSIONER BARFIELD: Aye.

CHAIRMAN DUNNIGAN: Opposed, same sign?

Meeting adjourned. Thank you very much.

(Adjourned at 10:46 a.m., on August 12, 2009.)

Ex. 1

RESOLUTION BY THE REPUBLICAN RIVER COMPACT ADMINISTRATION REGARDING APPROVAL OF COLORADO'S AUGMENTATION PLAN AND RELATED ACCOUNTING PROCEDURES SUBMITTED UNDER SUBSECTION III.B.1.k OF THE FINAL SETTLEMENT STIPULATION

August 12, 2009

Whereas, the States of Kansas, Nebraska, and Colorado entered into a Final Settlement Stipulation ("FSS") as of December 15, 2002, to resolve pending litigation in the United States Supreme Court regarding the Republican River Compact ("Compact") in the case of *Kansas v. Nebraska and Colorado*, No. 126 Original;

Whereas, the FSS was approved by the United States Supreme Court on May 19, 2003;

Whereas, the State of Colorado's Computed Beneficial Consumptive Use of the waters of the Republican River Basin exceeded Colorado's Compact Allocation using the five-year running average to determine Compact compliance from 2003 through 2007, as provided in Subsection IV.D of the FSS;

Whereas, the Republican River Water Conservation District is a water conservation district created by Colorado statute to assist the State of Colorado to comply with the Compact;

Whereas, the Republican River Water Conservation District, acting by and through its Water Activity Enterprise ("RRWCD WAE"), has contracted to acquire fifteen Compact Compliance Wells in the Republican River Basin in Colorado for the sole purpose of offsetting stream depletions in order to comply with the State of Colorado's Compact Allocations;

Whereas, the RRWCD WAE has contracted to purchase groundwater rights in the Republican River Basin within Colorado and proposes to pump the historical consumptive use of all or some of these water rights from the Compact Compliance Wells into a pipeline and deliver that water into the North Fork of the Republican River near the Colorado/Nebraska State Line to offset stream depletions in order to comply with Colorado's Compact Allocations ("Colorado Compact Compliance Pipeline");

Whereas, the States of Kansas, Nebraska, and Colorado adopted a Moratorium on New Wells in Subsection III.A of the FSS, with certain exceptions set forth in subsection III.B of the FSS;

Whereas, Subsection III.B.1.k of the FSS provides that the Moratorium shall not apply to wells acquired or constructed by a State for the sole purpose of offsetting stream depletions in order to

comply with its Compact Allocations, provided that such wells shall not cause any new net depletion to stream flow either annually or long term;

Whereas, Subsection III.B.1.k of the FSS further provides that augmentation plans and related accounting procedures submitted under this Subsection III.B.1.k shall be approved by the Republican River Compact Administration ("RRCA") prior to implementation;

Whereas, Subsection I.F of the FSS also provides that: "The RRCA may modify the RRCA Accounting Procedures, or any portion thereof, in any manner consistent with the Compact and this Stipulation;" and

Whereas, the State of Colorado and the RRWCD WAE have submitted an augmentation plan and related accounting procedures to account for water delivered to the North Fork of the Republican River for the purpose of offsetting stream depletions in order to comply with Colorado's Compact Allocations.

Now, therefore, it is hereby resolved that the RRCA approves the augmentation plan and the related accounting procedures submitted by the State of Colorado and the RRWCD WAE under Subsection III.B.1.k of the FSS, subject to the terms and conditions set forth herein. The augmentation plan is described in the application submitted by the State of Colorado and the RRWCD WAE, which is attached hereto as Exhibit 1. The related accounting procedures are included in the revised RRCA Accounting Procedures and Reporting Requirements ("revised RRCA Accounting Procedures"), which are attached hereto as Exhibit 2. This approval of the augmentation plan and the related accounting procedures shall be subject to the following terms and conditions:

1. The average annual historical consumptive use of the groundwater rights that will be diverted at the Compact Compliance Wells shall be as determined by the Colorado Ground Water Commission pursuant to its rules and regulations, provided that the average annual historical consumptive use of the groundwater rights listed on Exhibit 3 shall not exceed the 1998-2007 average annual amounts shown on Exhibit 3. Annual diversions during any calendar year under the groundwater rights included in the augmentation plan shall be limited to the total average annual historical consumptive use of the rights, except as provided in paragraph 3 below.

2. Net depletions from the Colorado Compact Compliance Wells shall be computed by the RRCA Groundwater Model and included in Colorado's Computed Beneficial Consumptive Use of groundwater pursuant to paragraph III.D.1 of the revised RRCA Accounting Procedures. Groundwater pumping from the Compact Compliance Wells shall be measured by totalizing flow meters, and the measured groundwater pumping from such wells shall be included in the base "run" of the RRCA Groundwater Model in accordance with paragraph III.D.1 of the revised RRCA Accounting Procedures.

3. Diversions from any individual Compact Compliance Well shall be limited to no more than 2,500 acre feet per year. Banking of groundwater shall be permitted in accordance with the rules and regulations of the Colorado Ground Water Commission, subject to the limit on Augmentation Water Supply Credit in paragraph 4 below.

4. The Augmentation Water Supply Credit due to deliveries from the Colorado Compact Compliance Pipeline that will be applied against the Computed Beneficial Consumptive Use of water to offset stream depletions in order to comply with Colorado's Compact Allocations during any calendar year shall be limited as follows:

   Calculation of Projected Augmentation Water Supply Delivery to Determine the Limit on Augmentation Water Supply Credit

   Each year, using the procedures described below, Colorado will determine the Projected Augmentation Water Supply Delivery ("Projected Delivery") for the upcoming accounting year (the "subject accounting year") to estimate the volume of Augmentation Water Supply that will be delivered from the Colorado Compact Compliance Pipeline during the subject accounting year, with a minimum annual delivery of 4,000 acre-feet. The RRWCD WAE will begin deliveries from the Colorado Compact Compliance Pipeline during the subject accounting year based on the Projected Delivery, but actual deliveries will be adjusted during the course of the year based on hydrologic and climatic conditions and the need to offset stream depletions in order to comply with Colorado's Compact Allocations, subject to the limit on the Augmentation Water Supply Credit set forth below.

   The steps to determine the Projected Delivery and the limit on the Augmentation Water Supply Credit are as follows:

   A. Step 1. By March 31st of each year, Colorado will calculate Colorado's total Allocation and Colorado's Computed Beneficial Consumptive Use ("CBCU") for the previous accounting year using the procedures described in the revised RRCA Accounting Procedures, but using preliminary data where necessary.

   B. Step 2. Colorado will determine the Projected Delivery, which shall be the largest annual deficit or difference between Colorado's total annual Allocation and Colorado's CBCU during the 10 accounting years immediately preceding the subject accounting year; provided, however, that accounting years in which Colorado's total annual Allocation exceeds Colorado's CBCU shall not be used in determining the Projected Delivery.

   C. Step 3. The Colorado RRCA Member shall provide notice of the Projected Delivery determination to the Kansas and Nebraska RRCA Members by April 1 of each year.

D. Step 4. The Augmentation Water Supply Credit for the subject accounting year shall be limited to the Projected Delivery plus 4,000 acre-feet, or 140% of the Projected Delivery, whichever is greater.

Examples of how this limitation shall be applied are attached as Exhibit 4.

5. The preliminary design for the Colorado Compact Compliance Pipeline is described in the application attached hereto as Exhibit 1. The State of Colorado and the RRWCD WAE shall submit the final design for the Colorado Compact Compliance Pipeline to the RRCA and any changes to the final design after the Colorado Compliance Pipeline has been constructed. If the final design or changes to the final design of the Colorado Compliance Pipeline as constructed differ from the preliminary design in a way that would materially change the location of the Compact Compliance Wells or the river outlet structure, the RRCA may modify the terms and conditions of this approval.

6. The RRWCD WAE may acquire additional groundwater rights to be pumped through the Compact Compliance Wells upon the terms and conditions of this resolution. The State of Colorado and the RRWCD WAE shall file a notice with the RRCA identifying the additional groundwater rights and the historical consumptive use of the groundwater rights. The RRCA members shall have sixty days from the date the notice is given to review the information. If no objection is made within sixty days from the date the notice is given, the additional groundwater rights may be pumped through the Compact Compliance Wells upon the terms and conditions of this resolution. If an objection is made by any RRCA member, the objection shall be shall be given in writing to the RRWCD WAE within 60 days from the date the notice is given and the notice shall be treated as an application for approval of an augmentation plan and related accounting procedures under Subsection III.B.1.k of the FSS and the State of Colorado and the RRWCD WAE may submit any additional information to address the objection.

7. The approval of this augmentation plan and the related accounting procedures shall not govern the approval of any future proposed augmentation plan and related accounting procedures submitted by any other State under Subsection III.B.1.k of the FSS.

8. The approval of this augmentation plan and the related accounting procedures shall not waive any State's rights to seek damages from any other State for violations of the Compact or the FSS subsequent to December 15, 2002.

9. Except for the approval of the augmentation plan and the related accounting procedures as provided herein, nothing in this Resolution shall relieve the State of Colorado from complying with the obligations set forth in the Compact or FSS.

Approved by the RRCA this 12th day of August, 2009.

Brian Dunnigan, P.E. Nebraska Member Chairman, RRCA	date
David Barfield, P.E. Kansas Member	date
Dick Wolfe, P.E. Colorado Member	date

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WATER RESOURCES

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Governor

Harris D. Sherman
Executive Director

Dick Wolfe, P.E.
Director/State Engineer

APPLICATION FOR APPROVAL OF AN AUGMENTATION PLAN AND RELATED ACCOUNTING PROCEDURES UNDER SUBSECTION III.B.I.K. OF THE FINAL SETTLEMENT STIPULATION IN KANSAS V. NEBRASKA AND COLORADO, NO. 126, ORIGINAL

The Republican River Compact Compliance Pipeline

Submitted by

The State of Colorado
And
The Republican River Water Conservation District, acting by and through its Water Activity Enterprise

March 2008

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1.0 INTRODUCTION

1.1. The Republican River Compact Compliance Pipeline

Subsection III.B.1.k of the Final Settlement Stipulation in *Kansas v. Nebraska and Colorado*, No. 126, Original (U.S. Sup. Court) allows the acquisition or construction of wells for the purpose of offsetting stream depletions in order to comply with a State's Compact Allocations. Subsection III.B.1.k states that these wells "shall not cause any new net depletion to stream flow either annually or long-term." It further states: "The determination of net depletions from these Wells will be computed by the RRCA Groundwater Model and included in the State's Computed Beneficial Consumptive Use. Augmentation plans and related accounting procedures submitted under this Subsection III.B.1.k shall be approved by the RRCA [Republican River Compact Administration] prior to implementation."

The Republican River Water Conservation District (RRWCD) was formed in 2004 to assist the State of Colorado to comply with the Compact, and the RRWCD, acting through its Water Activity Enterprise (WAE), has entered into contracts to purchase rights to ground water located north of the North Fork of the Republican River in the Republican River Basin in Colorado. These rights have an historical consumptive use of approximately 15,000 acre-feet per year. The RRWCD WAE is currently in the process of completing the engineering design of a 12.7 mile Compact Compliance Pipeline to deliver this water to the North Fork of the Republican River to offset stream depletions in order to comply with Colorado's Compact Allocations. The general location of the compact compliance pipeline is shown in Figure 1. The design is scheduled for completion in August of this year. Selection of the construction contractor is anticipated to be finalized by the first of October and construction on the pipeline and related facilities will commence in November. Construction of the pipeline is scheduled for completion of June of 2009 and approximately 11,000 ac-ft will be delivered between June and December to allow Colorado to meet its compact obligation in 2009.

The RRWCD WAE has applied for, and received preliminary approval, a $60.6 million loan from the Colorado Water Conservation Board Water Project Construction Fund to purchase these rights to and to construct the Compact Compliance Pipeline to offset stream depletions in order to comply within Colorado's Compact Allocations.

The State of Colorado on behalf of the RRWCD WAE requests that the RRCA approve an augmentation plan and related accounting procedures described in this

application under Subsection III.B.1.k of the Final Settlement Stipulation for the Republican River Compact Compliance Pipeline.

1.2. Project Sponsor – The Republican River Water Conservation District, acting by and through its Water Activity Enterprise

The RRWCD is managed and controlled by a 15-member board of directors comprised of one member appointed by the county commissioners of each of the seven counties wholly or partially within the RRWCD, one member appointed by the boards of the seven ground water management districts within the RRWCD, and one member appointed by the Colorado Ground Water Commission. The RRWCD Board of Directors established the RRWCD Water Activity Enterprise (WAE) in October 2004.

The RRWCD Board of Directors imposed a use fee on the diversion of water within the District of $5.50 per assessed irrigated acre on diversions of ground water for irrigation use by post-compact wells within the District. The RRWCD Board recently increased the use fee to $14.50 per assessed irrigated acre to pay for the Republican River Compact Compliance Pipeline. There are approximately 500,500 assessed irrigated acres in the basin irrigated by post-compact wells and the RRWCD fee will generate approximately $7.3 million per year for operating expenses and to pay back the loans used to acquire the water rights and construct the compact compliance pipeline.

The RRWCD WAE uses a portion of the revenues collected from use fees to provide local cost-sharing for federal programs designed to retire irrigated acreage in the basin, including the Republican River Conservation Reserve Enhancement Program (CREP) and the Environmental Quality Improvement Program (EQIP). To date, approximately 30,000 irrigated acres have been voluntarily retired in the basin under CREP and EQIP, or approximately five percent (5%) of the irrigated acreage in the basin. An amendment to the Republican River CREP designed to retire an additional 30,000 irrigated acres has been submitted to the U.S. Department of Agriculture for approval. The RRWCD WAE has committed to provide local cost-sharing for a second Republican River CREP amendment that is proposed to retire an additional 30,000 acres. The CREP program is an important part of the RRWCD efforts to implement conservation measures in the basin to reduce groundwater pumping in Colorado to assist in meeting compact compliance obligations.

The RRWCD is located in northeastern Colorado and includes all of Yuma and Phillips Counties and those portions of Kit Carson, Lincoln, Logan, Sedgwick, and Washington Counties that overlie the Ogallala Aquifer. The RRWCD encompasses about 7,761 square miles or about 7.5% of Colorado's 104,247 square miles. There is currently about 545,000 irrigated acres within the Ogallala Aquifer in Colorado with 500,500 irrigated acres located within the RRWCD boundaries. With the exception of approximately 3,000 acres irrigated by surface water, virtually all the acreage in the basin is irrigated with ground water from the Ogallala Aquifer. A map of the RRWCD boundaries is shown in Figure 2.

2.0 AUGMENTATION PLAN AND RELATED ACCOUNTING PROCEDURES

The State of Colorado has exceeded its compact allocation by approximately 11,000 ac-ft/yr for period of 2003-2007. In order to comply with the State of Colorado's Compact Allocations, the RRWCD WAE has entered into contracts to acquire ground water rights that were historically used for irrigation in the Republican River Basin. The location of the lands that were historically irrigated with the water rights acquired by the RRWCD WAE is shown in Figures 3 and 4.

The RRWCD WAE will change the use of these existing rights and consolidate these rights at fifteen existing Republican River Compact Compliance Wells (Compact Compliance Wells) that will be used for the sole purpose of offsetting stream depletions in order to comply with the State of Colorado's Compact Allocations. Initially only eight of the wells will be active with an additional seven existing wells that will serve as backup if additional well capacity in needed in the future. The locations of the 15 wells are shown in Figure 4 (wells A1 through A8 are the initial wells, and the wells numbered B1 through B7 are the backup wells).

The compact compliance wells are located in the area of the Ogallala Aquifer in Colorado that has the greatest saturated thickness. The wells typically have 250 to 300 feet of saturated thickness. The well field is also located in the sand hills region of Colorado that has the highest recharge rates of any location in the Republican River Basin.

The Computed Beneficial Consumptive Use of the compact compliance wells, specifically the ground water impacts of these wells upon the stream system, will be

determined by use of the RRCA Groundwater Model as the difference in streamflows using two runs of the model that is consistent with Section III.D.1 of the Republican River Compact Administration Accounting Procedures and Reporting Requirements.

The historical consumptive use of the rights that will be diverted at the Compact Compliance Wells was determined based on irrigation system and pump efficiency tests, power records, and crop records for ten year period from 1998 to 2007 as summarized in Table 1. The procedures for changing the use of existing rights to designated ground water based on historical consumptive use are established in the current Colorado Ground Water Commission rules. The Compact Compliance Wells will cause no new net depletions because pumping will be limited to the historical consumptive use of the existing rights.

The pumping under this plan for augmentation will be limited to the historical consumptive use of existing groundwater rights as determined by the Colorado Ground Water Commission pursuant to its rules and regulations, which permit banking of ground water once a change has been based on historical consumptive use. Pumping from the Compact Compliance Wells will be metered and included in the RRCA Groundwater Motel. The groundwater pumped by the Compact Compliance Wells will be delivered by a pipeline to the North Fork of the Republican River a short distance upstream from the streamflow gage at the Colorado-Nebraska state line (USGS gaging station number 06823000, North Fork Republican River at the Colorado-Nebraska State Line). The augmentation discharge will be measured and subtracted from the gaged flow of the North Fork of the Republican River to calculate the Annual Virgin Water Supply. The augmentation discharge to the North Fork of the Republican River from the Compact Consumptive Pipeline will be the Augmentation Credit for the purpose of offsetting stream depletions to comply with the State of Colorado's Compact Allocations and shall be counted as a credit/offset against the Computed Beneficial Consumptive use of water allocated to Colorado

3.0 ENGINEERING ANALYSIS FOR THE COMPACT COMPLIANCE PIPELINE

Approximately 11,000 acre-feet of water per year needs to be supplied by the compact compliance pipeline to meet Colorado's Compact obligation. The initial capacity of the main trunk of the pipeline will be 15,000 acre-feet per year using a nine-month delivery season. The pipeline is being designed so that it will be capable of

delivering up to 25,000 ac-ft/yr by adding a pumping facility to deliver the water under a higher pressure.

3.1. Water Quality

All of the streamflow in the North Fork of the Republican River, with the exception of the occasional rainstorm event, is derived from groundwater inflow from the Ogallala Aquifer. The compact compliance pipeline will deliver groundwater from the Ogallala aquifer to the North Fork of the Republican River at the state line. Table 2 presents the ground water quality of the Ogallala aquifer relative to the water quality standards for the North Fork of the Republican River, as published by the Colorado Water Quality Control Commission. The water quality of the Ogallala Aquifer meets or exceeds drinking water standards. This is to be expected because the groundwater management districts in Colorado carefully monitor the water quality in the Ogallala Aquifer since the groundwater supplies agriculture uses along with domestic, municipal, and industrial uses. Thus, the water quality of ground water for the Republican River Compact Compliance Pipeline is appropriate for delivery to the North Fork of the Republican River to offset stream depletions.

3.2. Pipeline Design

The RRWCD WAE contracted with GEI Consultants to perform a preliminary feasibility study for the design of a compact compliance pipeline. The $50,000 study was completed in January of 2008. Based on the recommendations in this report, the RRWCD WAE has contracted with GEI Consultants to proceed with the final design of the compact compliance pipeline. The final design of the compact compliance pipeline is scheduled to be completion in August of 2008 and is budgeted to cost approximately $1 million dollars.

The preliminary design of the Republican River Compact Compliance Pipeline has been completed and is summarized in the following paragraphs. This summary is based on the preliminary design and the design refinements made in the last two months. The final design is currently under way and the general description included in this report will probably somewhat in the next few months as the design is finalized.

The well field to pump the water will consist of 8 wells numbered A1 through A8 as shown in Figure 4. The design of the pipeline will also allow for an additional 7 wells

numbered B1 through B7 in Figure 4. These 7 additional wells will not initially be connected to the pipeline, but are available for future use if needed.

Water pumped from the individual wells will be collected in a series of pipes that will vary in size from 12" to 18" and the water will then be conveyed to a 1 million gallon re-regulating storage tank. The storage tank will provide reserve capacity allowing the main pipeline to operate for 2 hours at two-thirds capacity with no inflow to the tank from the well field. The storage tank will also provide protection of the main pipeline from surge and negative pressures that could develop if the main pipeline were connected directly to the well field collection system.

From the storage tank the water will flow by gravity through the main water 36-inch diameter conveyance pipeline approximately 12.7 miles to the North Fork of the Republican River following the general alignment shown on Figure 3. Releases from the tank will be regulated by a valve located near the tank, and an ultra-sonic flow meter will be provided approximately 30 feet downstream of the release valve. The main conveyance pipeline will be designed so that a pump could be added at the outlet of the storage tank to increase the capacity of the pipeline to approximately 25,000 ac-ft/yr in the future.

At this time, the most likely type of pipe material is PVC. The pipeline will be buried with minimum cover of three feet above the crown of the pipe. To assure integrity, the pipe will be properly bedded prior to filling the trench with well-compacted backfill. Access manholes, air release valves, and drain valves will be provided at appropriate locations along the pipeline, as determined during the final design and confirmed during construction.

Table 3 contains summaries of the preliminary cost estimates developed by GEI during the preliminary feasibility study for the Compact Compliance Pipeline project. The final cost estimates will be dependent upon the final design and the bids received by the contractors. The key milestone dates discussed in previous sections of this report are summarized Table 4. Achieving this schedule will enable full delivery of water to begin in the latter part of June 2009. The project should be able to deliver close to 11,000 acre-feet of water in by year-end 2009.

4.0 REQUEST FOR APPROVAL

The State of Colorado on behalf of the RRWCD WAE requests that RRCA approve an augmentation plan and related accounting procedures described above under Subsection III.B.1.k of the Final Settlement Stipulation for the Republican River Compact Compliance Pipeline.

Exhibit 3

Rights to Designated Groundwater

Field Number (1)	Permit #1 (2)	Permit #2 (3)	1998-2007 Average Irrigated Acres (4)	1998-2007 Average Annual Historical Consumptive Use (ac-ft/yr) (5)
1-1	12967-FP	16920-FP	194	345
1-2	14403-FP		181	279
1-3	14019-FP		133	217
1-4	14018-FP		164	252
1-5	19372-FP		136	218
1-6 and 1-7	18780-FP		127	192
Subtotal			**935**	**1,503**
2-1	14396-FP		130	192
2-2	13858-FP		133	228
2-3	13859-FP	16069-FP	188	270
2-4	13857-FP		147	229
2-5	14398-FP		144	240
2-6	13856-FP	16067-FP	164	249
Subtotal			**906**	**1,408**
3-1	14397-FP		127	192
3-2	14027-FP		153	251
3-3	14022-FP		180	289
3-4	14023-FP		133	219
3-5	14600-FP		124	197
3-6	15285-FP		98	161
3-7	20896-FP		107	169
Subtotal			**922**	**1,478**
4-1	13513-FP	16074-FP	186	302
4-2	14028-FP		146	218
4-3	14753-FP		185	310
4-4	13522-FP		135	204
4-5	14024-FP		93	141
4-6	13509-FP	16075-FP	179	284
4-7	13511-FP		123	192
4-8	18781-FP		128	216
4-9	21476-FP		88	144
5-1	18783-FP		173	273
Subtotal			**1,437**	**2,284**
6-0	19004-FP		82	141
6-1	19005-FP		124	178
6-2	18966-FP		94	172
6-3	18018-FP		148	230
6-4,6-5	18017-FP	19001-FP	245	361
6-6, 6-7	23222-FP		148	230
6-8	18019-FP		107	173
6-9, 6-10	18014-FP		176	259
6-11,12,13,14	18013-FP		250	350
6-15, 6-16	18011-FP		244	431
6-17, 6-18, 6-19	18015-FP		329	549

Exhibit 3

Rights to Designated Groundwater

Field Number (1)	Permit #1 (2)	Permit #2 (3)	1998-2007 Average Irrigated Acres (4)	1998-2007 Average Annual Historical Consumptive Use (ac-ft/yr) (5)
6-20, 6-21	18012-FP	19000-FP	208	322
Subtotal			**2,155**	**3,396**
7-1	13813-FP	16923-FP	126	206
7-2, 7-2A	13814-FP		219	334
7-3, 7-3a	13815-FP		197	291
7-13, 7-14	14718-FP		358	526
7-15, 7-16	14121-FP		285	437
7-17, 7-18	14719-FP		263	455
7-19 [b)]	14122-FP		131	215
7-21, 7-21A	12589-FP		251	376
7-23	12567-FP		126	201
Subtotal			**1,957**	**3,041**
Wiley	4319-FP	4922-FP	65	75
Wilder1	20198-FP		124	194
Wilder2	20196-FP		163	249
Subtotal			**352**	**518**
Total			**8,664**	**13,629**

Footnotes

a) Change of use approved amounts on March 19, 2008.

b) Permit allows for irrigation of parcels 7-19 and 7-20. Only the portion of permit historically used to irrigate parcel 7-19 is included in this table.

Explanation of Columns

(1) Field Number.

(2) Final permit for the Northern High Plains Designated Ground Water Basin.

(3) Second permit associated with the permit shown in column 2. Typically, these are permits for additional acreage, but see permit for details.

(4) Average acreage reported in change of use form used to determine values in Column 5.

(5) Historical consumptive use determined from irrigated acreage, crop records and power records. Values as specified in March 19, 2008 and December 8, 2008 DWR Publication letters.

Hypothetical Calculations of the Projected Delivery and the Limit on Augmentation Water Sup 8/5/2009

A	B	C	D	E	F	G	H	I	J	
Year	Colorado's Total Allocation	Computed Beneficial Consumptive Use	Deficit or Difference	Projected Delivery	Max Aug. Water Supply (AWS) Credit	Measured Pipeline Deliveries	Annual Calculation = Alloc - (CBCU - Deliveries)	Five-year running average	*Limited??*	Remarks
1993	42,214	35,274	6940			0	6,940			
1994	35,831	32,967	2864			0	2,864			
1995	40,714	35,125	5589			0	5,589			
1996	39,659	36,469	3190			0	3,190			
1997	32,641	35,442	(2801)	0	4,000	0	-2,801	**3156**		No previous deficit; therefore, Max AWS Credit is 4000 af
1998	33,294	36,148	(2854)	2,801	6,801	4,000	1,146	**1998**		Max AWS Credit is Projected Delivery plus 4000 af because it is larger Minimum 4000 af delivery
1999	37,782	38,217	(435)	2,854	6,854	4,000	3,565	**2138**		Max AWS Credit is Projected Delivery plus 4000 af because it is larger Minimum 4000 af delivery
2000	31,427	37,691	(6264)	2,854	6,854	4,000	-2,264	**567**		Max AWS Credit is Projected Delivery plus 4000 af because it is larger Minimum 4000 af delivery
2001	27,572	36,132	(8560)	6,264	10,264	4,000	-4,560	(983)		Max AWS Credit is Projected Delivery plus 4000 af because it is larger Minimum 4000 af delivery
2002	20,741	35,228	(14487)	8,560	12,560	4,000	-10,487	(2520)		Max AWS Credit is Projected Delivery plus 4000 af because it is larger Minimum 4000 af delivery
2003	21,420	33,470	(12050)	14,487	20,282	4,000	-8,050	(4359)		Max AWS Credit is 140% of Projected Delivery because it is larger Minimum 4000 af delivery
2004	22,540	33,670	(11130)	14,487	20,282	13,629	2,499	(4572)		Deliveries begin, but limited to Hist. CU b/c there has been no banking
2005	25,040	35,460	(10420)	14,487	20,282	13,629	3,209	(3478)		Max AWS Credit is 140% of Projected Delivery because it is larger
2006	21,090	30,760	(9670)	14,487	20,282	13,629	3,959	(1774)		Max AWS Credit is 140% of Projected Delivery because it is larger
2007	24,520	32,850	(8330)	14,487	20,282	13,629	5,299	**1383**		Max AWS Credit is 140% of Projected Delivery because it is larger
2008	27,000	32,000	(5000)	14,487	20,282	4,000	-1,000	**2793**		Max AWS Credit is 140% of Projected Delivery because it is larger Minimum 4000 af delivery
2009	27,000	33,000	(6000)	14,487	20,282	4,000	-2,000	**1893**		Max AWS Credit is 140% of Projected Delivery because it is larger Minimum 4000 af delivery
2010	27,000	33,000	(6000)	14,487	20,282	4,000	-2,000	**852**		Max AWS Credit is 140% of Projected Delivery because it is larger Minimum 4000 af delivery
2011	21,000	33,000	(12000)	14,487	20,282	20,500	8,282	**1716**	*Limited to Max*	Deliveries > Hist. CU b/c of banking, but Max AWS Credit applies
2012	27,000	32,000	(5000)	14,487	20,282	4,000	-1,000	**456**		Max AWS Credit is 140% of Projected Delivery because it is larger Minimum 4000 af delivery
2013	27,000	33,000	(6000)	12,050	16,870	4,000	-2,000	**256**		Max AWS Credit is 140% of Projected Delivery because it is larger Minimum 4000 af delivery
2014	32,641	35,442	(2801)	12,000	16,800	4,000	1,199	**896**		Max AWS Credit is 140% of Projected Delivery because it is larger Minimum 4000 af delivery
2015	33,294	36,148	(2854)	12,000	16,800	4,000	1,146	**1525**		Max AWS Credit is 140% of Projected Delivery because it is larger Minimum 4000 af delivery
2016	37,782	38,217	(435)	12,000	16,800	4,000	3,565	**582**		Max AWS Credit is 140% of Projected Delivery because it is larger Minimum 4000 af delivery
2017	31,427	37,691	(6264)	12,000	16,800	6,500	236	**829**		Max AWS Credit is 140% of Projected Delivery because it is larger
2018	27,572	36,132	(8560)	12,000	16,800	9,000	440	**1317**		Max AWS Credit is 140% of Projected Delivery because it is larger
2019	20,741	35,228	(14487)	12,000	16,800	13,000	-1,487	**780**		Max AWS Credit is 140% of Projected Delivery because it is larger
2020	21,420	33,470	(12050)	14,487	20,282	13,000	950	**741**		Max AWS Credit is 140% of Projected Delivery because it is larger

[ ] = formula amended to account for lack of data for 10 yrs

A Accounting Year
B From RRCA Accounting
C From RRCA Accounting
D Allocation (B) minus CBCU ©
E Largest Deficit in previous 10 years
F E + 4000 or E * 140% whichever is larger
G Augmentation Water Pumped during the accounting year
H Annual Calculation = Alloc - (CBCU - Deliveries) (B-(C-G))
I Running Average = ave of this year plus previous 4 years (Column H)
J Flag that notes if pumping (G) exceeds AWS limit (F)

Republican River Compact Administration

ACCOUNTING PROCEDURES

AND

REPORTING REQUIREMENTS

Revised July 27, 2005

Updated November 7, 2008

Colorado Proposal
Updated January 26, 2009

Table of Contents

I. Introduction

This document describes the definitions, procedures, basic formulas, specific formulas, and data requirements and reporting formats to be used by the RRCA to compute the Virgin Water Supply, Computed Water Supply, Allocations, Imported Water Supply Credit, Augmentation Water Supply Credit, and Computed Beneficial Consumptive Use. These computations shall be used to determine supply, allocations, use and compliance with the Compact according to the Stipulation. These definitions, procedures, basic and specific formulas, data requirements and attachments may be changed by consent of the RRCA consistent with Subsection I.F of the Stipulation. This document will be referred to as the RRCA Accounting Procedures. Attached to these RRCA Accounting Procedures as Figure 1 is the map attached to the Compact that shows the Basin, its streams and the Basin boundaries.

II. Definitions

The following words and phrases as used in these RRCA Accounting Procedures are defined as follows:

Additional Water Administration Year - a year when the projected or actual irrigation water supply is less than 130,000 Acre-feet of storage available for use from Harlan County Lake as determined by the Bureau of Reclamation using the methodology described in the Harlan County Lake Operation Consensus Plan attached as Appendix K to the Stipulation.

Allocation(s): the water supply allocated to each State from the Computed Water Supply;

Annual: yearly from January 1 through December 31;

Augmentation Plan: a detailed program used by a State to offset stream depletions in order to comply with its Compact Allocations. An Augmentation Plan shall be approved by the RRCA prior to implementation in accordance with Subsection III.B.1.k of the Stipulation;

Augmentation Water Supply: the water supply developed through the acquisition or construction of wells for the sole purpose of offsetting stream depletions in order to comply with a State's Compact Allocations in conformance with an Augmentation Plan;

Augmentation Water Supply Credit: the amount of water measured and discharged to the stream flow of a Designated Drainage Basin due to the acquisition or construction of wells for the purpose of offsetting stream depletions to comply with a States' Compact Allocation in conformance with an Augmentation Plan. The Augmentation Water Supply Credit of a State shall not be included in the Virgin Water Supply in the Designated Drainage Basin and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State;

Basin: the Republican River Basin as defined in Article II of the Compact;

Beneficial Consumptive Use: that use by which the Water Supply of the Basin is consumed through the activities of man, and shall include water consumed by evaporation from any reservoir, canal, ditch, or irrigated area;

Change in Federal Reservoir Storage: the difference between the amount of water in storage in the reservoir on December 31 of each year and the amount of water in storage on December 31 of the previous year. The current area capacity table supplied by the appropriate federal operating agency shall be used to determine the contents of the reservoir on each date;

Compact: the Republican River Compact, Act of February 22, 1943, 1943 Kan. Sess. Laws 612, codified at Kan. Stat. Ann. § 82a-518 (1997); Act of February 24, 1943, 1943 Neb. Laws 377, codified at 2A Neb. Rev. Stat. App. § 1-106 (1995), Act of March 15, 1943, 1943 Colo. Sess. Laws 362, codified at Colo. Rev. Stat. §§ 37-67-101 and 37-67-102 (2001); Republican River Compact, Act of May 26, 1943, ch. 104, 57 Stat. 86;

Computed Beneficial Consumptive Use: for purposes of Compact accounting, the stream flow depletion resulting from the following activities of man:

Irrigation of lands in excess of two acres;
Any non-irrigation diversion of more than 50 Acre-feet per year;
Multiple diversions of 50 Acre-feet or less that are connected or otherwise combined to serve a single project will be considered as a single diversion for accounting purposes if they total more than 50 Acre-feet;
Net evaporation from Federal Reservoirs;
Net evaporation from Non-federal Reservoirs within the surface boundaries of the Basin;
Any other activities that may be included by amendment of these formulas by the RRCA;

Computed Water Supply: the Virgin Water Supply less the Change in Federal Reservoir Storage in any Designated Drainage Basin, and less the Flood Flows;

Designated Drainage Basins: the drainage basins of the specific tributaries and the Main Stem of the Republican River as described in Article III of the Compact. Attached hereto as Figure 3 is a map of the Sub-basins and Main Stem;

Dewatering Well: a Well constructed solely for the purpose of lowering the groundwater elevation;

Federal Reservoirs:

Bonny Reservoir

Swanson Lake
Enders Reservoir
Hugh Butler Lake
Harry Strunk Lake
Keith Sebelius Lake
Harlan County Lake
Lovewell Reservoir

Flood Flows: the amount of water deducted from the Virgin Water Supply as part of the computation of the Computed Water Supply due to a flood event as determined by the methodology described in Subsection III.B.1.;

Gaged Flow: the measured flow at the designated stream gage;

Guide Rock: a point at the Superior-Courtland Diversion Dam on the Republican River near Guide Rock, Nebraska; the Superior-Courtland Diversion Dam gage plus any flows through the sluice gates of the dam, specifically excluding any diversions to the Superior and Courtland Canals, shall be the measure of flows at Guide Rock;

Historic Consumptive Use: that amount of water that has been consumed under appropriate and reasonably efficient practices to accomplish without waste the purposes for which the appropriation or other legally permitted use was lawfully made;

Imported Water Supply: the water supply imported by a State from outside the Basin resulting from the activities of man;

Imported Water Supply Credit: the accretions to stream flow due to water imports from outside of the Basin as computed by the RRCA Groundwater Model. The Imported Water Supply Credit of a State shall not be included in the Virgin Water Supply and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State, except as provided in Subsection V.B.2. of the Stipulation and Subsections III.I. – J. of these RRCA Accounting Procedures;

Main Stem: the Designated Drainage Basin identified in Article III of the Compact as the North Fork of the Republican River in Nebraska and the main stem of the Republican River between the junction of the North Fork and the Arikaree River and the lowest crossing of the river at the Nebraska-Kansas state line and the small tributaries thereof, and also including the drainage basin Blackwood Creek;

Main Stem Allocation: the portion of the Computed Water Supply derived from the Main Stem and the Unallocated Supply derived from the Sub-basins as shared by Kansas and Nebraska;

Meeting(s): a meeting of the RRCA, including any regularly scheduled annual meeting or any special meeting;

Modeling Committee: the modeling committee established in Subsection IV.C. of the Stipulation;

Moratorium: the prohibition and limitations on construction of new Wells in the geographic area described in Section III. of the Stipulation;

Non-federal Reservoirs: reservoirs other than Federal Reservoirs that have a storage capacity of 15 Acre-feet or greater at the principal spillway elevation;

Northwest Kansas: those portions of the Sub-basins within Kansas;

Replacement Well: a Well that replaces an existing Well that a) will not be used after construction of the new Well and b) will be abandoned within one year after such construction or is used in a manner that is excepted from the Moratorium pursuant to Subsections III.B.1.c.-f. of the Stipulation;

RRCA: Republican River Compact Administration, the administrative body composed of the State officials identified in Article IX of the Compact;

RRCA Accounting Procedures: this document and all attachments hereto;

RRCA Groundwater Model: the groundwater model developed under the provisions of Subsection IV.C. of the Stipulation and as subsequently adopted and revised through action of the RRCA;

State: any of the States of Colorado, Kansas, and Nebraska;

States: the States of Colorado, Kansas and Nebraska;

Stipulation: the Final Settlement Stipulation to be filed in *Kansas v. Nebraska and Colorado*, No. 126, Original, including all Appendices attached thereto;

Sub-basin: the Designated Drainage Basins, except for the Main Stem, identified in Article III of the Compact. For purposes of Compact accounting the following Sub-basins will be defined as described below:

> North Fork of the Republican River in Colorado drainage basin is that drainage area above USGS gaging station number 06823000, North Fork Republican River at the Colorado-Nebraska State Line,

Arikaree River drainage basin is that drainage area above USGS gaging station number 06821500, Arikaree River at Haigler, Nebraska,

Buffalo Creek drainage basin is that drainage area above USGS gaging station number 06823500, Buffalo Creek near Haigler, Nebraska,

Rock Creek drainage basin is that drainage area above USGS gaging station number 06824000, Rock Creek at Parks, Nebraska,

South Fork of the Republican River drainage basin is that drainage area above USGS gaging station number 06827500, South Fork Republican River near Benkelman, Nebraska,

Frenchman Creek (River) drainage basin in Nebraska is that drainage area above USGS gaging station number 06835500, Frenchman Creek in Culbertson, Nebraska,

Driftwood Creek drainage basin is that drainage area above USGS gaging station number 06836500, Driftwood Creek near McCook, Nebraska,

Red Willow Creek drainage basin is that drainage area above USGS gaging station number 06838000, Red Willow Creek near Red Willow, Nebraska,

Medicine Creek drainage basin is that drainage area above the Medicine Creek below Harry Strunk Lake, State of Nebraska gaging station number 06842500; and the drainage area between the gage and the confluence with the Main Stem,

Sappa Creek drainage basin is that drainage area above USGS gaging station number 06847500, Sappa Creek near Stamford, Nebraska and the drainage area between the gage and the confluence with the Main Stem; and excluding the Beaver Creek drainage basin area downstream from the State of Nebraska gaging station number 06847000 Beaver Creek near Beaver City, Nebraska to the confluence with Sappa Creek,

Beaver Creek drainage basin is that drainage area above State of Nebraska gaging station number 06847000, Beaver Creek near Beaver City, Nebraska, and the drainage area between the gage and the confluence with Sappa Creek,

Prairie Dog Creek drainage basin is that drainage area above USGS gaging station number 06848500, Prairie Dog Creek near Woodruff, Kansas, and the drainage area between the gage and the confluence with the Main Stem;

Attached hereto as Figure 2 is a line diagram depicting the streams, Federal Reservoirs and gaging stations;

Test hole: a hole designed solely for the purpose of obtaining information on hydrologic and/or geologic conditions;

Trenton Dam: a dam located at 40 degrees, 10 minutes, 10 seconds latitude and 101 degrees, 3 minutes, 35 seconds longitude, approximately two and one-half miles west of the town of Trenton, Nebraska;

Unallocated Supply: the "water supplies of upstream basins otherwise unallocated" as set forth in Article IV of the Compact;

Upstream of Guide Rock, Nebraska: those areas within the Basin lying west of a line proceeding north from the Nebraska-Kansas state line and following the western edge of Webster County, Township 1, Range 9, Sections 34, 27, 22, 15, 10 and 3 through Webster County, Township 2, Range 9, Sections 34, 27 and 22; then proceeding west along the southern edge of Webster County, Township 2, Range 9, Sections 16, 17 and 18; then proceeding north following the western edge of Webster County, Township 2, Range 9, Sections 18, 7 and 6, through Webster County, Township 3, Range 9, Sections 31, 30, 19, 18, 7 and 6 to its intersection with the northern boundary of Webster County. Upstream of Guide Rock, Nebraska shall not include that area in Kansas east of the 99° meridian and south of the Kansas-Nebraska state line;

Virgin Water Supply: the Water Supply within the Basin undepleted by the activities of man;

Water Short Year Administration: administration in a year when the projected or actual irrigation water supply is less than 119,000 acre feet of storage available for use from Harlan County Lake as determined by the Bureau of Reclamation using the methodology described in the Harlan County Lake Operation Consensus Plan attached as Appendix K to the Stipulation.

Water Supply of the Basin or **Water Supply within the Basin:** the stream flows within the Basin, excluding Imported Water Supply;

Well: any structure, device or excavation for the purpose or with the effect of obtaining groundwater for beneficial use from an aquifer, including wells, water wells, or groundwater wells as further defined and used in each State's laws, rules, and regulations.

III. Basic Formulas

The basic formulas for calculating Virgin Water Supply, Computed Water Supply, Imported Water Supply, Allocations and Computed Beneficial Consumptive Use are set forth below. The results of these calculations shall be shown in a table format as shown in Table 1.

Basic Formulas for Calculating Virgin Water Supply, Computed Water Supply, Allocations and Computed Beneficial Consumptive Use

Sub-basin VWS	=	Gage + All CBCU – AWS +ΔS – IWS
Main Stem VWS	=	Hardy Gage – Σ Sub-basin gages + All CBCU in the Main Stem +ΔS – IWS
CWS	=	VWS - Δ S – FF
Allocation for each State in each Sub-basin And Main Stem	=	CWS x %
State's Allocation	=	Σ Allocations for Each State
State's CBCU	=	Σ State's CBCUs in each Sub-basin and Main Stem

Abbreviations:

AWS = Augmentation Water Supply Credit
CBCU = Computed Beneficial Consumptive Use
FF = Flood Flows
Gage = Gaged Flow
IWS = Imported Water Supply Credit
CWS = Computed Water Supply
VWS = Virgin Water Supply
% = the ratio used to allocate the Computed Water Supply between the States. This ratio is based on the allocations in the Compact
Δ S = Change in Federal Reservoir Storage

A. Calculation of Annual Virgin Water Supply

1. Sub-basin calculation:

The annual Virgin Water Supply for each Sub-basin will be calculated by adding: a) the annual stream flow in that Sub-basin at the Sub-basin stream gage designated in Section II., b) the annual Computed Beneficial Consumptive Use above that gaging station, and c) the Change in Federal Reservoir Storage in that Sub-basin; and from that total subtract any Imported Water Supply Credit and any Augmentation Water Supply Credit. The Computed Beneficial Consumptive Use will be calculated as described in Subsection III. D. Adjustments for flows diverted around stream gages and for Computed Beneficial Consumptive Uses in the Sub-basin between the Sub-basin stream gage and the confluence of the Sub-basin tributary and the Main Stem shall be made as described in Subsections III. D. 1 and 2 and IV. B.

2. Main Stem Calculation:

The annual Virgin Water Supply for the Main Stem will be calculated by adding: a) the flow at the Hardy gage minus the flows from the Sub-basin gages listed in Section II, b) the annual Computed Beneficial Consumptive Use in the Main Stem, and c) the Change in Federal Reservoir Storage from Swanson Lake and Harlan County Lake; and from that total subtract any Imported Water Supply Credit for the Main Stem. Adjustments for flows diverted around Sub-basin stream gages and for Computed Beneficial Consumptive Uses in a Sub-basin between the Sub-basin stream gage and the confluence of the Sub-basin tributary and the Mains Stem shall be made as described in Subsections III. D. 1 and 2 and IV.B.,

3. Imported Water Supply Credit Calculation:

The amount of Imported Water Supply Credit shall be determined by the RRCA Groundwater Model. The Imported Water Supply Credit of a State shall not be included in the Virgin Water Supply and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water allocated to that State. Currently, the Imported Water Supply Credits shall be determined using two runs of the RRCA Groundwater Model:

a. The "base" run shall be the run with all groundwater pumping, groundwater pumping recharge, and surface water recharge within the model study boundary for the current accounting year turned "on." This will be the same "base" run used to determine groundwater Computed Beneficial Consumptive Uses.

b. The "no NE import" run shall be the run with the same model inputs as the base run with the exception that surface water recharge associated with Nebraska's Imported Water Supply shall be turned "off."

The Imported Water Supply Credit shall be the difference in stream flows between these two model runs. Differences in stream flows shall be determined at the same locations as identified in Subsection III.D.1.for the "no pumping" runs. Should another State import water into the Basin in the future, the RRCA will develop a similar procedure to determine Imported Water Supply Credits.

4. Augmentation Water Supply Credit:

The amount of Augmentation Water Supply Credit shall be the quantity of water delivered to the stream flow of a Designated Drainage Basin and shall be measured and subtracted from the Gaged Flow of the Designated Drainage Basin to calculate the Annual Virgin Water Supply. The Augmentation Water Supply Credit of a State shall not be included in the Annual Virgin Water Supply and shall be counted as a credit/offset against the Computed Beneficial Consumptive Use of water

allocated to that State.

B. Calculation of Computed Water Supply

On any Designated Drainage Basin without a Federal Reservoir, the Computed Water Supply will be equal to the Virgin Water Supply of that Designated Drainage Basin minus Flood Flows.

On any Designated Drainage Basin with a Federal Reservoir, the Computed Water Supply will be equal to the Virgin Water Supply minus the Change in Federal Reservoir Storage in that Designated Drainage Basin and minus Flood Flows.

1. Flood Flows

If in any calendar year there are five consecutive months in which the total actual stream flow[1] at the Hardy gage is greater than 325,000 Acre-feet, or any two consecutive months in which the total actual stream flow is greater than 200,000 Acre-feet, the annual flow in excess of 400,000 Acre-feet at the Hardy gage will be considered to be Flood Flows that will be subtracted from the Virgin Water Supply to calculate the Computed Water Supply, and Allocations. The Flood Flow in excess of 400,000 Acre-feet at the Hardy gage will be subtracted from the Virgin Water Supply of the Main Stem to compute the Computed Water Supply unless the Annual Gaged Flows from a Sub-basin were in excess of the flows shown for that Sub-basin in Attachment 1. These excess Sub-basin flows shall be considered to be Sub-basin Flood Flows.

If there are Sub-basin Flood Flows, the total of all Sub-basin Flood Flows shall be compared to the amount of Flood Flows at the Hardy gage. If the sum of the Sub-basin Flood Flows are in excess of the Flood Flow at the Hardy gage, the flows to be deducted from each Sub-basin shall be the product of the Flood Flows for each Sub-basin times the ratio of the Flood Flows at the Hardy gage divided by the sum of the Flood Flows of the Sub-basin gages. If the sum of the Sub-basin Flood Flows is less than the Flood Flow at the Hardy gage, the entire amount of each Sub-basin Flood Flow shall be deducted from the Virgin Water Supply to compute the Computed Water Supply of that Sub-basin for that year. The remainder of the Flood Flows will be subtracted from the flows of the Main Stem.

C. Calculation of Annual Allocations

[1] These actual stream flows reflect Gaged Flows after depletions by Beneficial Consumptive Use and change in reservoir storage above the gage.

Article IV of the Compact allocates 54,100 Acre-feet for Beneficial Consumptive Use in Colorado, 190,300 Acre-feet for Beneficial Consumptive Use in Kansas and 234,500 Acre-feet for Beneficial Consumptive Use in Nebraska. The Compact provides that the Compact totals are to be derived from the sources and in the amounts specified in Table 2.

The Allocations derived from each Sub-basin to each State shall be the Computed Water Supply multiplied by the percentages set forth in Table 2. In addition, Kansas shall receive 51.1% of the Main Stem Allocation and the Unallocated Supply and Nebraska shall receive 48.9% of the Main Stem Allocation and the Unallocated Supply.

D. Calculation of Annual Computed Beneficial Consumptive Use

1. Groundwater

Computed Beneficial Consumptive Use of groundwater shall be determined by use of the RRCA Groundwater Model. The Computed Beneficial Consumptive Use of groundwater for each State shall be determined as the difference in streamflows using two runs of the model:

The "base" run shall be the run with all groundwater pumping, groundwater pumping recharge, and surface water recharge within the model study boundary for the current accounting year "on".

The "no State pumping" run shall be the run with the same model inputs as the base run with the exception that all groundwater pumping and pumping recharge of that State shall be turned "off."

An output of the model is baseflows at selected stream cells. Changes in the baseflows predicted by the model between the "base" run and the "no-State-pumping" model run is assumed to be the depletions to streamflows. i.e., groundwater computed beneficial consumptive use, due to State groundwater pumping at that location. The values for each Sub-basin will include all depletions and accretions upstream of the confluence with the Main Stem. The values for the Main Stem will include all depletions and accretions in stream reaches not otherwise accounted for in a Sub-basin. The values for the Main Stem will be computed separately for the reach above Guide Rock, and the reach below Guide Rock.

2. Surface Water

The Computed Beneficial Consumptive Use of surface water for irrigation and non-irrigation uses shall be computed by taking the diversions from the river and subtracting the return flows to the river resulting from those diversions, as described in Subsections IV.A.2.a.-d. The Computed Beneficial Consumptive Use of surface water from Federal Reservoir and Non-Federal Reservoir evaporation shall be the net reservoir evaporation from the reservoirs, as described in Subsections IV.A.2.e.-f.

For Sub-basins where the gage designated in Section II. is near the confluence with the Main Stem, each State's Sub-basin Computed Beneficial Consumptive Use of surface water shall be the State's Computed Beneficial Consumptive Use of surface water above the Sub-basin gage. For Medicine Creek, Sappa Creek, Beaver Creek and Prairie Dog Creek, where the gage is not near the confluence with the Main Stem, each State's Computed Beneficial Consumptive Use of surface water shall be the sum of the State's Computed Beneficial Consumptive Use of surface water above the gage, and its Computed Beneficial Consumptive Use of surface water between the gage and the confluence with the Main Stem.

E. Calculation to Determine Compact Compliance Using Five-Year Running Averages

Each year, using the procedures described herein, the RRCA will calculate the Annual Allocations by Designated Drainage Basin and total for each State, the Computed Beneficial Consumptive Use by Designated Drainage Basin and total for each State and the Imported Water Supply Credit and the Augmentation Water Supply Credit that a State may use for the preceding year. These results for the current Compact accounting year as well as the results of the previous four accounting years and the five-year average of these results will be displayed in the format shown in Table 3.

F. Calculations To Determine Colorado's and Kansas's Compliance with the Sub-basin Non-Impairment Requirement

The data needed to determine Colorado's and Kansas's compliance with the Sub-basin non-impairment requirement in Subsection IV.B.2. of the Stipulation are shown in Tables 4.A. and B.

G. Calculations To Determine Projected Water Supply

1. Procedures to Determine Water Short Years

The Bureau of Reclamation will provide each of the States with a monthly or, if requested by any one of the States, a more frequent update of the projected or actual irrigation supply from Harlan County Lake for that irrigation season using the methodology described in the Harlan County Lake Operation Consensus Plan, attached as Appendix K to the Stipulation. The steps for the calculation are as follows:

Step 1. At the beginning of the calculation month (1) the total projected inflow for the calculation month and each succeeding month through the end of May shall be added to the previous end of month Harlan County Lake content and (2) the total projected 1993 level evaporation loss for the calculation month and each succeeding month through the end of May shall then be subtracted. The total projected inflow shall be the 1993 level average monthly inflow or the running average monthly inflow for the previous five years, whichever is less.

Step 2. Determine the maximum irrigation water available by subtracting the sediment pool storage (currently 164,111 Acre-feet) and adding the summer sediment pool evaporation (20,000 Acre-feet) to the result from Step 1.

Step 3. For October through January calculations, take the result from Step 2 and using the Shared Shortage Adjustment Table in Attachment 2 hereto, determine the preliminary irrigation water available for release. The calculation using the end of December content (January calculation month) indicates the minimum amount of irrigation water available for release at the end of May. For February through June calculations, subtract the maximum irrigation water available for the January calculation month from the maximum irrigation water available for the calculation month. If the result is negative, the irrigation water available for release (January calculation month) stays the same. If the result is positive the preliminary irrigation water available for release (January calculation month) is increased by the positive amount.

Step 4. Compare the result from Step 3 to 119,000 Acre-feet. If the result from Step 3 is less than 119,000 Acre-feet Water Short Year Administration is in effect.

Step 5. The final annual Water-Short Year Administration calculation determines the total estimated irrigation supply at the end of June (calculated in July). Use the result from Step 3 for the end of May irrigation release estimate, add the June computed inflow to Harlan County Lake and subtract the June computed gross evaporation loss from Harlan County Lake.

2. Procedures to Determine 130,000 Acre Feet Projected Water Supply

To determine the preliminary irrigation supply for the October through June calculation months, follow the procedure described in steps 1 through 4 of the "Procedures to determine Water Short Years" Subsection III. G. 1. The result from step 4 provides the forecasted water supply, which is compared to 130,000 Acre-feet. For the July through September calculation months, use the previous end of calculation month preliminary irrigation supply, add the previous month's Harlan County Lake computed inflow and subtract the previous month's computed gross evaporation loss from Harlan County Lake to determine the current preliminary irrigation supply. The result is compared to 130,000 Acre-feet.

H. Calculation of Computed Water Supply, Allocations and Computed Beneficial Consumptive Use Above and Below Guide Rock During Water-Short Administration Years.

For Water-Short-Administration Years, in addition to the normal calculations, the Computed Water Supply, Allocations, Computed Beneficial Consumptive Use and Imported Water Supply Credits, and Augmentation Water Supply Credits shall also be calculated above Guide Rock as shown in Table 5C. These calculations shall be done in the same manner as in non-Water-Short Administration years except that water supplies originating below Guide Rock shall not be included in the calculations of water supplies originating above Guide Rock. The calculations of Computed Beneficial Consumptive Uses shall be also done in the same manner as in non-Water-Short Administration years except that Computed Beneficial Consumptive Uses from diversions below Guide Rock shall not be included. The depletions from the water diverted by the Superior and Courtland Canals at the Superior-Courtland Diversion Dam shall be included in the calculations of Computed Beneficial Consumptive Use above Guide Rock. Imported Water Supply Credits and Augmentation Water Supply Credits above Guide Rock, as described in Sub-section III.I., may be used as offsets against the Computed Beneficial Consumptive Use above Guide Rock by the State providing the Imported Water Supply Credits or Augmentation Water Supply Credits.~~,~~

The Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage shall be determined by taking the difference in stream flow at Hardy and Guide Rock, adding Computed Beneficial Consumptive Uses in the reach (this does not include the Computed Beneficial Consumptive Use from the Superior and Courtland Canal diversions), and subtracting return flows from the Superior and Courtland Canals in the reach. The Computed Water Supply above Guide Rock shall be determined by subtracting the Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage from the total Computed Water Supply. Nebraska's Allocation above Guide Rock shall be determined by subtracting 48.9% of the Computed Water Supply of the Main Stem reach between Guide Rock and the Hardy gage from Nebraska's total Allocation.

Nebraska's Computed Beneficial Consumptive Uses above Guide Rock shall be determined by subtracting Nebraska's Computed Beneficial Consumptive Uses below Guide Rock from Nebraska's total Computed Beneficial Consumptive Use.

I. Calculation of Imported Water Supply Credits During Water-Short Year Administration Years.

Imported Water Supply Credit during Water-Short Year Administration years shall be calculated consistent with Subsection V.B.2.b. of the Stipulation.

The following methodology shall be used to determine the extent to which Imported Water Supply Credit, as calculated by the RRCA Groundwater Model, can be credited to the State importing the water during Water-Short Year Administration years.

1. Monthly Imported Water Supply Credits

The RRCA Groundwater Model will be used to determine monthly Imported Water Supply Credits by State in each Sub-basin and for the Main Stem. The values for each Sub-basin will include all depletions and accretions upstream of the confluence with the Main Stem. The values for the Main Stem will include all depletions and accretions in stream reaches not otherwise accounted for in a Sub-basin. The values for the Main Stem will be computed separately for the reach 1) above Harlan County Dam, 2) between Harlan County Dam and Guide Rock, and 3) between Guide Rock and the Hardy gage. The Imported Water Supply Credit shall be the difference in stream flow for two runs of the model: a) the "base" run and b) the "no State import" run.

During Water-Short Year Administration years, Nebraska's credits in the Sub-basins shall be determined as described in Section III. A. 3.

2. Imported Water Supply Credits Above Harlan County Dam

Nebraska's Imported Water Supply Credits above Harlan County Dam shall be the sum of all the credits in the Sub-basins and the Main Stem above Harlan County Dam.

3. Imported Water Supply Credits Between Harlan County Dam and Guide Rock During the Irrigation Season

a. During Water-Short Year Administration years, monthly credits in the reach between Harlan County Dam and Guide Rock shall be determined as the differences in the stream flows between the two runs at Guide Rock.

b. The irrigation season shall be defined as starting on the first day of release of water from Harlan County Lake for irrigation use and ending on the last day of release of water from Harlan County Lake for irrigation use.

c. Credit as an offset for a State's Computed Beneficial Consumptive Use above Guide Rock will be given to all the Imported Water Supply accruing in the reach between Harlan County Dam and Guide Rock during the irrigation season. If the period of the irrigation season does not coincide with the period of modeled flows, the amount of the Imported Water Supply credited during the irrigation season for that month shall be the total monthly modeled Imported Water Supply Credit times the number of days in the month occurring during the irrigation season divided by the total number of days in the month.

4. Imported Water Supply Credits Between Harlan County Dam and Guide Rock During the Non-Irrigation Season

a. Imported Water Supply Credit shall be given between Harlan County Dam and Guide Rock during the period that flows are diverted to fill Lovewell Reservoir to the extent that imported water was needed to meet Lovewell Reservoir target elevations.

b. Fall and spring fill periods shall be established during which credit shall be given for the Imported Water Supply Credit accruing in the reach. The fall period shall extend from the end of the irrigation season to December 1. The spring period shall extend from March 1 to May 31. The Lovewell target elevations for these fill periods are the projected end of November reservoir level and the projected end of May reservoir level for most probable inflow conditions as indicated in Table 4 in the current Annual Operating Plan prepared by the Bureau of Reclamation.

c. The amount of water needed to fill Lovewell Reservoir for each period shall be calculated as the storage content of the reservoir at its target elevation at the end of the fill period minus the reservoir content at the start of the fill period plus the amount of net evaporation during this period minus White Rock Creek inflows for the same period.

d. If the fill period as defined above does not coincide with the period of modeled flows, the amount of the Imported Water Supply Credit during the fill period for that month shall be the total monthly modeled Imported Water Supply Credit times the number of days in the month occurring during the fill season divided by the total number of days in the month.

e. The amount of non-imported water available to fill Lovewell Reservoir to the target elevation shall be the amount of water available at Guide Rock during the fill period minus the amount of the Imported Water Supply Credit accruing in the reach during the same period.

f. The amount of the Imported Water Supply Credit that shall be credited against a State's Consumptive Use shall be the amount of water imported by that State that is available in the reach during the fill period or the amount of water needed to reach Lovewell Reservoir target elevations minus the amount of non-imported water available during the fill period, whichever is less.

5. Other Credits

Kansas and Nebraska will explore crediting Imported Water Supply that is otherwise useable by Kansas.

J. Calculations of Compact Compliance in Water-Short Year Administration Years

During Water-Short Year Administration, using the procedures described in Subsections III.A-D, the RRCA will calculate the Annual Allocations for each State, the Computed Beneficial Consumptive Use by each State, the ~~and~~ Imported Water Supply Credit, and the Augmentation Water Supply Credit that a State may use to offset Computed Beneficial Consumptive Use in that year. The resulting annual and average values will be calculated as displayed in Tables 5 A-C and E.

If Nebraska is implementing an Alternative Water-Short-Year Administration Plan, data to determine Compact compliance will be shown in Table 5D. Nebraska's compliance with the Compact will be determined in the same manner as Nebraska's Above Guide Rock compliance except that compliance will be based on a three-year running average of the current year and previous two year calculations. In addition, Table 5 D. will display the sum of the previous two-year difference in Allocations above Guide Rock and Computed Beneficial Consumptive Uses above Guide Rock minus any Imported Water Credits and compare the result with the Alternative Water-Short-Year Administration Plan's expected decrease in Computed Beneficial Consumptive Use above Guide Rock. Nebraska will be within compliance with the Compact as long as the three-year running average difference

in Column 8 is positive and the sum of the previous year and current year deficits above Guide Rock are not greater than the expected decrease in Computed Beneficial Consumptive Use under the plan.

IV. Specific Formulas

A. Computed Beneficial Consumptive Use

1. Computed Beneficial Consumptive Use of Groundwater:

The Computed Beneficial Consumptive Use caused by groundwater diversion shall be determined by the RRCA Groundwater Model as described in Subsection III.D.1.

2. Computed Beneficial Consumptive Use of Surface Water:

The Computed Beneficial Consumptive Use of surface water shall be calculated as follows:

a) Non-Federal Canals

Computed Beneficial Consumptive Use from diversions by non- federal canals shall be 60 percent of the diversion; the return flow shall be 40 percent of the diversion

b) Individual Surface Water Pumps

Computed Beneficial Consumptive Use from small individual surface water pumps shall be 75 percent of the diversion; return flows will be 25 percent of the diversion unless a state provides data on the amount of different system types in a Sub-basin, in which case the following percentages will be used for each system type:

Gravity Flow.	30%
Center Pivot	17%
LEPA	10%

c) Federal Canals

Computed Beneficial Consumptive Use of diversions by Federal canals will be calculated as shown in Attachment 7. For each Bureau of

Reclamation Canal the field deliveries shall be subtracted from the diversion from the river to determine the canal losses. The field delivery shall be multiplied by one minus an average system efficiency for the district to determine the loss of water from the field. Eighty-two percent of the sum of the field loss plus the canal loss shall be considered to be the return flow from the canal diversion. The assumed field efficiencies and the amount of the field and canal loss that reaches the stream may be reviewed by the RRCA and adjusted as appropriate to insure their accuracy.

d) Non-irrigation Uses

Any non-irrigation uses diverting or pumping more than 50 acre-feet per year will be required to measure diversions. Non-irrigation uses diverting more than 50 Acre-feet per year will be assessed a Computed Beneficial Consumptive Use of 50% of what is pumped or diverted, unless the entity presents evidence to the RRCA demonstrating a different percentage should be used.

e) Evaporation from Federal Reservoirs

Net Evaporation from Federal Reservoirs will be calculated as follows:

(1) Harlan County Lake, Evaporation Calculation

April 1 through October 31:

Evaporation from Harlan County Lake is calculated by the Corps of Engineers on a daily basis from April 1 through October 31. Daily readings are taken from a Class A evaporation pan maintained near the project office. Any precipitation recorded at the project office is added to the pan reading to obtain the actual evaporation amount. The pan value is multiplied by a pan coefficient that varies by month. These values are:

March	.56
April	.52
May	.53
June	.60
July	.68
August	.78
September	.91

October 1.01

The pan coefficients were determined by studies the Corps of Engineers conducted a number of years ago. The result is the evaporation in inches. It is divided by 12 and multiplied by the daily lake surface area in acres to obtain the evaporation in Acre-feet. The lake surface area is determined by the 8:00 a.m. elevation reading applied to the lake's area-capacity data. The area-capacity data is updated periodically through a sediment survey. The last survey was completed in December 2000.

November 1 through March 31

During the winter season, a monthly total evaporation in inches has been determined. The amount varies with the percent of ice cover. The values used are:

HARLAN COUNTY LAKE

Estimated Evaporation in Inches
Winter Season -- Monthly Total

PERCENTAGE OF ICE COVER

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
JAN	0.88	0.87	0.85	0.84	0.83	0.82	0.81	0.80	0.78	0.77	0.76
FEB	0.90	0.88	0.87	0.86	0.85	0.84	0.83	0.82	0.81	0.80	0.79
MAR	1.29	1.28	1.27	1.26	1.25	1.24	1.23	1.22	1.21	1.20	1.19
OCT	4.87			NO ICE							
NOV	2.81			NO ICE							
DEC	1.31	1.29	1.27	1.25	1.24	1.22	1.20	1.18	1.17	1.16	1.14

The monthly total is divided by the number of days in the month to obtain a daily evaporation value in inches. It is divided by 12 and multiplied by the daily lake surface area in acres to obtain the evaporation in Acre-feet. The lake surface area is determined by the 8:00 a.m. elevation reading applied to the lake's area-capacity data. The area-capacity data is updated periodically through a sediment survey. The last survey was completed in December 2000.

To obtain the net evaporation, the monthly precipitation on the lake is subtracted from the monthly gross evaporation. The monthly precipitation is calculated by multiplying the sum of the month's daily precipitation in inches by the average of the end of the month lake surface area for the previous month and the end of the month lake surface area for the current month in acres and dividing the result by 12 to obtain the precipitation for the month in acre feet.

The total annual net evaporation (Acre-feet) will be charged to Kansas and Nebraska in proportion to the annual diversions made by the Kansas Bostwick Irrigation District and the Nebraska Bostwick Irrigation District during the time period each year when irrigation releases are being made from Harlan County Lake. For any year in which no irrigation releases were made from Harlan County Lake, the annual net evaporation charged to Kansas and Nebraska will be based on the average of the above calculation for the most recent three years in which irrigation releases from Harlan County Lake were made. In the event Nebraska chooses to substitute supply for the Superior Canal from Nebraska's allocation below Guide Rock in Water-Short Year Administration years, the amount of the substitute supply will be included in the calculation of the split as if it had been diverted to the Superior Canal at Guide Rock.

(2) Evaporation Computations for Bureau of Reclamation Reservoirs

The Bureau of Reclamation computes the amount of evaporation loss on a monthly basis at Reclamation reservoirs. The following procedure is utilized in calculating the loss in Acre-feet.

An evaporation pan reading is taken each day at the dam site. This measurement is the amount of water lost from the pan over a 24-hour period in inches. The evaporation pan reading is adjusted for any precipitation recorded during the 24-hour period. Instructions for determining the daily pan evaporation are found in the "National Weather Service Observing Handbook No. 2 – Substation Observations." All dams located in the Kansas River Basin with the exception of Bonny Dam are National Weather Service Cooperative Observers. The daily evaporation pan readings are totaled at the end of each month and converted to a "free water surface" (FWS) evaporation, also referred to as "lake" evaporation. The FWS evaporation is determined by multiplying the observed pan evaporation by a coefficient of .70 at each of the reservoirs. This coefficient can be affected by several factors including water and air

temperatures. The National Oceanic and Atmospheric Administration (NOAA) has published technical reports describing the determination of pan coefficients. The coefficient used is taken from the "NOAA Technical Report NWS 33, Map of coefficients to convert class A pan evaporation to free water surface evaporation". This coefficient is used for the months of April through October when evaporation pan readings are recorded at the dams. The monthly FWS evaporation is then multiplied by the average surface area of the reservoir during the month in acres. Dividing this value by twelve will result in the amount of water lost to evaporation in Acre-feet during the month.

During the winter months when the evaporation pan readings are not taken, monthly evaporation tables based on the percent of ice cover are used. The tables used were developed by the Corps of Engineers and were based on historical average evaporation rates. A separate table was developed for each of the reservoirs. The monthly evaporation rates are multiplied by the .70 coefficient for pan to free water surface adjustment, divided by twelve to convert inches to feet and multiplied by the average reservoir surface area during the month in acres to obtain the total monthly evaporation loss in Acre-feet.

To obtain the net evaporation, the monthly precipitation on the lake is subtracted from the monthly gross evaporation. The monthly precipitation is calculated by multiplying the sum of the month's daily precipitation in inches by the average of the end of the month lake surface area for the previous month and the end of the month lake surface area for the current month in acres and dividing the result by 12 to obtain the precipitation for the month in acre feet.

f) Non-Federal Reservoir Evaporation:

For Non-Federal Reservoirs with a storage capacity less than 200 Acre-feet, the presumptive average annual surface area is 25% of the area at the principal spillway elevation. Net evaporation for each such Non-Federal Reservoir will be calculated by multiplying the presumptive average annual surface area by the net evaporation from the nearest climate and evaporation station to the Non-Federal Reservoir. A State may provide actual data in lieu of the presumptive criteria.

Net evaporation from Non-Federal Reservoirs with 200 Acre-feet of storage or greater will be calculated by multiplying the average annual surface area (obtained from the area-capacity survey) and the net evaporation from the nearest evaporation and climate station to the reservoir. If the average annual surface area is not available, the Non-Federal Reservoirs with 200 Acre-feet of storage or greater will be presumed to be full at the principal spillway elevation.

B. Specific Formulas for Each Sub-basin and the Main Stem

All calculations shall be based on the calendar year and shall be rounded to the nearest 10 Acre-feet using the conventional rounding formula of rounding up for all numbers equal to five or higher and otherwise rounding down.

Abbreviations:

AWS	= Augmentation Water Supply Credit
CBCU	= Computed Beneficial Consumptive Use
CWS	= Computed Water Supply
D	= Non-Federal Canal Diversions for Irrigation
Ev	= Evaporation from Federal Reservoirs
EvNFR	= Evaporation from Non-Federal Reservoirs
FF	= Flood Flow
GW	= Groundwater Computed Beneficial Consumptive Use (includes irrigation and non-irrigation uses)
IWS	= Imported Water Supply Credit from Nebraska
M&I	= Non-Irrigation Surface Water Diversions (Municipal and Industrial)
P	= Small Individual Surface Water Pump Diversions for Irrigation
RF	= Return Flow
VWS	= Virgin Water Supply
c	= Colorado
k	= Kansas
n	= Nebraska
ΔS	= Change in Federal Reservoir Storage
%	= Average system efficiency for individual pumps in the Sub-basin
% BRF	= Percent of Diversion from Bureau Canals that returns to the stream
###	= Value expected to be zero

3. North Fork of Republican River in Colorado [2]

CBCU Colorado	= 0.6 x Haigler Canal Diversion Colorado + 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Haigler Canal Diversion Nebraska + GWn
	Note: The diversion for Haigler Canal is split between Colorado and Nebraska based on the percentage of land irrigated in each state
VWS	= North Fork of the Republican River at the State Line, Stn. No. 06823000 + CBCUc + CBCUk + CBCUn + Nebraska Haigler Canal RF– IWS -AWS
	Note: The Nebraska Haigler Canal RF returns to the Main Stem
CWS	= VWS - FF
Allocation Colorado	= 0.224 x CWS
Allocation Nebraska	= 0.246 x CWS
Unallocated	= 0.53 x CWS

4. Arikaree River [2]

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc
CBCU Kansas	= 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Arikaree Gage at Haigler Stn. No. 06821500 + CBCUc + CBCUk + CBCUn – IWS

[2] The RRCA will investigate whether return flows from the Haigler Canal diversion in Colorado may return to the Arikaree River, not the North Fork of the Republican River, as indicated in the formulas. If there are return flows from the Haigler Canal to the Arikaree River, these formulas will be changed to recognize those returns.

CWS	= VWS - FF
Allocation Colorado	= 0.785 x CWS
Allocation Kansas	= 0.051 x CWS
Allocation Nebraska	= 0.168 x CWS
Unallocated	=-0.004 x CWS

5. Buffalo Creek

CBCU Colorado	= 0.6 x Dc + % x Pc + 0.5 x M&In + EvNFRc + GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Buffalo Creek near Haigler Gage Stn. No. 06823500 + CBCUc + CBCUk + CBCUn – IWS
CWS	= VWS - FF
Allocation Nebraska	= 0.330 x CWS
Unallocated	= 0.670 x CWS

6. Rock Creek

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn
VWS	= Rock Creek at Parks Gage Stn. No. 06824000 + CBCUc + CBCUk + CBCUn – IWS
CWS	= VWS - FF

Allocation Nebraska = 0.400 x CWS

Unallocated = 0.600 x CWS

7. South Fork Republican River

CBCU Colorado = 0.6 x Hale Ditch Diversion + 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + Bonny Reservoir Ev + GWc

CBCU Kansas = 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk

CBCU Nebraska = 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn

VWS = South Fork Republican River near Benkelman Gage Stn. No. 06827500 + CBCUc + CBCUk + CBCUn + ΔS Bonny Reservoir – IWS

CWS = VWS - ΔS Bonny Reservoir - FF

Allocation Colorado = 0.444 x CWS

Allocation Kansas = 0.402 x CWS

Allocation Nebraska = 0.014 x CWS

Unallocated = 0.140 x CWS

8. Frenchman Creek in Nebraska

CBCU Colorado = GWc

CBCU Kansas = GWk

CBCU Nebraska = Culbertson Canal Diversions x (1-%BRF) + Culbertson Extension x (1-%BRF) + 0.6 x Champion Canal Diversion + 0.6 x Riverside Canal Diversion + 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + Enders Reservoir Ev + GWn

VWS = Frenchman Creek in Culbertson, Nebraska Gage Stn. No.

06835500 + CBCUc + CBCUk + CBCUn + 0.17 x Culbertson Diversion RF + Culbertson Extension RF + ΔS Enders Reservoir – IWS

Note: 17% of the Culbertson Diversion RF and 100% of the Culbertson Extension RF return to the Main Stem

CWS = VWS - ΔS Enders Reservoir – FF

Allocation Nebraska = 0.536 x CWS

Unallocated = 0.464 x CWS

9. Driftwood Creek

CBCU Colorado = GWc

CBCU Kansas = 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk

CBCU Nebraska = 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + GWn

VWS = Driftwood Creek near McCook Gage Stn. No. 06836500 + CBCUc + CBCUk + CBCUn – 0.24 x Meeker Driftwood Canal RF - IWS

Note: 24 % of the Meeker Driftwood Canal RF returns to Driftwood Creek

CWS = VWS – FF

Allocation Kansas = 0.069 x CWS

Allocation Nebraska = 0.164 x CWS

Unallocated = 0.767 x CWS

10. Red Willow Creek in Nebraska

CBCU Colorado = GWc

CBCU Kansas = GWk

CBCU Nebraska	= 0.1 x Red Willow Canal CBCU + 0.6 x Dn + % x Pn + 0.5 x M&In + EvNFRn + 0.1 x Hugh Butler Lake Ev + GWn Note: Red Willow Canal CBCU = Red Willow Canal Diversion x (1- % BRF) 90% of the Red Willow Canal CBCU and 90% of Hugh Butler Lake Ev charged to Nebraska's CBCU in the Main Stem
VWS	= Red Willow Creek near Red Willow Gage Stn. No. 06838000 + CBCUc + CBCUk + CBCUn + 0.9 x Red Willow Canal CBCU + 0.9 x Hugh Butler Lake Ev + 0.9 xRed Willow Canal RF + ΔS Hugh Butler Lake – IWS Note: 90% of the Red Willow Canal RF returns to the Main Stem
CWS	= VWS - ΔS Hugh Butler Lake - FF
Allocation Nebraska	= 0.192 x CWS
Unallocated	= 0.808 x CWS

11. Medicine Creek

CBCU Colorado	= GWc
CBCU Kansas	= GWk
CBCU Nebraska	= 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn Note: Harry Strunk Lake Ev charged to Nebraska's CBCU in the Main Stem. CU from Harry Strunk releases in the Cambridge Canal is charged to the Main stem (no adjustment to the VWS

formula is needed as this water shows up in the Medicine Creek gage).

VWS = Medicine Creek below Harry Strunk Lake Gage Stn. No. 06842500 + CBCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x Pn below gage – 0.5 * M&In below gage - EvNFRn below gage + Harry Strunk Lake Ev + ΔS Harry Strunk Lake– IWS

Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem

CWS = VWS - ΔS Harry Strunk Lake - FF

Allocation Nebraska = 0.091 x CWS

Unallocated = 0.909 x CWS

12. Beaver Creek

CBCU Colorado = 0.6 x Dc + % x Pc + 0.5 x M&Ic + EvNFRc + GWc

CBCU Kansas = 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk

CBCU Nebraska = 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn

VWS = Beaver Creek near Beaver City gage Stn. No. 06847000 + BCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x Pn below gage – 0.5 * M&In below gage - EvNFRn below gage – IWS

Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem

CWS = VWS – FF

Allocation Colorado = 0.200 x CWS

Allocation Kansas = 0.388 x CWS

Allocation Nebraska = 0.406 x CWS

Unallocated = 0.006 x CWS

13. Sappa Creek

CBCU Colorado = GWc

CBCU Kansas = 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + GWk

CBCU Nebraska = 0.6 x Dn above and below gage + % x Pn above and below gage + 0.5 x M&In above and below gage + EvNFRn above and below gage + GWn

VWS = Sappa Creek near Stamford gage Stn. No. 06847500 – Beaver Creek near Beaver City gage Stn. No. 06847000 + CBCUc + CBCUk + CBCUn – 0.6 x Dn below gage - % x Pn below gage – 0.5 * M&In below gage - EvNFRn below gage – IWS

Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem

CWS = VWS - FF

Allocation Kansas = 0.411 x CWS

Allocation Nebraska = 0.411 x CWS

Unallocated = 0.178 x CWS

14. Prairie Dog Creek

CBCU Colorado = GWc

CBCU Kansas = Almena Canal Diversion x (1-%BRF) + 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + Keith Sebelius Lake Ev + GWk

CBCU Nebraska	= 0.6 x Dn below gage + % x Pn below gage + 0.5 x M&In below gage + EvNFRn + GWn below gage
VWS	= Prairie Dog Creek near Woodruff, Kansas USGS Stn. No. 06848500 + CBCUc + CBCUk + CBCUn - 0.6 x Dn below gage - % x Pn below gage - 0.5 x M&In below gage - EvNFRn below gage + ΔS Keith Sebelius Lake – IWS Note: The CBCU surface water terms for Nebraska which occur below the gage are added in the VWS for the Main Stem
CWS	= VWS- ΔS Keith Sebelius Lake - FF
Allocation Kansas	= 0.457 x CSW
Allocation Nebraska	= 0.076 x CWS
Unallocated	= 0.467 x CWS

15. The North Fork of the Republican River in Nebraska and the Main Stem of the Republican River between the junction of the North Fork and the Arikaree River and the Republican River near Hardy

CBCU Colorado	= GWc
CBCU Kansas	= (Deliveries from the Courtland Canal to Kansas above Lovewell) x (1-%BRF) + Amount of transportation loss of Courtland Canal deliveries to Lovewell that does not return to the river, charged to Kansas + (Diversions of Republican River water from Lovewell Reservoir by the Courtland Canal below Lovewell) x (1-%BRF) + 0.6 x Dk + % x Pk + 0.5 x M&Ik + EvNFRk + Harlan County Lake Ev charged to Kansas + Lovewell Reservoir Ev charged to the Republican River

+ GWk

CBCU Nebraska =
Deliveries from Courtland Canal to Nebraska lands x (1- %BRF)
+ Superior Canal x (1- %BRF)
+ Franklin Pump Canal x (1- %BRF)
+ Franklin Canal x (1- %BRF)
+ Naponee Canal x (1- %BRF)
+ Cambridge Canal x (1- %BRF)
+ Bartley Canal x (1- %BRF)
+ Meeker-Driftwood Canal x (1- %BRF)
+ 0.9 x Red Willow Canal CBCU
+ 0.6 x Dn
+ % x Pn
+ 0.5 x M&In
+ EvNFRn
+ 0.9 x Hugh Butler Lake Ev
+ Harry Strunk Lake Ev
+ Swanson Lake Ev
+ Harlan County Lake Ev charged to Nebraska
+ GWn

Notes:
The allocation of transportation losses in the Courtland Canal above Lovewell between Kansas and Nebraska shall be done by the Bureau of Reclamation and reported in their "Courtland Canal Above Lovewell" spreadsheet. Deliveries and losses associated with deliveries to both Nebraska and Kansas above Lovewell shall be reflected in the Bureau's Monthly Water District reports. Losses associated with delivering water to Lovewell shall be separately computed.

Amount of transportation loss of the Courtland Canal deliveries to Lovewell that does not return to the river, charged to Kansas shall be 18% of the Bureau's estimate of losses associated with these deliveries.

Red Willow Canal CBCU = Red Willow Canal Diversion x (1- % BRF)

10% of the Red Willow Canal CBCU is charged to Nebraska's CBCU in Red Willow Creek sub-basin

10% of Hugh Butler Lake Ev is charged to Nebraska's CBCU in the Red Willow Creek sub-basin

None of the Harry Strunk Lake EV is charged to Nebraska's CBCU in the Medicine Creek sub-basin

VWS =

Republican River near Hardy Gage Stn. No. 06853500
- North Fork of the Republican River at the State Line, Stn. No. 06823000
- Arikaree Gage at Haigler Stn. No. 06821500
- Buffalo Creek near Haigler Gage Stn. No. 06823500
- Rock Creek at Parks Gage Stn. No. 06824000
-South Fork Republican River near Benkelman Gage Stn. No. 06827500
- Frenchman Creek in Culbertson Stn. No. 06835500
- Driftwood Creek near McCook Gage Stn. No. 06836500
- Red Willow Creek near Red Willow Gage Stn. No. 06838000
- Medicine Creek below Harry Strunk Lake Gage Stn. No. 06842500
- Sappa Creek near Stamford Gage Stn. No. 06847500
- Prairie Dog Creek near Woodruff, Kansas Stn. No. 68-485000

+ CBCUc
+ CBCUn

+ 0.6 x Dk
+ % x Pk
+ 0.5 x M&Ik
+ EvNFRk
+ Harlan County Lake Ev charged to Kansas
+Amount of transportation loss of the Courtland Canal above the Stateline that does not return to the river, charged to Kansas

- 0.9 x Red Willow Canal CBCU
- 0.9 x Hugh Butler Ev
- Harry Strunk Ev

+ 0.6 x Dn below Medicine Creek gage
+ % x Pn below Medicine Creek gage
+ 0.5 * M&In below Medicine Creek gage
+ EvNFRn below Medicine Creek gage

+ 0.6 x Dn below Beaver Creek gage
+ % x Pn below Beaver Creek gage
+ 0.5 * M&In below Beaver Creek gage
+ EvNFRn below Beaver Creek gage

+ 0.6 x Dn below Sappa Creek gage
+ % x Pn below Sappa Creek gage
+ 0.5 * M&In below Sappa Creek gage
+ EvNFRn below Sappa Creek gage

+ 0.6 x Dn below Prairie Dog Creek gage
+ % x Pn below Prairie Dog Creek gage
+ 0.5 * M&In below Prairie Dog Creek gage
+ EvNFRn below Prairie Dog Creek gage

+ Change in Storage Harlan County Lake
+ Change in Storage Swanson Lake

- Nebraska Haigler Canal RF
- 0.17 x Culbertson Canal RF
- Culbertson Canal Extension RF to Main Stem
+ 0.24 x Meeker Driftwood Canal RF which returns to Driftwood Creek
- 0.9 x Red Willow Canal RF

+ Courtland Canal at Kansas-Nebraska State Line Gage Stn No. 06852500
- Courtland Canal RF in Kansas above Lovewell Reservoir

-IWS

Notes:
None of the Nebraska Haigler Canal RF returns to the North Fork of the Republican River

83% of the Culbertson Diversion RF and none of the Culbertson Extension RF return to Frenchman Creek

24 % of the Meeker Driftwood Canal RF returns to Driftwood Creek.

10% of the Red Willow Canal RF returns to Red Willow Creek

Courtland Canal RF in Kansas above Lovewell Reservoir = 0.015 x (Courtland Canal at Kansas-Nebraska State Line Gage Stn No. 06852500)

CWS = VWS - Change in Storage Harlan County Lake - Change in Storage Swanson Lake - FF

Allocation Kansas = 0.511 x CWS

Allocation Nebraska = 0.489 x CWS

V. Annual Data/ Information Requirements, Reporting, and Verification

The following information for the previous calendar year shall be provided to the members of the RRCA Engineering Committee by April 15th of each year, unless otherwise specified.

All information shall be provided in electronic format, if available.

Each State agrees to provide all information from their respective State that is needed for the RRCA Groundwater Model and RRCA Accounting Procedures and Reporting Requirements, including but not limited to the following:

A. Annual Reporting

1. Surface water diversions and irrigated acreage:

Each State will tabulate the canal, ditch, and other surface water diversions that are required by RRCA annual compact accounting and the RRCA Groundwater Model on a monthly format (or a procedure to distribute annual data to a monthly basis) and will forward the surface water diversions to the other States. This will include available diversion, wasteway, and farm delivery data for canals diverting from the Platte River that contribute to Imported Water Supply into the Basin. Each State will provide the water right number, type of use, system type, location, diversion amount, and acres irrigated.

2. Groundwater pumping and irrigated acreage:

Each State will tabulate and provide all groundwater well pumping estimates that are required for the RRCA Groundwater Model to the other States.

Colorado – will provide an estimate of pumping based on a county format that is based upon system type, Crop Irrigation Requirement (CIR), irrigated acreage, crop distribution, and irrigation efficiencies. Colorado will require installation of a totalizing flow meter, installation of an hours meter with a measurement of the pumping rate, or determination of a power conversion coefficient for 10% of the active wells in the Basin by December 31, 2005. Colorado will also provide an annual tabulation for each groundwater well that measures groundwater pumping by a totalizing flow meter, hours meter or power conversion coefficient that includes: the groundwater well permit number, location, reported hours, use, and irrigated acreage.

Kansas - will provide an annual tabulation by each groundwater well that includes: water right number, groundwater pumping determined by a meter on each well (or group of wells in a manifold system) or by reported hours of use and rate; location; system type (gravity, sprinkler, LEPA, drip, etc.); and irrigated acreage. Crop distribution will be provided on a county basis.

Nebraska – will provide an annual tabulation through the representative Natural Resource District (NRD) in Nebraska that includes: the well registration number or other ID number; groundwater pumping determined by a meter on each well (or group of wells in a manifold system) or by reported hours of use and rate; wells will be identified by; location; system type (gravity, sprinkler, LEPA, drip, etc.); and irrigated acreage. Crop distribution will be provided on a county basis.

3. Climate information:

Each State will tabulate and provide precipitation, temperature, relative humidity or dew point, and solar radiation for the following climate stations:

State	Identification	Name
Colorado		
Colorado	C050109	Akron 4 E
Colorado	C051121	Burlington
Colorado	C054413	Julesburg
Colorado	C059243	Wray
Kansas	C140439	Atwood 2 SW
Kansas	C141699	Colby 1SW
Kansas	C143153	Goodland
Kansas	C143837	Hoxie

Kansas	C145856	Norton 9 SSE
Kansas	C145906	Oberlin1 E
Kansas	C147093	Saint Francis
Kansas	C148495	Wakeeny
Nebraska	C250640	Beaver City
Nebraska	C250810	Bertrand
Nebraska	C252065	Culbertson
Nebraska	C252690	Elwood 8 S
Nebraska	C253365	Gothenburg
Nebraska	C253735	Hebron
Nebraska	C253910	Holdredge
Nebraska	C254110	Imperial
Nebraska	C255090	Madrid
Nebraska	C255310	McCook
Nebraska	C255565	Minden
Nebraska	C256480	Palisade
Nebraska	C256585	Paxton
Nebraska	C257070	Red Cloud
Nebraska	C258255	Stratton
Nebraska	C258320	Superior
Nebraska	C258735	Upland
Nebraska	C259020	Wauneta 3 NW

4. Crop Irrigation Requirements:

Each State will tabulate and provide estimates of crop irrigation requirement information on a county format. Each State will provide the percentage of the crop irrigation requirement met by pumping; the percentage of groundwater irrigated lands served by sprinkler or flood irrigation systems, the crop irrigation requirement; crop distribution; crop coefficients; gain in soil moisture from winter and spring precipitation, net crop irrigation requirement; and/or other information necessary to compute a soil/water balance.

5. Streamflow Records from State-Maintained Gaging Records:

Streamflow gaging records from the following State maintained gages will be provided:

Station No	Name
00126700	Republican River near Trenton
06831500	Frenchman Creek near Imperial
06832500	Frenchman Creek near Enders

06835000	Stinking Water Creek near Palisade
06837300	Red Willow Creek above Hugh Butler Lake
06837500	Red Willow Creek near McCook
06841000	Medicine Creek above Harry Strunk Lake
06842500	Medicine Creek below Harry Strunk Lake
06844000	Muddy Creek at Arapahoe
06844210	Turkey Creek at Edison
06847000	Beaver Creek near Beaver City
	Republican River at Riverton
06851500	Thompson Creek at Riverton
06852000	Elm Creek at Amboy
	Republican River at the Superior-Courtland Diversion Dam

6. Platte River Reservoirs:

The State of Nebraska will provide the end-of-month contents, inflow data, outflow data, area-capacity data, and monthly net evaporation, if available, from Johnson Lake; Elwood Reservoir; Sutherland Reservoir; Maloney Reservoir; and Jeffrey Lake.

7. Water Administration Notification:

The State of Nebraska will provide the following information that describes the protection of reservoir releases from Harlan County Lake and for the administration of water rights junior in priority to February 26, 1948:

Date of notification to Nebraska water right owners to curtail their diversions, the amount of curtailment, and length of time for curtailment.
The number of notices sent.
The number of diversions curtailed and amount of curtailment in the Harlan County Lake to Guide Rock reach of the Republican River.

8. Moratorium:

Each State will provide a description of all new Wells constructed in the Basin Upstream of Guide Rock including the owner, location (legal description), depth and diameter or dimension of the constructed water well, casing and screen information, static water level, yield of the water well in gallons per minute or gallons per hour, and intended use of the water well.

Designation whether the Well is a:

a. Test hole;

b. Dewatering Well with an intended use of one year or less;

c. Well designed and constructed to pump fifty gallons per minute or less;

d. Replacement Water Well, including a description of the Well that is replaced providing the information described above for new Wells and a description of the historic use of the Well that is replaced;

e. Well necessary to alleviate an emergency situation involving provision of water for human consumption, including a brief description of the nature of the emergency situation and the amount of water intended to be pumped by and the length of time of operation of the new Well;

f. Transfer Well, including a description of the Well that is transferred providing the information described above for new Wells and a description of the Historic Consumptive Use of the Well that is transferred;

g. Well for municipal and/or industrial expansion of use;

Wells in the Basin in Northwest Kansas or Colorado. Kansas and Colorado will provide the information described above for new Wells along with copies of any other information that is required to be filed with either State of local agencies under the laws, statutes, rules and regulations in existence as of April 30, 2002, and;

Any changes in State law in the previous year relating to existing Moratorium.

9. Non-Federal Reservoirs:

Each State will conduct an inventory of Non Federal Reservoirs by December 31, 2004, for inclusion in the annual Compact Accounting. The inventory shall include the following information: the location, capacity (in Acre-feet) and area (in acres) at the principal spillway elevation of each Non-Federal Reservoir. The States will annually provide any updates to the initial inventory of Non-Federal Reservoirs, including enlargements that are constructed in the previous year.

Owners/operators of Non-Federal Reservoirs with 200 Acre-feet of storage capacity or greater at the principal spillway elevation will be required to provide an area-capacity survey from State-approved plans or prepared by a licensed professional engineer or land surveyor.

10. Augmentation Plan:

Each State will provide a description of the wells, measuring devices, conveyance structure(s), and other infrastructure to describe the physical characteristics, water diversions, and consumptive use associated with each augmentation plan. The States will provide any updates to the plan on an annual basis.

B. RRCA Groundwater Model Data Input Files

1. Monthly groundwater pumping, surface water recharge, groundwater recharge, and precipitation recharge provided by county and indexed to the one square mile cell size.

2. Potential Evapotranspiration rate is set as a uniform rate for all phreatophyte vegetative classes – the amount is X at Y climate stations and is interpolated spatially using kriging.

C. Inputs to RRCA Accounting

1. Surface Water Information

a. Streamflow gaging station records: obtained as preliminary USGS or Nebraska streamflow records, with adjustments to reflect a calendar year, at the following locations:

Arikaree River at Haigler, Nebraska
North Fork Republican River at Colorado-Nebraska state line
Buffalo Creek near Haigler, Nebraska
Rock Creek at Parks, Nebraska
South Fork Republican River near Benkelman, Nebraska
Frenchman Creek at Culbertson, Nebraska
Red Willow Creek near Red Willow, Nebraska
Medicine Creek below Harry Strunk Lake, Nebraska*
Beaver Creek near Beaver City, Nebraska*
Sappa Creek near Stamford, Nebraska
Prairie Dog Creek near Woodruff, Kansas
Courtland Canal at Nebraska-Kansas state line
Republican River near Hardy, Nebraska
Republican River at Superior-Courtland Diversion Dam near Guide Rock,
Nebraska (new)*

b. Federal reservoir information: obtained from the United States Bureau of Reclamation:

Daily free water surface evaporation, storage, precipitation, reservoir release information, and updated area-capacity tables.
Federal Reservoirs:
Bonny Reservoir
Swanson Lake
Harry Strunk Lake
Hugh Butler Lake
Enders Reservoir
Keith Sebelius Lake
Harlan County Lake
Lovewell Reservoir

c. Non-federal reservoirs obtained by each state: an updated inventory of reservoirs that includes the location, surface area (acres), and capacity (in Acre-feet), of each non-federal reservoir with storage capacity of fifteen (15) Acre-feet or greater at the principal spillway elevation. Supporting data to substantiate the average surface water areas that are different than the presumptive average annual surface area may be tendered by the offering State.

d. Diversions and related data from USBR

Irrigation diversions by canal, ditch, and pumping station that irrigate more than two (2) acres
Diversions for non-irrigation uses greater than 50 Acre-feet
Farm Deliveries
Wasteway measurements
Irrigated acres

e. Diversions and related data – from each respective State

Irrigation diversions by canal, ditch, and pumping station that irrigate more than two (2) acres
Diversions for non-irrigation uses greater than 50 Acre-feet
Wasteway measurements, if available

2. Groundwater Information

(From the RRCA Groundwater model as output files as needed for the accounting procedures)

a. Imported water - mound credits in amount and time that occur in defined streamflow points/reaches of measurement or compliance – ex: gaging stations near confluence or state lines

b. Groundwater depletions to streamflow (above points of measurement or compliance – ex: gaging stations near confluence or state lines)

3. Summary

The aforementioned data will be aggregated by Sub-basin as needed for RRCA accounting.

D. Verification

1. Documentation to be Available for Inspection Upon Request

a. Well permits/ registrations database
b. Copies of well permits/ registrations issued in calendar year
c. Copies of surface water right permits or decrees
d. Change in water right/ transfer historic use analyses
e. Canal, ditch, or other surface water diversion records
f. Canal, ditch, or other surface water measurements
g. Reservoir storage and release records
h. Irrigated acreage
i. Augmentation Plan well pumping and augmentation delivery records

2. Site Inspection

a. Accompanied – reasonable and mutually acceptable schedule among representative state and/or federal officials.

b. Unaccompanied – inspection parties shall comply with all laws and regulations of the State in which the site inspection occurs.

Table 1: Annual Virgin and Computed Water Supply, Allocations and Computed Beneficial Consumptive Uses by State, Main Stem and Sub-basin

Designated Drainage Basin	Col. 1: Virgin Water Supply	Col. 2: Computed Water Supply	Col. 3: Allocations				Col. 4: Computed Beneficial Consumptive Use		
			Colorado	Nebraska	Kansas	Unallocated	Colorado	Nebraska	Kansas
North Fork in Colorado									
Arikaree									
Buffalo									
Rock									
South Fork of Republican River									
Frenchman									
Driftwood									
Red Willow									
Medicine									
Beaver									
Sappa									
Prairie Dog									
North Fork of Republican River in Nebraska and Main Stem									
Total All Basins									
North Fork Of Republican River in Nebraska and Mainstem Including Unallocated Water									
Total									

Table 2: Original Compact Virgin Water Supply and Allocations

Designated Drainage Basin	Virgin Water Supply	Colorado Allocation	% of Total Drainage Basin Supply	Kansas Allocation	% of Total Drainage Basin Supply	Nebraska Allocation	% of Total Drainage Basin Supply	Unallo-cated	% of Total Drainage Basin Supply
North Fork - CO	44,700	10,000	22.4			11,000	24.6	23,700	53.0
Arikaree River	19,610	15,400	78.5	1,000	5.1	3,300	16.8	-90	-0.4
Buffalo Creek	7,890					2,600	33.0	5,290	67.0
Rock Creek	11,000					4,400	40.0	6,600	60.0
South Fork	57,200	25,400	44.4	23,000	40.2	800	1.4	8,000	14.0
Frenchman Creek	98,500					52,800	53.6	45,700	46.4
Driftwood Creek	7,300			500	6.9	1,200	16.4	5,600	76.7
Red Willow Creek	21,900					4,200	19.2	17,700	80.8
Medicine Creek	50,800					4,600	9.1	46,200	90.9
Beaver Creek	16,500	3,300	20.0	6,400	38.8	6,700	40.6	100	0.6
Sappa Creek	21,400			8,800	41.1	8,800	41.1	3,800	17.8
Prairie Dog Creek	27,600			12,600	45.7	2,100	7.6	12,900	46.7
Sub-total Tributaries	384,400							175,500	
Main Stem + Blackwood Creek	94,500								
Main Stem + Unallocated	270,000			138,000	51.1	132,000	48.9		
Total	478,900	54,100		190,300		234,500			

Table 3A: Table to Be Used to Calculate Colorado's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Colorado				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit and/or Augmentation Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit Col 1 – (Col 2- Col 3)
Year t= -4				
Year t= -3				
Year t= -2				
Year t= -1				
Current Year t= 0				
Average				

Table 3B. Table to Be Used to Calculate Kansas's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Kansas				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Col 1 – (Col 2- Col 3)
Year t= -4				
Year t= -3				
Year t= -2				
Year t= -1				

Current Year t= 0				
Average				

Table 3C. Table to Be Used to Calculate Nebraska's Five-Year Running Average Allocation and Computed Beneficial Consumptive Use for Determining Compact Compliance

Nebraska				
	Col. 1	Col. 2	Col. 3	Col. 4
Year	Allocation	Computed Beneficial Consumptive	Imported Water Supply Credit	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Col 1 – (Col 2- Col 3)
Year T= -4				
Year T= -3				
Year T= -2				
Year T= -1				
Current Year T= 0				
Average				

Table 4A: Colorado Compliance with the Sub-basin Non-impairment Requirement

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6
Sub-basin	Colorado Sub-basin Allocation (5-year running average)	Unallocated Supply (5-year running average)	Credits from Imported Water Supply and/or Augmentation Water Supply (5-year running average)	Total Supply Available = Col 1+ Col 2 + Col 3 (5-year running average)	Colorado Computed Beneficial Consumptive Use (5-year running average)	Difference Between Available Supply and Computed Beneficial Consumptive Use = Col 4 – Col 5 (5-year running average)
North Fork Republican River Colorado						
Arikaree River						
South Fork Republican River						
Beaver Creek						

Table 4B: Kansas Compliance with the Sub-basin Non-impairment Requirement

	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7
Sub-basin	Kansas Sub-basin Allocation (5-year running average)	Unallocated Supply (5-year running average)	Unused Allocation from Colorado (5-year running average)	Credits from Imported Water Supply (5-year running average)	Total Supply Available = Col 1+ Col 2+ Col 3 + Col 4 (5-year running average)	Kansas Computed Beneficial Consumptive Use (5-year running average)	Difference Between Available Supply and Computed Beneficial Consumptive Use = Col 5 – Col 6 (5-year running average)
Arikaree River							
South Fork Republican River							
Driftwood Creek							
Beaver Creek							
Sappa Creek							
Prairie Dog Creek							

Table 5A: Colorado Compliance During Water-Short Year Administration

Colorado				
	Col. 1	Col. 2	Col. 3	Col 4
Year	Allocation minus Allocation for Beaver Creek	Computed Beneficial Consumptive minus Computed Beneficial Consumptive Use for Beaver Creek	Imported Water Supply Credit and/or Augmentation Water Supply Credit excluding Beaver Creek	Difference between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit and/or Augmentation Water Supply Credit for All Basins Except Beaver Creek Col 1 – (Col 2 – Col 3)
Year T= -4				
Year T= -3				
Year T= -2				
Year T= -1				
Current Year T= 0				
Average				

Table 5B: Kansas Compliance During Water-Short Year Administration

Kansas						
Year	Allocation			Computed Beneficial Consumptive Use`	Imported Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit
Column	1	2	3	4	5	6
	Sum Sub-basins	Kansas's Share of the Unallocated Supply	Total Col 1 + Col 2			Col 3 – (Col 4 – Col 5)
Previous Year						
Current Year						
Average						

Table 5C: Nebraska Compliance During Water-Short Year Administration

Nebraska								
Year	Allocation			Computed Beneficial Consumptive Use			Imported Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Above Guide Rock
Column	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
	State Wide Allocation	Allocation below Guide Rock	State Wide Allocation above Guide Rock	State Wide CBCU	CBCU below Guide Rock	State Wide CBCU above Guide Rock	Credits above Guide Rock	Col 3 – (Col 6 – Col 7)
Previous Year								
Current Year								
Average								

Table 5D: Nebraska Compliance Under a Alternative Water-Short Year Administration Plan

Year	Allocation			Computed Beneficial Consumptive Use			Imported Water Supply Credit	Difference Between Allocation and the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit Above Guide Rock
Column	Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8
	State Wide Allocation	Allocation below Guide Rock	State Wide Allocation above Guide Rock	State Wide CBCU	CBCU below Guide Rock	State Wide CBCU above Guide Rock	Credits above Guide Rock	Col 3 – (Col 6- Col 7)
Year = -2								
Year = -1								
Current Year								
Three-Year Average								
Sum of Previous Two-year Difference								
Expected Decrease in CBCU Under Plan								

Table 5E: Nebraska Tributary Compliance During Water-Short Year Administration

Year	Sum of Nebraska Sub-basin Allocations	Sum of Nebraska's Share of Sub-basin Unallocated Supplies	Total Available Water Supply for Nebraska	Computed Beneficial Consumptive Use	Imported Water Supply Credit	Difference between Allocation And the Computed Beneficial Consumptive Use offset by Imported Water Supply Credit
	Col 1	Col 2	`Col 3	Col 4	Col 5	Col 6
Previous Year						Col 3 -(Col 4-Col 5)
Current Year						
Average						

Figure 1

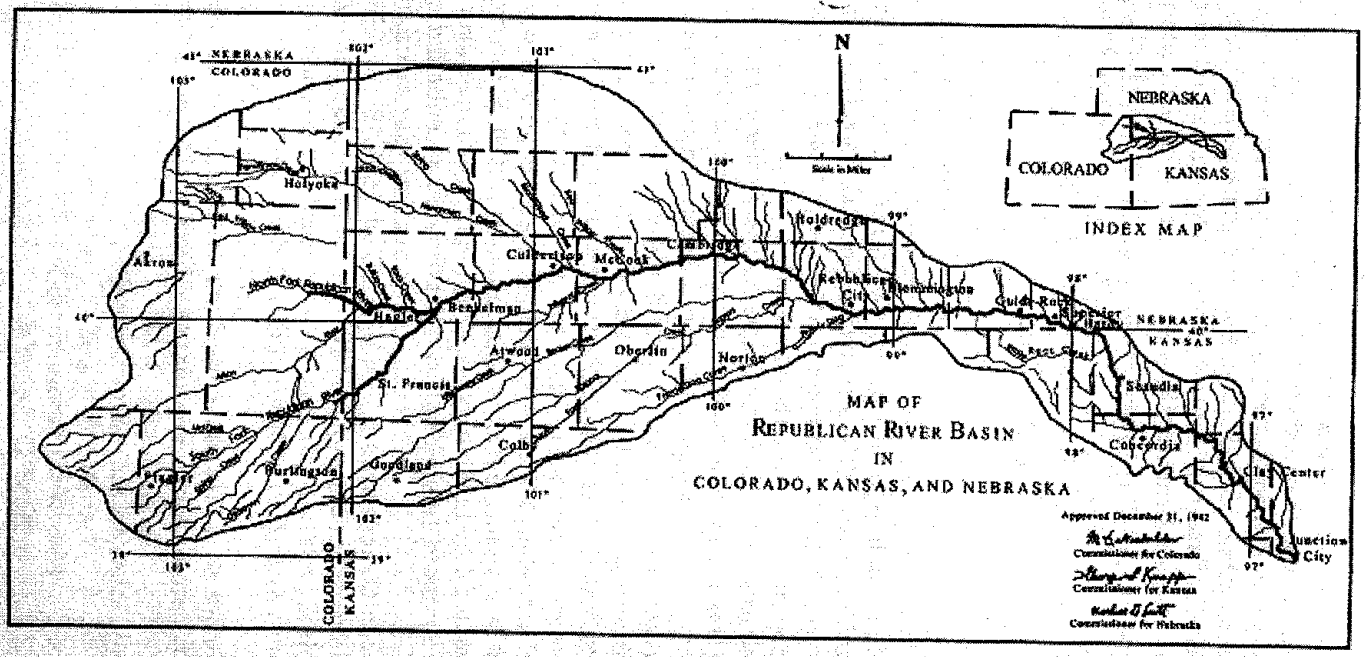
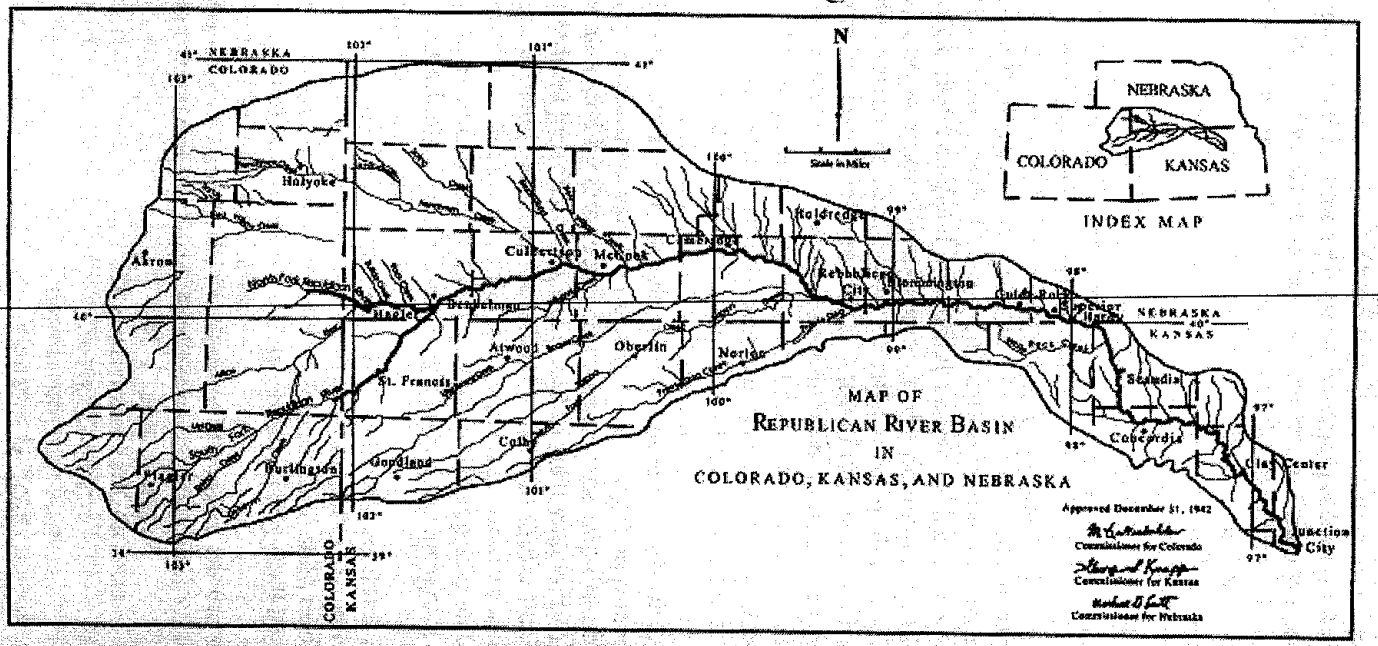
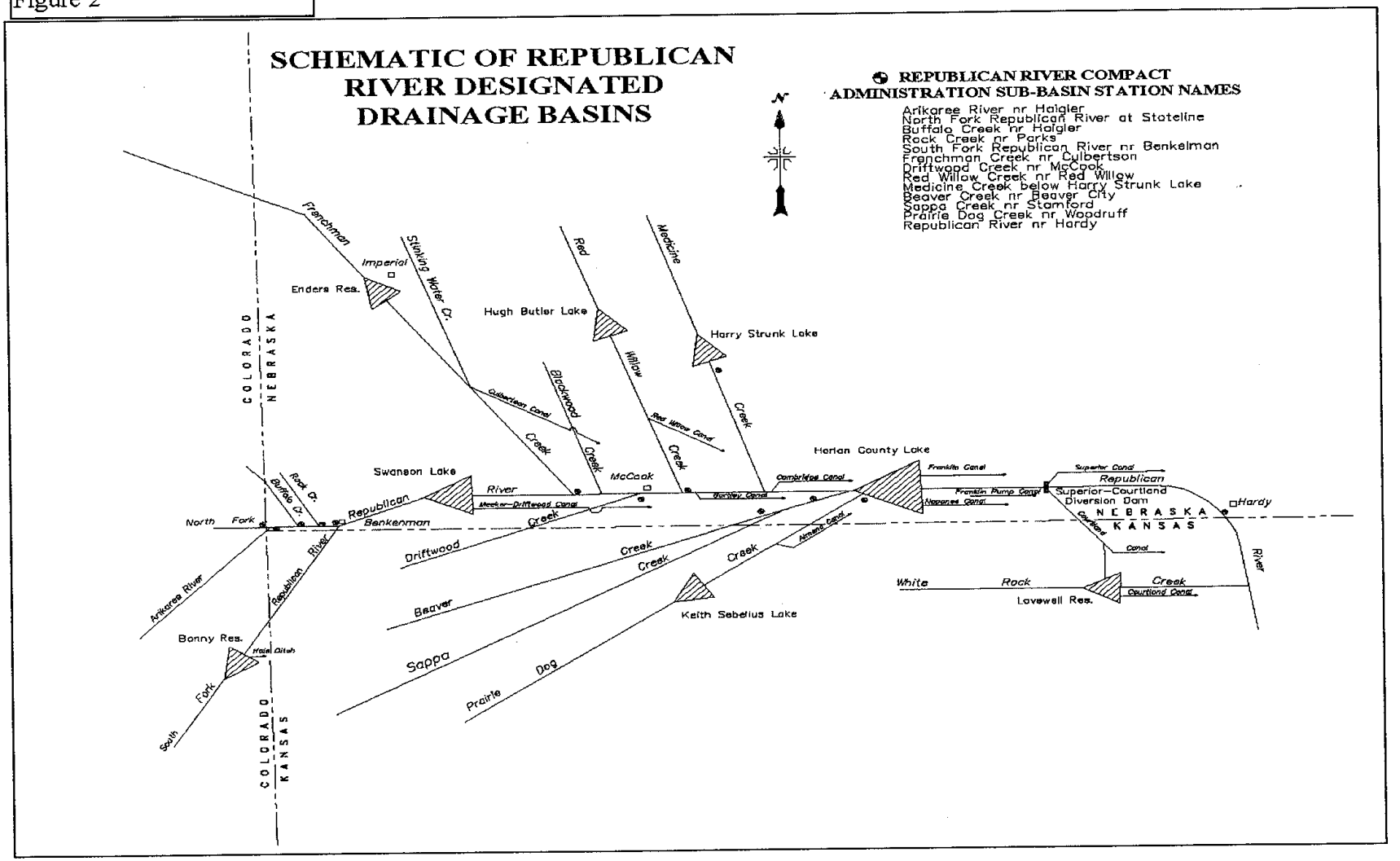

NEBRASKA
COLORADO
N
INDEX MAP
NEBRASKA
COLORADO
KANSAS
Holyoke
Culbertson
McCook
Beaumont
Atwood
Oberlin
Norton
St. Francis
Colby
Goodland
Burlington
Republican City
Hardy
Superior
Concordia
Clay Center
Junction City
MAP OF
REPUBLICAN RIVER BASIN
IN
COLORADO, KANSAS, AND NEBRASKA
Approved December 31, 1942
Commissioner for Colorado
Commissioner for Kansas
Commissioner for Nebraska

Figure 1



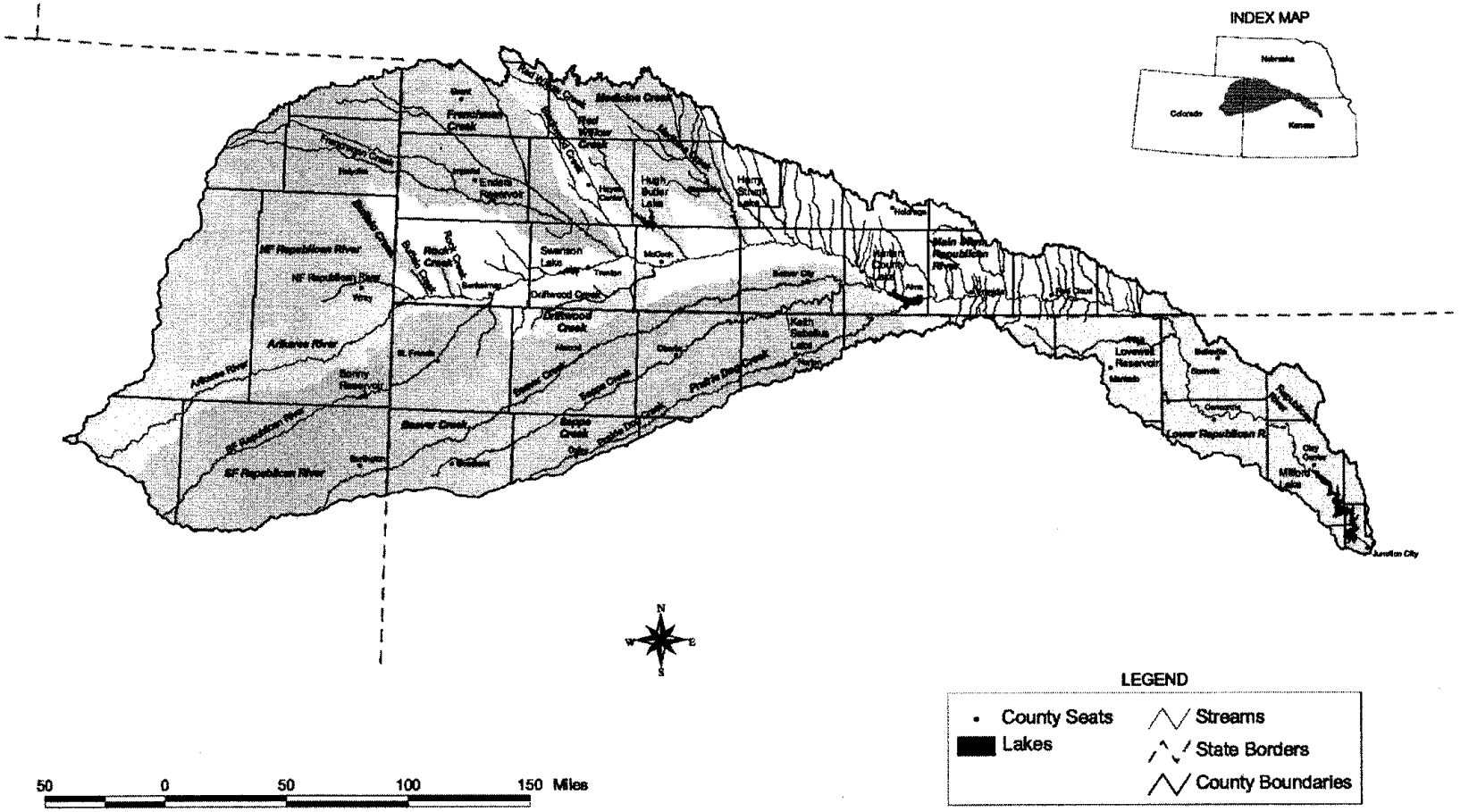
Basin Map Attached to Compact that Shows the Streams and the Basin Boundaries

Figure 2



Line Diagram of Designated Drainage Basins Showing Federal Reservoirs and Sub-basin Gaging Stations

Update of Figure 3 - Map Showing Sub-basins, Streams, and the Basin Boundaries
RRCA Accounting Procedures and Reporting Requirements
January 12, 2005



Map Showing Sub-basins, Streams, and the Basin Boundaries

Attachment 1: Sub-basin Flood Flow Thresholds

Sub-basin	Sub-basin Flood Flow Threshold Acre-feet per Year[3]
Arikaree River	16,400
North Fork of Republican River	33,900
Buffalo Creek	4,800
Rock Creek	9,800
South Fork of Republican River	30,400
Frenchman Creek	51,900
Driftwood Creek	9,400
Red Willow Creek	15,100
Medicine Creek	55,100
Beaver Creek	13,900
Sappa Creek	26,900
Prairie Dog	15,700

[3] Flows considered to be Flood Flows are flows in excess of the 94% flow based on a flood frequency analysis for the years 1971-2000. The Gaged Flows are measured after depletions by Beneficial Consumptive Use and change in reservoir storage. For the purpose of compliance with III.B.1, the Gaged Flows shall not include Augmentation Water Supply Credits delivered in any calendar year.

Attachment 2: Description of the Consensus Plan for Harlan County Lake

The Consensus Plan for operating Harlan County Lake was conceived after extended discussions and negotiations between Reclamation and the Corps. The agreement shaped at these meetings provides for sharing the decreasing water supply into Harlan County Lake. The agreement provides a consistent procedure for: updating the reservoir elevation/storage relationship, sharing the reduced inflow and summer evaporation, and providing a January forecast of irrigation water available for the following summer.

During the interagency discussions the two agencies found agreement in the following areas:

- The operating plan would be based on current sediment accumulation in the irrigation pool and other zones of the project.
- Evaporation from the lake affects all the various lake uses in proportion to the amount of water in storage for each use.
- During drought conditions, some water for irrigation could be withdrawn from the sediment pool.
- Water shortage would be shared between the different beneficial uses of the project, including fish, wildlife, recreation and irrigation.

To incorporate these areas of agreement into an operation plan for Harlan County Lake, a mutually acceptable procedure addressing each of these items was negotiated and accepted by both agencies.

1. Sediment Accumulation.

The most recent sedimentation survey for Harlan County project was conducted in 1988, 37 years after lake began operation. Surveys were also performed in 1962 and 1972; however, conclusions reached after the 1988 survey indicate that the previous calculations are unreliable. The 1988 survey indicates that, since closure of the dam in 1951, the accumulated sediment is distributed in each of the designated pools as follows:

Flood Pool	2,387 Acre-feet
Irrigation Pool	4,853 Acre-feet
Sedimentation Pool	33,527 Acre-feet

To insure that the irrigation pool retained 150,000 Acre-feet of storage, the bottom of the irrigation pool was lowered to 1,932.4 feet, msl, after the 1988 survey.

To estimate sediment accumulation in the lake since 1988, we assumed similar conditions have occurred at the project during the past 11 years. Assuming a consistent rate of deposition since 1988, the irrigation pool has trapped an additional 1,430 Acre-feet.

A similar calculation of the flood control pool indicates that the flood control pool has captured an additional 704 Acre-feet for a total of 3,090 Acre-feet since construction.

The lake elevations separating the different pools must be adjusted to maintain a 150,000-acre-foot irrigation pool and a 500,000-acre-foot flood control pool. Adjusting these elevations results in the following new elevations for the respective pools (using the 1988 capacity tables).

Top of Irrigation Pool	1,945.70 feet, msl
Top of Sediment Pool	1,931.75 feet, msl

Due to the variability of sediment deposition, we have determined that the elevation capacity relationship should be updated to reflect current conditions. We will complete a new sedimentation survey of Harlan County Lake this summer, and new area capacity tables should be available by early next year. The new tables may alter the pool elevations achieved in the Consensus Plan for Harlan County Lake.

2. Summer Evaporation.

Evaporation from a lake is affected by many factors including vapor pressure, wind, solar radiation, and salinity of the water. Total water loss from the lake through evaporation is also affected by the size of the lake. When the lake is lower, the surface area is smaller and less water loss occurs. Evaporation at Harlan County Lake has been estimated since the lake's construction using a Weather Service Class A pan which is 4 feet in diameter and 10 inches deep. We and Reclamation have jointly reviewed this information and assumed future conditions to determine an equitable method of distributing the evaporation loss from the project between irrigation and the other purposes.

During those years when the irrigation purpose expected a summer water yield of 119,000 Acre-feet or more, it was determined that an adequate water supply existed and no sharing of evaporation was necessary. Therefore, evaporation evaluation focused on the lower pool elevations when water was scarce. Times of water shortage would also generally be times of higher evaporation rates from the lake.

Reclamation and we agreed that evaporation from the lake during the summer (June through September) would be distributed between the irrigation and sediment pools based on their relative percentage of the total storage at the time of evaporation. If the sediment pool held 75 percent of the total storage, it would be charged 75 percent of the evaporation. If the sediment pool held 50 percent of the total storage, it would be charged 50 percent of the evaporation. At the bottom of the irrigation pool (1,931.75 feet, msl) all of the evaporation would be charged to the sediment pool.

Due to downstream water rights for summer inflow, neither the irrigation nor the sediment pool is credited with summer inflow to the lake. The summer inflows would be assumed passed through the lake to satisfy the water right holders. Therefore, Reclamation and we did not distribute the summer inflow between the project purposes.

As a result of numerous lake operation model computer runs by Reclamation, it became apparent that total evaporation from the project during the summer averaged about 25,000 Acre-feet during times of lower lake elevations. These same models showed that about 20 percent of the evaporation should be charged to the irrigation pool, based on percentage in storage during the summer months. About 20 percent of the total lake storage is in the irrigation pool when the lake is at elevation 1,935.0 feet, msl. As a result of the joint study, Reclamation and we agreed that the irrigation pool would be credited with 20,000 Acre-feet of water during times of drought to share the summer evaporation loss.

Reclamation and we further agreed that the sediment pool would be assumed full each year. In essence, if the actual pool elevation were below 1,931.75 feet, msl, in January, the irrigation pool would contain a negative storage for the purpose of calculating available water for irrigation, regardless of the prior year's summer evaporation from sediment storage.

3. Irrigation withdrawal from sediment storage.

During drought conditions, occasional withdrawal of water from the sediment pool for irrigation is necessary. Such action is contemplated in the Field Working Agreement and the Harlan County Lake Regulation Manual: "Until such time as sediment fully occupies the allocated reserve capacity, it will be used for irrigation and various conservation purposes, including public health, recreation, and fish and wildlife preservation."

To implement this concept into an operation plan for Harlan County Lake, Reclamation and we agreed to estimate the net spring inflow to Harlan County Lake. The estimated inflow would be used by the Reclamation to provide a firm projection of water available for irrigation during the next season.

Since the construction of Harlan County Lake, inflows to the lake have been depleted by upstream irrigation wells and farming practices. Reclamation has recently completed an in-depth study of these depleted flows as a part of their contract renewal process. The study concluded that if the current conditions had existed in the basin since 1931, the average spring inflow to the project would have been 57,600 Acre-feet of water. The study further concluded that the evaporation would have been 8,800 Acre-feet of water during the same period. Reclamation and we agreed to use these values to calculate the net inflow to the project under the current conditions.

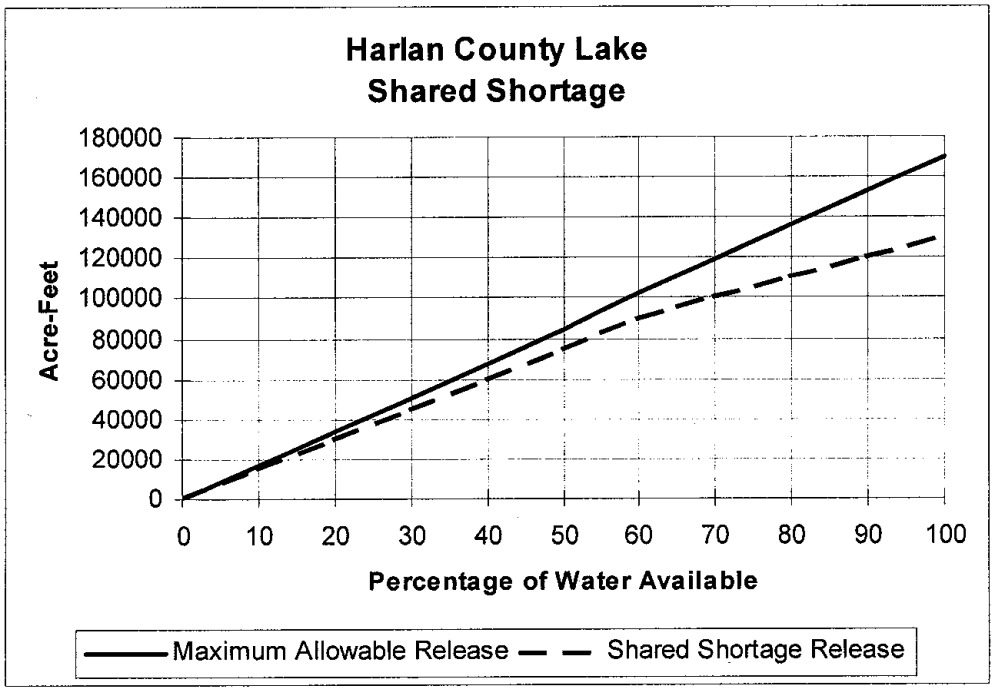
In addition, both agencies also recognized that the inflow to the project could continue to decrease with further upstream well development and water conservation farming. Due to these

concerns, Reclamation and we determined that the previous 5-year inflow values would be averaged each year and compared to 57,600 Acre-feet. The inflow estimate for Harlan County Lake would be the smaller of these two values.

The estimated inflow amount would be used in January of each year to forecast the amount of water stored in the lake at the beginning of the irrigation season. Based on this forecast, the irrigation districts would be provided a firm estimate of the amount of water available for the next season. The actual storage in the lake on May 31 would be reviewed each year. When the actual water in storage is less than the January forecast, Reclamation may draw water from sediment storage to make up the difference.

4. Water Shortage Sharing.

A final component of the agreement involves a procedure for sharing the water available during times of shortage. Under the shared shortage procedure, the irrigation purpose of the project would remove less water then otherwise allowed and alleviate some of the adverse effects to the other purposes. The procedure would also extend the water supply during times of drought by "banking" some water for the next irrigation season. The following graph illustrates the shared shortage releases.



5. Calculation of Irrigation Water Available

Each January, the Reclamation would provide the Bostwick irrigation districts a firm estimate of the quantity of water available for the following season. The firm estimate of water available for irrigation would be calculated by using the following equation and shared shortage adjustment:

Storage + Summer Sediment Pool Evaporation + Inflow – Spring Evaporation=Maximum Irrigation Water Available

The variables in the equation are defined as:

- Maximum Irrigation Water Available. Maximum irrigation supply from Harlan County Lake for that irrigation season.
- Storage. Actual storage in the irrigation pool at the end of December. The sediment pool is assumed full. If the pool elevation is below the top of the sediment pool, a negative irrigation storage value would be used.
- Inflow. The inflow would be the smaller of the past 5-year average inflow to the project from January through May, or 57,600 Acre-feet.
- Spring Evaporation. Evaporation from the project would be 8,800 Acre-feet which is the average January through May evaporation.
- Summer Sediment Pool Evaporation. Summer evaporation from the sediment pool during June through September would be 20,000 Acre-feet. This is an estimate based on lower pool elevations, which characterize the times when it would be critical to the computations.

6. Shared Shortage Adjustment

To ensure that an equitable distribution of the available water occurs during short-term drought conditions, and provide for a "banking" procedure to increase the water stored for subsequent years, a shared shortage plan would be implemented. The maximum water available for irrigation according to the above equation would be reduced according to the following table. Linear interpolation of values will occur between table values.

Shared Shortage Adjustment Table

Irrigation Water Available (Acre-feet)	Irrigation Water Released (Acre-feet)
0	0
17,000	15,000
34,000	30,000
51,000	45,000
68,000	60,000

85,000	75,000
102,000	90,000
119,000	100,000
136,000	110,000
153,000	120,000
170,000	130,000

7. Annual Shutoff Elevation for Harlan County Lake

The annual shutoff elevation for Harlan County Lake would be estimated each January and finally established each June.

The annual shutoff elevation for irrigation releases will be estimated by Reclamation each January in the following manner:

1. Estimate the May 31 Irrigation Water Storage (IWS) (Maximum 150,000 Acre-feet) by taking the December 31 irrigation pool storage plus the January-May inflow estimate (57,600 Acre-feet or the average inflow for the last 5-year period, whichever is less) minus the January-May evaporation estimate (8,800 Acre-feet).
2. Calculate the estimated Irrigation Water Available, including all summer evaporation, by adding the Estimated Irrigation Water Storage (from item 1) to the estimated sediment pool summer evaporation (20,000 AF).
3. Use the above Shared Shortage Adjustment Table to determine the acceptable Irrigation Water Release from the Irrigation Water Available.
4. Subtract the Irrigation Water Release (from item 3) from the Estimated IWS (from item 1). The elevation of the lake corresponding to the resulting irrigation storage is the Estimated Shutoff Elevation. The shutoff elevation will not be below the bottom of the irrigation pool if over 119,000 AF of water is supplied to the districts, nor below 1,927.0 feet, msl. If the shutoff elevation is below the irrigation pool, the maximum irrigation release is 119,000 AF.

The annual shutoff elevation for irrigation releases would be finalized each June in accordance with the following procedure:

1. Compare the estimated May 31 IWS with the actual May 31 IWS.
2. If the actual end of May IWS is less than the estimated May IWS, lower the shutoff elevation to account for the reduced storage.
3. If the actual end of May IWS is equal to or greater than the estimated end of May IWS, the estimated shutoff elevation is the annual shutoff elevation.
4. The shutoff elevation will never be below elevation1,927.0 feet, msl, and will not be below the bottom of the irrigation pool if more than 119,000 Acre-feet of water is supplied to the districts.

Attachment 3: Inflows to Harlan County Lake 1993 Level of Development

BASELINE RUN - 1993 LEVEL INFLOW TO HARLAN COUNTY RESERVOIR

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1931	10.2	10.8	13.4	5.0	18.8	15.8	4.3	1.8	1.8	0.0	0.1	0.1	82.1
1932	6.8	16.6	18.5	4.6	3.8	47.6	3.8	2.8	4.8	0.0	0.0	0.4	109.7
1933	0.4	0.0	3.9	30.2	31.0	5.4	1.8	0.0	10.4	0.0	2.6	5.5	91.2
1934	2.1	0.0	3.2	1.8	0.7	7.3	0.8	0.0	1.3	0.0	2.2	0.0	19.4
1935	0.3	0.1	0.7	4.2	0.8	389.3	6.1	19.1	26.1	2.4	5.2	0.9	455.2
1936	0.3	0.0	11.9	0.0	35.9	4.7	0.4	0.0	1.8	0.0	1.6	3.8	60.4
1937	4.8	12.9	6.0	2.5	0.0	12.6	6.3	6.9	2.4	0.0	0.0	12.4	66.8
1938	9.9	7.8	8.7	10.4	18.7	8.6	7.3	7.8	4.9	0.2	0.0	4.7	89.0
1939	2.7	7.5	9.6	12.2	6.6	13.3	5.0	4.1	0.0	0.0	0.0	0.0	61.0
1940	0.0	0.0	12.2	5.2	4.6	23.7	2.8	3.2	0.0	3.6	0.0	1.4	56.7
1941	0.0	10.6	10.6	7.7	17.2	67.1	28.9	19.7	14.9	8.3	6.7	7.1	198.8
1942	3.3	10.6	0.5	34.1	30.8	83.9	11.7	10.9	36.5	3.1	8.7	0.3	234.4
1943	1.2	11.2	14.6	31.4	4.7	28.3	4.8	0.3	0.9	0.0	0.0	11.8	109.2
1944	0.1	4.3	9.0	43.1	31.9	63.9	26.6	15.4	0.5	0.3	3.0	4.5	202.6
1945	4.3	7.8	5.7	9.5	4.1	53.5	5.0	0.9	1.5	5.0	6.0	6.3	109.6
1946	5.9	11.2	9.3	4.9	7.0	3.1	1.6	11.4	28.1	129.9	25.0	12.1	249.5
1947	1.1	3.2	10.4	8.2	11.9	195.4	22.3	5.9	2.9	0.2	0.3	0.3	262.1
1948	6.2	9.8	24.1	5.4	0.2	39.8	13.5	6.8	4.2	0.0	0.1	0.1	110.2
1949	2.0	1.5	25.2	16.3	49.0	57.4	9.2	5.5	2.1	3.0	2.8	0.3	174.3
1950	0.3	5.7	10.8	10.9	28.9	10.1	12.7	9.3	7.8	7.2	3.8	3.1	110.6
1951	3.8	3.4	7.1	5.3	42.0	39.9	42.1	10.1	36.0	15.5	14.8	8.9	228.9
1952	16.4	21.4	26.3	23.8	34.6	4.0	9.3	3.1	1.5	11.7	4.3	0.1	156.5
1953	1.8	4.6	5.3	3.3	15.1	9.5	1.8	0.2	0.0	0.0	2.8	0.1	44.5
1954	1.0	6.8	1.9	3.2	7.1	2.4	0.0	1.2	0.0	0.0	0.0	0.0	23.6
1955	0.0	4.0	6.3	4.8	2.9	6.4	2.7	0.0	1.4	0.0	0.0	0.0	28.5
1956	1.6	3.4	2.9	2.4	1.3	1.5	0.0	0.6	0.0	0.0	0.0	0.0	13.7
1957	0.0	4.1	6.2	12.8	3.5	62.4	21.3	1.2	2.0	3.4	4.5	4.7	126.1
1958	0.8	3.0	14.2	14.0	18.7	1.3	3.4	2.2	0.0	0.4	0.0	0.6	58.6
1959	1.9	15.4	16.4	8.5	13.6	4.2	1.4	1.2	0.0	4.3	1.0	4.5	72.4
1960	1.4	12.3	71.4	23.9	21.7	53.7	14.1	3.2	0.0	0.0	0.2	2.8	204.7
1961	2.3	6.4	7.7	7.4	26.5	24.0	7.2	4.9	0.0	2.3	4.8	1.7	95.2

Attachment 3: Inflows to Harlan County Lake 1993 Level of Development

BASELINE RUN - 1993 LEVEL INFLOW TO HARLAN COUNTY RESERVOIR

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1962	4.5	9.1	16.2	9.9	14.4	42.6	41.6	21.1	2.3	8.7	8.3	5.7	184.4
1963	3.4	18.2	18.2	15.0	12.7	14.7	3.4	6.1	8.7	0.8	5.3	1.8	108.3
1964	5.4	7.6	8.3	8.4	9.9	11.9	7.2	6.5	2.4	1.9	1.4	2.3	73.2
1965	6.0	8.1	11.1	12.8	32.8	40.0	22.9	6.5	37.2	53.7	19.5	11.0	261.6
1966	8.9	21.4	15.7	11.4	12.0	34.7	12.4	2.5	3.5	5.4	6.8	5.7	140.4
1967	7.2	11.5	11.5	12.9	9.1	75.3	43.7	15.3	4.4	7.3	6.9	5.4	210.5
1968	3.9	10.2	8.5	11.6	10.8	12.5	3.1	2.7	1.6	2.0	4.3	3.4	74.6
1969	4.2	10.8	24.5	15.1	18.9	17.5	17.0	12.6	16.6	9.2	11.8	9.9	168.1
1970	3.5	8.7	8.5	10.5	11.1	7.7	4.6	3.2	0.5	3.3	4.7	4.5	70.8
1971	4.1	10.3	12.4	12.8	18.3	7.2	8.4	6.2	1.9	4.2	7.3	7.1	100.2
1972	5.5	8.1	9.2	8.3	14.8	8.5	6.5	4.4	0.1	2.9	7.6	4.1	80.0
1973	11.4	14.2	19.0	16.2	17.4	20.9	9.1	1.9	8.4	19.6	11.9	13.2	163.2
1974	13.2	13.4	12.0	14.3	15.4	17.2	5.5	0.0	0.0	0.0	4.9	5.5	101.4
1975	7.2	8.2	13.6	14.8	12.0	48.1	11.6	7.4	0.1	3.0	6.2	7.3	139.5
1976	7.0	10.2	10.1	16.0	12.1	3.5	2.2	1.8	0.9	1.0	3.2	3.1	71.1
1977	4.4	9.6	12.9	21.2	31.5	12.1	5.9	1.9	10.6	4.1	5.5	5.3	125.0
1978	5.0	6.5	20.6	12.9	11.8	3.8	0.0	1.0	0.0	0.0	0.3	1.6	63.5
1979	1.3	7.6	21.5	18.8	15.9	5.4	10.4	10.6	1.6	0.9	3.6	6.2	103.8
1980	5.7	9.3	11.6	15.2	10.4	2.1	2.5	0.0	0.0	0.0	2.5	2.2	61.5
1981	5.5	6.0	11.6	14.9	22.5	6.4	11.5	16.3	4.3	2.5	6.7	6.2	114.4
1982	5.3	12.5	17.9	14.3	26.8	27.1	8.9	2.7	0.0	6.5	6.3	15.5	143.8
1983	6.5	9.7	27.2	16.4	41.4	74.2	10.7	7.6	3.8	3.1	6.7	5.2	212.5
1984	6.8	14.6	17.2	32.9	40.6	15.5	8.1	4.5	0.0	5.5	4.8	6.2	156.7
1985	6.9	14.1	13.6	11.9	27.4	9.9	10.0	2.0	6.0	8.5	5.6	5.8	121.7
1986	9.1	9.4	12.2	11.7	34.3	13.0	13.5	4.6	3.3	5.9	5.4	7.1	129.5
1987	5.9	9.2	19.7	24.1	24.3	11.7	19.0	5.7	2.3	2.7	8.2	7.0	139.8
1988	6.2	13.7	11.6	15.2	15.2	7.0	17.9	10.4	0.6	2.0	5.9	5.4	111.1
1989	5.4	5.9	10.5	9.1	11.4	11.8	14.0	6.2	0.2	3.1	3.1	3.5	84.2
1990	6.6	7.7	13.2	9.7	15.5	1.4	4.3	10.7	0.6	3.2	2.0	2.7	77.6
1991	2.4	8.0	9.0	10.6	15.2	3.9	1.9	0.5	0.0	0.0	2.7	4.8	59.0
1992	8.0	8.8	12.7	8.5	4.5	6.1	6.5	9.4	2.4	6.9	6.7	5.2	85.7
1993	5.2	14.4	71.6	22.7	21.0	17.0	68.0	37.5	23.3	16.8	30.1	17.7	345.3

Avg	4.5	8.8	14.1	13.0	17.2	30.6	11.0	6.2	5.4	6.3	5.0	4.7	126.8

Attachment 4: Evaporation Loss Harlan County Lake 1993 Level of Development

BASELINE - 1993 LEVEL FLOWS - HARLAN COUNTY EVAPORATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1931	0.7	0.9	1.6	2.9	4.2	7.4	6.9	5.2	2.7	2.1	1.2	0.4	36.2
1932	0.6	0.8	1.5	2.7	4.1	5.0	6.8	5.0	2.7	2.1	1.2	0.4	32.9
1933	0.6	0.8	1.4	2.5	3.8	7.8	6.1	4.2	2.7	2.1	1.2	0.4	33.6
1934	0.6	0.8	1.4	2.4	4.5	6.5	8.0	6.2	2.7	2.0	1.2	0.4	36.7
1935	0.6	0.8	1.3	2.3	2.2	3.6	9.7	6.2	3.1	2.5	1.4	0.5	34.2
1936	0.7	0.9	1.6	2.9	5.5	6.8	8.7	6.5	2.7	2.1	1.2	0.4	40.0
1937	0.6	0.8	1.4	2.5	3.6	4.0	6.2	6.5	2.7	2.1	1.2	0.4	32.0
1938	0.6	0.9	1.5	2.7	3.4	4.9	6.5	5.7	2.7	2.1	1.2	0.4	32.6
1939	0.6	0.8	1.4	2.6	4.3	4.9	6.8	4.6	2.7	2.1	1.2	0.4	32.4
1940	0.6	0.8	1.4	2.4	3.5	5.0	6.5	4.6	2.7	2.1	1.2	0.4	31.2
1941	0.6	0.8	1.4	2.5	3.9	4.2	6.7	5.3	2.8	2.1	1.3	0.5	32.1
1942	0.6	0.9	1.5	2.8	4.0	5.2	8.3	5.1	3.2	2.5	1.5	0.5	36.1
1943	0.7	1.0	1.8	3.2	4.3	5.7	7.9	6.3	2.7	2.1	1.2	0.4	37.3
1944	0.6	0.8	1.4	2.7	4.2	5.3	7.0	5.8	3.5	2.6	1.5	0.5	35.9
1945	0.7	1.0	1.8	3.1	3.8	3.0	6.7	5.7	2.9	2.2	1.3	0.5	32.7
1946	0.6	0.9	1.6	2.8	3.5	5.1	5.6	4.4	2.9	2.7	1.8	0.6	32.5
1947	1.0	1.5	2.9	3.2	3.4	-1.2	5.8	5.3	3.7	1.7	0.5	0.1	27.9
1948	0.8	0.7	1.5	3.6	3.1	2.4	4.2	4.7	3.0	2.7	0.8	0.3	27.8
1949	0.1	0.9	0.7	1.8	1.1	0.7	6.5	4.1	3.1	1.7	1.5	0.4	22.6
1950	0.7	0.1	0.8	2.8	2.0	5.6	0.8	2.8	4.5	2.3	1.6	0.6	24.6
1951	0.5	0.2	2.1	0.7	-0.1	1.9	3.5	4.1	0.4	3.1	2.2	0.9	19.5
1952	1.1	1.2	1.9	2.5	5.2	6.2	1.5	3.4	3.6	2.9	1.1	-0.1	30.5
1953	0.5	1.0	1.5	2.9	4.7	4.5	4.6	6.6	5.3	3.3	0.1	0.0	35.0
1954	0.7	0.6	2.2	3.6	0.3	4.9	6.7	1.6	3.6	1.6	1.5	0.6	27.9
1955	0.5	1.0	2.1	4.6	3.4	-0.5	7.3	6.9	2.7	2.6	1.4	0.4	32.4
1956	0.6	1.1	1.9	2.8	3.9	4.5	5.0	3.7	4.7	3.7	1.3	0.5	33.7
1957	0.7	1.0	1.3	0.5	-0.6	-1.1	6.1	3.7	2.3	1.7	1.2	0.4	17.2
1958	0.7	0.1	1.0	0.6	2.3	4.4	1.0	1.9	3.3	3.3	1.0	0.6	20.2
1959	0.4	1.0	1.1	2.1	1.0	3.5	5.0	4.8	2.3	0.7	1.5	0.6	24.0
1960	0.1	0.7	2.0	2.7	0.9	0.1	4.9	3.6	3.9	2.0	1.3	0.4	22.6
1961	0.9	1.0	1.4	2.7	-1.1	0.6	5.1	2.9	1.2	2.4	0.7	0.1	17.9

Attachment 4: Evaporation Loss Harlan County Lake 1993 Level of Development

BASELINE - 1993 LEVEL FLOWS - HARLAN COUNTY EVAPORATION

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1962	0.6	0.6	0.9	3.7	3.4	1.5	0.3	1.6	2.0	2.0	1.7	0.3	18.6
1963	0.7	1.4	1.3	4.5	4.6	6.3	6.1	3.1	-0.8	2.7	1.5	0.4	31.8
1964	0.8	0.8	1.7	3.2	5.6	1.2	6.9	3.0	3.0	3.3	1.2	0.6	31.3
1965	0.4	0.7	1.2	2.8	1.5	-0.5	2.0	2.8	-3.9	1.7	2.1	0.4	11.2
1966	0.9	0.8	2.9	2.7	7.5	2.8	5.8	3.7	2.7	2.8	1.5	0.4	34.5
1967	0.7	1.2	2.5	3.0	2.0	-2.9	1.6	4.5	3.5	2.0	1.6	0.4	20.1
1968	0.9	1.2	2.8	2.6	3.2	4.9	4.7	1.8	2.3	0.7	1.2	0.2	26.5
1969	0.4	0.6	2.4	3.3	0.1	3.8	-0.7	2.9	2.2	-1.0	1.5	0.4	15.9
1970	0.7	1.4	2.3	2.8	4.7	4.4	6.5	5.9	0.9	1.0	1.5	0.7	32.8
1971	0.7	0.2	2.0	2.9	0.7	5.1	3.4	4.5	1.4	1.5	0.2	0.5	23.1
1972	0.8	1.3	2.0	1.7	1.1	0.0	3.3	1.8	2.1	1.7	-0.4	0.1	15.5
1973	0.5	1.1	-0.7	2.5	3.4	6.7	-1.7	4.2	-3.0	0.2	0.2	0.2	13.6
1974	0.7	1.5	2.6	1.5	3.7	2.5	9.1	2.6	3.4	1.4	1.1	0.3	30.4
1975	0.7	0.7	2.0	2.1	0.8	1.1	4.3	2.7	3.0	3.4	0.7	0.6	22.1
1976	0.8	1.2	1.7	0.7	1.5	5.0	5.9	5.7	-0.2	1.4	1.4	0.7	25.8
1977	0.7	1.3	0.2	1.1	0.0	4.6	4.0	0.6	2.0	1.6	1.0	0.4	17.5
1978	0.5	0.7	1.2	3.4	3.9	6.2	7.1	4.5	4.5	3.0	1.1	0.5	36.6
1979	0.5	0.6	1.1	3.9	4.4	4.6	3.5	5.1	4.1	2.8	1.4	0.7	32.7
1980	0.5	0.6	1.2	3.4	3.7	4.7	6.8	6.0	3.9	2.7	1.3	0.6	35.4
1981	0.5	0.6	1.2	3.8	3.2	4.8	4.2	3.7	2.9	1.7	1.3	0.7	28.6
1982	0.5	0.7	1.2	3.9	3.8	3.9	5.1	3.8	2.9	2.2	1.4	0.8	30.2
1983	0.5	0.7	1.4	2.9	4.2	5.3	8.6	7.2	4.6	1.8	1.5	0.6	39.3
1984	0.6	0.8	1.4	2.9	4.2	5.8	7.2	5.7	4.7	1.4	1.4	0.7	36.8
1985	0.5	0.7	1.3	2.3	4.0	4.5	5.6	3.5	3.8	1.5	1.5	0.7	29.9
1986	0.6	0.7	1.3	2.8	4.4	5.8	6.7	4.0	2.7	1.3	1.4	0.7	32.4
1987	0.5	0.8	1.3	3.1	4.2	6.2	6.9	3.5	3.1	2.2	1.4	0.7	33.9
1988	0.5	0.7	1.3	3.5	4.9	6.6	4.6	4.8	3.5	2.2	1.4	0.7	34.7
1989	0.5	0.7	1.2	4.2	4.5	4.4	4.8	3.6	3.0	2.5	1.4	0.7	31.5
1990	0.5	0.7	1.2	3.0	3.5	5.6	6.4	4.0	5.0	3.4	1.4	0.6	35.3
1991	0.5	0.7	1.2	2.8	3.3	5.5	6.0	5.0	5.1	3.2	1.3	0.6	35.2
1992	0.6	0.7	1.2	1.8	3.2	2.2	4.1	3.5	4.2	2.9	1.9	1.0	27.3

1993	0.6	0.5	1.0	2.2	3.1	4.6	4.2	4.9	4.5	4.4	3.1	1.2	34.3
Avg	0.6	0.8	1.5	2.7	3.2	3.9	5.3	4.3	2.8	2.2	1.3	0.5	29.1

Trigger Calculations Based on Harlan County Lake Irrigation Supply	Units-1000 Acre-feet	Irrigation Trigger	119.0	Assume that during irrigation release season HCL Inflow = Evaporation Loss
		Total Irrigation Supply	130.0	
		Bottom Irrigation	164.1	
		Evaporation Adjust	20.0	

	Oct	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Total**
1993 Level AVE inflow	6.3	5	4.7	4.5	8.8	14.1	13.0	17.2	30.6	11.0	6.2	5.4	126.8
1993 Level AVE evap	2.2	1.3	0.5	0.6	0.8	1.5	2.7	3.2	3.9	5.3	4.3	2.8	29.1
(1931-93)													
Avg. Inflow Last 5 Years	10.8	13.0	12.3	12.9	16.6	22.4	19.4	18.1	14.8	16.5	11.0	4.7	172.6

Attachment 5: Projected Water Supply Spread Sheet Calculations

Year 2001-2002 Oct - Jun Trigger and Irrigation Supply Calculation									
Calculation Month	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Previous EOM Content	236.5	235.9	238.6	242.9	248.1	255.1	263.8	269.6	276.2
Inflow to May 31	73.6	67.3	62.3	57.6	53.1	44.3	30.2	17.2	0.0
Last 5 Yrs Avg Inflow to May 31	125.6	114.8	101.7	89.5	76.6	59.9	37.5	18.1	0.0
Evap to May 31	12.8	10.6	9.3	8.8	8.2	7.4	5.9	3.2	0.0
Est. Cont May 31	297.3	292.6	291.6	291.7	293.0	292.0	288.1	283.6	276.2
Est. Elevation May 31	1944.44	1944.08	1944.00	1944.01	1944.11	1944.03	1943.72	1943.37	1942.77
Max. Irrigation Available	153.2	148.5	147.5	147.6	148.9	147.9	144.0	139.5	132.1
Irrigation Release Est.	120.1	117.4	116.8	116.8	118.1	117.1	116.8	116.8	116.8
Trigger - Yes/No	NO	YES	YES	YES	YES	YES	YES	YES	YES
130 kAF Irrigation Supply - Yes/No	NO	NO	NO	NO	NO	NO	NO	NO	NO

Attachment 5: Projected Water Supply Spread Sheet Calculations

Year 2002 **Jul - Sep** **Final Trigger and** **Total Irrigation Supply** **Calculation**				
Calculation Month		**Jul**	**Aug**	**Sep**
Previous EOM Irrigation Release Est.		116.8	116.0	109.7
Previous Month Inflow		5.5	0.5	1.3
Previous Month Evap		6.3	6.8	6.6
Irrigation Release Estimate		116.0	109.7	104.4
Final Trigger - Yes/No		YES		
130 kAF Irrigation Supply - Yes/No		NO	NO	NO

Attachment 6: Computing Water Supplies and Consumptive Use Above Guide Rock

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Total Main Stem VWS	Hardy gage	Superior-Courtland Diversion Dam Gage	Courtland Canal Diversions	Superior Canal Diversions	Courtland Canal Returns	Superior Canal Returns	Total Bostwick Returns Below Guide Rock	NE CBCU Below Guide Rock	KS CBCU Below Guide Rock	Total CBCU Below Guide Rock	Gain Guide Rock to Hardy	VWS Guide Rock to Hardy	Main Stem Virgin Water Supply Above Guide Rock	Nebraska Main Stem Allocation Above Hardy	Kansas Main Stem Allocation Above Hardy	Nebraska Guide Rock to Hardy Allocation	Kansas Guide Rock to Hardy Allocation
							Col F+ Col G			Col I + Col J	+ Col B - Col C+ Col K - Col H	+ Col L + Col K	Col A - Col M	.489 x Col N	.511 x Col N	.489 x Col M	.511 x Col M

Attachment 7: Calculations of Return Flows from Bureau of Reclamation Canals

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11
Canal	Canal Diversion	Spill to Waste-way	Field Deliveries	Canal Loss	Average Field Loss Factor	Field Loss	Total Loss from District	Percent Field and Canal Loss That Returns to the Stream	Total Return to Stream from Canal and Field Loss	Return as Percent of Canal Diversion
Name Canal	Headgate Diversion	Sum of measured spills to river	Sum of deliveries to the field	+Col 2 - Col 4	1 -Weighted Average Efficiency of Application System for the District*	Col 4 x Col 6	Col 5 + Col 7	Estimated Percent Loss*	Columns 8 x Col 9	Col 10/Col 2
Example	100	5	60	40	30%	18	58	82%	48	48%
Culbertson					30%					
Culbertson Extension					30%					
Meeker-Driftwood					30%					
Red Willow					30%					
Bartley					30%					
Cambridge					30%					
Naponne					35%					
Franklin					35%					
Franklin Pump					35%					
Almena					30%					
Superior					31%					
Nebraska Courtland					23%					
Courtland Canal Above Lovewell (KS)					23%					
Courtland Canal Below Lovewell					23%					

*The average field efficiencies for each district and percent loss that returns to the stream may be reviewed and, if necessary, changed by the RRCA to improve the accuracy of the estimates.

Ex. 2

RESOLUTION OF THE REPUBLICAN RIVER COMPACT ADMINISTRATION

NEBRASKA'S CREDITING ISSUE

Whereas, the States of Kansas, Nebraska and Colorado entered into a Final Settlement Stipulation (FSS) as of December 15, 2002, to resolve pending litigation in the United States Supreme Court regarding the Republican River Compact (Compact) in *Kansas v. Nebraska and Colorado*, No 126 Original;

Whereas, the FSS was approved by the United States Supreme Court on May 19, 2003;

Whereas, by letter dated June 15, 2009, the State of Nebraska identified a concern regarding the appropriate mechanism by which to recognize in the annual accounting a payment for damages based on a past failure to comply with the Compact;

Whereas, the States agree that Nebraska's proposed resolution of the "Crediting Issue" is acceptable and that the Republican River Compact Administration should adopt Nebraska's proposal; and

Whereas, the Crediting Issue has been properly presented and Submitted to the Republican River Compact Administration Pursuant to Section VII of the FSS.

Now, therefore, it is hereby resolved that the Republican River Compact Administration approves and adopts the proposal set forth in Nebraska's June 15, 2009 letter, a copy of which is attached hereto as Exhibit A and incorporated as if the same were set forth fully herein.

Approved by the Republican River Compact Administration this 12th day of August, 2009.

_____ _____

Brian Dunnigan, P.E. Date
Nebraska Member
Chairman

_____ _____

David Barfield, P.E. Date
Kansas Member

_____ _____

Dick Wolfe, P.E. Date
Colorado Member

8/20/09 hsh
EXHIBIT
J
CASE #

Exhibit A

Nebraska's June 15, 2009

Dave Heineman
Governor

STATE OF NEBRASKA
DEPARTMENT OF NATURAL RESOURCES
Brian P. Dunnigan, P.E.
Director

June 15, 2009

IN REPLY TO:

Sent Via Mail and E-Mail

David Barfield
Kansas Commissioner
Republican River Compact Administration
Kansas State Engineer
Division of Water Resources
109 SW 9th St., 2nd Floor
Topeka, KS 66612-1283

Dick Wolfe

Colorado Commissioner
Republican River Compact Commission
Colorado State Engineer
Colorado Division of Water Resources
1313 Sherman St., Room 818
Denver, CO 80203

RE: Submission of Dispute to the Republican River Compact Administration Pursuant to Section VII of the Final Settlement Stipulation

Dear Commissioners Barfield and Wolfe:

In the course of the current Republican River Arbitration, an issue has arisen which Nebraska seeks to resolve pursuant to the "Fast Track" provisions of the Final Settlement Stipulation (FSS). The issue concerns an adjustment Nebraska submits must be made to Compact accounting to properly acknowledge damages paid for past Compact violations. Nebraska attempted to address this issue in the context of the current Arbitration; however, in his January 22, 2009 Final Decision on Legal Issues, the Arbitrator concluded that the issue (identified colloquially as the "Crediting Issue") had not been submitted to the Republican River Compact Administration (RRCA) for resolution. While Nebraska maintains the Crediting Issue was properly before the Arbitrator, Nebraska hereby submits the Crediting Issue to the RRCA to ensure its speedy resolution.

Limited Applicability of the Crediting Issue

As she has made clear during recent communications, Nebraska has implemented concrete measures to remain in Compact compliance in the future. Moreover, based on the States'

April 15, 2009 information exchange, preliminary data indicate Nebraska will be in Compact compliance for the 2004-2008 compliance period regardless of whether any credit is applied in that period. Therefore, insofar as Nebraska is concerned,[1] application of the Crediting Issue is limited to the following compliance periods:

- 2005 – 2006 Two-year average above Guide Rock;
- 2006 – 2007 Two-year average above Guide Rock; and
- 2003 – 2007 Five-year average for the Republican River Basin.

The Concept Defined

As you know, Compact compliance is determined based on averaging of multi-year annual determinations of Computed Beneficial Consumptive Use (CBCU.) Under Water Short Year Administration, annual CBCU determinations are averaged over a two-year period, while under Normal Year Administration, annual CBCU determinations are averaged over a five-year period. Running averages are employed in both cases.

Nebraska submits that when a State is found to be in violation of the Compact and pays damages based on that violation, that State should receive a credit in the Compact accounting to reflect the payment made. Specifically, the Compact accounting should be adjusted by reducing the annual CBCU calculation for the year in which payment is made by that amount of water of which the downstream state was deprived according to the official RRCA accounting spreadsheets.

The Concept as Applied to a Hypothetical Water Use Scenario

Thus, for example, if Nebraska were made to pay damages to Kansas for a shortage under 2005-2006 Water Short Year administration, the 2006 annual CBCU should be reduced on a prospective basis by the volume of water on which the damage payment was based. Table 1 illustrates the importance of providing a credit in this manner. Table 1 assumes, for illustrative purposes only, that in 2006 (a Water Short Year Administration year) Nebraska's average overuse for the 2005-2006 accounting period was 37,490 acre feet [(44,234 + 30,745) ÷ 2]. Damages theoretically could be awarded on this amount.[2] Assuming a full credit were provided

[1] Whatever rule is established in this process presumably will apply equally to the State of Colorado for any damage payments associated with any Colorado overuse.

[2] Nebraska does not concede that damages should be awarded on this amount and does not by this example waive any defense to the payment of damages in the current Arbitration or any other proceeding. Nor does Nebraska waive any argument it may make concerning the need to institute changes to the accounting on which this example is based.

for payment of an award based on that violation, the annual 2006 determination would be a positive 6,745 acre feet [37,490 – 30,745].

Proposed Compliance and Damages Flow Chart

Nebraska Dept. Natural Resources

Year	Allocation - (CBCU - IWS above Guide Rock) Two year Average 2005 - 2006	2-Year Average (Payoff to KS)	Allocation - (CBCU - IWS Credit) two year compliance test 2006 - 2007 with 2006 modified due to water short year payoff for to Kansas	Two year running average with 2006 payoff to Kansas	Allocation - (CBCU - IWS Credit) Five year compliance test 2003 - 2007	Payoff to Kansas in 2006	Allocation - (CBCU - IWS Credit) Five year compliance test 2003 - 2007 with 2006 modified due to water short year payoff for to Kansas	5-Year Average and our payoff to Kansas in 2007	Allocation - (CBCU - IWS Credit) revised due to water short year payoff for to Kansas	Allocation - (CBCU - IWS Credit) Five year compliance test 2004 - 2008 with water short year payoff for 2006 to Kansas
2003					(25,418)		(25,418)		(25,418)	
2004					(36,634)		(36,634)		(36,634)	(36,634)
2005	(44,234)				(42,324)		(42,324)		(42,324)	(42,324)
2006	(30,745)	(37,490)	6,745		(31,512)	(37,490)	5,978		5,978	5,978
2007	17,142		17,142	11,943	30,683		30,683	(13,643)	[illegible]	[illegible]
2008										28,754
2009										
2010										

Note: 2006 Numbers are adjusted for a 37,490 AF damage payoff to Kansas

[illegible]

Note: 2008 Estimated AF need for 2004 thru 2008 Compliance test

All values are from estimates made using the RRCA Accounting Procedures, version July 27, 2005

Table 1: Proposed Compliance and Damages Flow Chart—illustrative example taken from Nebraska's Opening Brief Re: Issue III.A.2 As Identified In Exhibit 4 Of The Arbitration Agreement (Nov. 10, 2008).

The importance of accounting for Nebraska's payment is further illustrated by calculating the two-year running average for the 2006-2007 accounting period, first with, and then without, the credit just discussed. If the credit were provided, the two-year running average for the 2006-2007 accounting period would show Nebraska remained well within her allocation, with a positive 11,943 acre feet [2006 annual determination of 6,745 plus the 2007 annual determination of 17,142 ÷ 2]. If the credit were not provided, however, the two year running average for 2006-2007 would show Nebraska still in violation (negative 6,802 acre feet). Thus, Nebraska could be required to pay both in 2006 *and* in 2007 for violations arising from overuse occurring in 2006 [2006 annual determination of negative 37,490 plus the 2007 annual determination of 17,142 ÷ 2]. This means Kansas would receive an unreasonable double recovery for the same violation that occurred in 2006.

As further shown in Table 1, providing a credit ensures a state to whom an award is made does not double recover when the Basin transitions from Water Short Year Administration accounting to Normal Year Administration accounting. Carrying the earlier analysis forward (tan columns), if a credit were provided, the 2006 annual determination under Normal Year Administration would be positive 5,978 acre feet, and the five-year running average for the 2003-2007

accounting period would show a deficit of just 13,543 acre feet.[3] If no credit were provided, the 2006 annual determination under Normal Year Administration would be negative 31,512 acre feet, and the five-year running average would show a deficit of 21,041 acre feet.[4]

Given the Crediting Issue's impact on Compact accounting, we believe you will agree that its immediate resolution is warranted. As counsel for the State of Kansas indicated at the December 10, 2008 Hearing on Legal Issues, we might not even have a dispute about the Crediting Issue. Nebraska hopes this is the case, and stands ready to resolve it with the RRCA's cooperation.

Sincerely

Brian P. Dunnigan, P.E.
Director

[3] [2003 annual determination of negative 25,418 + 2004 annual determination of negative 36,634 acre feet + 2005 annual determination of negative 42,324 + 2006 annual determination of positive 5,978 + 2007 annual determination of positive 30,683 ÷ 5]

[4] [2003 annual determination of negative 25,418 plus the 2004 annual determination of negative 36,634 acre feet plus 2005 annual determination of negative 42,324 plus the 2006 annual determination of negative 31,512 plus the 2007 annual determination of positive 30,683 divided by 5]

Attachment 1

Designated Schedule for Resolution

CREDITING ISSUE

Republican River Compact Administration
April 2, 2009

June 15, 2009	Nebraska submits Crediting Issue proposal to RRCA.
July 15, 2009	By this date, the RRCA meets to resolve the dispute.
August 15, 2009	If the RRCA fails to resolve the dispute, Nebraska invokes nonbinding arbitration.
December 31, 2009	Completion of Arbitration and decision rendered.
Thereafter	If the dispute is not resolved, Nebraska considers appropriate filings in the U.S. Supreme Court.

RECLAMATION
Managing Water in the West

Resources Management Activities

Nebraska-Kansas Area Office

Bureau of Reclamation

Republican River Compact Administration
Lincoln, Nebraska
August 12, 2009

Lower Republican Basin Feasibility Study
Pre-feasibility Activities

Title V, Section 510, of the Consolidated Natural Resources Act, S. 2789, Public Law 110-229 (May 8, 2008), authorized the Bureau of Reclamation to conduct the Lower Republican River Basin Feasibility Study (FS) to improve water supply reliability, increase water storage, and to improve water management efficiency. A copy of Section 510 of the Public Law is included on the next page. Federal funds have not been appropriated for Reclamation to perform any of the study tasks, however Kansas is beginning a few tasks in support of the FS.

Public Assistance to States Program

In conjunction with the Corps of Engineers (COE) Public Assistance to States (PAS) Program, the Kansas Water Office (KWO) and the Kansas Division of Water Resources (KDWR) continue to take advantages of opportunities to work on tasks identified in the Plan of Study Lower Republican Feasibility Study.

The first PAS Program effort was aerial surveys to obtain orthophotography and topography of the reservoir and embankment areas at Lovewell Reservoir. The reservoir area was flown in early spring of 2009. The survey data can be used in the Feasibility Study for analyzing alternatives involving increased storage at Lovewell Reservoir.

Another PAS Program effort includes possible development of a model covering the Republican Basin from Harlan County Dam to Milford Reservoir which will be used to evaluate alternatives and available water supplies. Initial discussions have been held with Reclamation, COE, KWO, KDWR, and the Nebraska Department of Natural Resources. Model development should be supported by Reclamation and both states because the model could also be used in future basin operations.

Bathymetric Survey Program

The KWO is working with the Kansas Biological Survey through the Bathymetric Survey Program. This survey program measures reservoir storage and sediment accumulation. Data from this program is used to estimate the sediment rate in reservoirs and the chemical composition of the sediment that has been deposited. The KBS plans on completing a survey of Lovewell Reservoir in 2010. This would provide an updated reservoir capacity data for Lovewell, which will prove valuable tool for evaluating alternatives.

Consolidated Natural Resources Act of 2008
S. 2789 - Public Law 110-229 **May 8, 2008**

TITLE V – Bureau of Reclamation and United States Geological Survey Authorizations

SEC. 510. REPUBLICAN RIVER BASIN FEASIBILITY STUDY.

(a) AUTHORIZATION OF STUDY. - Pursuant to reclamation laws, the Secretary of the Interior, acting through the Bureau of Reclamation and in consultation and cooperation with the States of Nebraska, Kansas, and Colorado, may conduct a study to -

(1) determine the feasibility of implementing a water supply and conservation project that will -

(A) improve water supply reliability in the Republican River Basin between Harlan County Lake in Nebraska and Milford Lake in Kansas, including areas in the counties of Harlan, Franklin, Webster, and Nuckolls in Nebraska
and Jewel, Republic, Cloud, Washington, and Clay in Kansas (in this section referred to as the ‘‘Republican River Basin’’);

(B) increase the capacity of water storage through modifications of existing projects or through new projects that serve areas in the Republican River Basin; and

(C) improve water management efficiency in the Republican River Basin through conservation and other available means and, where appropriate, evaluate integrated water resource management and supply needs in the Republican River Basin; and

(2) consider appropriate cost-sharing options for implementation of the project.

(b) COST SHARING. - The Federal share of the cost of the study shall not exceed 50 percent of the total cost of the study, and shall be nonreimbursable.

(c) COOPERATIVE AGREEMENTS. - The Secretary shall undertake the study through cooperative agreements with the State of Kansas or Nebraska and other appropriate entities determined by the Secretary.

(d) COMPLETION AND REPORT. -

(1) IN GENERAL. - Except as provided in paragraph (2), not later than 3 years after the date of the enactment of this Act, the Secretary of the Interior shall complete the study and transmit to the Congress a report containing the results of the study.

(2) EXTENSION. - If the Secretary determines that the study cannot be completed within the 3-year period beginning on the date of the enactment of this Act, the Secretary -

(A) shall, at the time of that determination, report to the Congress on the status of the study, including an estimate of the date of completion; and

(B) complete the study and transmit to the Congress a report containing the results of the study by not later than that date.

(e) SUNSET OF AUTHORITY. - The authority of the Secretary to carry out any provisions of this section shall terminate 10 years after the date of the enactment of this Act.

Frenchman Valley Appraisal Study

At the request of the Nebraska Department of Natural Resources, Reclamation began an appraisal study to examine opportunities for more efficient management in the Frenchman Basin which has experienced dramatically reduced surface water supplies, including reduced inflows to Enders Reservoir.

Study partners included Reclamation, the Nebraska Department of Natural Resources, Frenchman Valley Irrigation District, the H&RW Irrigation District, the Riverside Irrigation Company, the Upper Republican Natural Resource District, the Middle Republican Natural Resource District, and the Nebraska Game and Parks Commission.

Reclamation's Frenchman Unit (Unit) lacks the water supply to provide the benefits envisioned when the project was formulated, most notably supplying irrigation water from Enders Reservoir to project acres of the Unit. The purpose of the study is to determine whether the problems and alternatives analyzed have sufficient potential to justify further Federal involvement while meeting the following study objectives:

- Maintain the viability of the FVID and H&RWID
- Maintain recreation at Enders Reservoir
- Protect the Federal investment in the Unit

Three alternative plans were developed:

- Flow-Through Alternative
- Recreation Alternative, and
- Groundwater Recharge Alternative.

These alternatives were compared to the Future-Without Project Condition, which represents the project future conditions if no Federal action were taken.

The study reviewed and updated the conclusions and recommendations from the 1977 Frenchman Unit Appraisal Report.

A Final Draft has been completed and will be distributed to cooperating agencies for a final review.

Reclamation Assistance to Kansas
Evaluation of Water Conservation Projects

In 2008, the Kansas Legislature passed Substitute for Senate Bill 89 (SB89), which established the procedure for the distribution of any moneys recovered from disputes relating to the Republican River Compact from either Colorado or Nebraska. Reclamation is providing financial and technical assistance for the evaluation of water conservation projects in both the Upper and Lower Republican Basins.

Republican River Basin Conservation Alliance

The Republican River Basin Conversation Projects Alliance (Alliance) was formed to craft a cooperative and coordinated application for specific water conservation projects to be completed if and when Republican River Compact award funds accrue to Kansas from either Colorado or Nebraska. The Alliance consists of a wide representation of stakeholders in northwestern Kansas, including representatives from County Commissions; Cities; Irrigation Districts; Groundwater Management Districts; Production Agriculture; Economic development; RC&Ds; Financial institutions; area Industry; Animal feeding; the Upper Republican Basin Advisory Committee; Farm Bureau's and the Environment. Wayne Bossert, Manager of GMD #4 serves as Alliance Chair. The Alliance has brainstormed and created an initial list of potential conservation projects. The Alliance plans to make specific project recommendations on conservation projects at the appropriate time to the Director, Kansas Water Office.

One alternative involves an evaluation of the best use of water due to the Kansas Upper Republican basin by Colorado to comply with the compact and Final Settlement Stipulation. To meet Colorado's obligations, there are on-going discussions that Colorado may deliver between 2,500 and 5,000 acre feet to the South Fork Republican River basin at the Colorado-Kansas state line or possibly at some point near St. Francis.

Through a cooperative agreement with the Kansas Water Office, Reclamation is providing assistance to conduct a reconnaissance level study on options for the beneficial uses of Compact water provided by Colorado. The evaluations are to consider the economic benefits, social and environmental benefits, potential conservation benefits, and an estimate of the costs to implement.

Lower Republican River Stakeholder Advisory Committee

The Lower Republican River Stakeholder Advisory Committee (LRRSAC) is a group of water users/interests in the basin that will develop a list of potential projects and provide a report to Tracy Streeter, Director of the Kansas Water Office. The group is co-chaired by Susan Stover of the Kansas Water Office and Scott Ross of the Kansas Division of Water Resources. The LRRSAC hopes to provide this report by November, 2009.

The LRRSAC contains representatives from the Kansas Water Office, Kansas Division of Water Resources, Kansas Department of Wildlife and Parks, Corps of Engineers, Bureau of Reclamation, Kansas Bostwick Irrigation District No. 2, City of Concordia, City of Clay Center, and a number of irrigators, both surface and groundwater users.

Alternatives evaluated include increasing storage opportunities, improving surface water delivery system efficiency, improving on-farm irrigation efficiency, reducing demands, aquifer recharge, reduce Minimum Desirable Streamflow violations, and improving water quality.

Water conservation projects identified by the LRRSAC support the direction of the Final Settlement Stipulation (Settlement). Through the Settlement, Nebraska and Kansas, in agreement with the United States, agreed to minimize bypass at the Superior-Courtland Diversion Dam and to pursue system improvements in the basin, including measures to improve the ability to utilize the water supply below Hardy, Nebraska, on the main stem.

The LRRSAC has been utilizing a number of Reclamation reports on the Lower Republican to evaluate alternatives, including the *Draft – Lower Republican River, Kansas – Water Augmentation Analysis*, May, 2002, the *Value Study Report, Proposals for More Efficient Management of Lower Republican River Water Supplies*, December 17, 2002 and the *Appraisal Report, Lower Republican River Basin, Nebraska and Kansas*, January, 2005.

Substitute for Senate Bill 89

In 2008, the Kansas Legislature passed Substitute for Senate Bill 89 (SB89), which established the procedure for the distribution of any moneys recovered from disputes relating to the Republican River Compact from either Colorado or Nebraska. SB89 also established the Republican River Water Conservation Projects - Nebraska Moneys Fund (RRWCP-NE Fund) and the Republican River Water Conservation Projects - Colorado Moneys Fund (RRWCP-CO Fund). The RRWCP-NE and RRWCP-CO funds are to be administered by the Director, Kansas Water Office. After the Interstate Litigation Fund is restored to it's $20 million target level, two thirds of the funds received from Colorado will go into the RRWCP-CO Fund, to be used in the Upper Republican River Basin for conservation projects and one third will go into the State Water Plan Fund for water conservation projects – with priority given to projects that will directly enhance Kansas' ability to stay in compliance with the Compact. If any funds are received from Nebraska, (again, after the Interstate Litigation Fund is restored), two thirds of the funds received from Nebraska will go into the RRWCP-NE Fund to be used in the Lower Republican River Basin for water conservation projects and one third go into the State Water Plan Fund. The Director and the Chief Engineer of the Division of Water Resources are to review and approve each proposed project for which moneys would be expended, with Substitute for SB 89 providing broad guidance.

Meeker Driftwood Appraisal Study

Through the FY10 General Investigations Program, the Nebraska Game and Parks Commission submitted a proposal to conduct an appraisal study on the Meeker Driftwood Unit of the Frenchman-Cambridge Division. The purpose of the Meeker-Driftwood Appraisal Study is to evaluate alternative program activities, structural measures, and/or incentives that might assist in optimizing the existing facilities, provide increased lake level benefits, and provide ongoing recharge for Swanson Reservoir and the irrigated acres it serves.

The study area is defined as the entire drainage area of the Meeker-Driftwood Unit of the Frenchman-Cambridge Irrigation District located primarily in Dundy and Hitchcock counties which feeds Swanson Reservoir and the Meeker and Driftwood canal systems below it.

This Meeker Driftwood Unit has experienced reduced ground and surface water supplies both as a function of historic groundwater utilization and as a consequence of the ongoing drought situation in the basin. Swanson Reservoir has experienced greatly reduced inflows and has been limited to 20-30% of capacity for the last few years. This study may have potential benefits to Nebraska as related to the Republican River Compact. Declining inflows and consistently low reservoir levels have major environmental, economic, and social impacts on the watershed, including agricultural users and recreational interests.

An evaluation of alternative uses and allocations of the limited surface water will allow for more effective planning on the parts of both irrigation interests and natural resource agencies relative to how to expend resources and funds in the basin.

FY12 Proposals
General Investigations Program

The overall goal of Reclamation's Investigations Program (or Geographically Defined Program) is the formulation of plans to address current and projected needs, problems, and opportunities by conserving and managing the available natural resources. With the emphasis on water management and less on construction, the program is geared to assisting with cost-shared studies and technical assistance activities that are environmentally responsible and well planned.

Areas of specific interest and emphasis for selection of proposals include: completion of ongoing studies, watersheds where existing Reclamation projects can contribute to the solution, watershed/regional-scale problems and opportunities, clear Reclamation mission, and other local, state, and/or federal participation,

Nebraska FY 12 Proposals

Niobrara River Basin Management Alternatives Assessment (Nebraska Department of Natural Resources)

Study to evaluate conjunctive management alternatives related to Mirage Flats Irrigation District and optimization strategies for augmentation and retiming related to the Ainsworth Irrigation District. Study will target management of the hydrologically connected waters in the Niobrara Basin upstream of Box Butte Reservoir and the Mirage Flats Irrigation District.

Playa Wetlands Groundwater Recharge in South Platte and Upper Republican River Basins (Nebraska Game and Parks Commission)

Study to investigate the role of playa wetlands in providing groundwater recharge that may contribute to maintenance of stream flows in the Platte and Republican River watersheds. There are more than 15,000 individual playa wetlands in western Nebraska and they are all in the Platte and Republican River watersheds. Playa wetlands are within the Platte and Republican River watersheds in eastern Colorado and northern Kansas.

Kansas FY12 Proposals

Lovewell Reservoir Fish Entrainment (Kansas Water Office)

Study for the evaluation and installation of a barrier system or combination of systems to reduce fish loss from Lovewell Reservoir as a result of entrainment during irrigation releases.

Minimum Pool Development at Kansas Reservoirs (Kansas Water Office)

Evaluate the economic impacts of minimum pool development in Keith Sebelius Lake and Webster Reservoir.

Providing surplus water to Jamestown Wildlife Area (Kansas Water Office, Kansas Department of Wildlife and Parks)

Study to evaluate alternative to provide excess and/or off-season, surplus irrigation water from the Lower Republican area to the marshes at the Jamestown Wildlife Area, Water stored in the marshes will be available for later release back into the basin. This will provide a dependable water supply to the wetlands while still providing water for late winter alluvial aquifer recharge and helping meet minimum desirable streamflow,(MDS), in the Republican River at Concordia, Kansas.

Northwest Kansas Water Distribution Project (Kansas Water Office)

Pending approval by the Republican River Compact Administration, Colorado will deliver compact water to the Kansas stateline. Evaluations of options are needed for Kansas to make efficient, beneficial use of this water.

Smoky Hill Basin Groundwater Modeling (Kansas Water Office)

Modflow modeling of the Smoky Hill River alluvial valley from the Kansas-Colorado state line to Kanopolis Reservoir. Study area includes Kanopolis and Cedar Bluff Reservoirs (which are experiencing declining inflows), two intensive groundwater use control areas, the well fields for Hays and Russell, and also Minimum Desirable Streamflow issues.

Kickapoo Reservoir (Kansas Water Office)

The Kickapoo Tribe is seeking construction of a reservoir on their reservation in Brown County to supplement its water supplies. An appraisal study is needed, leading to Feasibility Study, and eventually the planning, design, construction and operation plans.

Streamflow availability modeling – Missouri River Basin (Kansas Water Office)

Model to determine availability for water appropriation and ecosystem needs on Kansas tributaries to the Missouri River.

Isolated Aquifer System Characterization (Kansas Water Office)

Important but geographically limited fresh water aquifers are becoming more intensely developed. Hydrologic models are needed as an analytical tool in for water management and planning. Study areas include the Upper Sumner, McPherson, Dakota, and Glacial Drift Aquifers.

2008 – 2009 Republican Water Conservation Activities

Republican River Basin Irrigation Management Project

Reclamation continues to provide financial assistance through the WCFSP to the University of Nebraska Extension Service for an irrigation management demonstration project. In 2008, field demonstrations included sites located near Alma, Edison, Loomis, Imperial, Benkelman, and Curtis. Information is presented at annual field days at each site and at an average of 16 other meetings/conferences per year.

The primary goal of the program is to demonstrate research-based irrigation management strategies in farmer fields and provide a hands-on practical teaching environment for farmers and consultants to learn how to implement these practices.

Canal Automation Workshop

In March of 2009, Reclamation held a canal automation workshop in Red Cloud to demonstrate some cost effective, low maintenance canal automation techniques that have been implemented in area irrigation districts (Ainsworth ID, Twin Loups ID, and Bostwick ID in Nebraska).

Frenchman-Cambridge Irrigation District

Reclamation provided financial assistance through the Water Conservation Field Services Program (WCFSP) for upgrading farm deliveries.

Almena Irrigation District No. 5

Reclamation is providing financial and technical assistance through the WCFSP for a buried pipe lateral project.

Bostwick Irrigation District in Nebraska

Reclamation is providing financial and technical assistance through both the Water 2025 Program and the WCFSP for the replacement of open ditch laterals with buried pipe. Also providing technical and financial assistance for the automation of 10 check structures on Franklin Canal.

On August 4, 2009, Commissioner Mike Conner announced that the Bostwick Irrigation District in Nebraska has been selected for two challenge grants. Projects include the replacement of open ditch laterals with buried pipe and a System Optimization Review, which will review the entire District and make recommendations for system improvements.

Kansas Bostwick Irrigation District No. 2

Reclamation is providing financial and technical assistance through the Water 2025 Program for the replacement of open ditch laterals with buried pipe.

Water Rights Mapping

Frenchman-Cambridge Water Rights

Reclamation worked with the Nebraska Department of Natural Resources (NDNR) and the Frenchman-Cambridge Irrigation District in the map transfer process, which resulted in an approval

Bostwick Irrigation District in Nebraska

NDNR worked with the Bostwick Irrigation District for mapping the entire district for the map transfer process. Reclamation recently completed cultural resource review of the Bostwick Irrigation District in Nebraska for the map transfer.

Kansas Bostwick Irrigation District No. 2

Reclamation has been working with the Kansas Division of Water Resources (KDWR) to map the Kansas Bostwick Irrigation District and the private irrigation water rights in the Lower Republican Basin.

Almena Irrigation District No. 5

Reclamation worked with KDWR to map the Almena Irrigation District water rights and the private rights from Norton Dam to the Kansas-Nebraska state line.

Future Project Mapping Activities

Reclamation plans to begin mapping the project acres of the Frenchman Valley Irrigation District and H & RW Irrigation District

Reclamation plans to provide assistance to the Republican Basin Natural Resource Districts to map private water rights within Reclamation project boundaries (co-mingled water rights).

Drought Assistance

Reclamation provides drought assistance through the Reclamation States Emergency Drought Relief Act of 1991.

Kansas Automated Weather Stations

In 2008 Reclamation provided $112,000 of drought assistance funds to purchase equipment for an additional ten automated weather stations to be installed throughout Kansas. Kansas. Kansas requested an additional $75,000 for additional automated weather stations. This request was included as part of the Recovery Act but has not been funded.

Nebraska – Municipal Well

The Village of Stockville has been approved for drought assistance for the installation of a municipal well. Reclamation continues to work out the details of this well project, which should be completed by spring of 2010.

Reservoir Management

ADA compliance activities

NKAO has completed American with Disabilities Act (ADA) related evaluations and action plans for all of the NKAO reservoirs. The Great Plains Region has set a goal to complete universal accessibility upgrades at Reclamation facilities by 2010. In order to complete the required ADA retrofits by 2010, Reclamation has entered into Title 28 cost share cooperative agreements with the Nebraska Game and Parks Commission and Kansas Department of Wildlife and Parks, made vault toilet purchases through our Indefinite Delivery/Indefinite Quantity Contract, and will have four construction contracts in place for work at six reservoirs this year.

Funding shortages in Nebraska Parks

Nebraska Game and Parks Commission has informed Reclamation of possible reduced services at three Reclamation reservoirs; Enders, Swanson and Box Butte. Because of declining reservoir water levels, these three facilities have received reduced visitation over the last ten years. Reclamation continues to work with the Commission by assisting them in land resources management using cost sharing cooperative agreements such as shoreline erosion protection, fencing, and noxious weed controls.

Invasive Species

The threat to the proper function of all aspects of NKAO projects caused by exotic and invasive species has become a serious issue for both Reclamation and our managing partners and contractors. Currently, the majority of issues impacting the NKAO are related to invasive plant and noxious weed infestations at the reservoirs. Invasive plant and noxious weed problems have been increasing in scope and severity due to declining water levels in many of facilities, increased costs associated with control measures, and increased political pressure to remove water consuming species from riparian areas. The control of noxious weed and invasive species has become a serious budgetary issue for the NKAO's managing partners in Nebraska and Kansas.

The greatest potential threat to the NKAO's projects from exotic species would occur from an infestation of Zebra and/or Quagga Mussels (ZQM) at the reservoirs and associated water distribution facilities. Many of the NKAO's projects areas are located within a day's travel from waters known to be infested with ZQM. The NKAO has been working with our managing partners to increase public awareness, and perform monitoring at high risk reservoirs.

RECLAMATION

Managing Water in the West

OPERATION

AND

MAINTENANCE

REPORT

REPUBLICAN RIVER

COMPACT MEETING

LINCOLN, NEBRASKA

U.S. Department of the Interior
Bureau of Reclamation
Great Plains Region
Nebraska-Kansas Area Office

August 12, 2009

REPUBLICAN RIVER COMPACT MEETING
August 12, 2009
Lincoln, Nebraska

2008 Operations

As shown on the attached Table 1, precipitation in the Republican River Basin varied from 115 percent of normal at Swanson Lake to 150 percent of normal at Hugh Butler Lake. Total precipitation at Reclamation dams ranged from 22.20 inches at Bonny Dam to 34.10 inches at Lovewell Dam.

Inflows varied from 37 percent of the most probable forecast at Enders Reservoir to 192 percent of the most probable forecast at Harry Strunk Lake. Inflows into Enders Reservoir totaled 4,770 AF while inflows at Harlan County Lake totaled 224,841 AF.

Average farm delivery values for each irrigated acre were as follows:

District	Farm Delivery
Frenchman Valley	0.0 inches
H&RW	0.0 inches
Frenchman-Cambridge	
- Meeker-Driftwood, Bartley	0.0 inches
- Red Willow Canal	3.0 inches
- Cambridge Canal	6.0 inches
Almena	1.7 inches
Bostwick in NE	2.6 inches
Kansas-Bostwick	
- Above Lovewell	4.1 inches
- Below Lovewell	5.5 inches

2008 Operation Notes

Bonny Reservoir -- The reservoir level began the year at elevation 3648.39 feet (23.6 feet below the top of conservation). Above average rainfall during the month of August caused the reservoir level to increase to a peak elevation of 3651.25 feet on August 15th. Beginning on August 15th releases were made in accordance with orders of the State of Colorado for Republican River Compact compliance. A total of 4,087 AF of river outflow was recorded for this purpose from August 15th through October 2nd. The release resulted in the reservoir level reaching a new historic low elevation of 3648.05 feet on October 9th. A total of 193 AF was released into Hale Ditch during the year. The reservoir elevation at the end of the year was 22.0 feet below the top of conservation at 3649.96 feet (second lowest end of December storage on record).

Enders Reservoir -- The 2008 inflow into Enders Reservoir of 4,770 AF was below the dry-year forecast. This was the 41st consecutive year with below-normal inflows in which the conservation pool did not fill. The reservoir level began the year at elevation 3092.64 feet (19.7 feet below top of conservation). The reservoir level increased slightly during the spring to a peak elevation of 3092.90 feet on June 8th.

The reservoir level gradually decreased the remainder of the year. Due to the extremely low water supply available, no water was released from Enders Reservoir. This was the seventh consecutive year that H&RW Irrigation District did not divert water and the third consecutive year that Frenchman Valley Irrigation District did not divert water. The end of the year reservoir level was 21.3 feet below the top of conservation.

Swanson Lake -- The annual inflow of 19,296 AF to Swanson Lake was between the dry-year and normal-year forecast. The lake level began the year at elevation 2735.00 feet and peaked at 2738.49 feet (13.5 feet below the top of conservation) on June 7th. The reservoir level gradually decreased to an elevation of 2736.58 feet on October 13th. Due to the extremely low water supply available, no water was released from Swanson Lake. Irrigation diversions were not made into Meeker-Driftwood or Bartley Canals. This was the sixth consecutive year that the district did not deliver water from the Meeker-Driftwood Canal. At the end of the year the reservoir level was 14.8 feet below the top of conservation at 2737.16 feet.

Hugh Butler Lake -- The annual inflow of 13,743 AF into Hugh Butler Lake was between the dry-year and normal-year forecast. The reservoir level at the first of the year was 2574.18 ft, 7.6 feet below the top of conservation. May precipitation totaled 8.32 inches at the dam, the most ever recorded for the month. The reservoir level gradually increased peaking at 2577.44 feet (4.4 feet below full) on June 27th. Irrigation releases began on June 22nd and ended on September 4th dropping the pool level 2.4 feet. The level of Hugh Butler Lake at the end of the year was 6.5 feet below the top of conservation.

Harry Strunk Lake -- The inflow of 69,752 AF was above the wet-year forecast. The reservoir level at the beginning of 2008 was only .3 foot below the top of conservation. Releases were made during early 2008 to maintain a reservoir elevation of approximately .5 foot below the top of conservation. The reservoir filled on April 29th and increased to elevation 2373.83 feet (7.7 feet into flood pool) on May 25th as a result of runoff from storms that occurred above the lake during May 23rd and 24th. Lake inflows exceeded historic highs for the month of May. Uncontrolled releases through the spillway reached over 1000 cfs. The reservoir level dropped from the flood pool on August 2nd. Irrigation releases during July, August and early September reduced the reservoir elevation to 2364.31 feet on September 6th. Harry Strunk Lake was only 0.8 foot below the top of conservation at the end of the year.

Keith Sebelius Lake -- The total inflow of 14,265 AF was slightly below the wet-year forecast. The reservoir level was 16.2 feet below the top of conservation pool at the first of the year. A storm system on May 22nd and 23rd produced significant rainfall across the region. Norton Dam recorded 5.05 inches over the two day period. The lake level increased 6.8 feet as a result of the runoff and peaked at elevation 2295.87 feet on June 4th (8.4 feet below the top of conservation). Irrigation releases were made during July and August reducing the lake level by 2.5 feet. In July of 2007, the Kansas Department of Wildlife and Parks and the Almena Irrigation District entered into a Memorandum of Agreement (MOA) to maintain a minimum pool elevation in the reservoir for ten years. Norton Dam recorded 8.94 inches of precipitation during October, the greatest ever recorded for the month. The lake level ended the year at

elevation 2293.86 feet (10.4 feet below the top of conservation).

Harlan County Lake -- Harlan County Lake began 2008 approximately 4.7 feet below the top of conservation pool, at 1941.08 feet. Runoff from late May storms increased the reservoir level 4.2 feet. Flood releases began on May 28th and continued through June 25th at which time irrigation demands exceeded inflows and the lake level reached 1948.0 feet. The available irrigation supply from Harlan County Lake on June 30th was 210,000 AF, indicating that "Water Short Year Administration" would not be in effect. Irrigation releases continued through September 5th reducing the lake level to elevation 1945.64 feet. Harlan County Dam recorded 8.60 inches of precipitation during October, the greatest ever recorded for the month. Runoff from the October storms increased the lake level to 1947.31 feet on November 3rd. Flood releases began on November 3rd and were made throughout the remainder of the year to reduce lake levels back to the top of conservation. The reservoir elevation was 1946.12 ft (0.4 foot in the flood pool) on December 31, 2008. A ten year summary of Harlan County Lake operations is shown on Table 3.

Lovewell Reservoir -- The reservoir elevation at the beginning of 2008 was 1.5 feet below the top of conservation pool. The pool level gradually increased, filling the conservation capacity on April 26th (1582.6 feet). Storms in late May produced significant runoff that raised the elevation 3.3 feet. The reservoir level peaked at 1587.31 feet on June 4th (4.7 feet into the flood pool). A flood release was made from May 28th through June 25th, and again from July 21st through July 31st. Irrigation releases to the canal began on May 27th and continued throughout the irrigation season. Releases were also made to the creek from August 14th through September 15th to lower the reservoir pool for maintenance activities. The reservoir refilled to elevation 1582.38 feet by late October when a release resumed to the creek. The release continued into late December. The reservoir level at the end of the year was 1581.13 feet (1.5 feet below the top of conservation).

Current Operations

Table 2 shows a summary of data for the first seven months of 2009.

Bonny Reservoir – The reservoir level is approximately 21 feet below the top of conservation. Bonny Dam has recorded 16.66 inches of precipitation during the first seven months of the year (143% of average). Reservoir inflow for the period is the greatest since 2001, but only half of the historic average. Releases have been made into Hale Ditch and also for compact compliance. The reservoir level is .2 foot less than last year at this time.

Swanson Lake – The lake level is **c**urrently 14 feet from full and is nearly the same as last year at this time. Precipitation for the year is 126% of normal (17.06 inches). Frenchman-Cambridge Irrigation District is irrigating from Swanson Lake for the first time since 2002.

Enders Reservoir - The reservoir level is currently 21 feet below full and .4 foot below last year at this time. Enders Dam recorded 20.88 inches of precipitation during the first seven months of the

year. Normal precipitation during this period is 12.92 inches. Due to the water supply shortage, H&RW Irrigation District is not irrigating for the eighth year in a row. This is the sixth consecutive year that Frenchman-Valley Irrigation District has not received storage water for irrigation.

Hugh Butler Lake – The lake level is currently 8 feet below full. The precipitation total so far this year is 15.09 inches (118% of normal). The lake level is 2 feet below last year at this time. Irrigation releases are being made from Hugh Butler Lake this year for diversions into Red Willow and Bartley Canals.

Harry Strunk Lake – The lake level is currently 3 feet below the top of conservation. The lake filled on April 26th with the reservoir level peaking on June 16th at 1.2 feet into the flood pool. Reservoir releases for the seasoning of Cambridge Canal began on May 19th. Precipitation at the dam during the first seven months of the year was 17.13 inches (124% of normal).

Keith Sebelius Lake – Currently 10.4 feet below full. Lake level is .6 foot above last year at this time. Irrigation releases began on July 8th with a very limited delivery expected in 2009. Precipitation at the dam during the first seven months of the year was 15.47 inches (96% of normal).

Harlan County Lake – The current water surface level is approximately one foot below full. The lake level is .5 foot below last year at this time. Harlan County Dam has recorded 15.77 inches of precipitation so far this year. The available irrigation supply from Harlan County Lake on June 30th was 156,000 AF, indicating that "Water-Short Year Administration" would not be in effect. Irrigation releases began on June 25th.

Lovewell Reservoir – The reservoir level is currently 3.5 feet below the top of conservation and approximately 2 feet below last years elevation at this time. Lovewell Dam recorded only 12.24 inches of precipitation during the first seven months of the year (71% of average). The Corps of Engineers allowed storing 5 percent in the flood pool (elevation 1583.4 feet) just prior to the irrigation season. Irrigation releases began on May 18th.

Other Items

Inspections

Comprehensive Facility Reviews were conducted at Bonny, Cedar Bluff, Kirwin, Norton, and Webster Dams during 2008. Annual Site Inspections were conducted at all other NKAO facilities in 2008.

Safety of Dams

Norton Dam – Construction of a filter drain system to collect seepage through the left abutment and the outlet works was completed in the fall of 2007. Another minor seep was discovered during drain construction that will require some additional remediation. Reclamation is currently evaluating options and anticipates scheduling construction activities for the late summer or early fall of 2009.

Enders Dam - A small depression was discovered near the outlet works stilling basin in August 2004. The depression has been attributed to a failure of the basin underdrain

system. Reclamation installed additional instrumentation in the area and has collected additional data on water levels around the basin. Additional weight was added to the basin in June 2007 to increase the stability of the outlet basin after a 10 ft rise in lake elevation. In the fall of 2008, Reclamation completed a drain grouting operation and installed temporary drainage features to correct the problem. Installation of a permanent groundwater control system is scheduled for the spring of 2010.

Red Willow Dam – The river outlet works stilling basin was dewatered for inspection in July 2005. During the inspection a small quantity of fine clean sand was discovered near the right basin under drain system outlet indicating that material was being transported through the basin underdrain system. Plugs were installed in the drain outlets to prevent any further movement of material. Final design and implementation of selected alternatives to address the problem is scheduled to be completed in 2010.

Trenton Dam - The left abutment embankment toe drain was reported damaged near the outfall in the 2004 CFR examination and as a result an O&M recommendation to repair the pipe outfall was made. Subsequently, during the 2005 Annual Site Inspection a depression was discovered left of the spillway just left of the left abutment embankment toe drain alignment. In FY09 Reclamation plans to evaluate alternatives to modify the existing toe drain, allowing access for video inspection equipment.

Emergency Management Operations

Orientation Meetings are held annually to discuss the Emergency Action Plan (EAP) for all NKAO dams. Federal, state, county and local organizations that would be impacted by an emergency at NKAO dams are invited to attend. Radios which contact the downstream 24-hour warning points are tested monthly.

Functional exercises were held for the Box Butte Dam Emergency Action Plan (EAP), Trenton Dam EAP, Red Willow Dam EAP, Medicine Creek Dam EAP and Lovewell Dam EAP in 2008.

Standing Operating Procedures

All NKAO SOP's have been updated based on the current guidelines.

Water Conservation

Reclamation continues to provide technical and financial assistance for water conservation projects through the Water Conservation Field Services Program, the Water 2025 Challenge Grant Program, and the new Water for American Program. Past assistance has included on-farm irrigation efficiency demonstrations, improved water measurement, replacement of open ditch laterals with buried pipe, remote monitoring installations, canal automation projects, and educational and training opportunities for local, state, and other federal water management personnel.

Security

Security at all Reclamation dams has increased since September 11, 2001. Site

security plans for all fifteen NKAO facilities have been finalized and published. In 2008 NKAO and RO personnel completed a Periodic Security Review of Glen Elder Dam. FY09 Periodic Security Reviews are scheduled for Bonny, Cedar Bluff, Kirwin, Norton, and Webster Dams.

TABLE 1
NEBRASKA-KANSAS PROJECTS
Summary of Precipitation, Reservoir Storage and Inflows
CALENDAR YEAR 2008

Reservoir	Total Precip. Inches	Percent Of Average %	Storage 12-31-07 AF	Storage 12-31-08 AF	Gain or Loss AF	Maximum Content AF	Storage Date	Minimum Content AF	Storage Date	Total Inflow AF	Percent Of Most Probable %
Box Butte	14.56	86	5,895	6,375	480	9,572	JUN 25	3,608	AUG 14	11,286	73
Merritt	21.35	104	60,831	61,100	269	66,959	JUN 1	41,554	SEP 7	182,099	99
Calamus	27.82	115	111,215	109,027	-2,188	128,582	MAY 27	73,324	SEP 16	266,651	102
Davis Creek	35.85	145	9,684	10,126	442	30,177	JUL 8	8,791	APR 23	46,785	97
Bonny	22.20	130	7,947	9,276	1,329	10,460	AUG 15	7,675	OCT 9	12,159	102
Enders	22.45	118	16,885	15,368	-1,517	17,134	JUN 8	14,973	OCT 11	4,770	37
Swanson	22.93	115	45,211	51,989	6,778	56,388	JUN 7	44,427	JAN 1	19,296	55
Hugh Butler	29.38	150	24,993	26,451	1,458	29,513	JUN 27	24,993	JAN 1	13,743	94
Harry Strunk	28.89	140	34,153	33,151	-1,002	51,158	MAY 25	31,502	SEP 5	69,752	192
Keith Sebelius	33.74	138	9,732	16,313	6,581	19,166	JUN 4	9,722	JAN 1	14,265	183
Harlan County	30.31	133	255,393	319,311	63,918	357,333	JUN 6	255,637	JAN 1	224,841	184
Lovewell	34.10	124	31,273	31,438	165	51,414	JUN 4	20,187	SEP 17	90,852	142
Kirwin	40.49	172	24,096	88,425	64,329	88,615	DEC 31	24,077	JAN 2	85,559	387
Webster	36.39	154	17,720	68,885	51,165	68,885	DEC 31	17,686	JAN 2	59,868	318
Waconda	31.11	122	142,983	206,420	63,437	319,346	OCT 27	142,713	JAN 3	407,850	299
Cedar Bluff	26.84	128	86,517	83,542	-2,975	89,201	JUN 3	83,035	DEC 27	12,383	80

TABLE 2
NEBRASKA-KANSAS AREA OFFICE
Summary of Precipitation, Reservoir Storage and Inflows

JANUARY - JULY 2009

Reservoir	Precip. Inches	Percent Of Average %	Storage 7/31/2008 AF	Storage 7/31/2009 AF	Gain or Loss AF	Inflow AF	Percent Of Most Probable %
Bonny	16.66	143	8,558	10,420	1,862	7,578	89
Enders	20.88	162	16,191	15,879	(312)	4,283	56
Swanson	17.06	126	53,986	57,813	3,827	27,833	99
Hugh Butler	15.09	118	26,506	26,044	(462)	6,898	72
Harry Strunk	17.13	124	34,942	32,471	(2,471)	26,726	110
Keith Sebelius	15.47	96	16,996	16,421	(575)	4,463	77
Harlan County	15.77	106	319,446	312,259	(7,187)	78,555	90
Lovewell	12.24	71	35,576	28,255	(7,321)	25,324	100
Kirwin	17.35	115	57,908	100,092	42,184	56,641	343
Webster	14.39	94	39,609	83,874	44,265	45,651	313
Waconda	12.48	77	225,518	219,798	(5,720)	156,232	151
Cedar Bluff	10.82	78	86,436	80,725	(5,711)	6,126	56

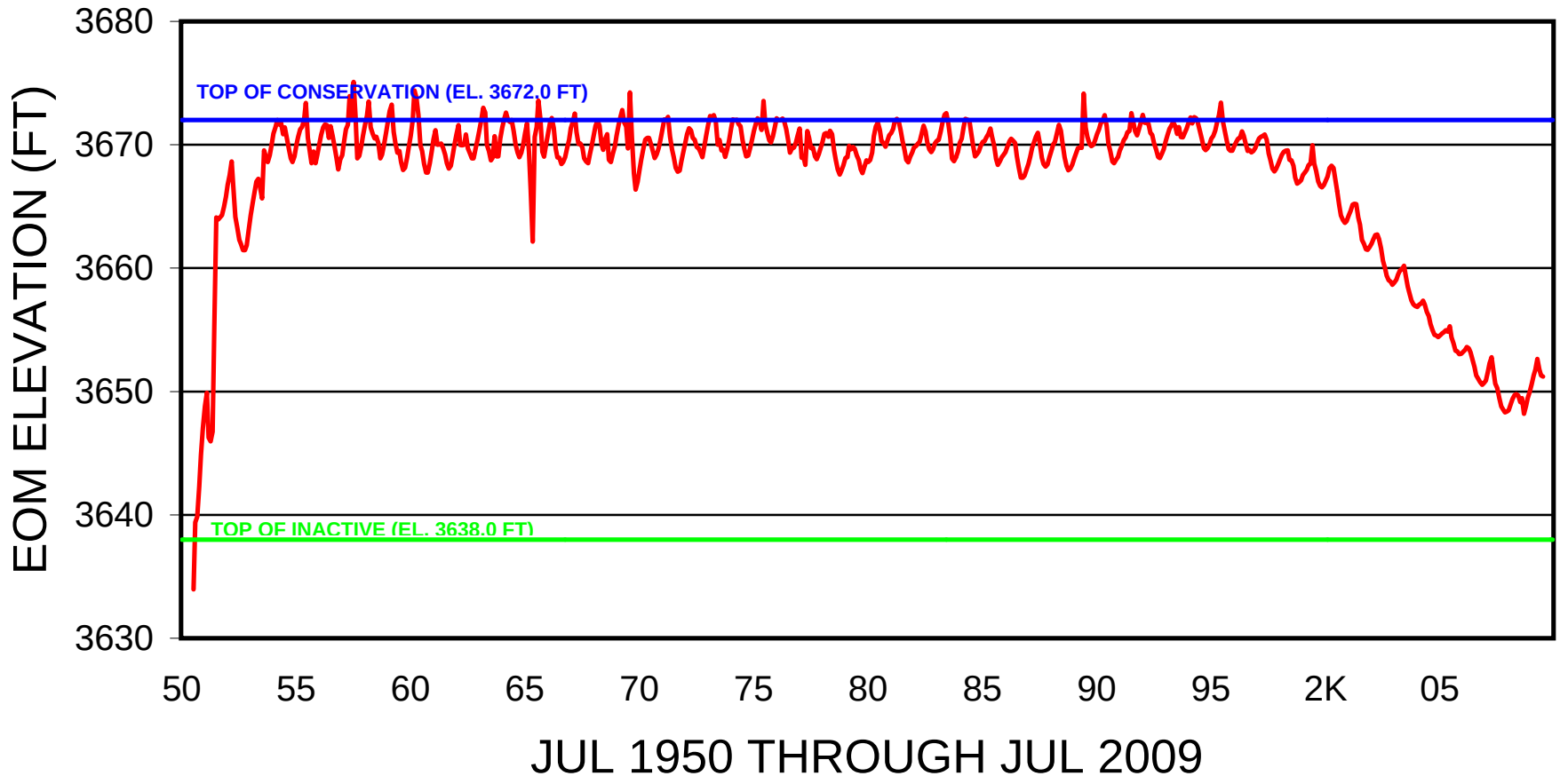
HARLAN COUNTY LAKE

Year	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	Precip. (% of Average) (22.76 inches)	Rep. Basin Reclamation Dams (% of Average)	End of Year Content (AF)	**Projected Irrig. Water Supply On June 30th (AF)**
1999	164,141	99,304	42,472	24.74	109%	95%	292,312	**186,700**
2000	134,191	166,484	45,006	23.20	102%	87%	215,004	**174,400**
2001	157,844	87,346	40,833	27.97	123%	109%	242,853	**152,600**
2002	60,094	98,518	43,988	16.86	74%	60%	160,463	**116,100**
2003	48,430	51,237	34,307	16.70	73%	93%	113,346	**62,000**
2004	25,099	0	30,601	22.83	100%	111%	107,050	**0**
2005	53,682	0	32,620	22.51	99%	107%	128,111	**14,100**
2006	30,077	12,280	29,609	20.62	91%	101%	116,299	**14,400**
2007	198,528	21,237	38,197	26.92	118%	114%	255,393	**111,700**
2008	224,841	114,938	45,985	30.31	133%	131%	319,311	**210,000**

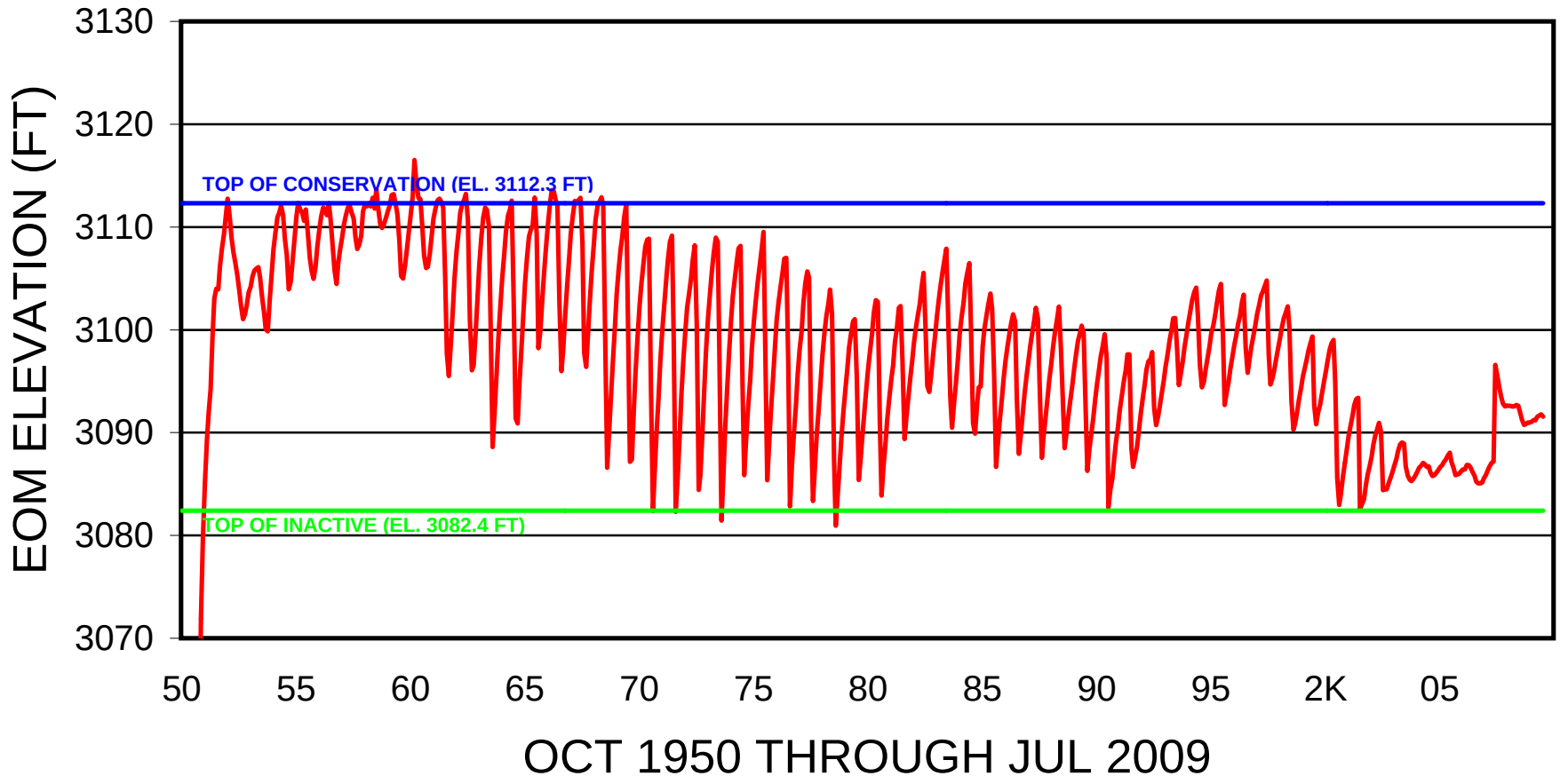
*NOTE: On June 30, 2009 Projected Irrig. Water Supply was 156,000 AF.

RECLAMATION
Managing Water in the West

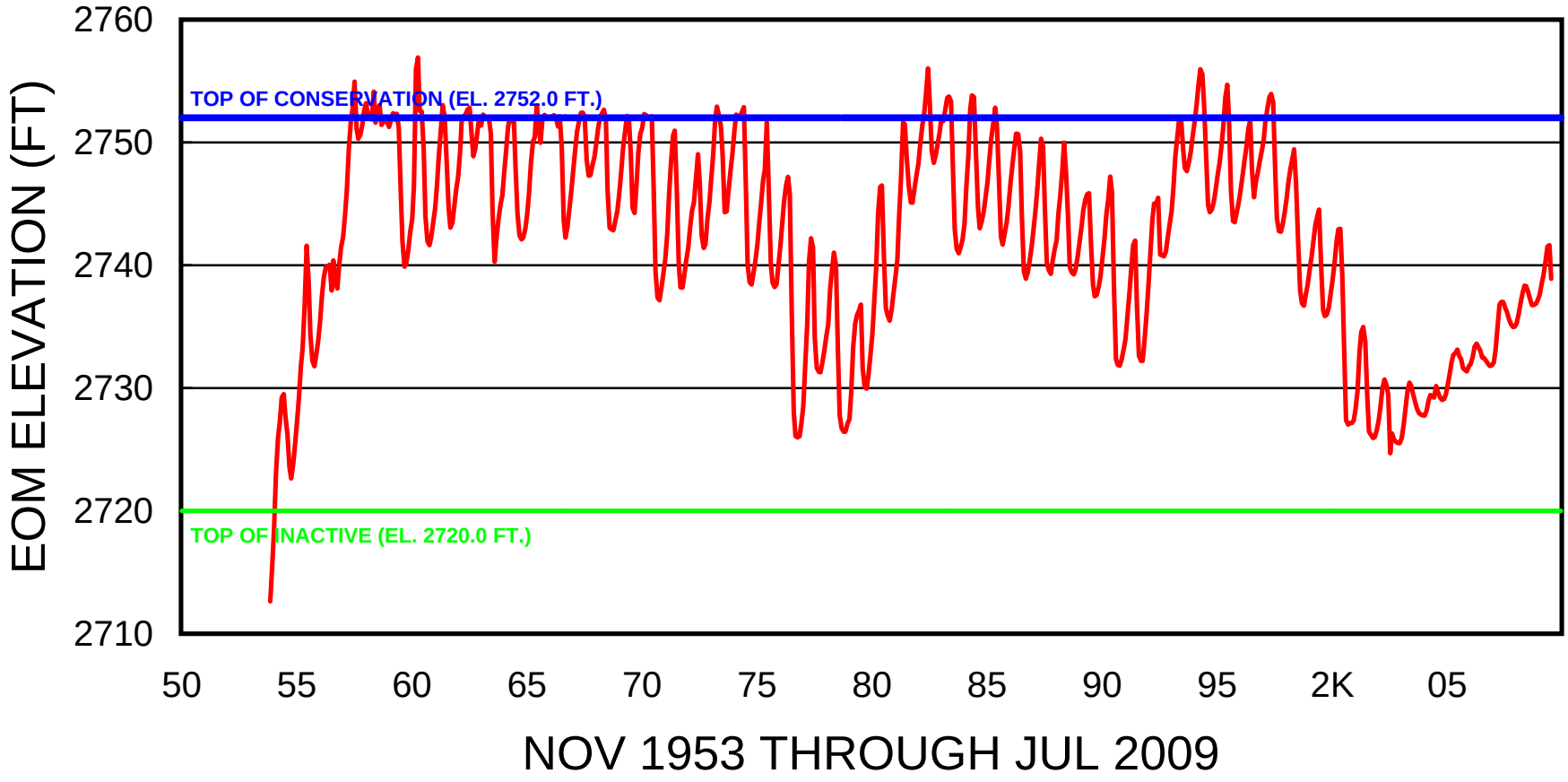
BONNY RESERVOIR
END OF MONTH ELEVATION



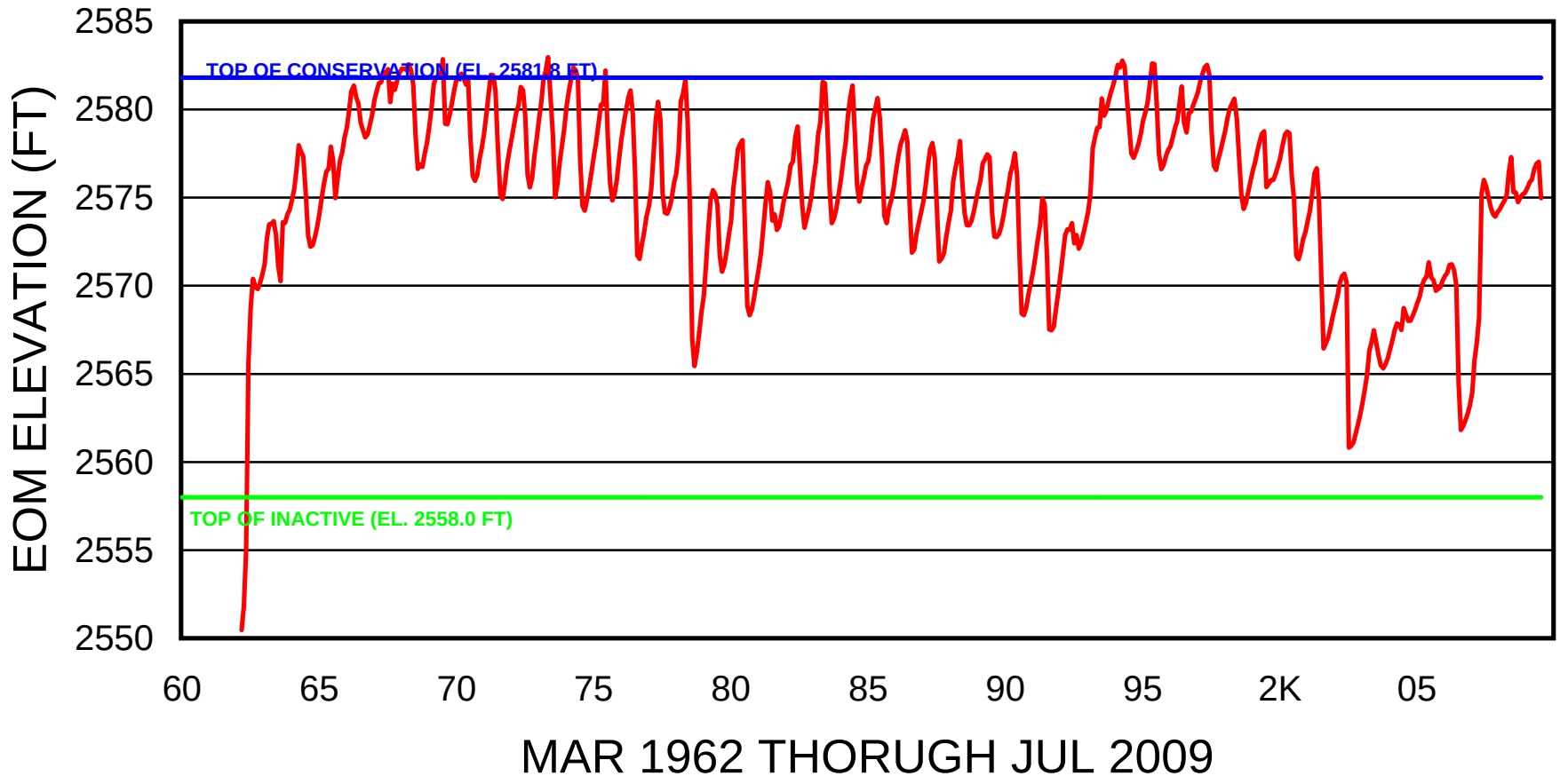
ENDERS RESERVOIR
END OF MONTH ELEVATION



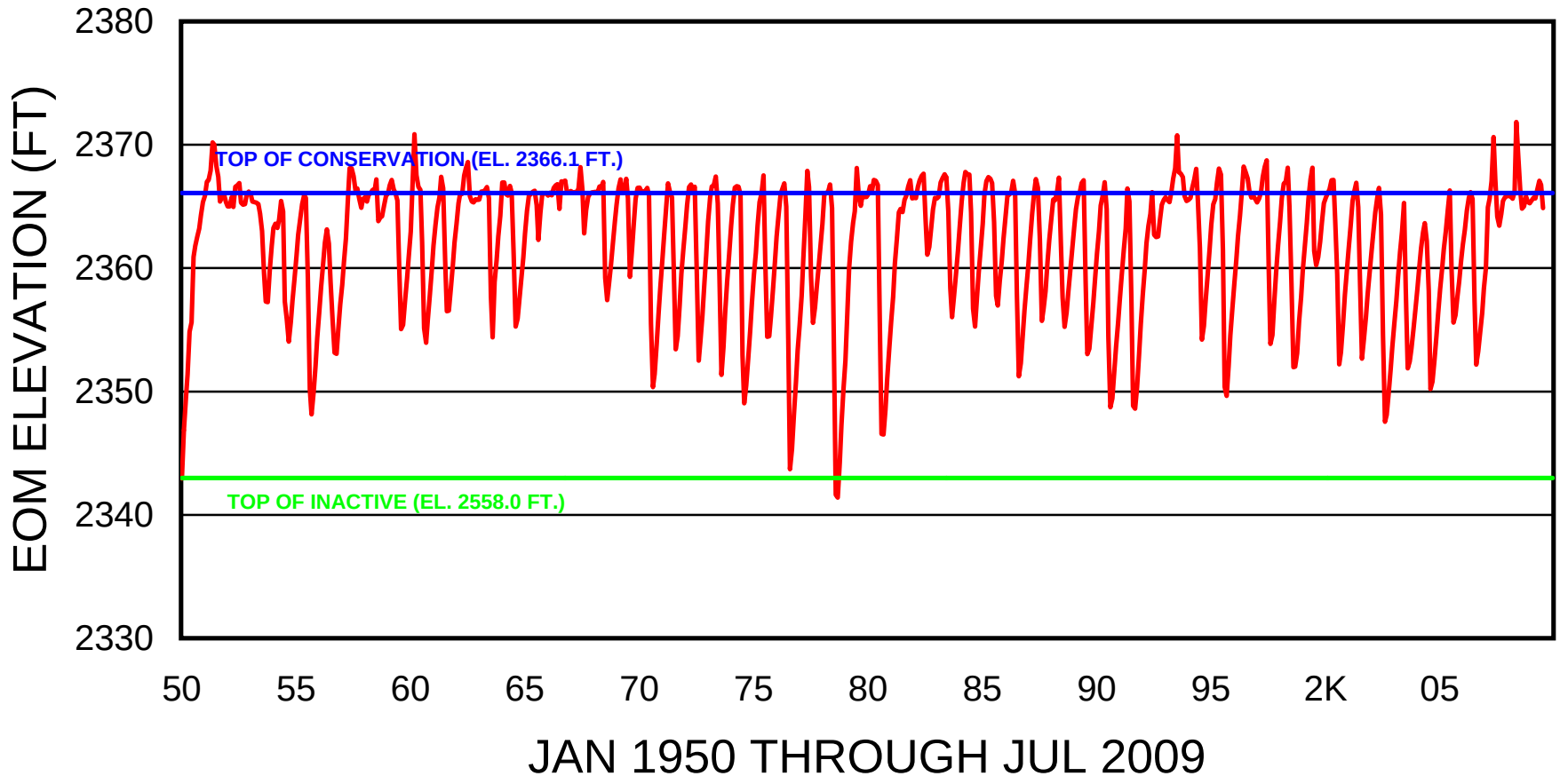
SWANSON LAKE
END OF MONTH ELEVATION



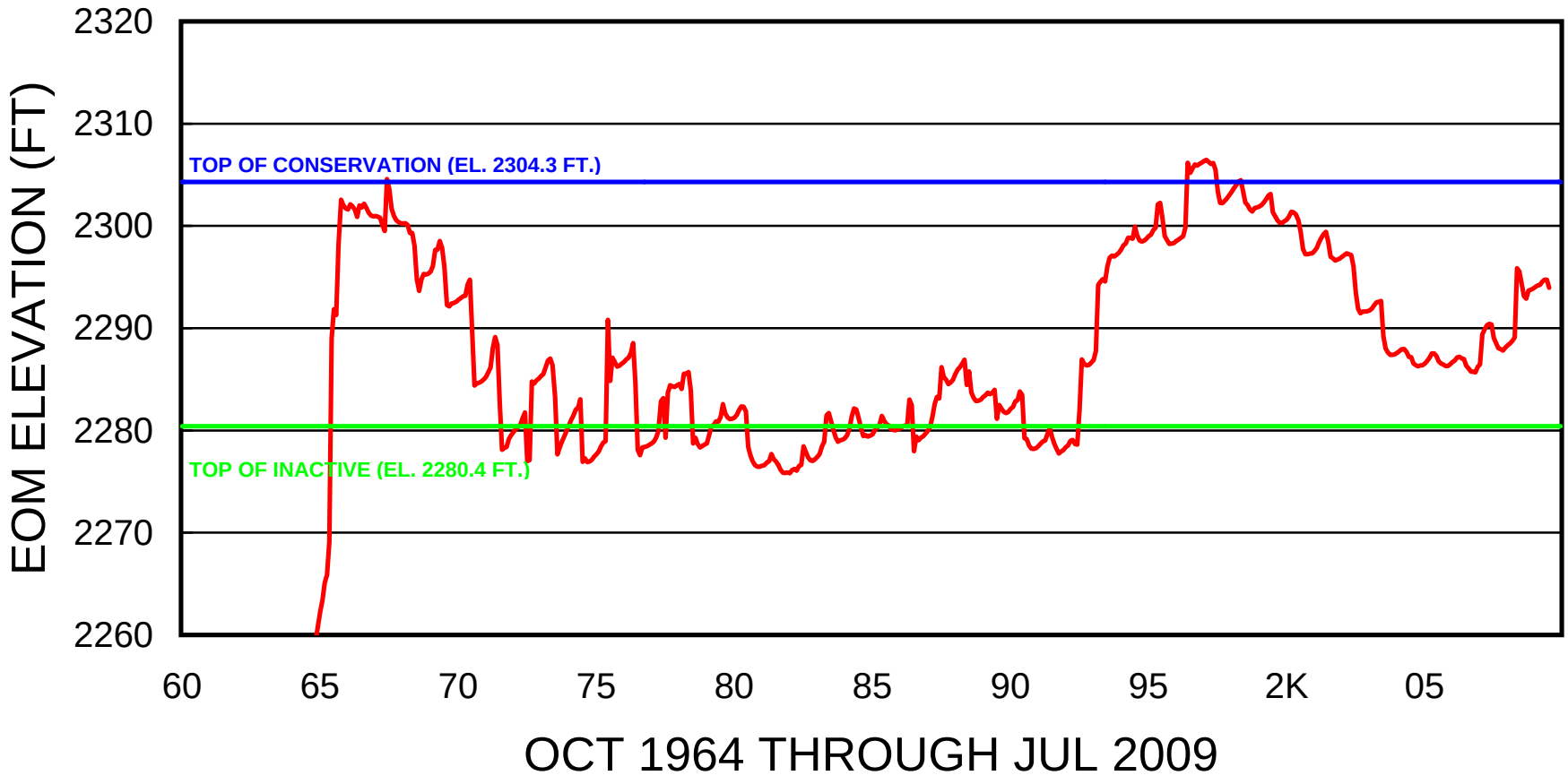
HUGH BUTLER LAKE
END OF MONTH ELEVATION



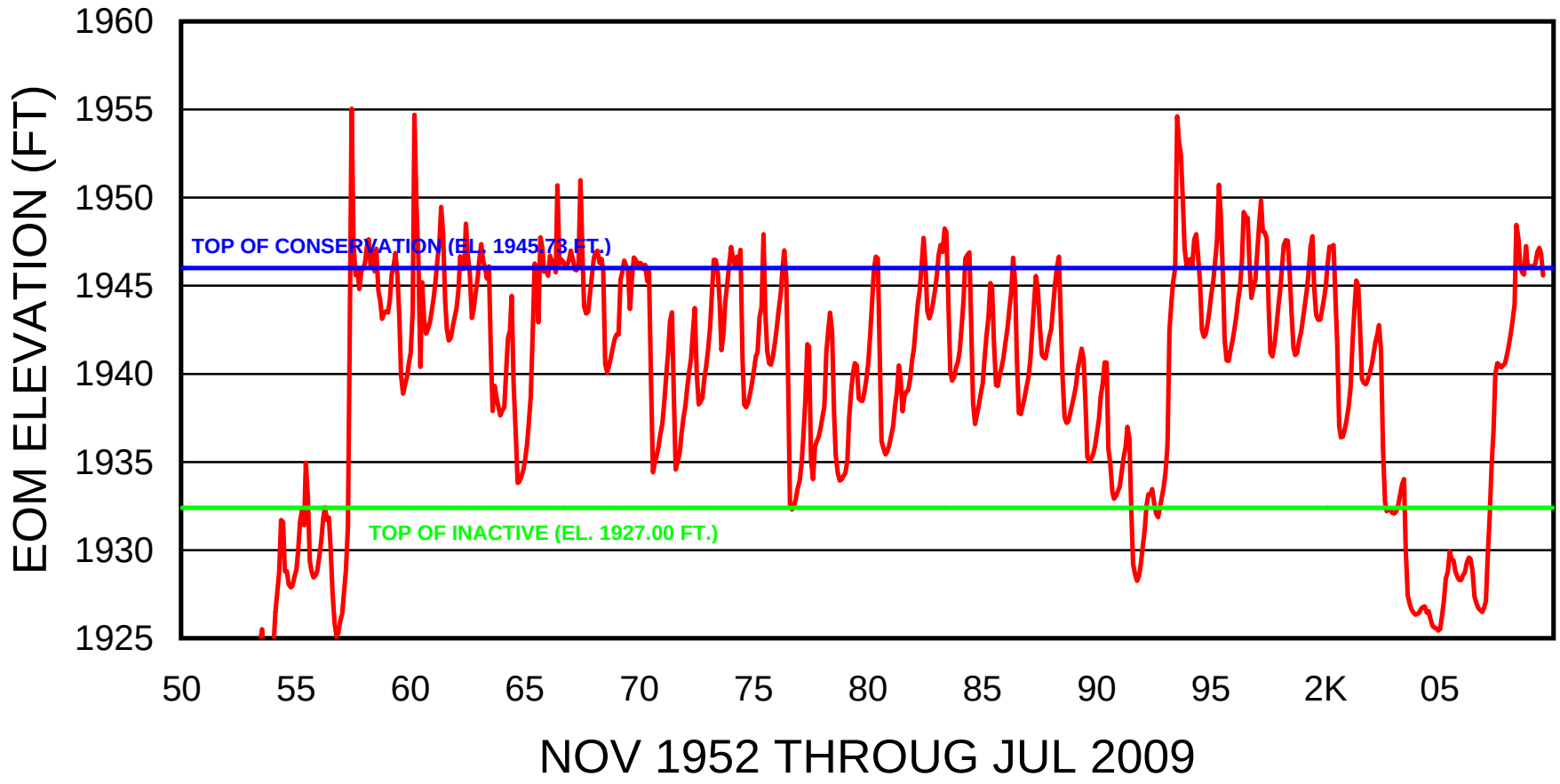
HARRY STRUNK LAKE
END OF MONTH ELEVATION



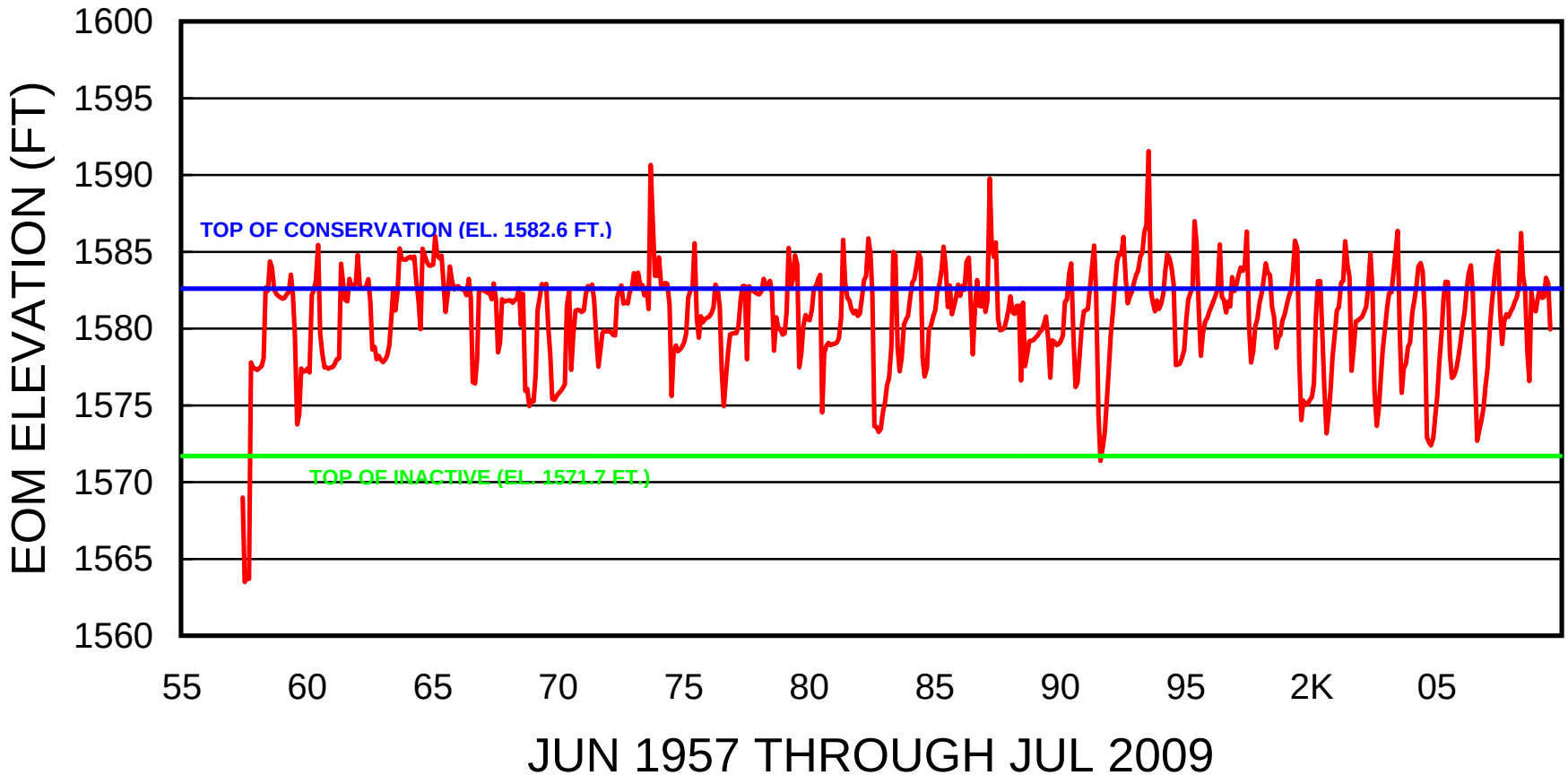
KEITH SEBELIUS LAKE
END OF MONTH ELEVATION



HARLAN COUNTY LAKE
END OF MONTH ELEVATION



LOVEWELL RESERVOIR
END OF MONTH ELEVATION



Republican River Basin streamflow-gaging stations with records published by USGS for water year (WY) 2008

[DCP, data-collection platform; NDNR, Nebraska Department of Natural Resources; USACE, U.S. Army Corps of Engineers; USBR, U.S. Bureau of Reclamation; USGS, U.S. Geological Survey]

Station number	Station name	Mean discharge (ft^3/s) WY 2008	Mean discharge (ft^3/s) Long-term	WY 2008 as percentage of long-term mean	WY 2008 as rank/years (1 highest)	WYs used for long-term mean	Remarks
USGS Compact stations supported by the National Streamflow Information Program (NSIP)							
06821500	Arikaree River at Haigler, Nebr	2.15	17.4	12.4%	70/76	1933 - 2008	
06823000	North Fork Republican River at Colo-Nebr State Line	29.0	42.6	68.1%	65/73	1936 - 2008	
06823500	Buffalo Creek near Haigler, Nebr	2.58	6.29	41.0%	66/68	1941 - 2008	
06824000	Rock Creek at Parks, Nebr	6.55	12.2	53.7%	68/68	1941 - 2008	New record low
06827500	South Fork Republican River near Benkelman, Nebr	0.30	36.4	0.8%	68/71	1938 - 2008	
06835500	Frenchman Creek at Culbertson, Nebr	46.7	68.6	68.1%	43/58	1951 - 2008	Since Enders Reservoir
06836500	Driftwood Creek near McCook, Nebr	3.57	8.64	41.3%	54/62	1947 - 2008	
06838000	Red Willow Creek near Red Willow, Nebr	16.5	12.6	131.0%	09/47	1962 - 2008	Since Hugh Butler Lake
06847500	Sappa Creek near Stamford, Nebr (USACE funds DCP)	7.60	40.2	18.9%	45/62	1947 - 2008	
06852500	Courtland Canal at Nebr-Kans State Line (USBR DCP)	35.8	76.8	46.6%	49/54	1955 - 2008	
USGS stations supported by USGS and/or other Federal or State agencies							
06837000	Republican River at McCook, Nebr	57.7	131	44.0%	47/54	1955 - 2008	Funded by USBR, NDNR, and USGS
06844500	Republican River near Orleans, Nebr	236	235	100.4%	22/61	1948 - 2008	Funded by USACE
NDNR stations with USGS/USACE support for DCP, Web display, review, and publishing							
06828500	Republican River at Stratton, Nebr	19.7	98.3	20.0%	55/58	1951 - 2008	
06834000	Frenchman Creek at Palisade, Nebr	22.5	63.3	35.5%	53/58	1951 - 2008	
06843500	Republican River at Cambridge, Nebr	174	217	80.2%	35/59	1950 - 2008	Since Harry Strunk Lake
06853020	Republican River at Guide Rock, Nebr	229	266	86.1%	24/58	1951 - 2008	

EXPLANATION

Indicates that WY 2008 percentage of long-term mean is greater than 100 and that rank is greater than for previous WY

Indicates that WY 2008 percentage of long-term mean is less than 100 and that rank is less than for previous WY

Online Annual Water Data Reports available at or through
http://wdr.water.usgs.gov
http://ne.water.usgs.gov

USGS
science for a changing world

Links to USGS downloadable data, publications, studies, ...
National http://water.usgs.gov/
Nebraska http://ne.water.usgs.gov/

Phil Soenksen, Hydrologist
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2010 Nebraska Report to the RRCA

2010 NEBRASKA REPORT
for the
Republican River Compact Administration
August 12, 2010

I am pleased again this year to inform all of you that the State of Nebraska is in compliance with the Republican River Compact. Using current accounting procedures, Nebraska has a positive five-year average for the period ending in 2009. Based on preliminary estimates, it appears Nebraska will again be in compliance for the five-year compliance period ending in 2010. This is a testament to the work conducted to date in partnership with Nebraska's Natural Resources Districts, its surface water users and the people of the Republican River Basin.

In the future, Nebraska will continue to remain in compliance with the Republican River Compact. The primary NRDs, in partnership with the Department of Natural Resources, have revised the Integrated Management Plans in place for two and a half years. These IMPs are working. Among other things, the IMPs clearly state that each of the NRDs cannot deplete more than their share of the water of the Basin. This is not merely a goal, but rather a requirement of each plan.

I have previously stated "the Department and the Natural Resources Districts feel that it is important to investigate other options and further regulations that can be incorporated into future plans addressing water short years." In the first week of August, the State of Nebraska along with the Upper and Middle Republican Natural Resources Districts successfully adopted revisions to the existing Integrated Management Plans. These revisions address the concerns of long term compliance brought up during the 2008 arbitration. The revised plans now contain an in-depth monitoring plan, including a comprehensive forecasting mechanism that now allows Nebraska to look ahead and anticipate compliance issues, rather than waiting until six months after a year is over to see the results of Compact accounting. This forecast is designed to predict the compliance outcome for Nebraska if dry conditions are experienced in the upcoming year, and accurately predicts when those potential dry conditions would require additional actions by Nebraska to remain in compliance. The revised plans contain a detailed description of the triggers that will indicate when additional management actions are needed. The responsibility for the needed management actions depends on the current situation in each NRD, and those NRDs with a share in any projected shortfall will be required to implement the necessary controls that will ensure Nebraska's compliance in dry periods. Finally, the plans also provide for an occupation tax in these NRDs and the additional framework for Nebraska to continue to manage consumptive use over the long term to meet compact compliance.

During the first half of this year, the States of Colorado, Kansas, and Nebraska spent considerable time and effort to address concerns related to the Colorado Compliance Pipeline and Nebraska's Crediting Issue through the arbitration process. We consider both of these issues to be of importance and look forward to their resolution. The Department has also held recent meetings with the Bureau of Reclamation to address their misunderstandings of the revised IMPs, and we have made considerable progress in the last two weeks.

In order for Nebraska to utilize its Compact allocation to the benefit of the entire basin, we will need to work closely with both surface water and groundwater users to develop conjunctive management strategies that benefit all water users. We will continue to see improvements over time as the IMPs continue to take hold. It is our belief that a healthy surface water system will contribute to Nebraska's ability to comply with the Compact. Conjunctive management studies that identify the best uses of those streamflow supplies during wet and dry conditions will further enhance Nebraska's ability to fully utilize its Compact allocation while also continuing to ensure Compact compliance. The natural resources districts, the irrigation districts, and their respective boards, and the Bureau of Reclamation will play an important role in implementing these strategies in the basin.

The future also holds continuing participation in the Conservation Reserve Enhancement Program and the Environmental Quality Incentives Program and other incentive based management strategies. Nebraska continues to explore stream augmentation options. Vegetation management has increased streamflow and the capacity of the stream channel. Nebraska will continue to take an active role in the Engineering Committee, and will always work with the other states to improve existing accounting methods and ensure they accurately reflect water use in the Basin.

In closing, I wish to assure you all, as well as my counterparts from our neighboring states, that Nebraska will continue to comply with the Republican River Compact. The State will continue to evaluate needs of the basin and make changes as necessary to stay in compliance, in a spirit of openness, transparency, and partnership. We expect to continue to work with all stakeholders in the basin, including the other states, the NRDs, the surface water districts and individual users, and the Bureau of Reclamation. Non-compliance is not an option for the State of Nebraska.

REPORT OF WATER ADMINISTRATION ACTIVITIES FOR THE REPUBLICAN RIVER BASIN IN NEBRASKA FOR THE CALENDAR YEAR 2009

January 14, 2009
Fifty-three (53) letters were sent to irrigators reminding them that 2008 Water Use Reports must be filed with Cambridge Field Office.

February 26, 2009
Fifteen (15) closing notices were issued to water users that failed to submit their required annual Water Use Reports, which were to be filed by December 31 of each year. These water users were not allowed to divert water during the 2009 calendar year.

June 24, 2009
One (1) Notice (Pumping schedule) was sent to a water user notifying them of the amount they could legally divert.

June 26, 2009
One (1) regulating notice was sent to water a user notifying them that they were not allowed to divert water in excess of the amount of their appropriation without prior consent.

June 29, 2009
Seventeen (17) closing notices were issued to water users above Meeker-Driftwood Canal, notifying them that they shall not divert water until further notice.

June 29, 2009
One (1) regulating notice was sent to water a user notifying them that they were not allowed to divert water in excess of the amount given in their appropriation without prior consent.

July 6, 2009
One (1) regulating notice was sent to a water user notifying them that they were not allowed to divert water in excess of the amount of their appropriation without prior consent.

July 6, 2009
Eight (8) closing notices were issued to water users above Red Willow Canal, notifying them that they shall not divert water until further notice.

July 8, 2009
Twenty-six (26) regulating notices were sent to water users above Cambridge Canal, notifying them that they were not allowed to divert water in excess of the amount of their appropriation without prior consent.

July 8-9, 2009
Thirty (30) closing notices were issued to water users above Cambridge Canal and Meeker-Driftwood Canal notifying them that they shall not divert water until further notice.

July 9, 2009
Sixteen (16) closing notices were issued to storage permit holders above Harry Strunk Lake, notifying them that no water can be impounded in there holding facility until further notice.

July 16, 2009
Thirty-one (31) regulating notices were sent to water users above Cambridge Canal, notifying them that they were not allowed to divert water in excess of the amount of their appropriation without prior consent.

August 6, 2009
Four (4) regulating notices were sent to Frenchman Cambridge and Frenchman Valley-H&RW Irrigation Districts, water users notifying them that they were not allowed to divert water in excess of the amount of their appropriation without prior consent.

August 6, 2009
Eighteen (18) closing notices were issued to water users above Bartley and Red Willow Canal notifying them that they shall not divert water until further notice.

August 26-31, 2009
Thirty-six (36) regulating notices were sent to water users above Bartley, Red Willow, and Meeker-Driftwood Canals, notifying them that they were not allowed to divert water in excess of the amount given of their appropriation without prior consent.

September 10, 2009
One (1) opening notice was sent to a storage permit allowing them to store water in the reservoir.

November 2, 2009
Two (2) opening notices were sent to storage permits allowing them to store water in reservoirs.

November 18, 2009
Letters were sent to the junior permit holders downstream of Harlan County Reservoir stating the U.S. Bureau of Reclamations prediction that 2010 will not be a water short year.

November 18, 2009
Water Use Report forms were sent out to all private water use permit holders in the Republican River Basin.

2010 Committee Reports

Engineering Committee Report
Republican River Compact Administration

August 13, 2008, Lincoln Nebraska

ASSIGNMENTS

At the August 15, 2007 Annual Meeting of the Republican River Compact Administration, the Commissioners assigned the Engineering Committee the following tasks:

1. Finalize work on a user's manual for the Republican River Compact *Accounting Procedures and Reporting Requirements* (RRCA Accounting Procedures, dated July 27, 2005) and provide a recommendation to the Administration for adoption at next year's annual meeting.
2. Exchange by April 15, 2008 the information listed in Section V of the RRCA Accounting Procedures, and other data required by that document, and use these data to complete the preliminary accounting of the virgin water supply, the computed water supply, and the beneficial consumptive uses in the Basin for the calendar year 2007. By July 15, 2008 exchange any updates to these data to complete the final accounting of the virgin water supply, the computed water supply, and the beneficial consumptive uses in the Basin for the calendar year 2007.
3. Continue efforts to resolve concerns related to varying methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues.
4. Retain Principia Mathematica to perform on-going maintenance of the ground water and periodic updates requested by members of the Engineering Committee for calendar year 2007. The billable costs shall be limited to actual costs incurred, not to exceed $12,000.00 in total and will be apportioned in equal 1/3 amounts to the States of Colorado, Kansas, and Nebraska respectively.

WORK ACTIVITIES RELATED TO THESE ASSIGNMENTS AND OTHER ISSUES

The Engineering Committee and technical representatives from the States of Colorado, Kansas, and Nebraska participated in numerous collaborative work activities, phone conferences, and the following face-to-face meetings:

- September 20, 2007, in Denver, Colorado,
- January 30, 2008, in Denver, Colorado,
- March 11 and 12, 2008, in Kansas City, Missouri,
- April 11, 2008, in Kansas City, Missouri,
- May 1 and 2, 2008, in Denver, Colorado, and
- May 15, 2008, in Lincoln, Nebraska.

The following assignments and work activities were completed:

1. **Complete the user's manual for accounting procedures and provide a resolution for its adoption.** The assignment was not completed; the assignment should be continued next year.

2. **Complete the accounting for 2007 using the preliminary information provided by April 15, 2008 and the final exchange by July 15, 2008.**

    a. Each state exchanged its model data sets by April 15 or shortly thereafter. A preliminary run of the RRCA groundwater model was developed by Willem Schreuder and posted on the RRCA web site he maintains for the Administration.

    b. The states exchanged final model data sets and supporting data by August 7, 2008 and Principia Mathematica completed a final run after all the states' final data were delivered to him.

    c. Data sets were collected by the Committee for stream flow, climate information, diversion records, and reservoir evaporation records of the three states in cooperation with the U.S. Geological Survey, U.S. Bureau of Reclamation, and U.S. Army Corps of Engineers for 2007.

    d. The Engineering Committee has not agreed to a final accounting for 2007. On August 1, 2008 Kansas Commissioner wrote a letter to Nebraska outlining questions related to Nebraska's data submittal and requesting additional data for its review. As a result of Kansas' questions related to the Nebraska data submittal and insufficient time to review that data, the committee was unable to finalize the information exchange. The accounting of the virgin water supply, the computed water supply, and the beneficial consumptive uses in the Republican Basin was not completed at this time due to disputes regarding the following matters:

        i. Non-federal reservoir evaporation below Harlan County Lake. Nebraska believes that Section VI.A. of the Final Settlement Stipulation prescribes that only non-federal reservoir evaporation above Harlan County Lake should be included in the annual accounting. Kansas disagrees and believes non-federal reservoir evaporation should be included for the entire basin. At last year's annual meeting the matter was referred to the Engineering Committee to resolve the issue. The matter is still unresolved.

        ii. Division of Evaporative Loss from Harlan County Lake when only one state utilizes reservoir storage for irrigation. Kansas believes that the FSS and currently approved accounting procedures did not anticipate this condition and therefore do not provide clear and fair guidance on the split in this case. Nebraska believes that the current accounting methods take into account the situation where only one state utilizes reservoir storage for irrigation. Last year the Administration asked the Engineering Committee to seek a resolution to the matter prior to October 15, 2007. The matter is still unresolved.

iii. Nebraska believes that Computed Beneficial Consumptive Use (CBCU) and the Imported Water Supply credit are not correctly calculated using the current RRCA Accounting Procedures. The matter was discussed during several meetings, and Nebraska proposed an alternative method of calculating these values in a paper titled *Analysis of Current Methods Used to Calculate Groundwater Impacts for the Republican River Compact,* dated August 6, 2008. The matter is still unresolved.

iv. Nebraska believes that consumptive use and virgin water supply on the Main Stem and Arikaree Sub-basin are being incorrectly calculated due to the incorrect accounting of return flows from the Haigler Canal. Investigations conducted by Nebraska suggest that a portion of the return flows from the Haigler Canal Diversion in Colorado return to the Arikaree River, and not solely to the Main Stem Republican River as indicated in the formulas. The results from this investigation were made available to the other states in March 2008. The matter is still unresolved.

v. Nebraska believes that the cells used as accounting points for outputs from the groundwater model should match the location of the respective Sub-basins as defined in the RRCA Accounting Procedures. The committee was able to reach agreement regarding one location (at Guide Rock, as described below) but was not able to reach agreement for the following locations:

1. Driftwood Creek – Colorado and Kansas disagree with Nebraska
2. Frenchman Creek – Colorado and Kansas disagree with Nebraska
3. North Fork Republican River – Kansas agrees with Nebraska that the accounting cell location should be moved to the Colorado – Nebraska state line, in accordance with the definition of the Main Stem Republican River
4. South Fork Republican River – Colorado and Kansas disagree with Nebraska

3. **Continue to work to resolve different recharge and return flow methods.** The Engineering Committee was unable to work on this assignment.

4. **Retain Principia Mathematica to perform maintenance of the groundwater model**. Each state separately contracted with Principia Mathematica for the groundwater model services.

5. **Colorado augmentation plan proposal**. The State of Colorado presented a plan to use existing ground water consumptive use to increase stream flow in the North Fork sub-basin. The matter is still unresolved.

COMMITTEE RECOMMENDATION

The Committee was able to reach agreement on the following issues:

1. The committee agrees with the proposal for distributing estimated return flows from Riverside Canal. The proposal is included as Attachment A.
2. The committee has agreed to relocate the groundwater model accounting cell in the vicinity of Guide Rock to match the surface water stream gage location at the Guide Rock diversion. Details are included as Attachment B.

RECOMMENDED ASSIGNMENTS FOR THE COMING YEAR

The Engineering Committee recommends the Republican River Compact Administration assign the following tasks:

1. Finalize work on a user's manual for the RRCA Accounting Procedures and provide a recommendation to the Administration for adoption at next year's annual meeting.
2. By September 15, 2008 Nebraska will provide data responding to Kansas' August 1, 2008 letter to Nebraska. In addition, Colorado will provide a final meter report by September 15, 2008. Comments and additional questions will be due by October 1, 2008. The information is to be reviewed by October 31, 2008.
3. Exchange by April 15, 2009 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2009 the states will exchange any updates to these data.
4. Continue efforts to resolve concerns related to varying methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues. Nebraska will continue to improve methods of estimating return flows from using spillback gages on surface water irrigation canals.
5. Continue to review Colorado's augmentation proposal.
6. Retain Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee for calendar year 2008. The billable costs shall be limited to actual costs incurred, not to exceed $15,000 in total and will be apportioned in equal 1/3 amounts to the States of Colorado, Kansas, and Nebraska respectively.

The Engineering Committee Report and the exchanged data will be posted on the web at www.republicanrivercompact.org.

ATTACHMENTS

A. Riverside Canal proposal
B. Proposal to move the groundwater model accounting cell at Guide Rock

SIGNED BY

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Scott E. Ross
Engineer Committee Member for Kansas

_____

Megan A. Sullivan
Engineer Committee Member for Colorado

_____

James R. Williams
Engineer Committee Member for Nebraska

ATTACHMENT A

RIVERSIDE CANAL PROPOSAL

ATTACHMENT B

PROPOSAL TO MOVE THE GROUNDWATER MODEL ACCOUNTING CELL AT GUIDE ROCK

Engineering Committee Report

Republican River Compact Administration

August 12, 2010

ASSIGNMENTS

At the August 12, 2009 Annual Meeting of the Republican River Compact Administration, the Commissioners assigned the Engineering Committee the following tasks:

1. Finalize work on a user's manual for the Republican River Compact *Accounting Procedures and Reporting Requirements* (RRCA Accounting Procedures, dated July 27, 2005) and provide a recommendation to the Administration for adoption at next year's annual meeting.
2. Complete exchange of data requested by Kansas in its August 1, 2008 and July 17, 2009 letters by October 1, 2009.
3. Exchange by April 15, 2010 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2010 the states will exchange any updates to these data.
4. Continue to review Colorado's augmentation proposal, as appropriate.
5. Continue efforts to resolve concerns related to varying methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues. Within 90 days, the states will exchange information and the Engineering Committee will meet to recommend next steps.
6. Develop a revision to the RRCA's Accounting Procedures to reflect agreements by the RRCA at its 2008 and 2009 annual meetings, and provide the RRCA with a recommendation of any appropriate formatting changes.
7. Retain Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee.
8. Continue development of a five-year accounting spreadsheet/database for adoption at the 2010 annual meeting or earlier.
9. Review accounting procedures to determine if Kansas groundwater CBCU in the Mainstem is properly included in the Mainstem virgin water supply calculation and if necessary, provide a recommendation to the RRCA at the next annual meeting.

WORK ACTIVITIES RELATED TO THESE ASSIGNMENTS AND OTHER ISSUES

The Engineering Committee and technical representatives from the States of Colorado, Kansas, and Nebraska participated in several collaborative work activities and phone conferences and the following assignments and work activities were completed:

1. **Complete the user's manual for accounting procedures and provide a resolution for its adoption.**

   a) The States reviewed the 2006 draft initiated by Kansas and provided comments. However, a final draft of the manual was not completed; the assignment should be continued next year.

2. **Complete exchange of data requested by Kansas in its August 1, 2008 and July 17, 2009 letters by October 1, 2009.**

   a) Placeholder for status of Nebraska data.

   b) Placeholder for status of Colorado meter data

3. **Exchange by April 15, 2010 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2010 the states will exchange any updates to these data.**

   a) Each state exchanged its model data sets by April 15, 2010 or shortly thereafter. A preliminary run of the RRCA groundwater model was developed by Willem Schreuder of Principia Mathematica and posted on the RRCA web site he maintains for the Administration.

   b) The States exchanged their available final data by August 3, 2010, and Willem Schreuder of Principia Mathematica completed a run based on this data on August 3, 2010.

   c) Placeholder for status of final accounting

d) Data sets were collected by the Committee for stream flow, climate information, diversion records, and reservoir evaporation records of the three states in cooperation with the U.S. Geological Survey, U.S. Bureau of Reclamation, and U.S. Army Corps of Engineers for 2009.

4. **Continue to review Colorado's augmentation proposal, as appropriate**.

   a) Proposal is the subject of an arbitration process. No additional information was discussed.

5. **Continue efforts to resolve concerns related to varying methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues. Within 90 days, the states will exchange information and the Engineering Committee will meet to recommend next steps.**

   a) Each state performed a cursory review of their respective engineering repositories for published studies/information pertaining to ground water irrigation recharge. Neither Nebraska nor Colorado found any pertinent information. Kansas assembled a bibliography of possible studies/information; however no additional progress has been made on this assignment.

6. **Develop a revision to the RRCA's Accounting Procedures to reflect agreements by the RRCA at its 2008 and 2009 annual meetings, and provide the RRCA with a recommendation of any appropriate formatting changes**.

   a) A revised accounting procedures was drafted to reflect:

      - Changes to both the Frenchman sub-basin and the Mainstem formulas pertaining to the return flows from the Riverside Canal.
      - Changes to the Mainstem formula to include missing Kansas ground water CBCU in the Virgin Water Supply calculations.

7. **Retain Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee.**

   a) Each state separately contracted with Principia Mathematica.

8. **Continue development of a five-year accounting spreadsheet/database for adoption at the 2010 annual meeting or earlier**.

   a) The assignment was not completed; the assignment should be continued next year.

9. **Review accounting procedures to determine if Kansas groundwater CBCU in the Mainstem is properly included in the Mainstem virgin water supply calculation and if necessary, provide a recommendation to the RRCA at the next annual meeting**.

   a) Based on a review of the accounting procedures, the Engineering Committee confirmed that Kansas groundwater CBCU was missing from the Mainstem Virgin Water Supply calculations. The accounting procedures were revised to

reflect the inclusion of this CBCU element in the Mainstem formula and the Engineering Committee recommends adoption of this change.

COMMITTEE RECOMMENDATION

The Committee recommends the adoption of the revisions to the Accounting Procedures that reflect the changes to the Frenchman and Mainstem subbasin formulas for the return flows of the Riverside Canal and the change to the Mainstem subbasin formula to include Kansas groundwater CBCU, as described in attachment A

The Committee recommends the adoption of the proposal to relocate the accounting point used in the RRCA groundwater model for the North Fork Republican River sub-basin to the Colorado – Nebraska state line in accordance with Art. III of the Compact, as discussed in attachment B.

RECOMMENDED ASSIGNMENTS FOR THE COMING YEAR

The Engineering Committee recommends the Republican River Compact Administration assign the following tasks:

1. Finalize work on a user's manual for the RRCA Accounting Procedures and provide a recommendation to the Administration for adoption at next year's annual meeting or earlier.
2. Exchange by April 15, 2011 the information listed in Section V of the RRCA Accounting Procedures and Reporting Requirements, and other data required by that document. By July 15, 2011 the states will exchange any updates to these data.
3. Continue efforts to resolve concerns related to varying methods of estimating ground and surface water irrigation recharge and return flows within the Republican River Basin and related issues.
4. Retain Principia Mathematica to perform on-going maintenance of the ground water model and periodic updates requested by the Engineering Committee for calendar year 2011. The billable costs shall be limited to actual costs incurred, not to exceed $15,000 in total and will be apportioned in equal 1/3 amounts to the States of Colorado, Kansas, and Nebraska respectively.
5. Continue development of a five-year accounting spreadsheet/database for adoption at the 2011 annual meeting or earlier.
6. Continue to review Colorado's augmentation proposal, as appropriate.

The Engineering Committee Report and the exchanged data will be posted on the web at www.republicanrivercompact.org.

Attachments

A) Revised Republican River Compact Administration Accounting Procedures and Reporting Requirements
B) Proposal to move the North Fork Accounting Point

SIGNED BY

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Megan A. Sullivan
Engineer Committee Member for Colorado

_____

Scott E. Ross
Engineer Committee Member for Kansas

_____

James Schneider
Engineer Committee Member for Nebraska

United States Department of the Interior
BUREAU OF RECLAMATION
Great Plains Region
P.O. Box 36900
Billings, Montana 59107-6900

IN REPLY REFER TO:

GP-4600
WTR-4.11

AUG 05 2010

Mr. Dick Wolfe
State Engineer, Director
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Mr. David Barfield
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Mr. Brian Dunnigan
Director
Nebraska Department of Natural Resources
301 Centennial Mall South
P.O. Box 94676
Lincoln, NE 68509-4676

Subject: Republican River Conservation Committee's 2010 Annual Status Report, Republican River Basin Study on the Impacts of Non-Federal Reservoirs and Land Terracing on Basin Water Supplies (Study)

Dear Messrs. Wolfe, Dunnigan, and Barfield:

On behalf of the Republican River Conservation Committee, I have enclosed a 2010 Annual Status Report (Report) for the Study. The Report was prepared in accordance with the July 27, 2004, Memorandum of Understanding, which implemented the Study.

This year I will be attending the Republican River Compact Administration annual meeting which will be held on August 11-12, 2010, in Burlington, Colorado. The principle investigators for the Study, Dr. Derrel Martin, University of Nebraska, and Dr. James Koelliker, Kansas State University, will be attending the meeting and will be available to answer questions.

If you have questions or concerns prior to the meeting, please contact your committee representative or call me at 406-247-7736.

Sincerely,

R. Scott Guenthner

Scott Guenthner
Republican River Conservation Committee

Enclosure

cc: Mr. Marv Swanda
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Mr. Doug Christensen
Assistant State Conservationist
Natural Resources Conservation Service
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Lincoln, NE 68508-3866

Mr. Scott Ross
Water Commissioner
Division of Water Resources
Kansas Department of Agriculture
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Dr. Jim Schneider
Mr. Jason Kepler
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(w/encl to each)

Dr. Derrel Martin
Biological Systems Engineering
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University of Nebraska
Lincoln, NE 68583-0726

bc: GP-4600 (Aycock, Guenthner, Erger)
NK-100 (Thompson, Esplin), NK-300 (Kube), NK-320 (Wergin) (w/encl to each)

WBR:SGuenthner:mmbustos:08/05/10:406-247-7736
V:\Shared\RMSG\4600\Guenthner\2010 Report Transmittal to RRCA.doc

2010 Annual Status Report to the Republican River Compact Administration
on the
Study on the Impacts of Non-Federal Reservoirs and Land Terracing
on Basin Water Supplies
August 4, 2010

Introductory Information

Kansas, Nebraska and Colorado agreed to and the United States Supreme Court approved the Final Settlement Stipulation to settle the Kansas v. Nebraska and Colorado litigation. The Final Settlement Stipulation required this Study. The Conservation Committee has held approximately 14 conference calls since the August 2009 Annual Meeting so progress toward completions of the study can be made. Additionally, the Conservation Committee met in Manhattan, Kansas, on July 15, 2010, to discuss in more detail some of the preliminary study results and current study status. Although progress towards completion of the Study has been made this past year, the impact of non-federal reservoirs and land terracing on basin water supplies are not yet in final form.

Input to the Water Balance Model

The Study includes collecting information in the field on the water balance at both reservoir and land terrace sites in the basin. A water balance model is used to simulate the impact of the reservoirs and land terraces for various combinations of existing meteorological, soils, land use data and information learned during the field investigation component of the Study. Finally, post-processing routines are developed to summarize the water balance model results by designated sub-basins. Previous annual status reports provide more detail regarding the reservoir and land terrace inventory, the collection of data on the field water balance, and on the water balance model used to simulate the impact.

Early in the Study, each of the States identified their respective Non-Federal Reservoirs in the basin, which total 716 reservoirs. Though a combination of previous work and work done as part of this Study 2,309,559 acres of terraced land have been identified in the study area.

The State's inventory of non-federal reservoirs does not contain all of the data required for the Study to assess impact on water supply. Information on drainage area, volume, and depth is not available for some reservoirs in the inventory. Characteristics of a typical reservoir for each State were developed using information for reservoirs in the inventory that did have a complete set of descriptive information. The impact on water supply was than simulated using the characteristics of the typical reservoirs. A typical reservoir was identified for different locations across the basin. Table 1 lists the typical reservoir characteristics for reservoirs in Nebraska.

Table 1. Selected Characteristics of the Typical Reservoir in Nebraska by Location in the Basin

Range W	*Depth at Principal Spillway, feet*	*Surface Area, acres*	*Storage at Principal Spillway, acre-feet*	*Drainage Area, acres*
15	12.8	17.5	98	1,550
20	13.0	16.2	90	1,550
25	13.3	15.0	83	1,500
30	13.5	13.9	76	1,500
35	13.8	13.6	68	1,450
40	14.0	11.0	60	1,350

The typical reservoir decreases in storage as one moves east to west across the Republican River Basin.

Water Balance Modeling at Point Locations or Field Location Scale

A. Reservoirs without Land Terracing

The water balance model was used to simulate operation of typical reservoirs. Table 2 lists simulation results from an example 59-year period for typical reservoirs at nine locations across the basin. The locations in Table 2 are generally listed in order from east to west and the model results indicate more inflow to the reservoir in the eastern portion of the basin than in the western portion of the basin. Reservoirs in the eastern portion of the basin overflow about 50 percent of the years; reservoirs in the center of the basin overflow about 20 percent of the years, and reservoirs in the west overflow only about 5 percent of the time or less.

Reservoirs in the eastern portion of the basin have the largest average annual reduction in runoff on a volume basis where runoff is reduced by about 70 percent. For example, runoff for typical reservoirs near Holdrege and Red Cloud is reduced by 50 acre-feet per square mile of drainage area or more. Note: 1.00 inches of runoff = 53.3 acre-feet for 1.00 square miles. Reservoirs in the western portion of the basin stop nearly all of the runoff into the reservoir. Because runoff is generally much less in the western portion of the basin, the volume of the runoff reduction is much smaller than in the east.

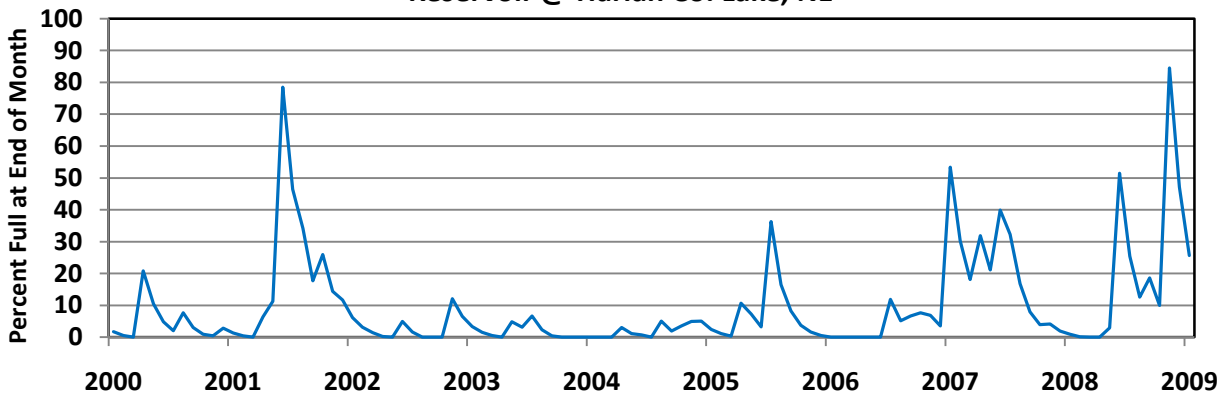
The runoff reduction listed in Table 2 is at the location of the dam site and not at the mouth of each reservoirs respective designated drainage basin. A stream transmission loss needs to be applied to the runoff reduction to estimate the impact of the non-federal reservoirs on the surface water supply for each of the designated drainage basins and for the full Republican River Basin above Hardy, Nebraska.

Table 2. Simulation of Typical Reservoir at Nine Weather Station Locations Across the Republican River Basin for a 59-year Period using Kansas Reservoir Characteristics.

Location	*Average Annual Values, acre-feet per square mile of Drainage Area*						*Years with Overflow*
	Inflow	Precip. onto Water surface	Evap. from Water Surface	Gross Seepage	Overflow	Runoff Reduction at Dam Site	
Holdrege, NE	81.3	5.1	9.3	49.7	27.2	54.1	29
Red Cloud, NE	74.2	4.7	9.2	46.3	23.3	51.0	25
Norton 9 SSE, KS	45.6	3.0	6.9	30.8	10.6	34.9	15
Curtis 3 NNE, NE	43.6	2.7	6.5	28.8	10.9	32.6	13
Imperial, NE	30.4	1.9	4.7	20.7	6.8	23.6	11
Culbertson, NE	30.7	2.2	5.5	23.7	3.6	27.0	11
Colby 1SW, KS	33.6	2.1	5.2	22.5	8.0	25.6	11
Yuma, CO	12.3	0.8	2.7	9.6	0.9	11.5	3
Burlington, CO	13.9	1.0	3.0	11.6	0.3	13.6	2

Figure 1 shows the simulated end-of-month storage for operation of a typical reservoir near Harlan County Lake, Nebraska. The average end-of-month storage was about 10 percent of full storage content for the 2000-2009 simulation period. This compares to 12.5 percent of full storage content for the entire 59-year simulation period for this same typical reservoir.

Figure 1. - Simulated End-of-month Storage as Percent Full for a Typical Reservoir @ Harlan Co. Lake, NE



B. Land Terracing without Reservoirs

The mapping of terraced land in the basin identified 2,309,559 acres. An investigation of 167 land terrace systems was conducted to determine the storage capacity of the terraces. The results show that the median runoff storage capacity for broad-based, level terraces with closed ends is about 0.57 inches of runoff and the median storage capacity for flat channel terraces is about 1.24 inches of runoff. About 80 percent of the terraced fields surveyed had the broadbase

type. The field investigations also indicated that approximately 35 percent of the entire field with terraces was below the ridge of the most downstream terrace. An adjustment of the acres in the mapped terraced field may be needed to account for that portion of the field where runoff is not affected by terraces. We are still reviewing the mapping of terraced lands to ascertain how much of the fields identified as terraced during the mapping portion of this work is below the lowest terrace in the fields.

The effects of storage-type terraces which are used in about the western two-thirds of the basin are important because they capture much of the runoff from the area above the terrace ridge in the terrace channel. The captured runoff can escape only by evaporation or infiltrate into the soil where it may be lost by evapotranspiration or percolation below the rooting depth of plants that grow in the runoff storage area. We presented a distribution of the storage capacity of terraces by type in our 2009 report. To determine the effects of terraces, first the land use on the field without terraces is simulated to get the daily results of the amount of runoff that is then put into another simulation program that uses the geometry of the terrace channel to estimate the amount of runoff that overflows the storage capacity and the amount that would infiltrate into the terrace channel and be lost as evaporation each day water remained in the channel. The channel is represented by a series of level sections into which water can infiltrate if the level is inundated. Finally, a third simulation program operates a daily water budget model for each of the level sections that make up the terrace channel to determine how much water percolates below the bottom of the rooting depth of plants that grow in the terrace channel. These simulations can be run for terraces with different storage capacities by setting the level of the overflow point lower or higher as desired.

In Table 3, the results of simulating the two different types of terraces at two locations are shown and these results are for the median storage capacity of each terrace type. Three different land uses are shown to provide a perspective on the effect of land use on terraces. Wheat-corn-fallow represents an important type of dryland cropping in the region. Range-pasture would be indicative of terraced land that is now in permanent cover such as the conservation reserve program and irrigated corn represents those terraced lands that are now under center-pivot irrigation. The evapotranspiration increase that is shown is the total of water that is used by plants and that which evaporates directly from the water stored in the terrace channel following runoff events. Overall, these results show a reduction in runoff at the edge of the field from terraced land of over 90% for flat channel terraces and over 80% for broadbase terraces. In general terms at these two locations, about 40% of the retained runoff becomes evapotranspiration and 60% percolates below the bottom of the rooting depth in the terrace channel. In drier regions, a greater portion becomes additional evapotranspiration and as shown for the irrigated condition, a greater portion becomes percolation in wetter areas.

The runoff reduction listed in Table 3 is at the edge of the terraced field and not at the mouth of a designated drainage basin. As with reservoirs, a stream transmission loss needs to be applied to the runoff reduction to estimate the impact of the terraces on the water supply for each of the designated drainage basins and for the full Republican River Basin above Hardy, Nebraska.

Table 3. Average Simulation Results at the Edge of the Field for Fields with Level Terraces with Closed Ends and Median Runoff Storage Capacity at Two Locations in the Republican River Basin for Three Land Uses for a 59-year Period.

Location	Annual Precip. Inches	*Acre-feet per square mile of Land Above a Terrace Ridge*				
		Unterraced Field		Terraced Field Effects		
		Runoff	Percolation	Runoff Reduction	Percolation Increase	EvapoTrans. Increase
Culbertson, NE (flat channel terrace)	20.94					
Wheat-Corn-Fallow		42.7	3.2	40.5 (95%)	24.0	16.5
Range-Pasture		22.9	0.0	22.4 (98%)	6.4	16.0
Irrigated Corn (net 15.66 in./yr)		81.6	14.9	76.3 (94%)	60.3	16.0
Benkelman, NE (broadbase terrace)	18.57					
Wheat-Corn-Fallow		35.2	3.2	29.3 (83%)	18.1	10.7
Range-Pasture		18.7	0.0	16.0 (86%)	4.3	11.7
Irrigated Corn (net 17.44 in./yr)		83.2	10.1	59.2 (71%)	49.1	10.1

Storage-type terraces have the greatest effect on reducing percentage of runoff during periods when runoff from the field is average or less because the sizes of the runoff events are low. They also have the greatest quantity effect in years when runoff is above average. Figure 2 shows a comparison of the simulated effect of a broadbase terrace with closed ends with median storage capacity of 0.57 inches at Oberlin, KS on the amount of annual predicted runoff from the unterraced field and the runoff that overflows the terrace system over a 59-year simulation period. The average runoff for the wheat-corn-fallow rotation on the unterraced field is 53.3 acre-feet per square mile compared to 10.7 for the terraced field above the lowest terrace ridge; an 80% reduction in runoff at the field edge. On average, nine out of 10 years yielded some runoff from the unterraced field while the terraced field produced runoff less than four out of 10 years at Oberlin.

Storage-type terraces increase the amount of water that infiltrates into the terrace channel. As shown in Table 3, this water increases the evapotranspiration in the channel and if the rooting depth water content exceeds the water holding capacity of the soil, then percolation below the rooting depth occurs. For the same field simulated to produce Figure 2, the annual results of the percolation from the field over the 59-year simulation period are shown in Figure 3. Percolation occurs much less often than runoff in the basin. These results for Oberlin 1E, KS show that percolation under an unterraced field occurs only on average once every eight years. Further, more than 90% of the total percolation occurred in four years; less than ten percent of the simulation period. Percolation on the unterraced field usually occurs as the result of an extended period of wet conditions rather than from a single large precipitation event. For the terraced field, however, because runoff into the terrace channel occurs nearly every year additional water infiltrates in the terrace channel, percolation occurs from the terraced field is predicted to occur in about seven out of eight years which is almost as frequent as years with runoff . The average annual amount of percolation under the unterraced field is 11.9 acre-feet per square mile and

under the terraced field, it totals 42.7 acre-feet per square mile, nearly a four-fold increase under the terraced field, it totals 42.7 acre-feet per square mile, nearly a four-fold increase.

Figure 2. - Simulated Runoff From a Wheat-Corn-Fallow Rotation on an Unterraced Field Compared to the Same Field with a Broadbase, Level, Closed-end Terrace System With Median Storage Capacity of 0.57 Inches of Runoff at Oberlin 1E, KS

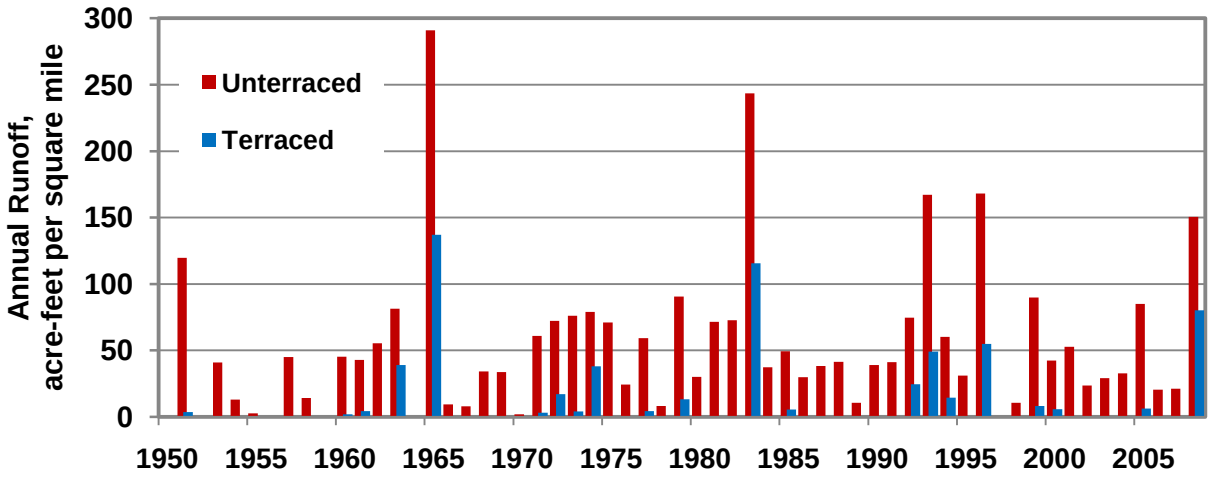
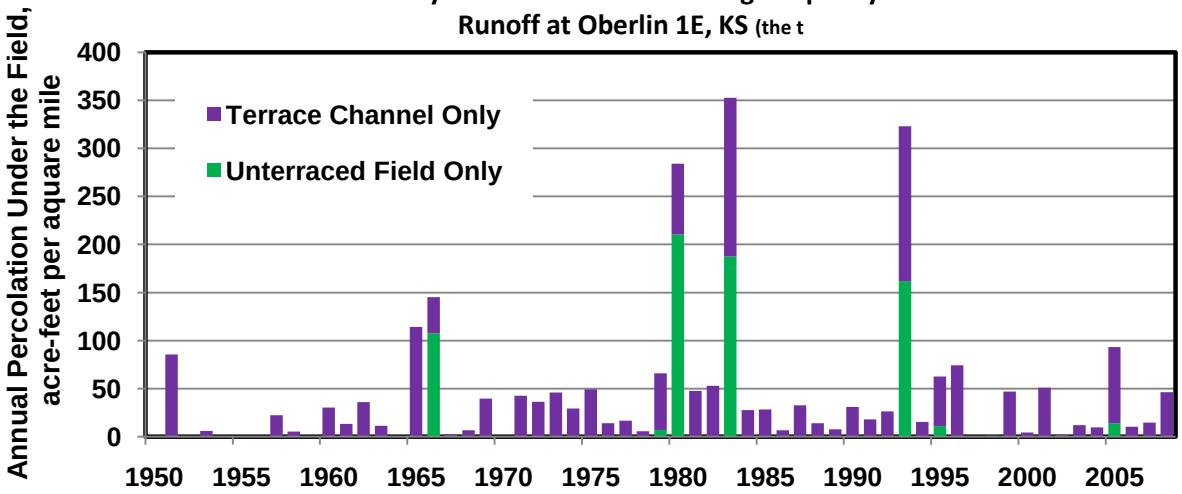


Figure 3. - Simulated Percolation Results From a Wheat-Corn-Fallow Rotation on an Unterraced Field Compared to the Same Field with a Broadbase, Level, Closed-End Terrace System With Median Storage Capacity of 0.57 Inches of Runoff at Oberlin 1E, KS (the t



C. Reservoirs with Land Terracing

Some of the terraces in the basin are located within the drainage area of a reservoir and they reduce the average annual inflow to that reservoir. For example, estimated annual inflow to a typical reservoir at Oberlin 1E is 40.6 acre-feet per square mile without terraces, but is 34.8 acre-feet per square mile with terraces in the upstream drainage area as shown in Table 4.

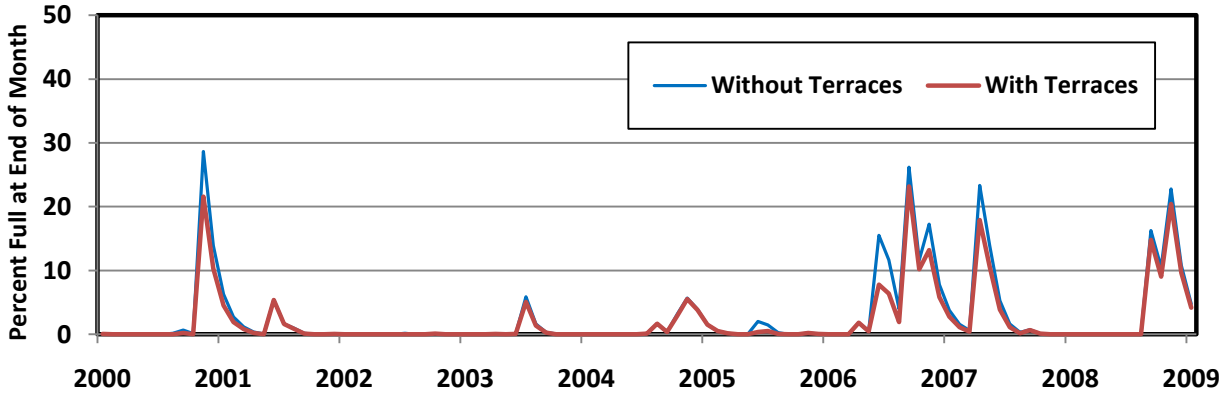
This reduced inflow from upstream terraces translates to about 3.9 acre-feet per square mile additional reduction in runoff to the downstream basin in addition to the reduction caused by the reservoirs alone. Again, these results are at the dam site and stream transmission losses have not yet been accounted.

Table 4. Simulation of Typical Reservoir at Three Locations Across the Republican River Basin with and without Terraces for a 59-year Period.

Location	*Average Annual Values, acre-feet per square mile of Drainage Area*						*Years with Overflow*
	Inflow	Precip. onto Water surface	Evap. from Water Surface	Gross Seepage	Overflow	Runoff Reduction at Dam Site	
Harlan Co. Lake, NE							
w/o terraces	52.5	4.0	7.8	35.4	13.1	39.4	21
w/31%CropTerrace	49.6	3.9	7.5	33.9	11.9	37.7	18
Oberlin 1 E							
w/o terraces	40.6	2.5	6.3	27.2	9.6	31.0	13
w/45%CropTerrace	34.8	2.2	5.6	23.7	7.7	27.1	12
Goodland, KS							
w/o terraces	21.0	1.4	3.6	15.1	3.6	17.4	7
w/23%CropTerrace	18.5	1.3	3.3	13.5	2.9	15.6	7

Figure 4 shows the simulated end-of-month storage for operation of a typical reservoir with and without terraces in the upstream drainage basin at Goodland, Kansas. Only minor differences are observed in end-of-month reservoir storage.

Figure 4.--Simulated End-of-month Storage as a Percent Full for a Typical Reservoir With and Without Terraces in the Upstream Drainage Basin at Goodland WSO, KS



Processing Water Balance Model Results to Basin Scale

Appropriate land uses from 6 land use groups for each of the 33 meteorological stations used in the study are simulated with the water balance model. Also, typical terraced lands and typical reservoirs at each of the 33 locations of the meteorological stations are simulated. The results from these simulations for the individual land use will be processed to represent the total impact of non-federal reservoirs and land terraces for an area represented by each of the 33 meteorological stations and designated drainage basins.

The land use has been grouped into 6 primary land use groups of row crop, forage, small grains, fallow, pasture/range, and urban as they are found on the terraced lands and in the drainage areas of the small federal reservoirs. Land uses that have rotations such as a 3-year wheat-corn-fallow are handled by using a 6-year sequence annual land uses in the water balance model.

A second task is to determine the distance in miles from where the impact occurs to the bottom of a designated drainage basin. This information is necessary to determine the transmission loss from the location of the reservoir or terrace to another downstream location.

Stream transmission losses can vary widely depending upon having either wet or dry conditions in a basin prior to runoff events. An extensive study in western Kansas in 1977 concluded that transmission loss for floods averaged about 2 percent of volume at the beginning of each mile. Evaluation of runoff events during the course of this study indicates that transmission lost can vary from less than 1 percent per mile to about 9 percent per mile. It is anticipated that a transmission loss of 2 percent per mile will be applied to transfer the impact at the reservoir or land terrace location to downstream locations.

Uncertainty of Assumptions in Estimating Impacts

Transmission losses are estimated to be larger in the western portions of the basin and lowest in the eastern portion of the basin. Periods with wetter conditions likely have lower losses than during dry periods, but there is not enough known about transmission loss to make better assumption on how and went to apply different loss factors. The range of uncertainty for this factor can make estimates of effects on streamflow in the order of 25%. Uncertainty factor ±25% .

The portion of streamflow going to transmission losses increases the estimates of the effects on ground-water recharge in the basin because much of the losses will infiltrate through the stream channel and into the alluvial ground-water system. Uncertainty factor ±25%

This study was intended to evaluate only the impacts of non-federal reservoirs and terraces on water supply of the Republican River Basin above Hardy, Nebraska. It was not intended to evaluate other impacts such as tillage practices, on-farm irrigation practices, or other water conservation practices, or to include other reservoirs which are presumed to not meet the criteria of the non-federal reservoir. These practices may have an impact on water supply, but the effects have not been evaluated. Other small reservoirs in the basin may affect the amount of streamflow or ground-water recharged in the order of 15%. Uncertainty factor ±15% .

2009 Accounting

Table 3A: Colorado's Five-Year Average Allocation and CBCU

Year	Allocation	Computed Beneficial Consumptive Use	Imported Water Supply Credit	Allocation - (CBCU - IWS Credit)
2005	25,040	35,460	NA	(10,420)
2006	21,260	31,280	NA	(10,020)
2007	24,520	32,850	NA	(8,330)
2008	25,420	30,530	NA	(5,110)
2009	33,390	39,780	NA	(6,390)
Average	25,930	33,980	NA	(8,050)
Sum				(40,270)

Table 3B: Kansas's Five-Year Average Allocation and CBCU

Year	Allocation	Computed Beneficial Consumptive Use	Imported Water Supply Credit	Allocation - (CBCU - IWS Credit)
2005	136,820	44,310	NA	92,510
2006	124,830	55,630	NA	69,200
2007	169,700	63,250	NA	106,450
2008	244,500	48,030	NA	196,470
2009	216,400	55,510	NA	160,890
Average	178,450	53,350	NA	125,100
Sum				625,520

Table 3C: Nebraska's Five-Year Average Allocation and CBCU

Year	Allocation	Computed Beneficial Consumptive Use	Imported Water Supply Credit	Allocation - (CBCU - IWS Credit)
2005	199,450	253,740	11,965	(42,325)
2006	187,090	228,420	12,214	(29,116)
2007	243,560	234,650	21,933	30,843
2008	309,200	249,960	25,758	84,998
2009	260,930	284,200	22,426	(844)
Average	240,050	250,190	18,860	8,710
Sum				43,556

Table 5C: Nebraska's Compliance During Water-Short Year Administration

	Allocation			Computed Beneficial Consumptive Use				
Year	State-Wide Allocation	Allocation Below Guide Rock	Allocation Above Guide Rock	State-Wide CBCU	CBCU Below Guide Rock	CBCU Above Guide Rock	Imported Water Supply Credit above Guide Rock	Allocation - (CBCU - IWS above Guide Rock)
2005	199,450	4,586	194,864	253,740	4,052	249,689	11,965	(42,860)
2006	187,090	2,286	184,804	228,420	3,057	225,363	12,214	(28,345)
2007	243,560	16,311	227,249	234,650	2,769	231,881	21,933	17,301
2008	309,200	7,828	301,372	249,960	2,144	247,816	25,758	79,315
2009	260,930	5,279	255,651	284,200	2,282	281,918	22,426	(3,841)
2005-2006 Ave	193,270	3,440	189,830	241,080	3,550	237,530	12,090	(35,600)
2006-2007 Ave	215,330	9,300	206,030	231,540	2,910	228,620	17,070	(5,520)
2007-2008 Ave	276,380	12,070	264,310	242,310	2,460	239,850	23,850	48,310
2008-2009 Ave	285,070	6,550	278,510	267,080	2,210	264,870	24,090	37,740

Table 5D: Nebraska's Compliance Under a Alternative Water-Short Year Administration Plan

	Allocation			Computed Beneficial Consumptive Use				
Year	State-Wide Allocation	Allocation Below Guide Rock	Allocation Above Guide Rock	State-Wide CBCU	CBCU Below Guide Rock	CBCU Above Guide Rock	Imported Water Supply Credit above Guide Rock	Allocation - (CBCU - IWS above Guide Rock)
2005	199,450	4,586	194,864	253,740	4,052	249,689	11,965	(42,860)
2006	187,090	2,286	184,804	228,420	3,057	225,363	12,214	(28,345)
2007	243,560	16,311	227,249	234,650	2,769	231,881	21,933	17,301
2008	309,200	7,828	301,372	249,960	2,144	247,816	25,758	79,315
2009	260,930	5,279	255,651	284,200	2,282	281,918	22,426	(3,841)
2005-2007 Ave	210,030	7,730	202,310	238,940	3,290	235,640	15,370	(17,970)
2006-2008 Ave	246,620	8,810	237,810	237,680	2,660	235,020	19,970	22,760
2007-2009 Ave	271,230	9,810	261,420	256,270	2,400	253,870	23,370	30,920

Table 3A: Colorado's Five-Year Average Allocation and CBCU

Year	Allocation	Computed Beneficial Consumptive Use	Imported Water Supply Credit	Allocation - (CBCU - IWS Credit)
2005	25,040	35,460	NA	(10,420)
2006	21,260	31,280	NA	(10,020)
2007	24,520	32,850	NA	(8,330)
2008	25,420	30,530	NA	(5,110)
2009	33,030	39,020	NA	(5,990)
Average	25,850	33,830	NA	(7,970)

Sum (39,870)

Table 3B: Kansas's Five-Year Average Allocation and CBCU

Year	Allocation	Computed Beneficial Consumptive Use	Imported Water Supply Credit	Allocation - (CBCU - IWS Credit)
2005	136,820	44,310	NA	92,510
2006	124,830	55,630	NA	69,200
2007	169,700	63,250	NA	106,450
2008	244,500	48,030	NA	196,470
2009	215,730	55,420	NA	160,310
Average	178,320	53,330	NA	124,990

Sum 624,940

Table 3C: Nebraska's Five-Year Average Allocation and CBCU

Year	Allocation	Computed Beneficial Consumptive Use	Imported Water Supply Credit	Allocation - (CBCU - IWS Credit)
2005	199,450	253,740	11,965	(42,325)
2006	187,090	228,420	12,214	(29,116)
2007	243,560	234,650	21,933	30,843
2008	309,200	249,960	25,758	84,998
2009	260,470	283,470	22,349	(651)
Average	239,950	250,050	18,840	8,750

Sum 43,749

Table 5C: Nebraska's Compliance During Water-Short Year Administration

	Allocation			Computed Beneficial Consumptive Use				
Year	State-Wide Allocation	Allocation Below Guide Rock	Allocation Above Guide Rock	State-Wide CBCU	CBCU Below Guide Rock	CBCU Above Guide Rock	Imported Water Supply Credit above Guide Rock	Allocation - (CBCU - IWS above Guide Rock)
2005	199,450	4,586	194,864	253,740	4,052	249,689	11,965	(42,860)
2006	187,090	2,286	184,804	228,420	3,057	225,363	12,214	(28,345)
2007	243,560	16,311	227,249	234,650	2,769	231,881	21,933	17,301
2008	309,200	7,828	301,372	249,960	2,144	247,816	25,758	79,315
2009	260,470	5,257	255,213	283,470	2,243	281,227	22,349	(3,665)
2005-2006 Ave	193,270	3,440	189,830	241,080	3,550	237,530	12,090	(35,600)
2006-2007 Ave	215,330	9,300	206,030	231,540	2,910	228,620	17,070	(5,520)
2007-2008 Ave	276,380	12,070	264,310	242,310	2,460	239,850	23,850	48,310
2008-2009 Ave	284,840	6,540	278,290	266,720	2,190	264,520	24,050	37,820

Table 5D: Nebraska's Compliance Under a Alternative Water-Short Year Administration Plan

	Allocation			Computed Beneficial Consumptive Use				
Year	State-Wide Allocation	Allocation Below Guide Rock	Allocation Above Guide Rock	State-Wide CBCU	CBCU Below Guide Rock	CBCU Above Guide Rock	Imported Water Supply Credit above Guide Rock	Allocation - (CBCU - IWS above Guide Rock)
2005	199,450	4,586	194,864	253,740	4,052	249,689	11,965	(42,860)
2006	187,090	2,286	184,804	228,420	3,057	225,363	12,214	(28,345)
2007	243,560	16,311	227,249	234,650	2,769	231,881	21,933	17,301
2008	309,200	7,828	301,372	249,960	2,144	247,816	25,758	79,315
2009	260,470	5,257	255,213	283,470	2,243	281,227	22,349	(3,665)
2005-2007 Ave	210,030	7,730	202,310	238,940	3,290	235,640	15,370	(17,970)
2006-2008 Ave	246,620	8,810	237,810	237,680	2,660	235,020	19,970	22,760
2007-2009 Ave	271,080	9,800	261,280	256,030	2,390	253,640	23,350	30,980

Proposed Resolutions

As of Tuesday August 10, 2010,

no draft resolutions to the RRCA

have yet been proposed.

2010 Bureau of Reclamation Report

RECLAMATION

Managing Water in the West

Nebraska-Kansas Area Office

Report

To The

Republican River

Compact Administration

Burlington, CO

U.S. Department of the Interior
Bureau of Reclamation
Great Plains Region

August 2010

Forward

The Bureau of Reclamation, Nebraska-Kansas Area Office submits this Report to the Republican River Compact Administration at their annual meeting, held in Burlington, Colorado, on August 12, 2010. The Report describes Reclamations 2009 Operations and the Operations for the first six months of 2010 Operations. The Report also describes other Reclamation Republican River Compact related activities.

Operations and Maintenance Activities

2009 Operations

As shown on the Appendix Table 1, precipitation in the Republican River Basin varied from 78 percent of normal at Lovewell Reservoir to 156 percent of normal at Swanson Lake. Total precipitation at Reclamation dams ranged from 21.33 inches at Lovewell Dam to 32.01 inches at Norton Dam.

Inflows varied from 51 percent of the most probable forecast at Enders Reservoir to 118 percent of the most probable forecast at Harry Strunk Lake. Inflows into Enders Reservoir totaled 6,577 AF while inflows at Harlan County Lake totaled 136,747 AF.

Average farm delivery values for each irrigated acre were as follows:

District	Farm Delivery
Frenchman Valley	0.7 inches
H&RW	0.0 inches
Frenchman-Cambridge	
- Meeker-Driftwood, Bartley	4.0 inches
- Red Willow Canal	3.1 inches
- Cambridge Canal	6.0 inches
Almena	0.6 inches
Bostwick in NE	5.8 inches
Kansas-Bostwick	6.5 inches

2009 Operation Notes

Bonny Reservoir – The annual precipitation total of 26.56 inches at Bonny Dam was 155 percent of normal and the greatest ever recorded at the site. The annual computed inflow of 11,698 AF to Bonny Reservoir was very close to the normal-year forecast. The reservoir level began the year at elevation 3649.96 feet and gradually increased to a peak elevation of 3652.66 feet by the end of April (19.3 feet below full pool). Bonny Dam received 4.46 inches of precipitation in June and 4.61 inches in July, 166% of average for the two month period. Rainfall during October was 3.59 inches, 318% of average for the month. These rains resulted in the

reservoir level increasing approximately 1.5 feet (1,500 acre-feet) from October 1st through November 30th. River releases were made during the months of May, June and December in accordance with orders of the State of Colorado for Republican River Compact compliance. A total of 3,361 AF of river outflow was recorded for this purpose. An additional 674 AF was released into Hale Ditch as directed by the Colorado State Water Commissioner. The reservoir elevation at the end of the year was 21.0 feet below the top of conservation at 3651.00 feet.

Enders Reservoir – The annual precipitation total of 29.69 inches at Enders Dam was well above normal (156 percent), and the greatest ever recorded for the site. The 2009 inflow into Enders Reservoir of 6,577 AF was between the dry-year and normal-year forecasts. This was the 42nd consecutive year with below-normal inflows in which the conservation pool did not fill. The reservoir level began the year at elevation 3090.99 feet (21.3 feet below top of conservation). The reservoir level increased slightly during the spring to a peak elevation of 3091.91 feet on June 18th and then gradually decreased through early October. The minimum elevation (3090.59 feet) occurred on October 5th. Due to the extremely low water supply available, no water was released from Enders Reservoir. The end of the year reservoir level was 21.0 feet below the top of conservation.

Swanson Lake – The annual precipitation total of 27.25 inches at Trenton Dam was 136 percent of normal. The inflow of 37,749 AF to Swanson Lake was slightly above the normal-year forecast. The lake level began the year at elevation 2737.16 feet and peaked at 2742.04 feet (10 feet below the top of conservation) on June 17th. The reservoir level decreased during the irrigation season and reached a minimum elevation of 2735.58 feet on October 13th. Irrigation diversions were made into Meeker-Driftwood Canal for the first time since 2002. The district diverted 23,274 AF from June 8th through August 28th. At the end of the year the reservoir level was 13.8 feet below the top of conservation at 2738.17 feet.

Hugh Butler Lake – The annual precipitation total of 23.96 inches at Red Willow Dam was 122 percent of normal. The annual inflow of 13,279 AF into Hugh Butler Lake was between the dry-year and normal-year forecasts. The reservoir level at the first of the year was 2575.27 feet, 6.5 feet below the top of conservation. The reservoir level peaked at 2577.18 feet (4.6 feet below full) on June 26th. Irrigation releases began on June 28th and ended on August 27th dropping the pool level 4.1 feet. The district diverted 5,166 AF into Red Willow Canal and 10,711 AF into Bartley Canal. October precipitation totaled 4.86 inches, the greatest October total recorded at the site. Discovery of embankment cracking at Red Willow Dam in late October resulted in the evacuation of 21,000 AF from Hugh Butler Lake. The end of year storage at Hugh Butler Lake was the lowest end of December storage ever recorded (elevation 2554.07 feet), 27.7 feet below the top of conservation.

Harry Strunk Lake – The annual precipitation total of 28.90 inches at Medicine Creek Dam was 140 percent of normal and the second highest ever recorded at the dam. The inflow of 42,805 AF was between the normal-year and wet-year forecasts. The reservoir level at the beginning of 2009 was only .8 foot below the top of conservation. Releases were made during the first four months of 2009 to maintain the reservoir elevation approximately .5 foot below the flood pool. The reservoir was allowed to fill on April 26th and the reservoir level gradually increased to elevation 2367.27 feet (1.2 feet into flood pool) on June 16th. Irrigation releases began on June 23rd and ran through September 4th reducing the reservoir level to 2360.22 feet. The district diverted 23,961 AF into Cambridge Canal. Medicine Creek Dam recorded 5.34

inches of precipitation during October, the most ever recorded for the month. Late fall and early winter inflows increased the level of Harry Strunk Lake to 0.5 foot below the top of conservation at the end of the year (2365.54 feet).

Keith Sebelius Lake – The annual precipitation at Norton Dam totaled 32.01 inches, which is 131 percent of normal. The total inflow of 7,452 AF was slightly below the normal-year forecast. The reservoir was 10.4 feet below the top of conservation pool at the first of the year. The reservoir level gradually increased peaking at 2294.85 feet on June 16th. Irrigation releases were made during July reducing the lake level by .75 feet. The lake level ended the year at elevation 2294.64 feet (9.7 feet below the top of conservation).

Harlan County Lake – The annual precipitation at Harlan County Dam totaled 24.50 inches of rainfall, which is 108 percent of normal. The 2009 inflow of 136,747 AF was between the normal- and wet-year forecasts. Harlan County Lake began 2009 approximately .4 foot above the top of conservation pool, at 1946.12 feet. Flood releases were made during the first three months of the year. The reservoir level increased gradually during the spring peaking at 1947.46 feet on June 21st. Irrigation releases started in mid June and continued through early September. The lake level decreased to elevation 1943.57 feet on September 30th. Lake levels increased through the fall and flood releases began on December 29th to maintain the pool level near the top of conservation. The reservoir elevation was 1946.19 feet (0.5 foot in the flood pool) on December 31, 2009. A ten year summary of Harlan County Lake operations is shown on Appendix Table 3.

Lovewell Reservoir – The 2009 precipitation at Lovewell Dam totaled 21.33 inches, which was 78 percent of normal. The reservoir elevation at the beginning of 2009 was 1581.13 feet (1.5 feet below the top of conservation pool). The pool level gradually increased, filling the conservation capacity on March 4th (1582.6 feet). Flood releases were initiated and continued into April to maintain the reservoir level near the top of conservation. The pool level gradually increased during May peaking at 1583.48 feet on June 5th. Irrigation releases to the canal began on May 18th and continued through September 12th, dropping the reservoir level 7.5 feet. Water was then diverted into Lovewell Reservoir via Courtland Canal through early November. The reservoir level at the end of the year was 1579.26 feet (3.3 feet below top of conservation).

Current Operations

Appendix Table 2 shows a summary of data for the first six months of 2010.

Bonny Reservoir – The reservoir level is approximately 18.0 feet below the top of conservation. Bonny Dam has recorded 11.14 inches of precipitation during the first six months of the year (124% of average). Reservoir inflow for the period is the greatest since 2001, but only half of the historic average. Releases have been made into Hale Ditch and also for compact compliance. The reservoir level is 2.5 foot higher than last year at this time.

Swanson Lake – The lake level is **c**urrently 9 feet from full and is approximately 4 feet higher than last year at this time. Precipitation for the year is 120% of normal (12.29 inches). Frenchman-Cambridge Irrigation District is irrigating from Swanson Lake for the second year since 2002.

Enders Reservoir - The reservoir level is currently 20 feet below full and 1.0 foot above last year at this time. Enders Dam recorded 12.89 inches of precipitation during the first six months of the year. Normal precipitation during this period is 9.98 inches. Due to the water supply shortage, H&RW Irrigation District is not irrigating for the ninth year in a row. This is the seventh consecutive year that Frenchman-Valley Irrigation District has not received storage water for irrigation.

Hugh Butler Lake – The lake level is currently 28 feet below full. The precipitation total so far this year is 15.41 inches (156% of normal). The lake level is 21 feet below last year at this time. Hugh Butler Lake continues to be maintained at historic low levels to reduce risks related to the Red Willow Dam embankment cracking.

Harry Strunk Lake – The lake level is currently near the top of conservation. Releases were made through early April to hold the pool level below top of conservation. Reservoir releases resumed in May with Cambridge Canal diversions beginning on May 18thth. Precipitation at the dam during the first six months of the year was 14.23 inches (133% of normal).

Keith Sebelius Lake – Currently 6 feet below full. Lake level is 4.7 foot above last year at this time. Irrigation releases began on July 12th with limited delivery expected in 2010. Precipitation at the dam during the first six months of the year was 19.00 inches (153% of normal).

Harlan County Lake – The current water surface level is near the top of conservation pool and is nearly the same as last year at this time. Harlan County Dam has recorded 23.15 inches of precipitation so far this year. The available irrigation supply from Harlan County Lake on June 30th was 147,800 AF, indicating that "Water-Short Year Administration" would not be in effect. Irrigation releases began on June 26th.

Lovewell Reservoir – The reservoir level dropped from the flood pool on July 25th and is slightly higher than one year ago. Lovewell Dam recorded 17.81 inches of precipitation during the first six months of the year (133% of average). Irrigation releases began on June 2nd.

Maintenance Related Activities

Inspections

Annual Site Inspections were conducted at all NKAO facilities in 2009.

Safety of Dams

Norton Dam – Construction of a weighted filter and drain system to collect seepage through the left abutment and along the outlet works alignment was completed in the fall of 2007. A residual seep was discovered upon completion of the construction contract, when the dewatering system was shut down. A cutoff wall was installed in the fall of 2009 to stop the residual seepage and therefore preventing internal erosion of the foundation materials beneath and downstream of the weighted filter and drain system.

Enders Dam – A small depression was discovered near the outlet works stilling basin in August 2004. The depression has been attributed to a failure of the basin underdrain system. Reclamation

installed additional instrumentation in the area and has collected additional data on water levels around the basin. Additional weight was added to the basin in June 2007 to increase the stability of the outlet basin after a 10 ft rise in lake elevation. In the fall of 2008, Reclamation completed a drain grouting operation and installed temporary drainage features to correct the problem. Installation of a permanent groundwater control system is scheduled for the fall of 2010.

Red Willow Dam – The river outlet works stilling basin was dewatered for inspection in July 2005. During the inspection a small quantity of fine clean sand was discovered near the right basin under drain system outlet indicating that material was being transported through the basin underdrain system. Plugs were installed in the drain outlets to prevent any further movement of material. Grouting to prevent further movement of material and remediating voids is scheduled to be completed in FY10.

On October 20, 2009 a sinkhole was discovered on the downstream embankment approximately 130 feet upstream of the outlet works building along the alignment of the conduit. Subsequent investigations revealed the presence of transverse cracking in the embankment above the outlet works alignment and in several additional locations along the embankment. In late October 2009 a reservoir level restriction was put in place to reduce the risks associated with the cracked embankment. In February 2010, Reclamation initiated a Corrective Action Study to identify alternatives to reduce risks at the dam and to determine a preferred alternative by fall of 2010. A Modification Report is planned for transmittal to Congress in spring 2011 with a potential contract award for repairs to the dam in the summer of 2011.

Emergency Management Operations

Orientation Meetings are held annually to discuss the Emergency Action Plan (EAP) for all NKAO dams. Federal, state, county and local organizations that would be impacted by an emergency at NKAO dams are invited to attend. Radios which contact the downstream 24-hour warning points are tested monthly.

Standing Operating Procedures

All NKAO SOP's have been updated based on the current guidelines.

Security

Security at all Reclamation dams has increased since September 11, 2001. Site security plans for all fifteen NKAO facilities have been finalized and published.

American and Reinvestment Act of 2009 Project

Reclamation received ARRA funds to re-coat the interior of the outlet works conduit at Enders Dam.

Resource Management Activities

Lower Republican Basin Feasibility Study

Title V, Section 510, of the Consolidated Natural Resources Act, S. 2789, Public Law 110-229 (May 8, 2008), authorized the Bureau of Reclamation to conduct the Lower Republican River Basin Feasibility Study (FS) to improve water supply reliability, increase water storage, and to improve water management efficiency. Federal funds have not been appropriated for Reclamation to perform any of the study tasks.

Both Nebraska and Kansas have indicated that they will provide in-kind support and/or funding for the Feasibility Study. The Republican River Compact Administration Commissioners renewed their support for the Feasibility Study at the 2009 annual meeting.

On April 8, 2010, the Kansas Water Office hosted a Congressional Tour at Lovewell Reservoir to present information on the Lower Republican Feasibility Study. Reclamation made presentations concerning the alternatives from the Lower Republican Appraisal Report.

Frenchman Valley Appraisal Study

At the request of the Nebraska Department of Natural Resources, Reclamation prepared an appraisal study to examine opportunities for more efficient management in the Frenchman Basin which has experienced dramatically reduced surface water supplies, including reduced inflows to Enders Reservoir.

Reclamation's Frenchman Unit (Unit) lacks the water supply to provide the benefits envisioned when the project was formulated, most notably supplying irrigation water from Enders Reservoir to project acres of the Unit. The purpose of the study is to determine whether the problems and alternatives analyzed have sufficient potential to justify further Federal involvement while meeting the following study objectives:

- Maintain the viability of the FVID and H&RWID
- Maintain recreation at Enders Reservoir
- Protect the Federal investment in the Unit

Three alternative plans were developed:

- Flow-Through Alternative
- Recreation Alternative, and
- Groundwater Recharge Alternative.

These alternatives were compared to the Future-Without Project Condition, which represents the project future conditions if no Federal action were taken.

The study reviewed and updated the conclusions and recommendations from the 1977 Frenchman Unit Appraisal Report. A Final Draft was distributed to cooperating agencies in fall of 2009.

Reclamation is preparing the final report.

Water Conservation Activities

Reclamation continues to provide financial and technical assistance for water conservation projects in the Basin.

Almena Irrigation District No. 5 – Reclamation is providing financial and technical assistance through the WCFSP for a buried pipe lateral project.

Bostwick Irrigation District in Nebraska – Reclamation is providing financial and technical assistance through both the Water 2025 Program and the WCFSP for the replacement of open ditch laterals with buried pipe. In addition, Reclamation also provided technical and financial assistance for the automation of 10 check structures on Franklin Canal.

On August 4, 2009, Commissioner Mike Conner announced that the Bostwick Irrigation District in Nebraska has been selected for two challenge grants. Projects include the replacement of open ditch laterals with buried pipe and a System Optimization Review, which will review the entire District and make recommendations for system improvements.

On July 29, 2010, Commissioner Mike Conner announced that the Bostwick Irrigation District in Nebraska has been selected for a WaterSMART challenge grant for a project which will replace 6.8 miles of open ditch lateral with buried pipe.

Kansas Bostwick Irrigation District No. 2 – Reclamation is providing financial and technical assistance through the Water 2025 Program for the replacement of open ditch laterals with buried pipe.

Republican River Basin Conservation Alliance - Kansas

The Republican River Basin Conversation Projects Alliance is a group of stakeholder in Northwest Kansas formed to develop a cooperative and coordinated application for specific water conservation projects to be completed if and when Republican River Compact award funds accrue to Kansas from either Colorado or Nebraska. One alternative involves an evaluation of the best use of water due to the Kansas Upper Republican basin by Colorado to comply with the compact and Final Settlement Stipulation. Through a cooperative agreement with the Kansas Water Office, Reclamation is providing assistance to conduct a reconnaissance level study on options for the beneficial uses of Compact water provided by Colorado. The evaluations are to consider the economic benefits, social and environmental benefits, potential conservation benefits, and an estimate of the costs to implement.

Lower Republican River Stakeholder Advisory Committee - Kansas

Reclamation was a member of the Lower Republican River Stakeholder Advisory Committee (LRRSAC), a group of water users/interests in the basin formed to develop and recommend potential

water conservation projects in the lower basin.

Alternatives evaluated include increasing storage opportunities, improving surface water delivery system efficiency, improving on-farm irrigation efficiency, reducing demands, aquifer recharge, reducing Minimum Desirable Streamflow violations, and improving water quality.

The LRRSAC presented a report titled "Recommendations for improvement of the water supply, management, efficiency, and conservation in the Lower Republican River Basin, January 2010" to Kansas Water Office Director Tracy Streeter. On January 28, 2010, the Kansas Water Authority approved inclusion of the Lower Republican River Systems Management as a basin priority issue in the Kansas-Lower Republican basin section, Kansas Water Plan.

Republican River Basin Irrigation Management Project – Nebraska

Reclamation continues to provide financial assistance through the Water Conservation Field Services Program to the University of Nebraska Extension Service for an irrigation management demonstration project. In 2009, field demonstrations included sites located near Alma, Edison, Loomis, Imperial, Benkelman, and Curtis. Information is presented at annual field days at each site and at an average of 16 other meetings/conferences per year.

The primary goal of the program is to demonstrate research-based irrigation management strategies in farmer fields and provide a hands-on practical teaching environment for farmers and consultants to learn how to implement these practices.

Water Rights Mapping

Frenchman-Cambridge Water Rights – Reclamation worked with the Nebraska Department of Natural Resources (NDNR) and the Frenchman-Cambridge Irrigation District in the map transfer process

Bostwick Irrigation District in Nebraska – NDNR worked with the Bostwick Irrigation District for mapping the entire district for the map transfer process. Reclamation recently completed cultural resource review of the Bostwick Irrigation District in Nebraska for the map transfer.

Kansas Bostwick Irrigation District No. 2 – Reclamation has been working with the Kansas Division of Water Resources (KDWR) to map the Kansas Bostwick Irrigation District and the private irrigation water rights in the Lower Republican Basin.

Almena Irrigation District No. 5 – Reclamation worked with KDWR to map the Almena Irrigation District water rights and the private rights from Norton Dam to the Kansas-Nebraska state line.

Future Project Mapping Activities – Reclamation plans to begin mapping the project acres of the Frenchman Valley Irrigation District and H & RW Irrigation District

Reclamation plans to provide assistance to the Republican Basin Natural Resource Districts to map

private water rights within Reclamation project boundaries (co-mingled water rights).

Drought Assistance

Reclamation provides drought assistance through the Reclamation States Emergency Drought Relief Act of 1991.

Nebraska Municipal Well – The Village of Stockville has been approved for drought assistance for the installation of a municipal well. Reclamation issued a construction contract for the well which is scheduled to be completed in August, 2010.

Reservoir Resource Management

ADA compliance activities – The Great Plains Region has set a goal to complete universal accessibility upgrades at Reclamation facilities by 2010. With the work scheduled for completion later this year, the NKAO (Nebraska-Kansas Area Office) will essentially meet this goal.

Invasive Species – The threat to the proper function of all aspects of NKAO projects caused by exotic and invasive species continues to be a issue for both Reclamation and our managing partners and contractors. The control of noxious weed and invasive species has become a serious budgetary issue for the NKAO's managing partners in Nebraska and Kansas.

The greatest potential threat to the NKAO's projects from exotic species would occur from an infestation of Zebra and/or Quagga Mussels (ZQM) at the reservoirs and associated water distribution facilities. Many of the NKAO's projects areas are located within a day's travel from waters known to be infested with ZQM. The NKAO has been working with our managing partners to increase public awareness, and perform monitoring at high risk reservoirs.

Appendix

TABLE 1
NEBRASKA-KANSAS PROJECTS
Summary of Precipitation, Reservoir Storage and Inflows
CALENDAR YEAR 2009

Reservoir	Total Precip. Inches	Percent Of Average %	Storage 12-31-08 AF	Storage 12-31-09 AF	Gain or Loss AF	Maximum Content AF	Maximum Storage Date	Minimum Content AF	Minimum Storage Date	Total Inflow AF	Percent Of Most Probable %
Box Butte	19.98	118	6,375	10,213	3,838	13,522	JUL 14	6,076	AUG 28	15,432	100
Merritt	28.14	137	61,100	61,100	0	67,602	JUN 14	48,661	SEP 19	182,155	99
Calamus	26.14	108	109,027	107,417	-1,610	127,965	APR 19	82,324	SEP 20	278,685	105
Davis Creek	25.20	102	10,126	8,922	-1,204	28,956	JUL 7	8,734	SEP 24	47,962	99
Bonny	26.56	155	9,276	10,220	944	11,860	MAY 4	9,293	JAN 1	11,698	98
Enders	29.69	156	15,368	15,662	294	16,200	JUN 18	15,017	OCT 8	6,577	51
Swanson	27.25	136	51,989	55,314	3,325	69,029	JUN 17	46,987	OCT 13	37,749	108
Hugh Butler	23.96	122	26,451	6,357	-20,094	29,136	JUN 26	6,327	DEC 23	13,279	91
Harry Strunk	28.90	140	33,151	33,630	479	36,852	JUN 17	25,375	SEP 4	42,805	118
Keith Sebelius	32.01	131	16,313	17,386	1,073	17,682	JUN 16	16,152	OCT 5	7,452	96
Harlan County	24.50	108	319,311	320,258	947	337,577	JUN 21	285,161	OCT 5	136,747	112
Lovewell	21.33	78	31,438	26,528	-4,910	38,354	JUN 5	18,853	SEP 4	41,606	64
Kirwin	27.86	118	88,425	98,662	10,237	117,565	JUN 17	88,615	JAN 1	78,204	354
Webster	23.50	99	68,885	78,514	9,629	93,666	JUN 17	69,063	JAN 1	61,300	326
Waconda	22.05	86	206,420	213,790	7,370	229,378	JUN 18	200,541	FEB 23	222,698	163
Cedar Bluff	23.22	111	83,542	83,699	157	83,895	MAY 8	79,327	SEP 7	14,391	93

TABLE 2
NEBRASKA-KANSAS AREA OFFICE
Summary of Precipitation, Reservoir Storage and Inflows

JANUARY - JUNE 2010

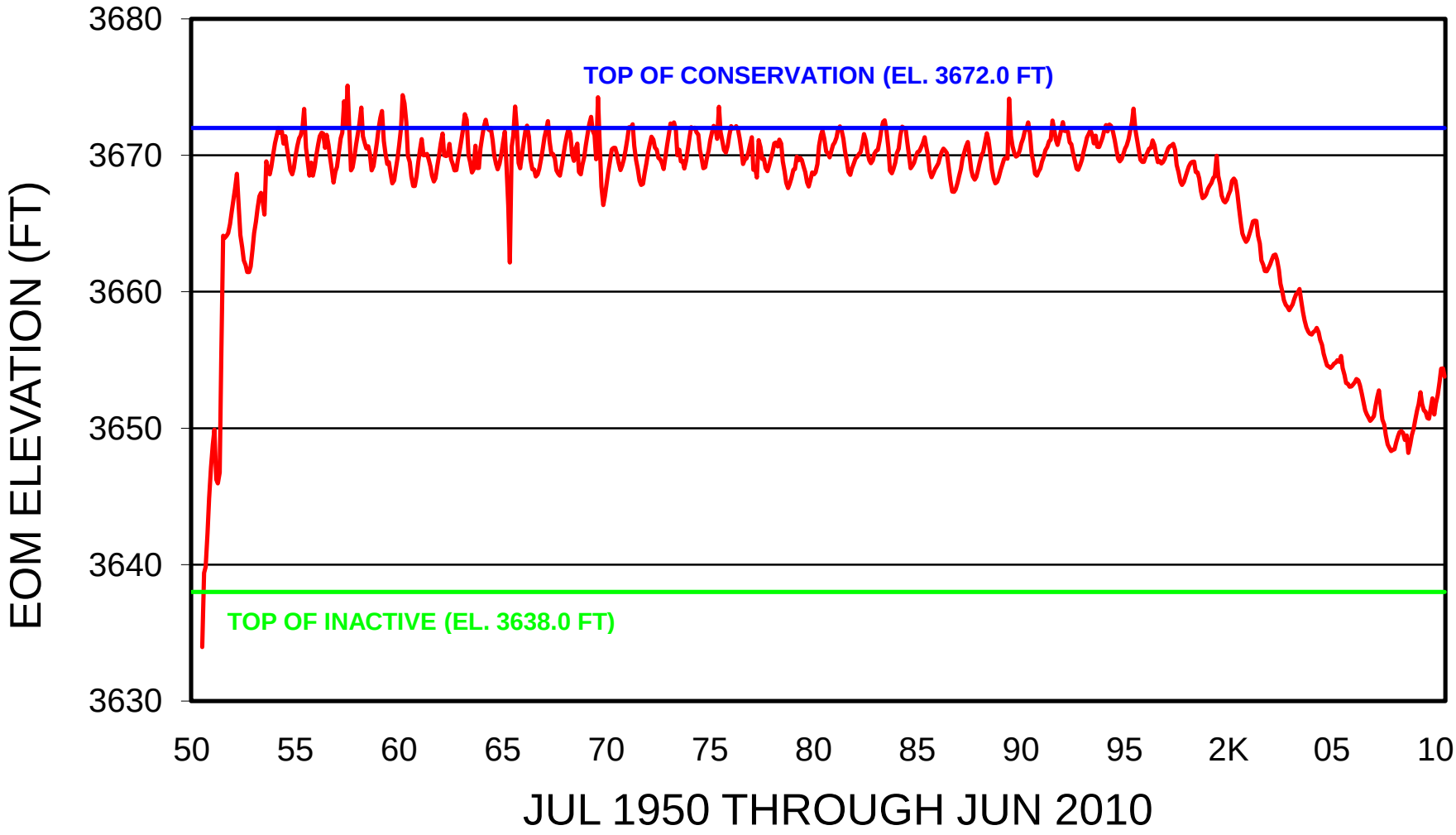
Reservoir	Precip. Inches	Percent Of Average %	Storage 6/30/2009 AF	Storage 6/30/2010 AF	Gain or Loss AF	Inflow AF	Percent Of Most Probable %	AVERAGE PREC.	MOST PROBABLE INFLOW
Bonny	11.14	124	10,511	13,037	2,526	7,306	97	**8.98**	7,500
Enders	12.89	129	16,076	17,038	962	4,602	78	**9.98**	5,900
Swanson	12.29	120	67,506	81,692	14,186	33,899	133	**10.26**	25,500
Hugh Butler	15.41	156	28,941	6,441	(22,500)	14,372	177	**9.86**	8,100
Harry Strunk	14.23	133	35,859	39,324	3,465	29,762	143	**10.73**	20,800
Keith Sebelius	19.00	153	17,521	24,912	7,391	10,355	211	**12.43**	4,900
Harlan County	23.15	202	328,917	368,695	39,778	173,918	231	**11.48**	75,300
Lovewell	17.81	133	36,599	52,083	15,484	31,155	153	**13.40**	20,300
Kirwin	18.38	152	111,016	122,564	11,548	72,338	473	**12.06**	15,300
Webster	13.75	117	86,637	78,706	(7,931)	45,430	332	**11.80**	13,700
Waconda	16.37	130	217,701	259,122	41,421	274,805	345	**12.59**	79,700
Cedar Bluff	9.93	95	86,436	101,920	15,484	25,073	285	**10.49**	8,800

TABLE 3
HARLAN COUNTY LAKE

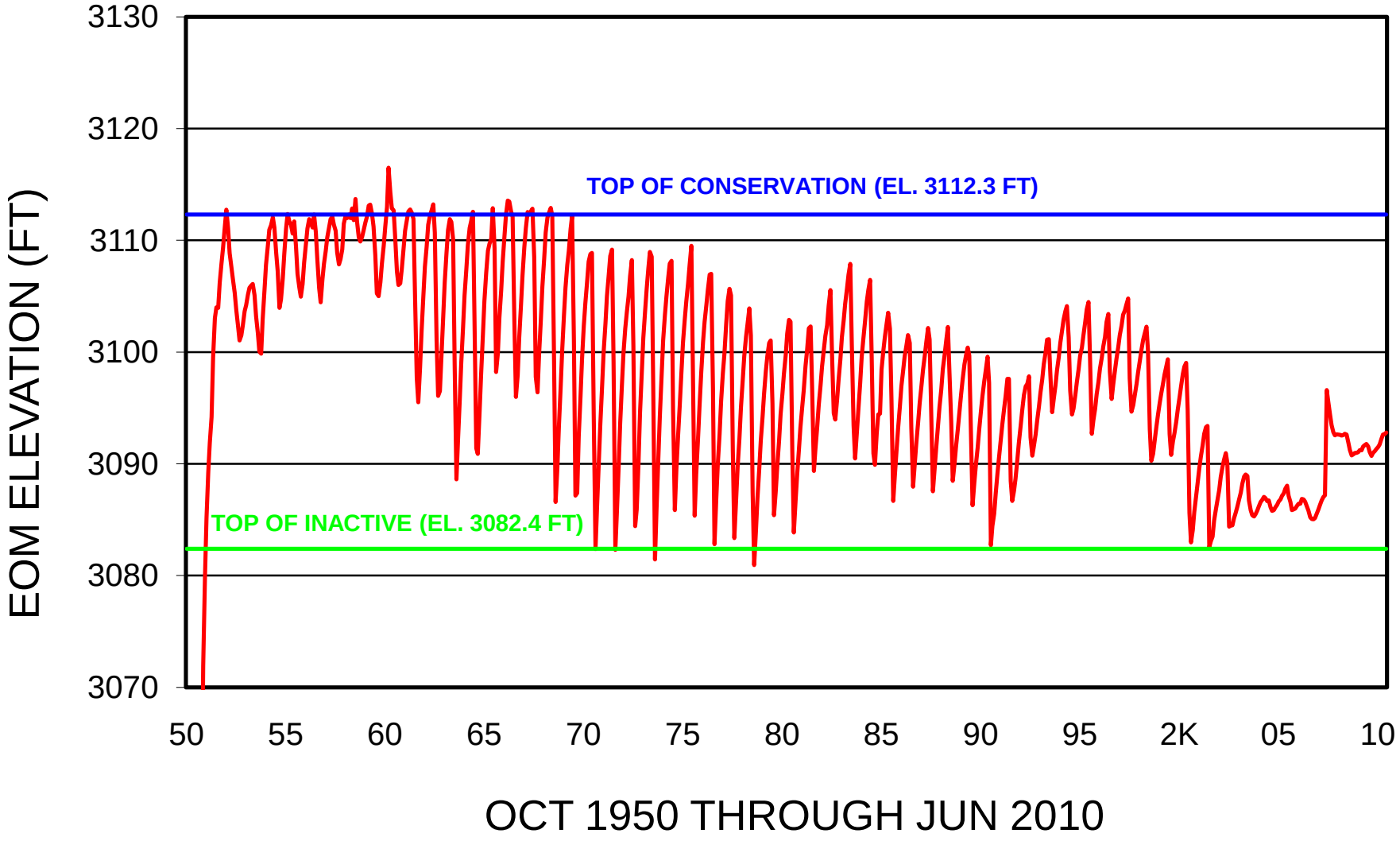
Year	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	Precip. (% of Average) (22.76 inches)	Rep. Basin Reclamation Dams (% of Average)	End of Year Content (AF)	**Projected Irrig. Water Supply On June 30th (AF)**
1999	164,141	99,304	42,472	24.74	109%	95%	292,312	**186,700**
2000	134,191	166,484	45,006	23.20	102%	87%	215,004	**174,400**
2001	157,844	87,346	40,833	27.97	123%	109%	242,853	**152,600**
2002	60,094	98,518	43,988	16.86	74%	60%	160,463	**116,100**
2003	48,430	51,237	34,307	16.70	73%	93%	113,346	**62,000**
2004	25,099	0	30,601	22.83	100%	111%	107,050	**0**
2005	53,682	0	32,620	22.51	99%	107%	128,111	**14,100**
2006	30,077	12,280	29,609	20.62	91%	101%	116,299	**14,400**
2007	198,528	21,237	38,197	26.92	118%	114%	255,393	**111,700**
2008	224,841	114,938	45,985	30.31	133%	131%	319,311	**210,000**
2009	136,747	94,079	41,721	24.50	108%	128%	320,258	**156,000**

*NOTE: On June 30, 2010 Projected Irrig. Water Supply was 147,800 AF.

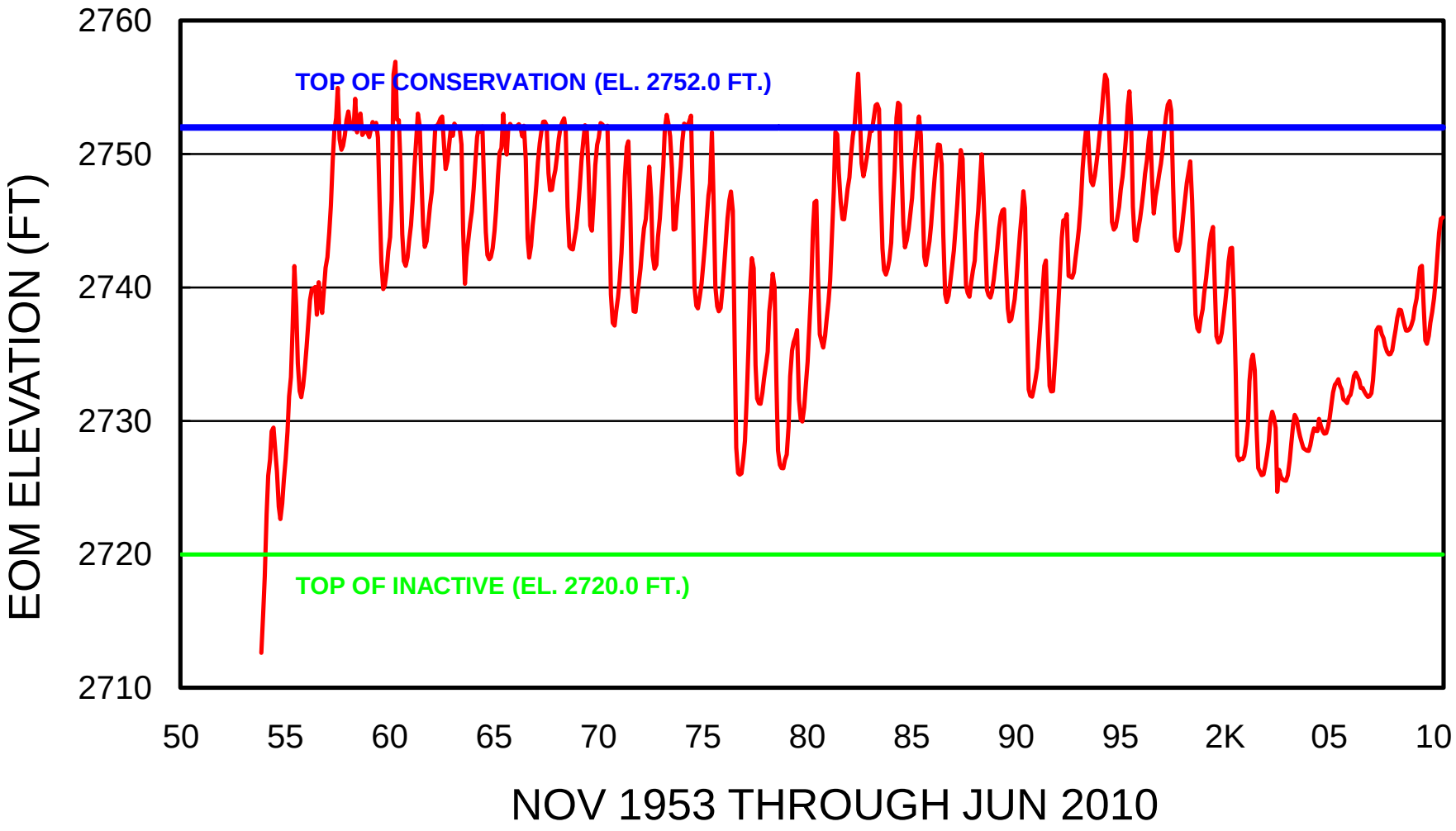
BONNY RESERVOIR
END OF MONTH ELEVATION



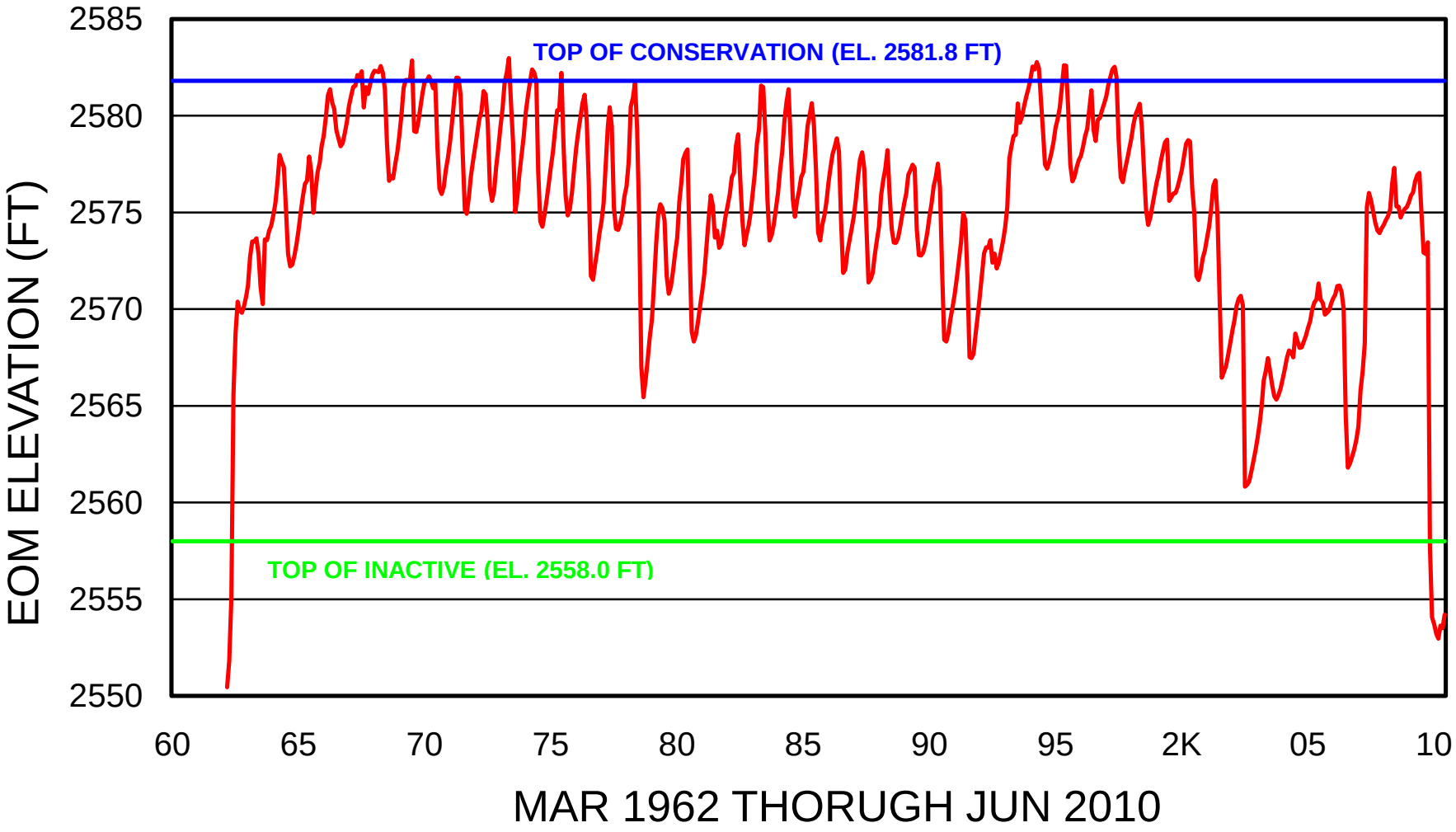
ENDERS RESERVOIR
END OF MONTH ELEVATION



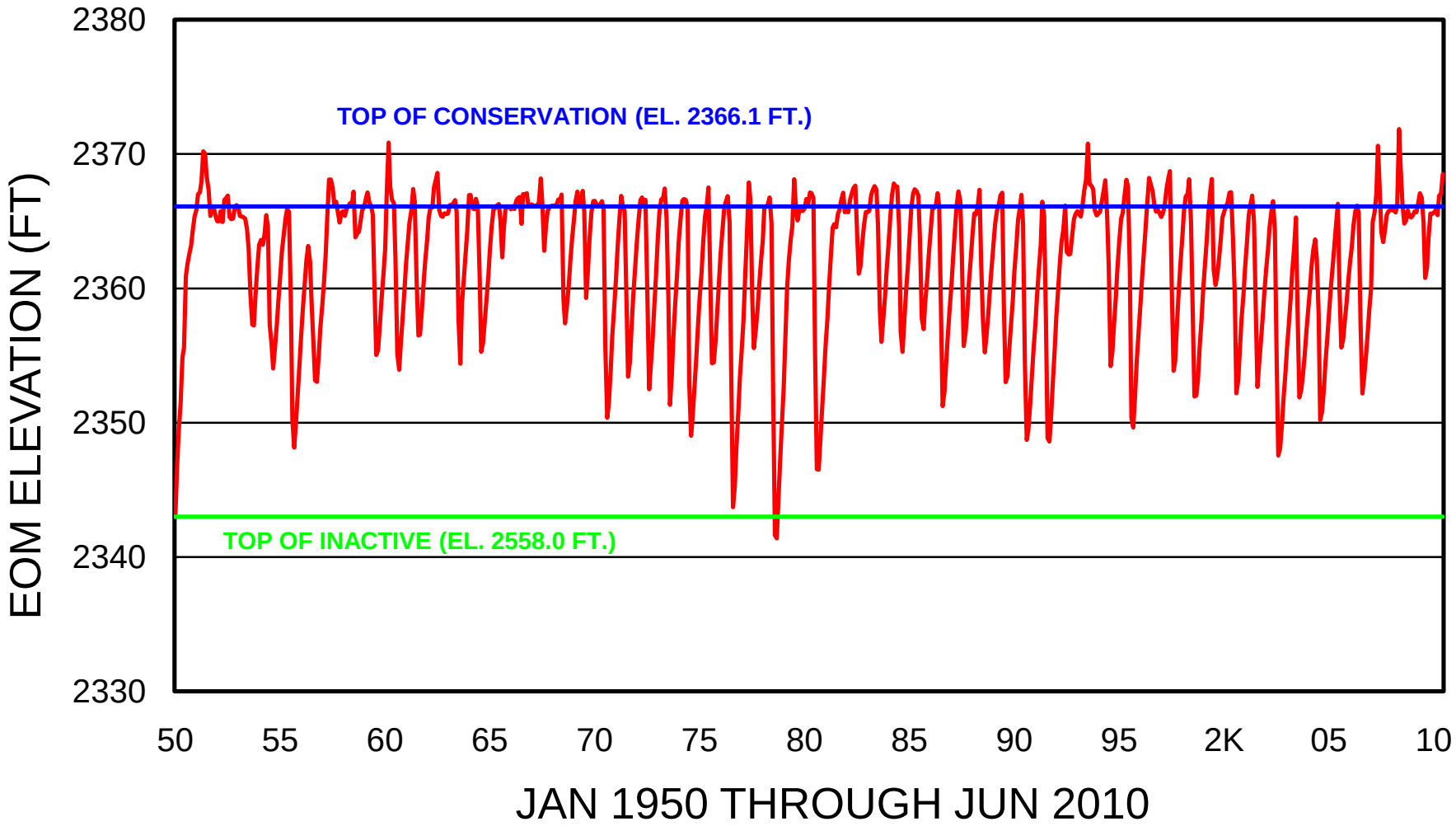
SWANSON LAKE
END OF MONTH ELEVATION



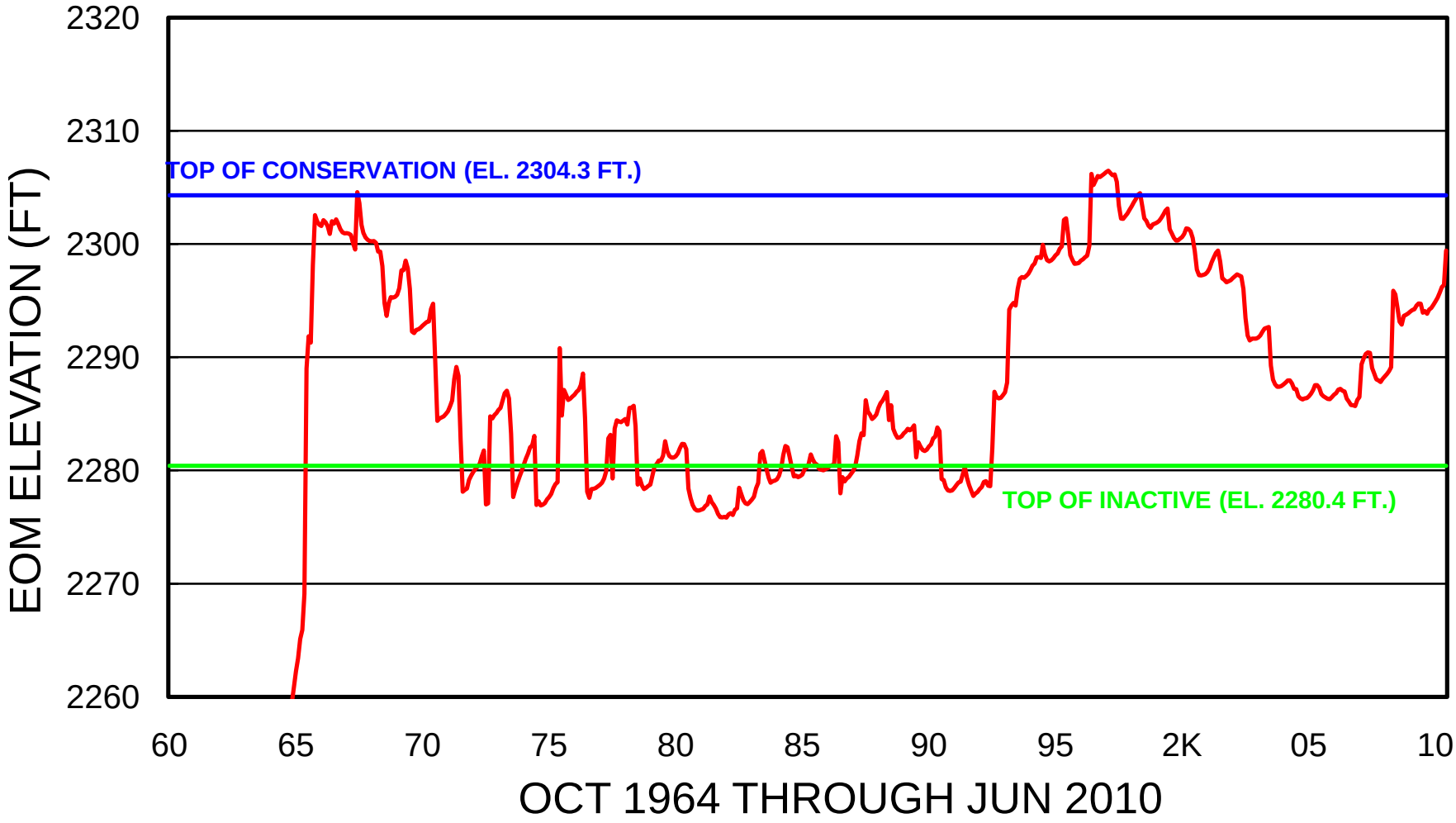
HUGH BUTLER LAKE
END OF MONTH ELEVATION



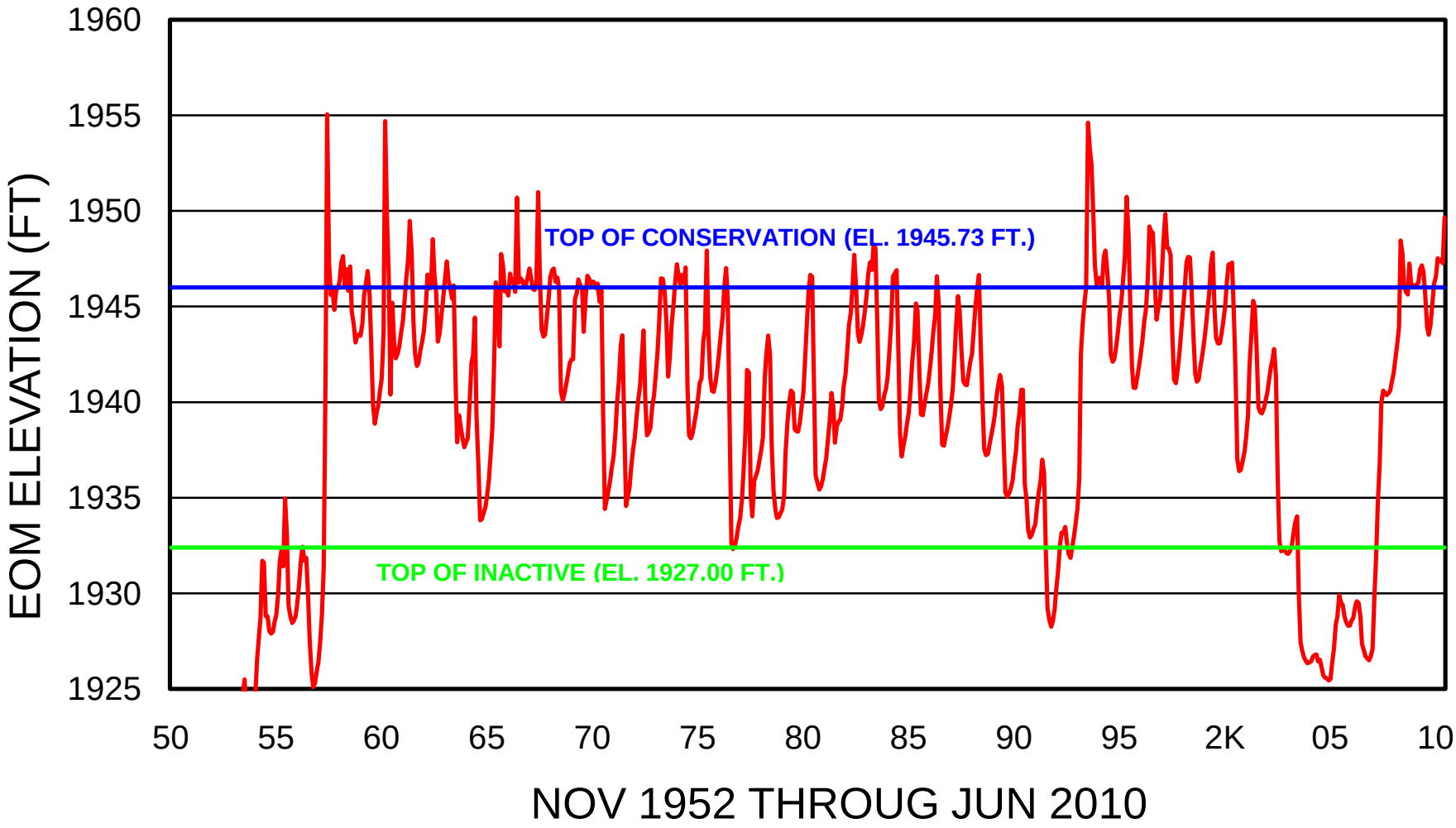
HARRY STRUNK LAKE
END OF MONTH ELEVATION



KEITH SEBELIUS LAKE
END OF MONTH ELEVATION



HARLAN COUNTY LAKE
END OF MONTH ELEVATION



LOVEWELL RESERVOIR
END OF MONTH ELEVATION