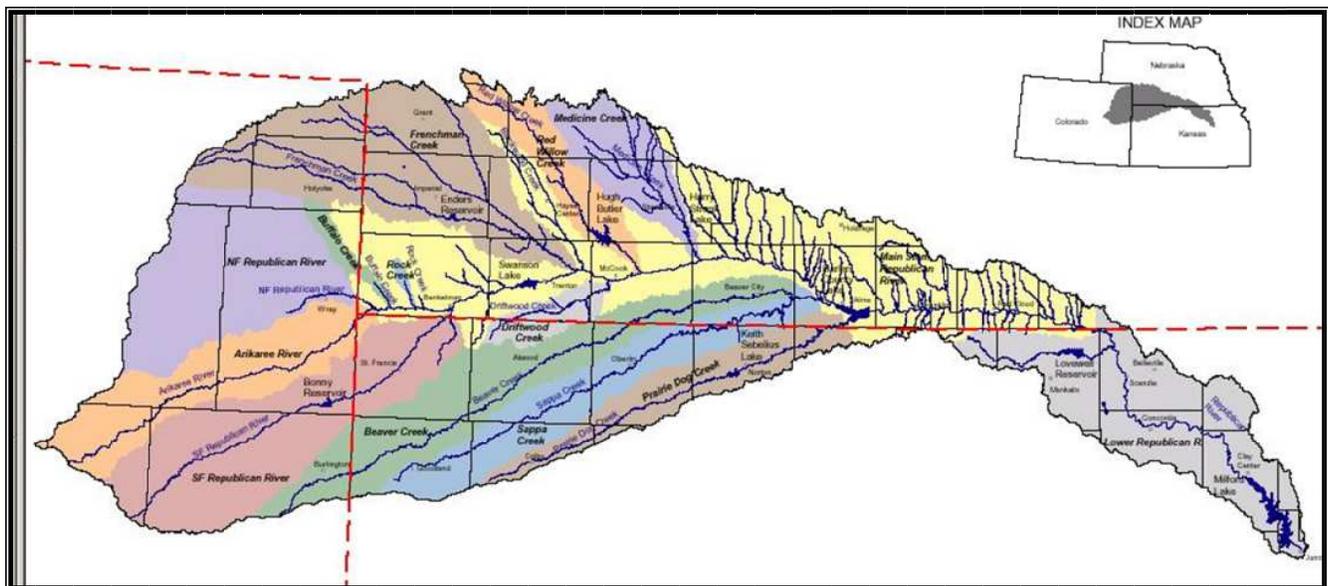


# REPUBLICAN RIVER COMPACT ADMINISTRATION

## FORTY-SIXTH ANNUAL REPORT

FOR THE YEAR 2006



Junction City, Kansas

August 15, 2007

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## 47<sup>th</sup> ANNUAL MEETING REPUBLICAN RIVER COMPACT ADMINISTRATION

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### Minutes

In lieu of a transcript, the Republican River Compact Administration (Administration) meeting was taped. An electronic copy of the audio tape is available in MP3 format to each of the states. Below is a summary of the meeting.

### Introductions

The 47<sup>th</sup> Annual Meeting was called to order by Chairman David W. Barfield of Kansas at 9:00 a.m., August 15<sup>th</sup>, 2007, at the Convention Center in Junction City, Kansas. Chairman Barfield welcomed everyone in attendance. Each commissioner introduced their staff in attendance and individuals introduced themselves. Those in attendance as recorded on the attendance sheets, or by introduction, are listed in the attached exhibit.

### Approval of Agenda

A motion to approve the agenda was made by Commissioner Bleed, seconded by Commissioner Knox and was approved as proposed:

1. Introductions
2. Modification and Adoption of Agenda
3. Approval of Previous Annual Meeting Minutes
4. Report of Chairman & Commissioners' Reports
  - a. Kansas
  - b. Colorado
  - c. Nebraska
5. Federal Reports
  - a. Bureau of Reclamation
  - b. Corps of Engineers
  - c. Geological Survey
6. Committee Reports
  - a. Engineering Committee
    - i. User Accounting Manual
    - ii. 2007 Accounting
    - iii. Recharge and Return flow methods
    - iv. Harlan County Split
    - v. Documentation of acreage retirement
    - vi. Principia Mathematica contract for maintenance and operation of RRCA Groundwater Model
    - vii. Other matters
  - b. Conservation Committee
  - c. Legal Committee
    - i. RRCA regulation regarding the approval of a diversion in one state that is used in another state.
    - ii. Non-Federal dam evaporation
7. Unfinished Business
  - a. Amended regulations of the Administration
  - b. Lower Republican Feasibility study

- c. Harlan County Evaporation Split
8. New Business and Assignments to the Compact's Committees
  - a. Action on Committee Reports
  - b. Committee Assignments
  - c. Compact Compliance
9. Remarks from the Public
10. Future Meeting Arrangements
11. Adjournment

### **Approval of 45<sup>th</sup> Annual Report and Minutes**

Chairman Barfield moved to approve the Minutes of 45<sup>th</sup> Annual Meeting; the motion was seconded by Commissioner Bleed and approved unanimously.

### **Report of the Chairman from Kansas**

Chairman Barfield gave the report for Kansas.

Legislative highlights related to water and related areas of interest included an update on use of a voluntary incentive based program for reducing water use via the Conservation Reserve Enhancement Program (CREP). The area targeted is along the Upper Arkansas River from the Stateline to Great Bend, Kansas and amounts to 40,000 acres.

Also the State of Kansas enacted a separate program to retire water rights, the Water Rights Transition Program (Water TAP). There are two priority areas for this program which includes the Prairie Dog Creek in the Republican River basin and the Rattlesnake Creek. The program's purpose is to provide a permanent transition to non-irrigation use to reduce total historic use. The five year pilot program was appropriated \$1.5 million per year.

The Kansas v. Colorado lawsuit on the Arkansas River is fast approaching final closure as work by the two states on the Final Decree is finalized. It is expected to be submitted to the Special Master in the fall of 2007. It appears Colorado will be in compliance for the first 10-year accounting period of 1997 to 2006.

An administrative order on the lower Republican River was recently rescinded, lifting restrictions on junior appropriator's the use of water in the valley in effect since 2002.

Kansas had several natural disasters in 2007. A winter storm involved a disaster declaration in 42 counties including some counties in upstream tributaries of the Republican River in Northwest Kansas. A late spring freeze also involved a disaster declaration. An F-5 tornado leveled Greensburg and surrounding areas. The tornado and flooding involved a disaster declaration of 41 counties. Southeast Kansas experienced significant flooding involving 21 counties.

The Kansas Department of Wildlife and Parks has entered into a 10-year agreement with Almena Irrigation District restricting District withdrawals when the Sebelius Reservoir level drops below a certain elevation.

As has been reported in the past, in Northwest Kansas, Kansas is requiring all non-domestic, large-capacity wells to be metered using totalizing flow meters within the boundaries of the Northwest Kansas Groundwater Management District No. 4. This applies to Ogallala wells in the GMD. Approximately 75% of the meters have been put in place in

the four year program. In 1997, Kansas had required alluvial wells and locally connected Ogallala wells in the Republican River basin to be metered.

Kansas is also using the EQIP program as an incentive program to discontinue irrigation. Targeted areas for EQIP in the Republican River basin include alluvial areas of Prairie Dog, Beaver and Sappa Creeks.

### **Report of the Commissioner from Colorado**

Commissioner Knox provided the report for Colorado.

At Wray, total precipitation amounted to 13.64 inches in 2006. The average precipitation for the area is 16.33 inches based upon the 1918 to 2006 period of record. The gaged flow on the North Fork was 17,200 acre-feet which is 13,780 acre-feet less than the historical average. The Arikaree River total recorded streamflow at the state line was 400 acre-feet which is a significant decline from the 1933-2006 historical average of 12,920 acre-feet. The South Fork had no flow for the third consecutive year.

The Pioneer Irrigation District and other senior ditches have petitioned the Colorado Groundwater Commission to de-designate the Northern High Plains Groundwater Basin, which was designated in 1967. An appeal was filed in District Court to consider the motion to dismiss. The District Court remanded the motion back to the Commission with an instruction that pumping in designated groundwater basins cannot affect surface water by greater than a *de minimums* basis.

The Republican River Water Conservation District has through EQIP retired 89 wells: 30 wells involving 3,228 acres in 2005 and 59 wells involving 7557 acres in 2006. Colorado's CREP program involves the permanent retirement 109 wells in 2006 and affecting 16,607 acres with 22,643 acres targeted for 2007. The total retirements involve 214 wells and 29,432 acres of which 23,104 acres are permanent retirements; this represents a financial commitment on the district of over \$6.58 million. The District provided greater incentives to irrigated land within one mile of stream, a lesser incentive within 1 to 3 miles from the stream, and further out, an even lesser incentive.

At Bonny Reservoir, an order to release 2,200 acre-feet of water was issued and a release began on May 22<sup>nd</sup>, 2007. Because of adverse river conditions the release was halted on June 5<sup>th</sup>, 2007. 1,359 acre-feet was released with 317 acre-feet reaching the compact gage at Benkelman, Nebraska. Commissioner Knox thanked the U.S. Bureau of Reclamation for their assistance in this release and even though unpleasant, are a necessary function toward Compact compliance.

Draft regulations for the Republican River basin in Colorado to achieve compact compliance are to be filed this fall. These rules will comprehensively look at regulating and restricting the use of surface water, surface water storage and groundwater pumping of high capacity wells particularly in quick response areas. Domestic and stockwater uses will be exempt from these rules. Also, to be filed this fall, are new measurement rules which will require a totalizing flowmeter or power conversion coefficient on all high capacity wells. There were five information meetings on the two sets of rules and they were all well attended.

Colorado is in the process of investigating the feasibility of a compact compliance pipeline. A plan is being developed to study feasibility, extent and cost of the pipeline. The study is anticipated to be completed this December.

In response to Chairman Barfield's question, Commissioner Knox reported that in regulation by the priority system the most senior rights are the surface water followed by storage rights and wells are generally the most junior. However, regulation of all diversions regardless of seniority is being considered for compact compliance.

### **Report of the Commissioner from Nebraska**

Commissioner Ann Bleed provided the report for Nebraska.

Commissioner Bleed reported that Nebraska had flooding in parts of the Republican River basin, but the panhandle section of Nebraska is still extremely dry.

The Legislature passed LB701 which provided funding of \$3 million for the leasing of surface water rights in 2007. The Republican River Natural Resources Districts can levy taxes and occupation fees to fund compact compliance activities. The bill also created a riparian vegetation removal task force which is being funded at about \$2 million per year for the next two years. It created a water resources cash fund allowing \$2.7 million per year for the next 2 years, with the expectation of being funded through fiscal year 2018-19. In 2013, the cash fund will also benefit by an excise tax of 3/5<sup>th</sup> cent per bushel on corn and a 3/5<sup>th</sup> cent per hundredweight on grain sorghum which will be used to enhance Nebraska compliance efforts. The Department of Natural Resources will use the funds to reduce consumptive use of water. To the extent the funds are not expended for that purpose, the funds may be used to study the sustainable balance between supply and use. The funds must be cost-shared by the Natural Resources Districts by more than 40% of the total cost of the activity.

Commissioner Bleed thanked the Nebraska Bostwick Irrigation District and the Bureau of Reclamation for their help on Nebraska working toward compliance.

The state of Nebraska leased 12,500 acre-feet of water from the Harlan County Lake and has use of all natural flow available for the district to divert below Harlan County Lake. The state paid \$5,648,000 for that water, \$3 million came from appropriations from the legislature and the remaining was made available from the water resources cash fund. There was a similar purchase of water last year from the Nebraska Bostwick District of about 23,500 acre-feet of water; of that approximately 10,000 acre-feet made it to the border at Kansas. Over 35,000 acre-feet of purchased water is expected to be delivered to Kansas.

Nebraska was disappointed in the amount of purchased water that made it to Kansas last year. Nebraska believes a factor in that water not reaching Kansas was the vegetation that has grown in the area below Harlan County Lake. The legislature in turn, created the riparian vegetation removal task force to determine needs, cost effectiveness and funding needed to control vegetation throughout the state. The Republican River Basin was given two grants to help with weed and vegetation growth.

Nebraska has taken advantage of the CREP and EQIP programs. About 50,000 acres have been removed due to these programs. CREP has converted 35,500 acres to grassland

whereas EQIP has converted 12,100 acres from irrigated land to dryland. Over 2,000 acres are permanently retired.

1. Brad Edgerton of the DNR Field Office, Cambridge, Nebraska, reported on water administration during the 2006 season. Frenchman Valley, Riverside, Franklin, Naponee, Franklin Pump, Superior and Courtland canal users in Nebraska were compensated not to irrigate in 2006. Meeker-Driftwood, Culbertson extension and Red Willow canals did not divert due to shortage of storage water. Pioneer Irrigation District operated as normal. Bartley and Cambridge Canal operated with a limited supply.

On March 31, 2006, all junior permit holders (after February 26, 1948) below Harlan County Lake were notified they would be denied surface water in 2006. On June 23rd, 2006 all junior permits between Harlan County Reservoir and Guide Rock Diversion Dam were closed as required by final settlement stipulation and all senior permits were held to their legal limits. This order was lifted on August 17<sup>th</sup>, 2006. From July 5 to July 12, 2006 and again July 30 to August 8, 2006, all permits junior to August 26, 1940 between Harlan County Lake and Superior, Nebraska were closed to satisfy a senior natural flow permit.

On August 25, 2006 USBR placed a call on all appropriated storage reservoirs located above Swanson Lake, Enders Reservoir, Hugh Butler Lake, and Harry Strunk Lake in the Republican River Basin. The reported appropriations to bypass inflow are as follows, 15 above Swanson Lake, none above Enders Reservoir, two above Hugh Butler Lake and 13 above Harry Strunk Lake. These orders remain in effect with the exception of the 13 above Harry Strunk Lake which were opened March 19th, 2007.

2. Jasper Fanning, General Manager of the Upper Republican River NRD, reported for all four of the Nebraska Republican River NRDs. The Nebraska NRDs continue to assist the state in compliance compact obligations. The state and NRDs are accomplishing this through continued implementation of the integrated management plans adopted in 2005. When fully implemented, the NRDs believe that the plans will keep Nebraska within its compliance obligations. The integrated management plans contain two key components:

First, the plans require that the districts continue to regulate groundwater withdrawals. Groundwater pumping will be regulated to control depletions the extent necessary to keep Nebraska's depletions within the average allocation.

Second, the plans will implement targeted reductions in consumptive use during the water short periods. This will reduce Nebraska's consumptive use to the extent necessary to maintain Nebraska's depletions within average allocation during the water short periods.

The plans will further require the examination of the feasibility of additional compliance activities, such as, vegetation management and streamflow augmentation. A couple of the retirement programs initiated by the districts and the state, such as CREP and EQIP have helped significantly reduce consumptive use. Dealing with water short conditions have proved to be a difficult issue. Nebraska

passed legislation this past year to allow NRDs and the state to implement the water short portions of the existing integrated management plans. With the passage of LB701, additional water short activities were implemented. LB701 allows the Nebraska NRDs to collect tax funds via two different tax vehicles. These tax revenues may only be used to fund bonds for projects authorized under the River Flow Enhancement Act for the purposes of compact compliance with the intent to minimize economic impact for complying with the compact.

The water-short activities include irrigation retirement programs which have been targeted at reducing irrigation which will have an impact on compact consumptive use in the necessary accounting period. This year the NRDs paid the Frenchman-Cambridge District a total of about \$8.6 million in incentives to reduce irrigation in the 2007 irrigation season to reduce the consumptive use during the water-short year by nearly 24,000 acre-feet. In addition the irrigation rights of 2,640 acres were permanently retired under an EQIP special initiative program. There are also two weed management areas being worked on that Commissioner Bleed spoke of previously.

Commissioner Bleed stated they are working very hard in Nebraska on a number of activities to do what they need to do for compact compliance. They are working on plans to move forward in the next few years in order to achieve compliance.

#### **Report by the U. S. Bureau of Reclamation**

Steve Ronshaugen, of the U.S. Bureau of Reclamation (USBR) introduced the staffing in attendance. He also reported the new Area Manager for the Nebraska-Kansas Office in Grand Island, Nebraska, is Aaron Thompson.

Marv Swanda of the McCook office reported on the 2006 operations.

Norton Dam had some concerns related to seepage through the left abutment foundation. Construction on the remedial drains began in 2007; hopefully it will be done this fall.

On Enders Dam, a small depression was discovered near the stilling basin in August, 2004. Continued monitoring of the depression is on going.

On Red Willow Dam, during inspection of the dewatered stilling basin in July of 2005, a small amount of fine sand was discovered. Monitoring is ongoing.

Emergency management plans were updated on all dams. Table top and functional exercises were held on Kirwin Dam, Bonny Reservoir, Cedar Bluff and Enders Dam.

Bill Peck of the McCook office reported on the hydrology as affecting the reservoirs and presented a written report.

Bonny Reservoir started the year 19 feet below top of conservation. The annual computed inflow was recorded at 6,000 acre-feet, the second lowest recorded amount at the reservoir. Even though no releases were made, Bonny Reservoir ended the year about 2.3 feet below where it started.

Enders Reservoir began the year about 26 feet below top of conservation. The annual computed inflow of just over 4,000 acre-feet was the lowest ever recorded. No releases were made from Enders Reservoir in 2006; it was the fifth year water was not diverted due to extremely low water supplies. The reservoir ended about ½ foot below the beginning of the year.

Swanson Reservoir started the year at 20.5 feet below full, no releases or diversions were made, and it ended the year approximately 20.2 feet below full.

Hugh Butler began 11 ½ feet below full. There were some releases made, leaving the lake 18 ½ feet below full.

Harry Strunk began 5 ½ feet below conservation and on May 19th, it filled to the top of conservation. The lake ended the year 7 ½ feet below conservation.

Keith Sebelius Lake began almost 18 feet below full. Irrigation releases were not made in 2006, ending the year a little more than 18 feet below full.

Harlan County Lake began 7 ½ feet below conservation. Inflow for the year was slightly over 30,000 acre-feet; which was the second lowest inflow total for the lake. There were releases made to the Kansas Bostwick Irrigation District and the lake level ended the year nearly 19 feet below conservation.

At Lovewell, the level at the beginning of the year started at 3 ½ feet below conservation. The reservoir did reach the top of conservation on April 14<sup>th</sup>. Following approval from the Corps of Engineers, the reservoir was allowed to go 1.6 feet into the flood pool just prior to the irrigation season. Water surface for the end of the year was about 6 ½ feet below top of conservation.

Jack Wergin of the Grand Island office gave a report on the water conservation programs and planning and technical systems.

USBR has been able to provide some funding assistance in 2006 and 2007 for the replacement of open ditch laterals. Some of the districts to take advantage of this are Frenchman-Cambridge, Kansas and Nebraska Bostwick Irrigation Districts and Almena.

Assistance has been provided for remote monitoring canal diversions in some key canal sites and some increased river sites with the Department of Natural Resources in Nebraska.

In the field service program, there are some irrigation demonstration projects that provide some cost share. One of the popular demonstration projects is a limited irrigation project with the University of Nebraska.

Water 2025 is a challenge grant program to promote water conservation and improved efficiency. Nebraska Bostwick Irrigation District was awarded funding in 2005 for replacement of approximately 11 miles of open ditch lateral buried pipe. Also in 2005, Kansas Department of Agriculture was awarded funding for a pilot project that would install water flow metering equipment. The goal was to put the equipment on approximately 100 diversions in the lower Republican to improve administration of water rights and it allowed the Division of Water Resources and cooperators to remotely monitor their pumping areas.

Kansas Bostwick has been awarded 2025 funding for replacement of about nine miles of open ditch pipe.

The Lower Republican River feasibility study was started in 2005 by the request of Kansas and Nebraska. The results were that there are some unutilized flows along a portion of the basin and if we could come up with some additional storage flows could be better utilized. The appraisal study suggested that there was some interest of further federal involvement.

Another program is the Frenchman Valley Appraisal Study. The USBR is working with the Department of Natural Resources, NRDs, the Game and Parks Commission, and the Frenchman Valley Irrigation District to look at ways to develop and evaluate alternative management methods in the Frenchman Valley System to optimize economic benefits of water in this area.

USBR has provided assistance to both Kansas and Nebraska for mapping and irrigated acres.

#### **Report by the U. S. Army Corps of Engineer**

Christopher Purzer of the Kansas City District of the Corps of Engineers provided a report on the 2006 activities.

The Corps study regarding Harlan County Dam safety is coming close to completion. There are studies still needing to be done downstream. The report should be released in early calendar year 2008.

Two operation deviation requests were approved for Lovewell Reservoir to allow storage 1.6 feet into the flood control pool. The Corps and the USBR are working for an amendment to the operations manual to make this deviation permanent.

In Milford Reservoir, a deviation to store water in the flood control pool was approved. The conditions at Milford continue to be monitored. The Corps are releasing water from the first few feet of the flood control pool, they aren't storing the water, but they are making more than minimal releases in support of Fish & Wildlife services.

The District has been working, through its own operations and maintenance funding, on a Kansas River Model. The model itself is not yet complete. It is envisioned to have three components to the overall model: hydrologic and hydraulic, economic, and environmental. The hydrologic and hydraulic are complete, economic is progressing and the environmental needs the most work.

#### **Report by the U. S. Geological Survey**

Phil Soenksen presented the status of the USGS stream gaging program. The water resources data is available on the Web at <http://waterdata.usgs.gov/>. The bar graphs showed summary data with history of the flows at each site. There are ten sites on the Republican River basin USGS receives funding for. Two of the three stations funded by the Corps of Engineers have been dropped due to funding cuts; however, through funding from the Bureau of Reclamation, Department of Natural Resources and the Cooperative Water Program, one of the stations was allowed to keep going.

### **Engineering Committee Report**

David Barfield of Kansas presented the report of the Engineering Committee and provided copies of the report, which is attached. The Engineering Committee Report will be posted on the web at [www.republicanrivercompact.org](http://www.republicanrivercompact.org). The Committee received six assignments for this year.

The first assignment was the task of completing the “user’s manual” for compact accounting procedures and provide a resolution for its adoption. An initial draft of the users’ manual was developed by Kansas’ committee representatives in 2005. The draft consists of chapters on: 1) data sources, 2) data processing including the spreadsheets used by the committee, and 3) accounting results. As the committee envisions it, the user’s manual will not repeat the accounting procedures nor the content of the groundwater model documentation which includes procedures used by each state to assemble its data for the groundwater model.

The accounting spreadsheet includes an input page which is a listing of all the data used in the subsequent computations. Besides the model outputs, each input cell is the responsibility of one of the states, with the state of Nebraska compiling much of the federal data. The Engineering Committee representatives agreed that each state will develop documentation for the data it inputs into the spreadsheet noting where the data is obtained and how the data is processed prior to input into the spreadsheet.

The assignment was not completed. Each state developed an outline of its data which was shared with the other states. The assignment should be continued next year.

The second assignment was to complete the accounting for 2006 using the preliminary information provided by April 15, 2007 and the final exchange by July 15, 2007. As per the settlement’s requirements, each state exchanged its model data sets and supporting data and other accounting data by April 15 or shortly thereafter. The states exchanged final model data sets and supporting data by July 15 or shortly thereafter. On August 9, Colorado reported that it had discovered a minor error in its data and as a result, Willem Schreuder did an updated run which is considered final by the Engineering Committee. Final data sets were collected by the Committee for streamflow, climatological information, diversion records, and reservoir evaporation records of the three states and in cooperation with the U.S. Geological Survey, U.S. Bureau of Reclamation, and U.S. Army Corps of Engineers for 2006.

The 2006 model input and accounting data is considered final. The accounting of the virgin water supply, the computed water supply, and the beneficial consumptive uses in the Republican River Basin was not completed due to disputes regarding following matters: a) non-federal reservoir evaporation below Harlan County Lake, b) division of evaporative from Harlan County Lake for 2006, and c) while Nebraska believes that the current method of model runs properly calculates the mound credit, it believes it improperly includes, in its consumptive use computation, some consumption of the imported water. The Committee was not able to reach consensus on these three matters.

The third assignment was for the Engineering Committee to continue to work to resolve different recharge and return flow methods. Kansas continues to believe that with the limitations placed on irrigation diversions in Nebraska in recent years, continued use of an irrigation efficiency of 80% applied to all diversions in Nebraska results in an overestimation

of irrigation recharge. While the Engineering Committee had discussion on this matter, little effort was given to the assignment. The Engineering Committee further recommends continuing this assignment.

The fourth assignment was to develop a resolution regarding the Harlan County Lake evaporation split when only one state takes a release. Kansas offered a proposal by the November 15, 2006 deadline set by the Administration for resolution of the matter. The Committee has not yet reached agreement.

The fifth assignment was to add documentation requirements of acreage retirement to the user's manual. Both Colorado and Nebraska reported significant reduction in irrigation acreage estimate via either field work or retirement of acreage associated with incentive-based programs. Kansas has also had some limited retirements using such programs. Nebraska and Kansas have provided documentation to the other states as either GIS coverage (preferred) or a listing of legal tracts. Colorado is also working to collect and tabulate its data. Data should be exchanged annually and the requirement should be added to the accounting procedures.

The last assignment was to retain Principia Mathematica to perform maintenance of the groundwater model. Each state separately contracted with Principia Mathematica for the groundwater model services.

In the course of the Engineering Committee's work, it was discovered that Table 5B does not allow Kansas to use 51.1% of any unused portion of Colorado's allocations as per Settlement Stipulation in the water-short year test. The Engineering Committee recommends that this change be made in the accounting spreadsheet.

The Engineering Committee recommends the Republican River Compact Administration assign the following tasks to be completed by the indicated dates:

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. Exchange by April 15, 2008 the information listed in Section V of the Accounting Procedures and Reporting Requirements, all data required by the Republican River Compact accounting procedure, 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 this 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.

The Engineering Committee requests the Administration determine steps to resolve accounting disputes noted above.

### **Conservation Committee Report**

Scott Guenther of the USBR provided the third annual status report on the impacts of the conservation practices of non-Federal reservoirs and land terraces study. The report includes several appendices that summarize the study and includes a summary of the land terracing in the basin. Mapping of land terracing was finished this last year. Approximately 2.3 million acres of terracing was identified; 200,000 acres in Colorado, 890,000 acres in Kansas, and 1.2 million acres in Nebraska. The Nebraska acres are currently under review and could be updated.

The ultimate goal is to identify the impact these water conservation practices are having on the water supply. There are appendices in the report that detail the work Kansas State and the University of Nebraska have done so far and their future duties.

The study indicates it will cost approximately one million dollars; so the study plan was designed accordingly. The states will be responsible for about 25 percent of that and the Federal government will be responsible for the remaining 75 percent. To date, about 80 percent of the funds allotted have been spent. Many of the costs are upfront costs with the data collection effort. It is expected that the study will be completed in the remaining two years; although, some of the documentation might run over the two-year period. Right now, it is expected that the study costs will actually run between 1.1 and 1.2 million dollars.

### **Legal Committee**

Lee Rolfs, attorney for the Kansas Department of Agriculture, summarized the discussion of the *ad hoc* legal group of the regulation. The first issue deals the case when water is diverted in one state and used in another. Nebraska had a situation come up where an individual in Nebraska was seeking a permit to divert water in Nebraska and use that water in the state of Kansas. Kansas was concerned with this as the beneficial consumptive use was occurring in Kansas and thus would be charged to Kansas. The states have been discussing what kind of coordination should occur in such cases.

On the second matter, the legal group discussed whether non-Federal evaporation below Harlan County Lake should be included in the accounting. The committee was charged to come up with a recommendation for a solution to these issues by November 15<sup>th</sup>, 2006. Kansas provided draft proposal during November 2006.

The committee met on August 14, 2007 and discussed these two issues. On the interstate transfer of water issues, the committee discussed a procedural MOA with each state agency to give notice to the other states within a certain period of time that that state received an application for use of water in another state. The draft MOA will be forth coming from the *ad hoc* committee.

The committee was unable to reach a solution or agreement on the second issue. It was recommended that this issue be considered as a group with other accounting issues.

The *ad hoc* committee requested that it be disbanded after it presents its draft MOA to the RRCA.

### **Unfinished Business**

The first item discussed was the amended regulation of the RRCA related to interstate transfer of waters. Commissioner Bleed moved that after the draft is completed and received from the legal committee November 15<sup>th</sup>, 2007, the committee will be disbanded; chairman Barfield seconded the motion. The Motion passed.

The second item on the agenda was the Lower Republican Feasibility Study. The House did pass the bill to authorize the study, it is now being considered in the Senate subcommittee. This item was put on the agenda to discuss if there was anything further needed to be done to help get this bill passed. The state of Kansas has funds in place for the study and funds have been budgeted to keep that going. Commissioner Bleed advised she didn't think it would be harmful to draft another letter from the RRCA identifying the importance of the feasibility study for the compact and the commonality of the three states. Chairman Barfield stated that a letter would affirm the compact's support of the study. It was agreed that Nebraska would draft the letter.

Last on the agenda was what to do with the dispute of the Harlan County Evaporation split. The proposal was sent to the Engineering committee and a solution was not reached. Chairman Barfield stated that other waters being stored or passing through Harlan County Lake were not taken into consideration. He recommended the committee take another look at this issue. To seek a resolution, it was recommended that they meet in a time frame of 60 days.

### **New Business**

#### **Engineering Committee Assignments**

Commissioner Knox requested to adopt the Engineering report with the instructions to continue their endeavors and provide a schedule of the assignments and the actions to be taken by October 15<sup>th</sup>, 2007. There was discussion on whether or not the Harlan County Evaporation Split should be sent back to the Engineering Committee when they couldn't solve the issue previously. Commissioner Bleed stated she would like for the Engineering Committee try to meet by October 15<sup>th</sup>, 2007 and provide a report to the RRCA with any recommendations at that point and then the RRCA can look at the issues and see what the compact can do to move forward with a resolution. Commissioner Bleed amended Commissioner Knox's motion to have the Engineering Committee report back to the RRCA by October 15<sup>th</sup>, 2007 with any recommendations they may have for a resolution on these issues. Commissioner Knox offered a substitute motion that the Engineering Committee will proceed on the uncontested issues. However, for the three that are contested, the committee should provide a report to the compact by October 15<sup>th</sup>, 2007. Commissioner Bleed seconded the Motion. The Motion passed. Chairman Barfield advised that the approval of the Engineering Report and their assignments were included in the Motion. George Austin reminded the chairman that the committee discovered that Table 5 was not in compliance with the settlement. Chairman Barfield moved for the Engineering Committee to make the change in the accounting spreadsheet. Commissioner Knox seconded the Motion. The Motion passed.

## **Compact Compliance**

Chairman Barfield commented that while Kansas does appreciate the progress of Colorado and Nebraska toward compact compliance, the Settlement signed by the states in 2002 and adopted by the Court provided time for the states to take the actions needed to get into compliance by the time the first test of compliance came due.

According to Kansas' calculations, for the first four years of the accounting, Nebraska's consumptive use has exceeded its allocation by almost 144,000 acre-feet and Colorado by more than 44,000 acre-feet.

With this annual meeting, the RRCA was to determine compliance with the first definitive test of compliance under the implementation schedule adopted in the Settlement. For the water-short years 2005-2006, Kansas' calculations show Nebraska has used 84,000 acre-feet more than its allocation above Guide Rock. Kansas' view of the fundamental cause is the excessive use of groundwater in Nebraska. According to the Engineering Committee data and Kansas' estimates from this year, Nebraska's groundwater pumping caused 198,000 acre-feet of depletions to the basin streamflows. The surface water consumptive use was approximately 35,000 acre-feet. Thus eighty percent of the Nebraska's consumptive use was from groundwater origin.

As a result of Nebraska's overuse, Kansas has not received its water for the Kansas Bostwick Irrigation District and its uses on the main stem Republican River. The Kansas Bostwick area has approximately 40,000 irrigable acres. The base allocation the district can use and count on is 15 inches. For each of these years, the area has received substantially less. In 2003, the upper district received 3.8 inches; 2004, seven inches; 2005, less than one inch; and 2006, 2.7 inches. The lower district received approximately half of that base allocation over these years. This area does not have alternate groundwater supply for their district and could have put the additional water to use. Downstream of Hardy, Kansas has had historic low streamflow for these years in times of significant demand for water.

While not part of the 2006 accounting, Chairman Barfield commented on actions by the state of Nebraska in 2007. He discussed the limitations on Kansas ability to use water purchased by Nebraska for Kansas due to the late notice by the State of Nebraska. Kansas would like a more collaborative approach to these actions so that they are part of the discussion and can make sure these things are done for the benefit of both states.

Paul Morrison, Kansas Attorney General, commented on the compliance issues between Nebraska and Kansas. He stated that water has been an issue for a long time. Every gallon that is used upstream is another gallon that is not delivered to the downstream users. He reiterated that this was a Supreme Court order and the compliance and allocations are not something you can ignore. Mr. Morrison again stated that Kansas appreciates the efforts by Nebraska and Colorado, but he is somewhat disappointed in Nebraska relying so heavily on the purchase of surface water and clearing vegetation out of streambeds. This is not a long-term solution to the water problems we're facing. Until there are more meaningful water reductions in place, it is uncertain if Nebraska will ever be in compliance. He advised that while Kansas understands both states are taking measures to try to come into compliance, Kansas will take measures to bring both states into compliance. He stated that Kansas will take measures to begin the process of enforcing the Supreme Court order.

Commissioner Knox thanked Attorney General Morrison and stated that as the states progress and work toward compliance they need to keep the lines of communication open

and work through this. He advised that the basin and water users need to remain the focus of the issues at hand.

Commissioner Bleed also thanked Attorney General Morrison and reiterated that communication has been well and that communication is an important key as we move forward. She agreed that the vegetation removal and surface water purchases should not be the only actions taken. She advised that with the groundwater pumping, results do not come over night. Nebraska's modeling efforts have shown that it takes significant actions to reduce groundwater pumping and see impact on the streams in the near future; which is one of the reasons why Nebraska has looked at surface water purchases. This is something that can remedy the situation in an attempt to get water to Kansas as quick as possible. That is not to say that Nebraska is not looking at other actions that need to be taken to deal with a more long-term solution. Commissioner Bleed stated that Nebraska would like to keep communication open with Kansas and Colorado and that they are committed to doing what needs to be done.

Commissioner Knox gave the resolution of the Republican River Compact Administration honoring Mr. Hal D. Simpson, Denver, Colorado. Mr. Simpson has served as the Colorado State Engineer, Director of the Colorado Division of Water Resources and Colorado Commissioner of the RRCA for 15 years. Commissioner Knox, on behalf of the Republican River Compact Administration, expressed sincerest gratitude and appreciation to Mr. Simpson for his dedicated service to the RRCA in his position of Colorado Commissioner and extended best wishes to Mr. Simpson in all his future endeavors.

Chairman Barfield gave the resolution of the Republican River Compact Administration honoring Mr. David L. Pope, Topeka, Kansas. Mr. Pope resigned his position as the Kansas Chief Engineer and thus Kansas Commissioner of the RRCA after having served in that position for over 24 years. Chairman Barfield, on behalf of the RRCA, expressed sincere gratitude and appreciation to David L. Pope for his dedicated service to the RRCA in his position of Kansas Commissioner.

Chairman Barfield moved to accept both resolutions, Commissioner Bleed seconded. Motion passed.

### **Remarks from the Public**

Norman Nelson, Kansas Almena Irrigation District No. 5, talked about how he has changed his farming practices in the last five years. He advised that no-till farming causes less runoff and Kansas State University has tested and proven this is true. Mr. Nelson believes that this has a lot to do with what was discussed today. He thinks no-till farming is great and effective and it is the way to the future.

Tony Maages, T & T Farms, discussed his concern for the area in which he lives. Mr. Maages lives near Bonny Reservoir. He has noted that there is quite a bit of silt from many floods. Bonny Reservoir was put in for protection for Kansas and Nebraska from floods. He lives west of Bonny about four miles; the river here has good water flow, however, the flow doesn't reach highway 385. He has two questions in regards to this. First, does Kansas and Nebraska feel any responsibility for Colorado being charged evaporation from the reservoir, when it was put in for their protection? The second question refers to the river flow and the gravel pits. Whose problem is it, just Colorado, or all three states?

Chairman Barfield noted that some gravel pits have water rights and use that is reported and included in accounting procedures.

### **Future Meeting Arrangements**

Chairman Barfield reported that the next annual meeting will be hosted by Nebraska. He asked Commissioner Bleed if she had any meeting arrangements in mind. A specific date was selected for August 13, 2008 and the working session scheduled for the prior day. The location and time will be announced at a later date.

A special compact meeting was scheduled for October 30, 2007; the location is to be determined.

### **Adjournment**

With concurrence of the others commissioners, Commissioner Barfield adjourned the meeting and everyone was dismissed.

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David W. Barfield, Acting Chief Engineer  
Kansas Commissioner (Chairman)

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Ann Salomon Bleed, Director  
Nebraska Commissioner

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Ken Knox, Acting State Engineer  
Colorado Commissioner

### **Exhibits**

- Attendance List
- Engineering Committee Report
- Bureau of Reclamation Report
- U. S. Geological Survey Reports
- Brad Edgerton, Nebraska DNR, Report
- Resolution Honoring Mr. David L. Pope
- Resolution Honoring Mr. Hal D. Simpson

# Republican River Compact Annual Meeting Attendance List

Junction City, KS

August 15, 2007

<b>Name</b>	<b>Representing</b>
David W. Barfield	Kansas Commissioner, Chairman
Ann Salomon Bleed	Nebraska Commissioner
Ken Knox	Colorado Commissioner
Megan Sullivan	Colorado Division of Water Resources
Peter Ampe	Colorado Attorney General's Office
Ron Theis	Nebraska Department of Natural Resources
Brad Edgerton	Nebraska Department of Natural Resources
Jim Schneider	Nebraska Department of Natural Resources
Paul Koester	Nebraska Department of Natural Resources
Jim Williams	Nebraska Department of Natural Resources
Sam Perkins	Division of Water Resources / Kansas Department of Agriculture
Scott E. Ross	Division of Water Resources / Kansas Department of Agriculture
Mark Billinger	Division of Water Resources / Kansas Department of Agriculture
Leland E. Rolfs	Kansas Department of Agriculture
Katherine A. Tietsort	Division of Water Resources / Kansas Department of Agriculture
George A. Austin	Division of Water Resources / Kansas Department of Agriculture
Roy Patterson	Frenchman-Cambridge Irrigation District, Nebraska
Dale Cramer	Frenchman-Cambridge Irrigation District, Nebraska
Merle Brown	Frenchman-Cambridge Irrigation District, Nebraska
Don Felker	Frenchman Valley Irrigation District, H&RW, Nebraska
Jerry Kotschiwn	Frenchman Valley Irrigation District, Nebraska
David Robbins	Republican River Water Conservation District, Colorado
Rick Seedorf	Republican River Water Conservation District, Colorado
Dennis Coryell	Republican River Water Conservation District, Colorado
Stan Murphy	Republican River Water Conservation District, Colorado
Vicki Murphy	Republican River Water Conservation District, Colorado
Jim Putnam	USGS / Kansas
Phil Soenksen	USGS / Nebraska Water Science Center
Christopher Purzer	U. S. Army Corps of Engineers, Kansas City
Mike Clements	Lower Republican NRD, Nebraska
Dan Smith	Middle Republican NRD, Nebraska
Robert Merrigan	Middle Republican NRD, Nebraska
Marty Schurr	Middle Republican NRD, Nebraska
Mike Ryan	Bureau of Reclamation, Billings Montana
Steve Ronshaugen	Bureau of Reclamation, Grand Island, Nebraska
Jack Wergin	Bureau of Reclamation, Grand Island, Nebraska
Marv Swanda	Bureau of Reclamation, McCook, Nebraska
Bill Peck	Bureau of Reclamation, McCook, Nebraska
R. Scott Guenthner	Bureau of Reclamation, Billings, Montana
Patrick Erger	Bureau of Reclamation, Billings, Montana
Gordon Aycock	Bureau of Reclamation, Billings, Montana
John Thorburn	Tri-Basin NRD, Nebraska
Ray Wing	Tri-Basin NRD, Nebraska
Jasper Fanning	Upper Republican NRD, Imperial, Nebraska
Fred Rogge	Kansas River Water Assurance District, Topeka
Justin Lavene	Nebraska Attorney General's Office
Derrell Martin	University of Nebraska – Lincoln
Wayne Woldt	University of Nebraska – Lincoln
Jim Koelliker	Kansas State University
Ginger Jensen	Kearney Hub
Norman Nelson	Almena Irrigation District No. 5, Kansas
Steven Cox	Almena Irrigation District No. 5, Kansas
Kenny Nelson	Kansas Bostwick Irrigation District No. 2, Kansas
Mike Delka	Nebraska Bostwick Irrigation District, Nebraska
Nelson Trambly	Lower Republican River NRD
Matt Thomson	Lower Republican River NRD

**Name**

Dale Book  
John Ourada  
Steve Nelson  
David Pope  
Ken Rahjes  
Mike Leitch  
Paul Morrision  
John Draper  
John Cassidy  
Tony Maages  
Kent Askren  
John Hanna  
David Hendee

**Representing**

Kansas (Denver, Colorado)  
Natural Conservation Resources Service, Kansas  
NFBF  
Kansas (Topeka, Kansas)  
Kansas Rural  
Kansas Attorney General Office  
Kansas Attorney General  
Kansas Attorney General Office  
Kansas Attorney General Office  
T & T Farms  
Kansas Farm Bureau  
Associated Press  
Omaha World Herald

**Republican River Compact Administration**  
**Engineering Committee Report**  
August 15, 2007

**Assignments**

At the 2006 annual meeting of the Republican River Compact Administration, the Commissioners assigned the Engineering Committee the following tasks:

1. Complete the user's manual for accounting procedures and provide a resolution for its adoption.
2. Complete the accounting for 2006 using the preliminary information provided by April 15, 2007 and the final exchange by July 15, 2007.
3. Continue to work to resolve different recharge and return flow methods.
4. By November 15, 2006, develop a resolution regarding the Harlan County Lake evaporation split when only one state takes a release.
5. Add documentation requirements of acreage retirement to the user's manual.
6. Retain Principia Mathematica to perform maintenance of the groundwater model.

**Work activities related to these assignments**

The Engineering Committee and technical representatives from the States of Colorado, Kansas, and Nebraska participated in numerous collaborative work activities and phone conferences as well as a face-to-face meeting on July 31, 2007. The following assignments and work activities were completed:

1. **Complete the user's manual for accounting procedures and provide a resolution for its adoption** - An initial draft of the users' manual was developed by Kansas' committee representatives in 2005. The draft consists of chapters on: 1) data sources, 2) data processing including the spreadsheets used by the committee, and 3) accounting results. As the committee envisions it, the user's manual will not repeat the accounting procedures nor the content of the groundwater model documentation which includes procedures used by each state to assemble its data for the groundwater model.

The accounting spreadsheet includes an input page which is a listing of all the data used in the subsequent computations. Besides the model outputs, each input cell is the responsibility of one of the states, with the state of Nebraska compiling much of the federal data. The Engineering Committee representatives agreed that each state will develop documentation for the data it inputs into the spreadsheet noting where the data is obtained and how the data is processed prior to input into the spreadsheet.

The assignment was not completed. Each state developed an outline of its data which was shared with the other states. The assignment should be continued next year.

2. **Complete the accounting for 2006 using the preliminary information provided by April 15, 2007 and the final exchange by July 15, 2007.**

- a. As per the settlement's requirements, each state exchanged its model data sets and supporting data and other accounting data 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 July 15 or shortly thereafter. On August 9, Colorado reported that it had discovered a minor error in its data and as a result, Willem did an updated run which is considered final by the Engineering Committee. Willem posted the updated run on the RRCA web site and has created CD's of this final run for each of the States.
- c. Nebraska reported that in 2006 its computations relied on meter data collected by the Republican River basin Natural Resources Districts. Power data was used only outside of the Republican River boundary. New methods had to be employed to use the power records where part of the power service area was estimated using meter data and part using power data.
- d. Final data sets were collected by the Committee for streamflow, climatological information, diversion records, and reservoir evaporation records of the three states and in cooperation with the U.S. Geological Survey, U.S. Bureau of Reclamation, and U.S. Army Corps of Engineers for 2006.
- e. The 2006 model input and accounting data is considered final. The accounting of the virgin water supply, the computed water supply, and the beneficial consumptive uses in the Republican River Basin was not completed due to disputes regarding following matters:
  - i. Non-federal reservoir evaporation below Harlan County Lake. Nebraska has noted 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 a legal committee created 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 this split in this case. Nebraska believes that the current accounting methods clearly 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 November 15, 2006. Consensus had not been reached. See the discussion below for the States' positions.
  - iii. On June 20, 2007, Nebraska provided the Engineering Committee with a proposed change in the accounting procedures and attached paper titled *Calculation of Computed Beneficial Consumptive Use and Imported Water Supply Using the RRCA Ground Water Model*, which provided the rationale for the proposed change. While Nebraska believes that the current method of model runs properly calculates the mound credit, it

believes it improperly includes, in its consumptive use computation, some consumption of the imported water.

The Committee was not able to reach consensus on these three matters.

3. **Continue to work to resolve different recharge and return flow methods** – Kansas continues to believe that with the limitations placed on irrigation diversions in Nebraska in recent years, continued use of an irrigation efficiency of 80% applied to all diversions in Nebraska results in an overestimation of irrigation recharge. While the Engineering Committee had discussion on this matter, little effort was given to the assignment. The Engineering Committee further recommends continuing this assignment.
4. **By November 15, 2006, develop a resolution regarding the Harlan County Lake evaporation split when only one state takes a release.** – Kansas offered a proposal by the November 15, 2006 deadline set by the Administration for resolution of the matter.

The Committee has not yet reached agreement.

5. **Add documentation requirements of acreage retirement to the user's manual.** Both Colorado and Nebraska reported significant reduction in irrigation acreage estimate via either field work or retirement of acreage associated with incentive-based programs. Kansas has also had some limited retirements using such programs. Nebraska and Kansas have provided documentation to the other states as either GIS coverage (preferred) or a listing of legal tracts. The Kansas and Nebraska data is provided in sufficient detail to provide an opportunity for any state to determine compliance. Colorado is also working to collect and tabulate its data. This data could be exchanged annually and the requirement should be added to the accounting procedures.
6. **Retain Principia Mathematica to perform maintenance of the groundwater model.** Each state separately contracted with Principia Mathematica for the groundwater model services.

### **Other discussions**

In the course of the Engineering Committee's work, it was discovered that Table 5B does not allow Kansas to use 51.1% of any unused portion of Colorado's allocations as per Settlement Stipulation in the water-short year test. The Engineering Committee recommends that this change be made in the accounting spreadsheet.

### **Recommended assignments for the coming year**

The Engineering Committee recommends the Republican River Compact Administration assign the following tasks to be completed by the indicated dates:

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. Exchange by April 15, 2008 the information listed in Section V of the Accounting Procedures and Reporting Requirements, all data required by the Republican River Compact accounting procedure, 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 this 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.

The Engineering Committee requests the Administration determine steps to resolve accounting disputes noted above.

The Engineering Committee Report will be posted on the web at [www.republicanrivercompact.org](http://www.republicanrivercompact.org).

#### **Attachment**

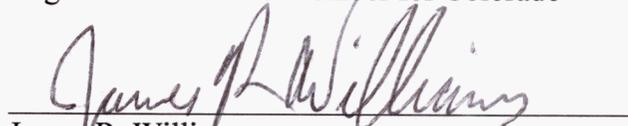
Input page from the accounting spreadsheet



David W. Barfield  
Engineer Committee Member for Kansas



Megan Sullivan  
Engineer Committee Member for Colorado



James R. Williams  
Engineer Committee Member for Nebraska

# RECLAMATION

*Managing Water in the West*

**OPERATION**

**AND**

**MAINTENANCE**

**REPORT**

**REPUBLICAN RIVER**

**COMPACT MEETING**

**JUNCTION CITY, KANSAS**



**U.S. Department of the Interior  
Bureau of Reclamation  
Great Plains Region  
Nebraska-Kansas Area Office**

**August 15, 2007**

## REPUBLICAN RIVER COMPACT MEETING

August 15, 2007  
Junction City, Kansas

### 2006 Operations

As shown on the attached Table 1, precipitation in the Republican River Basin varied from 87 percent of normal at Lovewell Dam to 113 percent of normal at Norton Dam. Total precipitation at Reclamation dams ranged from 16.41 inches at Bonny Dam to 27.56 inches at Norton Dam.

Inflows varied from 24 percent of the most probable forecast at Harlan County Lake to 77 percent of the most probable forecast at Harry Strunk Lake. Inflows into Harlan County Lake totaled 30,077 AF while inflows at Lovewell Reservoir totaled 30,337 AF.

Average farm delivery values for each irrigated acre were as follows:

<u>District</u>	<u>Farm Delivery</u>
Frenchman Valley	0.0 inches
H&RW	0.0 inches
Frenchman-Cambridge	
- Meeker-Driftwood, Red Willow	0.0 inches
- Bartley Canal	4.9 inches
- Cambridge Canal	6.2 inches
Almena	0.0 inches
Bostwick in NE	
- Franklin, Franklin Pump, Naponee, Courtland	0.0 inches
- Superior Canal	0.0 inches
Kansas-Bostwick	
- Above Lovewell	3.0 inches
- Below Lovewell	6.0 inches

### 2006 Operation Notes

**Bonny Reservoir**--Started the year 19.0 feet below the top of conservation. Annual computed inflow of 6,350 AF. Below normal inflows were recorded during every month of the year. Due to the low water supply, releases were not made to Hale Ditch. A new historical low reservoir elevation of 3650.49 feet was reached on December 14<sup>th</sup>. The end of year elevation was 21.3 feet below the top of active conservation.

**Enders Reservoir**--Started the year 26.0 feet below the top of conservation. Annual computed inflow of 4,284 AF was the lowest ever recorded. Storage water was not released from Enders Reservoir for either Frenchman Valley or H&RW irrigation districts. This was the fifth consecutive year that H&RW Irrigation District did not divert water due to the extremely low water supply. Frenchman Valley Irrigation District did not divert water into Culbertson Canal in 2006. The end of the year elevation was 26.4 feet below the top of conservation.

**Swanson, Hugh Butler, and Harry Strunk Lakes**—Swanson, Hugh Butler and Harry Strunk lakes started the year 20.6 feet, 11.5 feet and 5.4 feet below the top of conservation. Annual computed inflows were the lowest ever recorded at Swanson and Hugh Butler lakes. Harry Strunk Lake reached the top of conservation pool (2366.1 feet) on May 19<sup>th</sup>. Due to the low water supply, releases were not made from Swanson Lake in 2006. Irrigation diversions were not made into Meeker-Driftwood and Red Willow canals (fourth consecutive year). At the end of the year, Swanson Lake was 20.2 feet below the top of conservation, Hugh Butler Lake was 18.6 feet below and Harry Strunk Lake was 7.7 feet below.

**Keith Sebelius Lake**—The lake elevation at the first of the year was 2286.47 feet (17.8 feet below full). The annual inflow of 4,329 AF was between the dry and normal-year forecasts. The reservoir level peaked at elevation 2287.27 feet on April 14<sup>th</sup>. Due to the low water supply, irrigation releases were not made from the lake. In May of 2004, 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 two years, which was later amended to include a third year (2006). The MOA provided for no irrigation releases when the reservoir level was below 2288.0 feet. The reservoir ended the year 18.1 feet below conservation.

**Harlan County Lake**—The lake elevation at the beginning of 2006 was 17.4 feet below the top of conservation. Inflow for the year totaled 30,077 AF, the second lowest annual total ever recorded. Irrigation diversions were not made into Franklin, Naponee, Franklin Pump, Superior, or Courtland Canal in Nebraska in 2006. Bostwick Irrigation District and the Department of Natural Resources entered into a Memorandum of Agreement (MOA) to purchase the district's water supply for the 2006 irrigation season. "Water-Short Year Administration" was in effect. The lake level at the end of the year was 1926.75 feet (19.0 feet below full).

**Lovewell Reservoir**—The reservoir level was 3.6 feet below the top of conservation at the beginning of the year. Inflows from White Rock Creek and diversion of Republican River flows via Courtland Canal combined to fill the reservoir conservation pool (elevation 1582.6 feet) on April 14<sup>th</sup>. Following approval from the Corps of Engineers, the reservoir was allowed to fill to elevation 1584.20 feet on May 10<sup>th</sup>. Irrigation demands reduced the pool elevation to 1572.56 feet on August 16<sup>th</sup>. The water surface elevation at the end of the year was 6.4 feet below the top of conservation at 1576.22 feet.

### **Current Operations**

Table 2 shows a summary of data for the first seven months of 2007.

**Bonny Reservoir** – The reservoir level is currently 22.0 feet below the top of conservation. About 1,360 acre-feet was released to the river (May 22 through June 5) as requested by of the State of Colorado and about 90 acre-feet was released to Hale Ditch (June 5 through June 13) for irrigation purposes. Bonny Dam has recorded 9.73 inches of precipitation during the first seven months of the

year. The reservoir level is 1.9 feet below last year at this time. Reservoir storage continues to decline as inflows remain at or near historic lows.

**Swanson Lake** – Currently 15.5 feet from full. Lake level is 4.0 feet above last year at this time. Precipitation for the year is 98% of normal (13.22 inches). Frenchman-Cambridge Irrigation District is not irrigating from Swanson Lake for the fifth consecutive year due to the low water supply.

**Enders Reservoir** - The reservoir level of Enders Reservoir is currently at 3095.08 feet (17.2 feet below full). The reservoir level is 9.5 feet above last year at this time. The reservoir level increase is a result of heavy rains in the basin above the reservoir from June 11<sup>th</sup> through June 13<sup>th</sup>. Storm runoff increased the reservoir storage by approximately 9,400 acre-feet with a peak average daily inflow of approximately 2,700 cfs. Enders Dam recorded 20.54 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 sixth year in a row. This is fourth consecutive year that Frenchman-Valley Irrigation District has not received storage water for irrigation.

**Hugh Butler Lake** – Storage in Hugh Butler Lake is currently 6.3 feet below full (2575.48 feet). The lake level has gained 12.3 feet since the beginning of the year. The precipitation total so far this year is 16.85 inches (132% of normal). The lake level is 11.1 feet above last year at this time. Frenchman-Cambridge Irrigation District is not irrigating from Hugh Butler Lake this year due to the low water supply.

**Harry Strunk Lake** – Storage in Harry Strunk Lake is currently 3.3 feet below the top of conservation. The lake filled on April 24<sup>th</sup> (elevation 2366.1 feet). The reservoir level increased to elevation 2372.19 feet on June 3<sup>rd</sup> as a result of runoff from storms that occurred above the lake during the last few days of May. Frenchman-Cambridge Irrigation District is not irrigating from Harry Strunk Lake this year. Frenchman-Cambridge Irrigation District entered into an Memorandum of Agreement (MOA) with the Republican River Basin Coalition to purchase 26,000 acre-feet of the district's water supply for the 2007 irrigation season. As a result of the MOA, approximately 26,000 acre-feet has been released from the dam. Releases began on June 10<sup>th</sup> and were continued until August 13<sup>th</sup>. Precipitation at the dam during the first seven months of the year was 21.04 inches (153% of normal).

**Keith Sebelius Lake** – Currently 15.5 feet below full. Lake level is 2.8 feet above last year at this time. Irrigation releases began on July 16<sup>th</sup> and continued until July 24<sup>th</sup>. Precipitation at the dam during the first seven months of the year was 16.40 inches (101% of normal).

**Harlan County Lake** – The current water surface level of the Harlan County Lake is 1940.83 feet (4.9 feet below full). The lake level is 13.7 feet above last year at this time. Storage in Harlan County Lake has increased nearly 136,000 acre-feet since the beginning of the year. Harlan County Dam has recorded 19.24 inches of precipitation so far this year. The available irrigation supply from Harlan County Lake on June 30<sup>th</sup> was 111,700 acre-feet, indicating that "Water-Short Year Administration" would be in effect. Irrigation releases began on June 21<sup>st</sup> for the irrigation of Kansas Bostwick Irrigation District lands. Bostwick Irrigation District in Nebraska will not be irrigating from Harlan County Lake for the fourth consecutive year.

**Lovewell Reservoir** – The reservoir level of Lovewell Reservoir is currently at 1580.91 feet (1.4 feet below the top of conservation). Lovewell Dam recorded 20.81 inches of precipitation during the first seven months of the year. The reservoir was filled on April 25<sup>th</sup> by diverting Republican River flows via Courtland Canal. Corps of Engineers allowed storing 10 percent in flood pool (elevation 1584.2 feet) just prior to irrigation season. Irrigation releases began on May 14<sup>th</sup>. Kansas Bostwick Irrigation District expects to deliver 8 inches below Lovewell.

## **Other Items**

### **Inspections**

Comprehensive Facility Reviews were conducted at Davis Creek, Medicine Creek, and Red Willow Dams during 2006. Periodic Facility Reviews were conducted at Virginia Smith, Merritt, Lovewell, and Glen Elder Dams. Annual Site Inspections were conducted at the other eight NKAO dams in 2006.

### **Safety of Dams**

Norton Dam – Construction of a filter drain system and a seepage berm is in progress to reroute and reduce the seepage through the left abutment and around the outlet works house. Construction is scheduled for completion in the fall of 2007.

Enders Dam - A small depression was discovered near the outlet works stilling basin in August of 2004. Reclamation has installed instrumentation in the area to collect additional data. An Internal Alert remains in effect until investigation of the stability of the outlet works stilling basin and risk assessment are complete.

Red Willow Dam – The river outlet stilling basin was dewatered and inspected in July 2005. During the inspection a small quantity of fine, clean sand was discovered near the right drain outlet indicating a small amount of material being transported. An Internal Alert remains in effect until additional analysis of the underdrain system is complete.

Davis Creek Dam – A sinkhole was discovered adjacent to the outlet works structure in May 2007. Three base plates were installed in the hole and then filled with loose sand. Currently monitoring the sinkhole physical conditions and taking measurements on the base plates. The outlet works under drain system will be inspected after the irrigation season is complete.

### **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.

Tabletop exercises were held for the Norton Dam Emergency Action Plan (EAP), Virginia Smith Dam EAP, and the Davis Creek Dam EAP. Functional exercises were held for the Webster Dam EAP and Glen Elder Dam EAP.

### Standing Operating Procedures

The Standing Operating Procedures (SOP) for Kirwin and Davis Creek dams were republished in 2006. All the SOP's for the 15 dams are scheduled to be republished by the end of 2007.

### Water Conservation

Increased emphasis is being placed on water conservation by Reclamation. A full time employee is available in the Area Office to work with the irrigation districts on their water conservation efforts.

### Security

Security at all Reclamation dams has increased since September 11, 2001. We have installed or are installing security fencing around the critical facilities at nearly all of the NKAO dams and maintaining close communication with local law enforcement at all sites. Site security plans for Trenton, Lovewell, and Glen Elder Dams were finalized and published in 2006. Site security plans for the other 12 project dams are scheduled to be finalized and published in 2007.

**TABLE 1**  
**NEBRASKA-KANSAS PROJECTS**  
**Summary of Precipitation, Reservoir Storage and Inflows**  
**CALENDAR YEAR 2006**

Reservoir	Total Precip.	Percent Of Average	Storage 12-31-05	Storage 12-31-06	Gain or Loss	Maximum Content	Storage Date	Minimum Content	Storage Date	Total Inflow	Percent Of Most Probable
	Inches	%	AF	AF	AF	AF		AF		AF	%
Box Butte	14.77	87	9,167	5,081	-4,086	15,094	MAY 17	3,676	SEP 11	10,391	62
Merritt	18.40	90	61,370	61,100	-270	67,222	JUN 16	28,625	AUG 27	176,810	94
Calamus	17.80	72	100,561	107,326	6,765	129,150	MAR 24	69,542	SEP 8	236,764	90
Davis Creek	28.50	122	9,196	10,712	1,516	27,492	JUN 26	8,572	APR 16	50,048	102
Bonny	16.41	95	12,265	9,935	-2,330	12,971	APR 12	9,752	DEC 14	6,350	48
Enders	20.08	106	11,566	11,074	-492	12,100	APR 7	10,643	SEP 21	4,284	26
Swanson	20.76	104	35,068	36,310	1,242	41,351	APR 18	35,119	JAN 1	12,047	27
Hugh Butler	19.65	100	20,242	13,105	-7,137	21,428	APR 18	11,831	AUG 19	8,638	56
Harry Strunk	22.88	111	26,833	23,751	-3,082	36,280	JUN 24	16,486	SEP 1	27,009	77
Keith Sebelius	27.56	113	8,322	8,115	-207	9,005	APR 14	7,656	OCT 8	4,329	57
Harlan County	20.62	91	128,111	116,299	-11,812	139,207	MAY 9	114,066	DEC 8	30,077	24
Lovewell	23.87	87	25,836	19,605	-6,231	40,931	MAY 11	12,967	AUG 16	30,337	48
Kirwin	25.96	111	19,252	19,394	142	20,597	MAY 31	18,816	DEC 5	6,269	29
Webster	26.33	112	10,327	8,562	-1,765	10,368	JAN 5	8,117	DEC 18	3,187	17
Waconda	21.54	84	161,594	125,621	-35,973	161,895	JAN 8	122,936	DEC 19	26,963	19
Cedar Bluff	19.43	92	101,181	85,357	-15,824	101,135	JAN 1	83,581	DEC 19	7,418	55

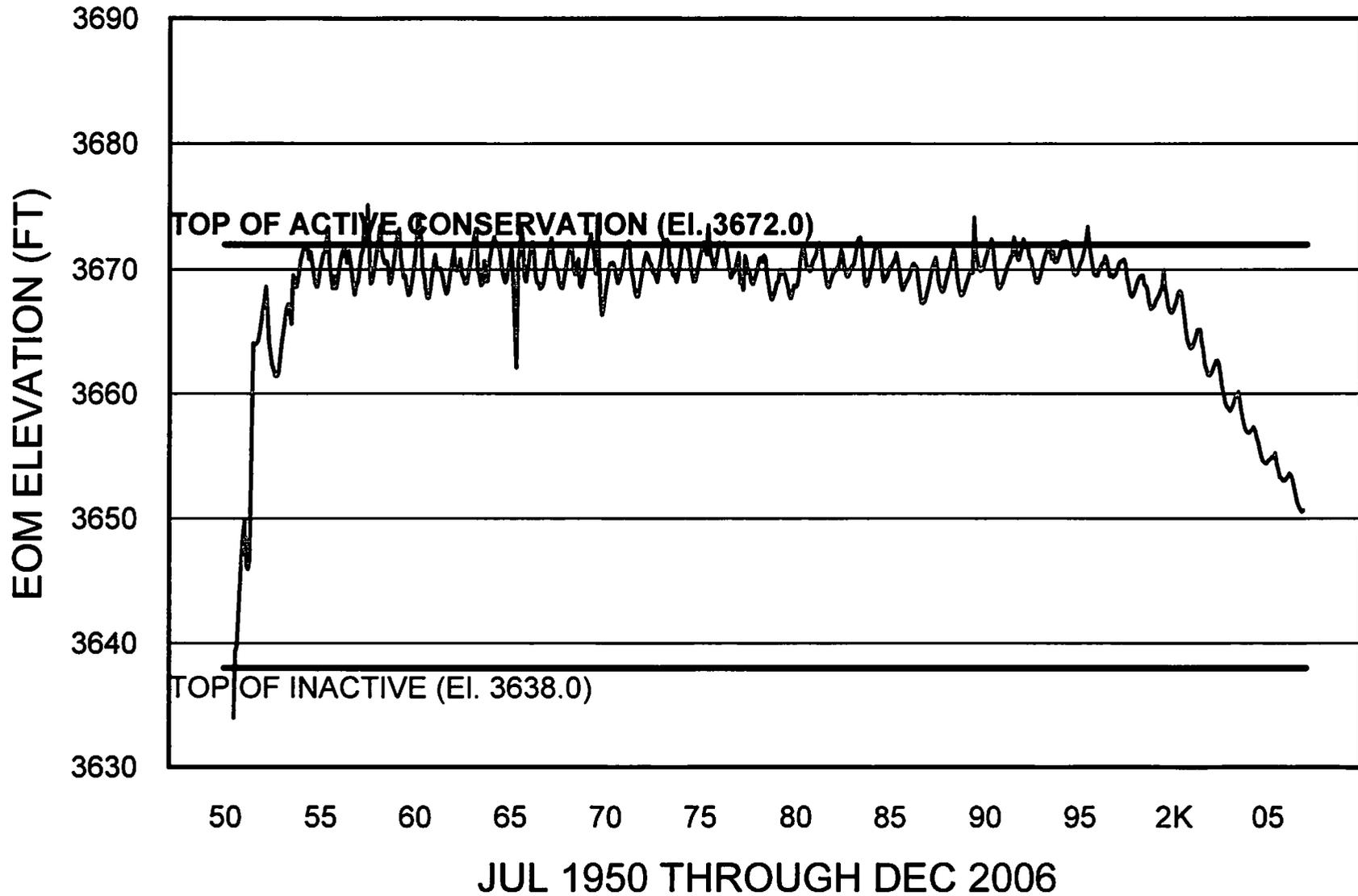
**TABLE 2**  
**NEBRASKA-KANSAS AREA OFFICE**  
**Summary of Precipitation, Reservoir Storage and Inflows**

**JANUARY - JULY 2007**

Reservoir	Precip.	Percent Of	Storage	Storage	Gain or	Inflow	Percent
	Inches	Average	7/31/2006	7/31/2007	Loss	AF	Of Most
		%	AF	AF	AF		Probable
							%
Bonny	9.73	83	11,160	9,552	(1,608)	6,240	69
Enders	20.54	159	11,253	19,852	8,599	12,331	142
Swanson	13.22	98	37,959	49,902	11,943	20,543	63
Hugh Butler	16.85	132	14,230	26,918	12,688	18,096	185
Harry Strunk	21.04	153	22,427	31,286	8,859	53,358	232
Keith Sebelius	16.40	101	8,206	10,662	2,456	6,780	126
Harlan County	19.24	129	120,744	249,777	129,033	165,687	197
Lovewell	20.81	121	22,495	31,715	9,220	40,375	112
Kirwin	17.70	117	19,300	27,168	7,868	17,913	118
Webster	16.86	110	8,775	19,143	10,368	14,097	106
Waconda	17.20	105	138,294	135,097	(3,197)	39,160	37
Cedar Bluff	15.47	112	91,277	92,964	1,687	16,230	155

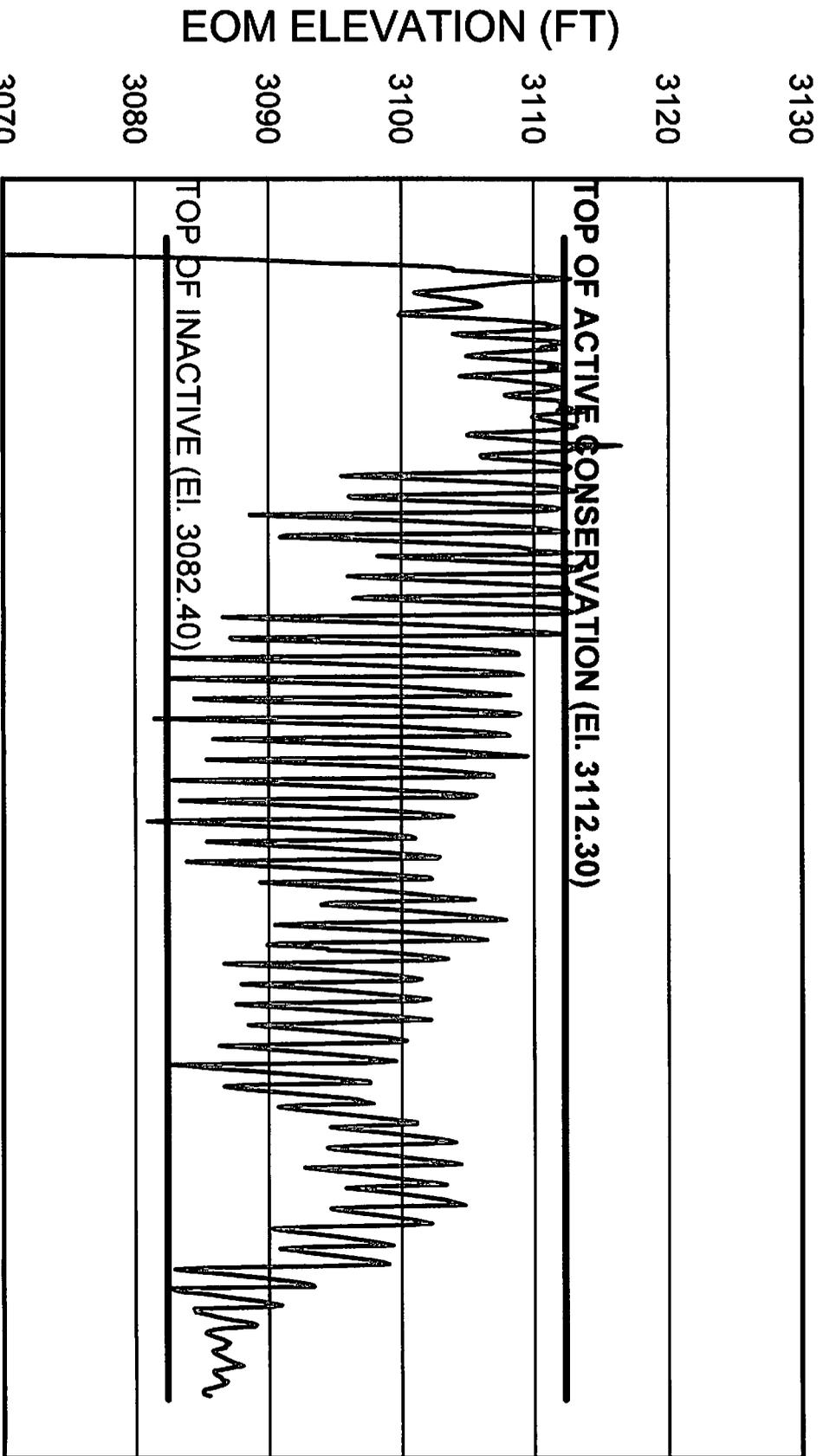
# BONNY RESERVOIR

## END OF MONTH ELEVATION



# ENDERS RESERVOIR

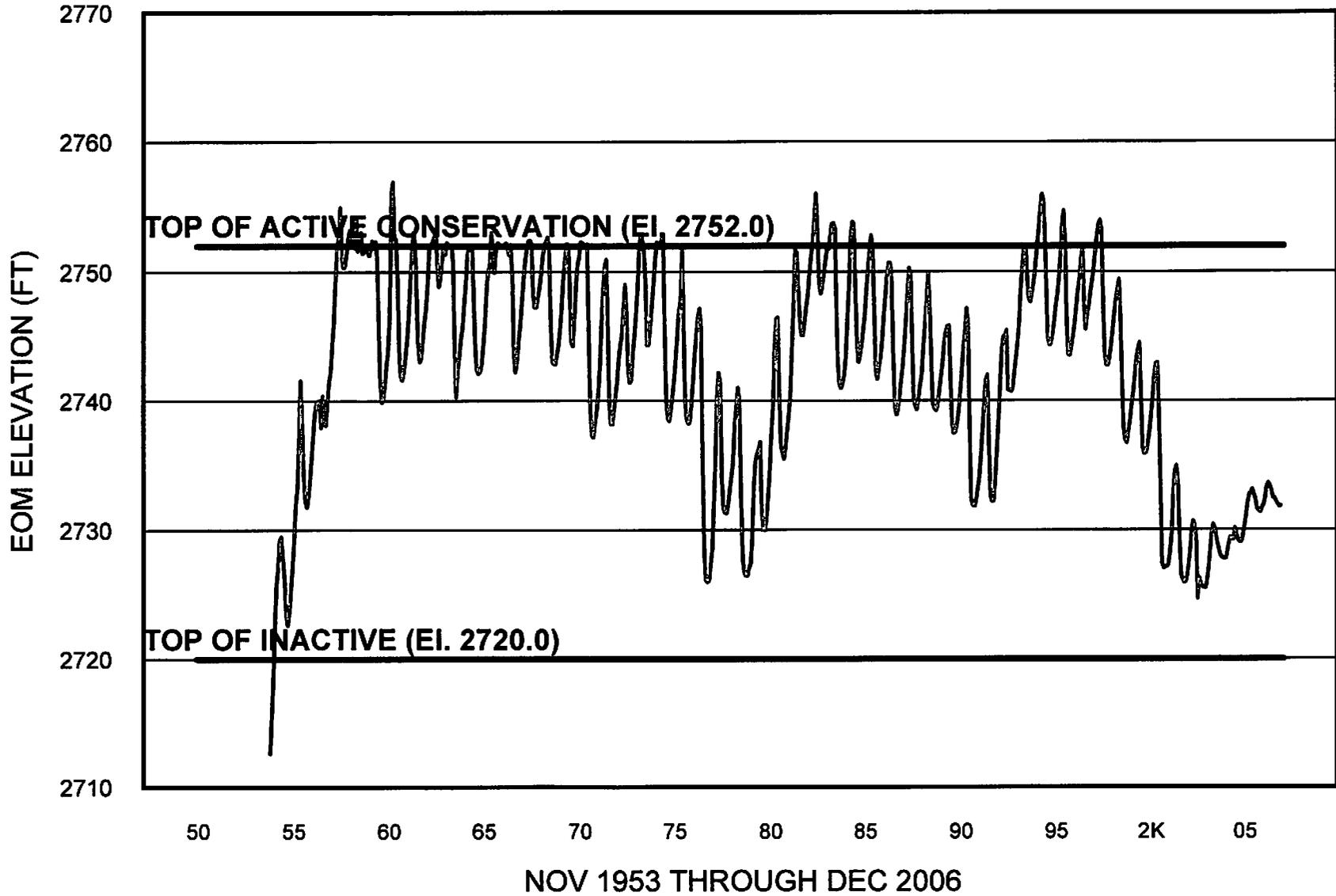
## END OF MONTH ELEVATION



OCT 1950 THROUGH DEC 2006

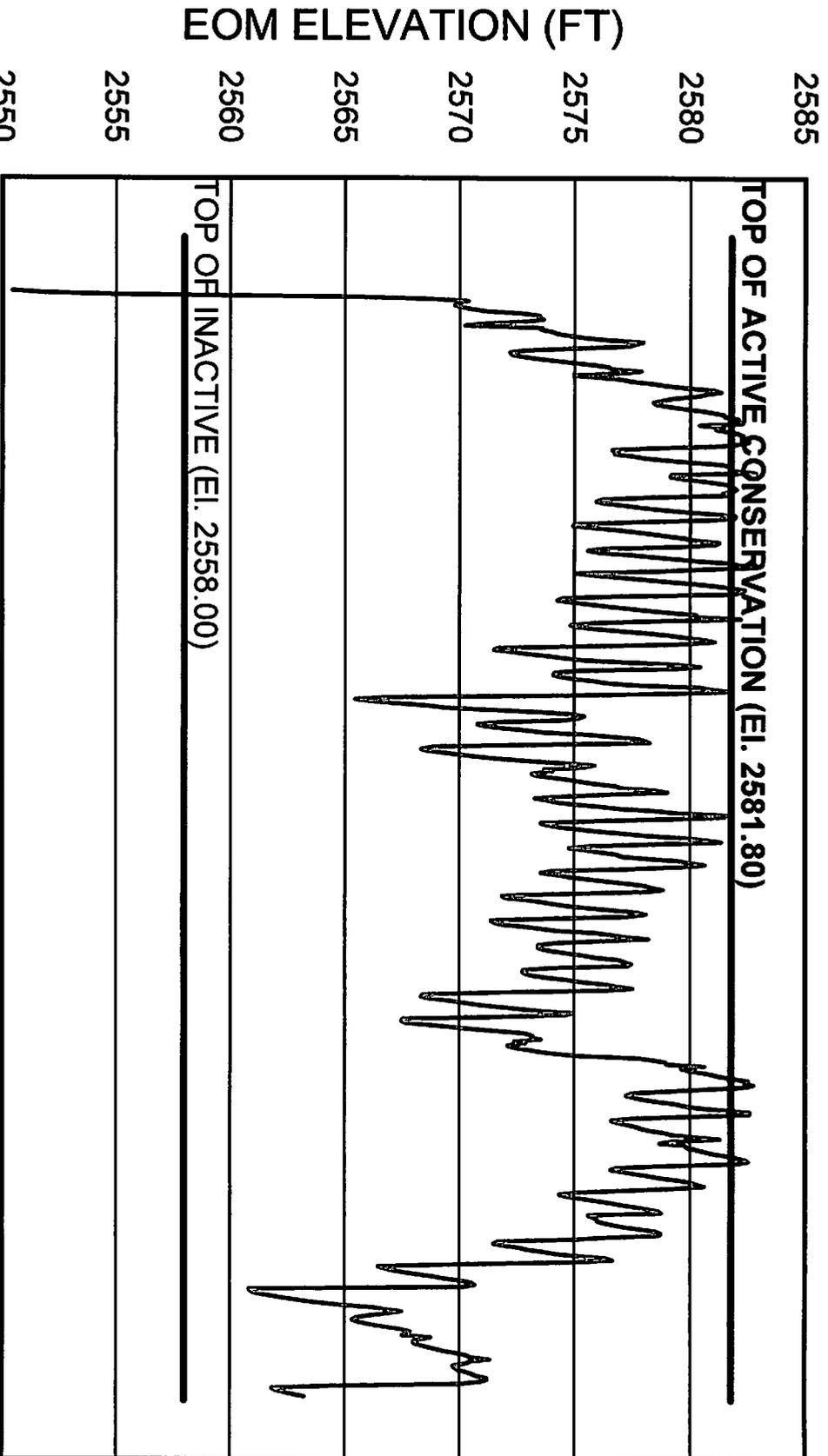
# SWANSON LAKE

## END OF MONTH ELEVATION



# HUGH BUTLER LAKE

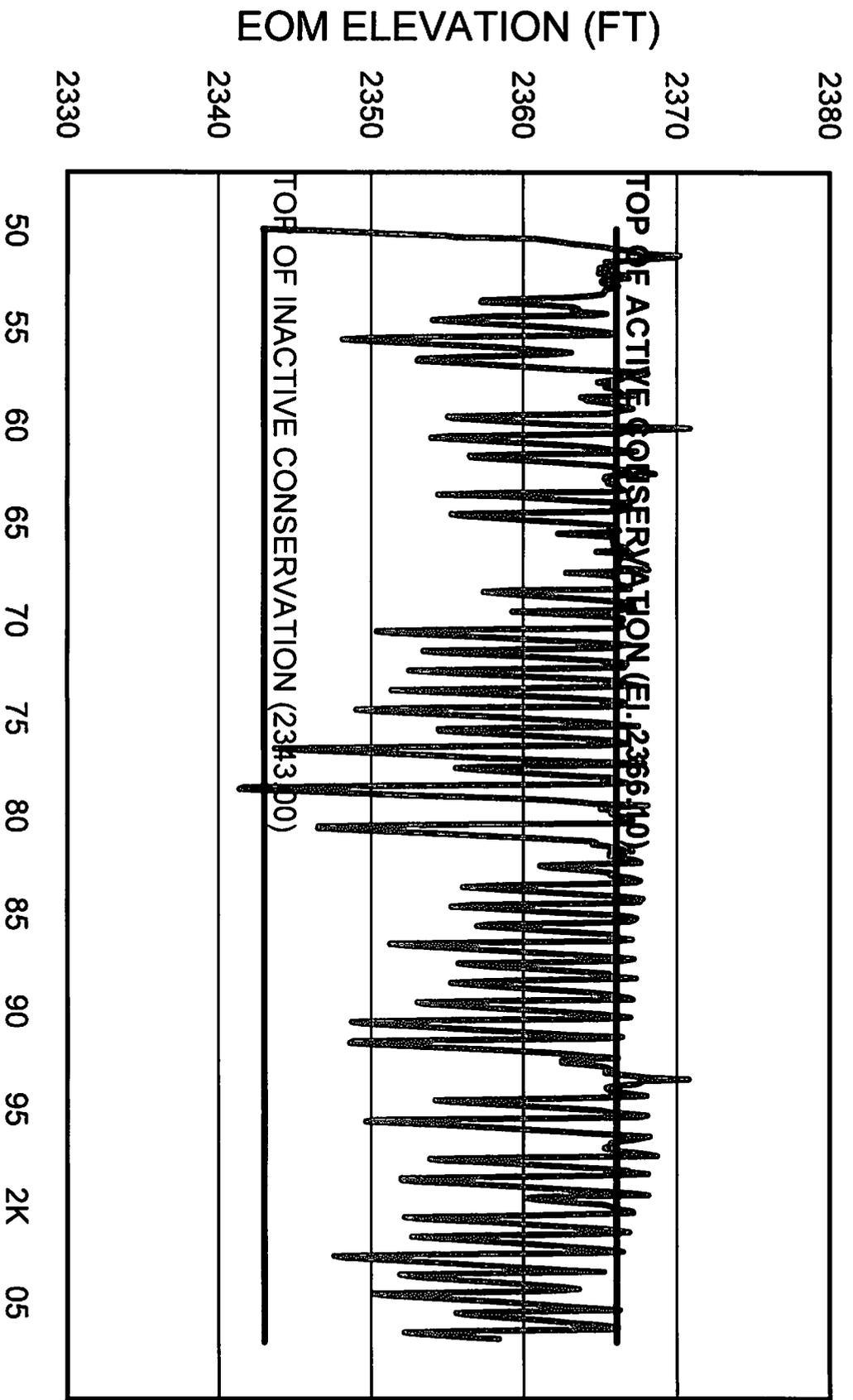
## END OF MONTH ELEVATION



MAR 1962 THOROUGH DEC 2006

# HARRY STRUNK LAKE

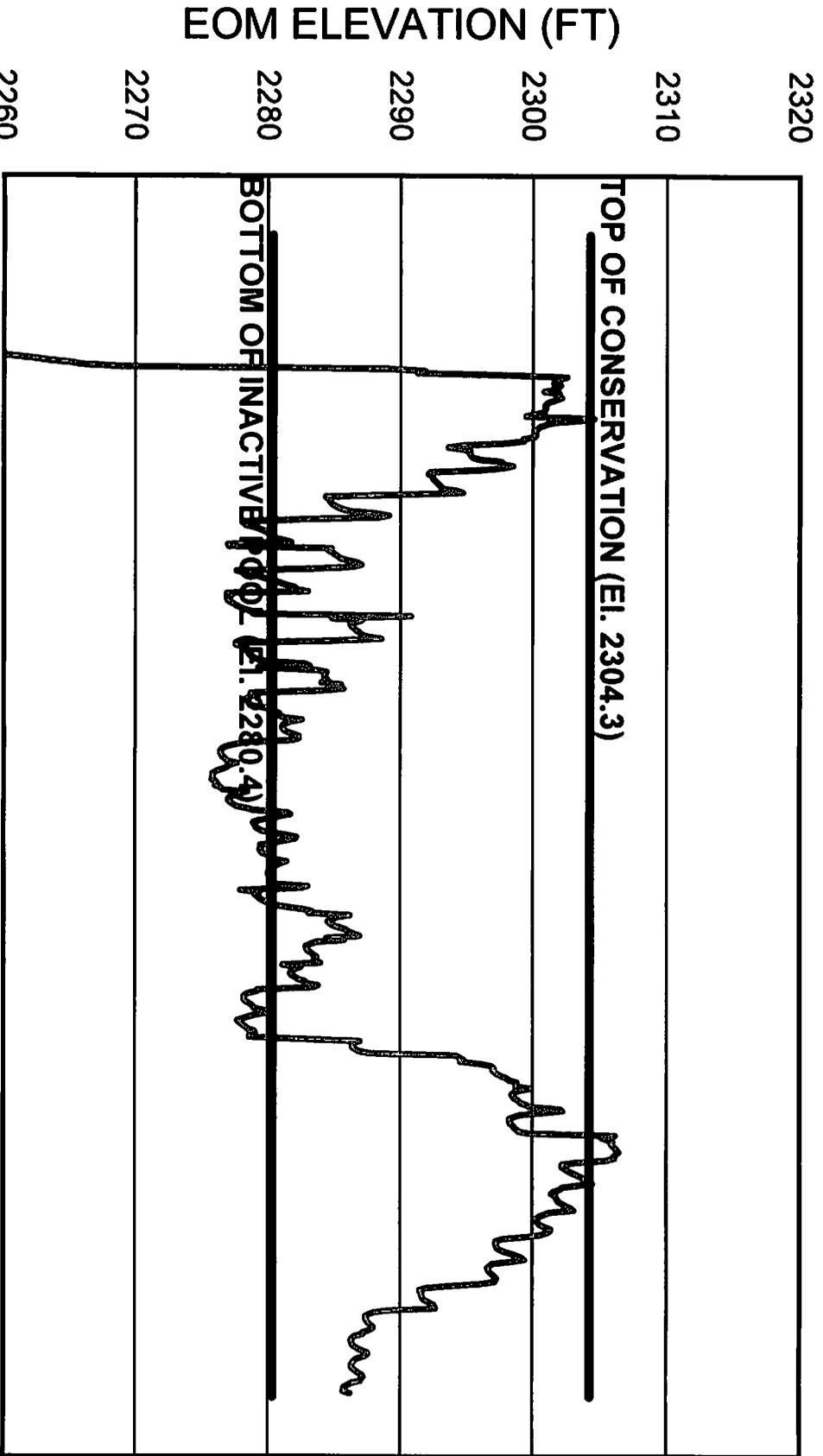
## END OF MONTH ELEVATION



JAN 1950 THROUGH DEC 2006

# KEITH SEBELIUS LAKE

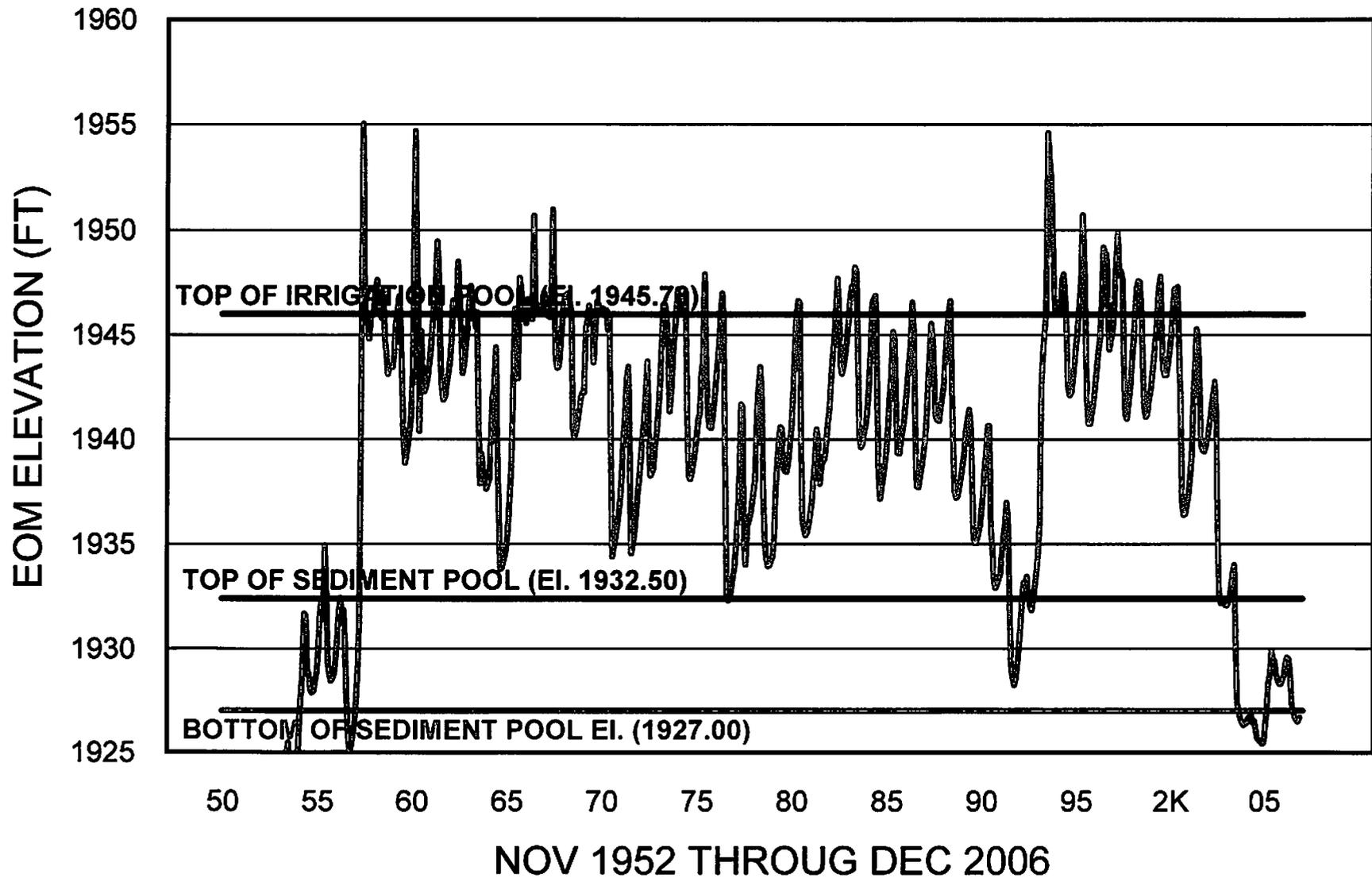
## END OF MONTH ELEVATION



OCT 1964 THROUGH DEC 2006

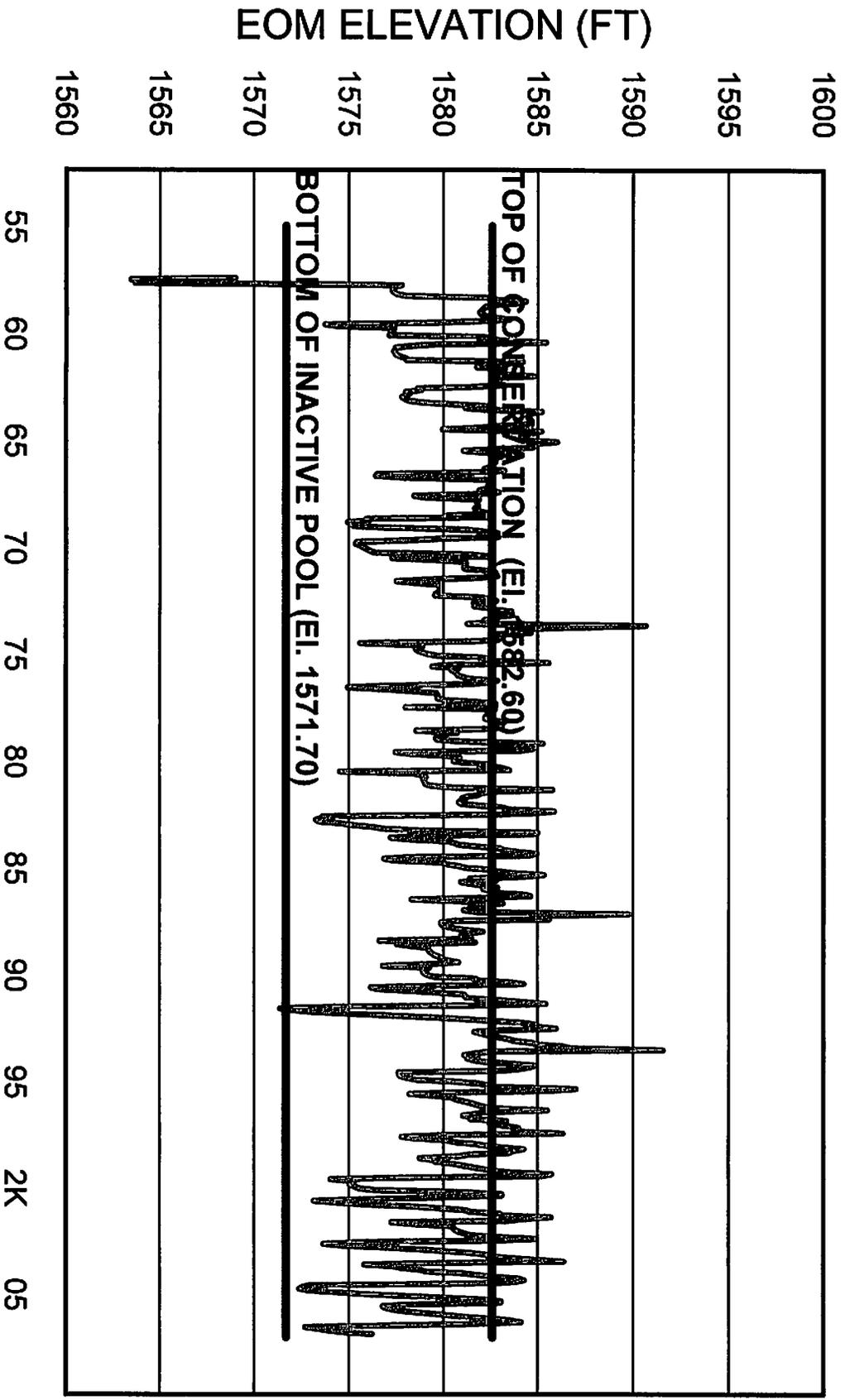
# HARLAN COUNTY LAKE

## END OF MONTH ELEVATION



# LOVEWELL RESERVOIR

## END OF MONTH ELEVATION



JUN 1957 THROUGH DEC 2006

## **Water Administration Summary**

### **Republican River Basin 2006-2007**

*Brad Edgerton  
(August 15, 2007)*

*Nebraska Department of Natural Resources*

#### **Water Administration 2006:**

Frenchman Valley, Riverside, Franklin, Naponee, Franklin pump, Superior and Courtland canal users were compensated not to irrigate in 2006. Meeker-Driftwood, Culbertson extension and Red Willow canals did not divert due to a shortage of storage water. Pioneer Irrigation District operated as normal. Bartley and Cambridge Canal operated with a limited supply.

Extremely low flows below Guide Rock diversion dam caused extensive water administration in that reach.

On March 31, 2006 the Cambridge Field Office notified all junior permits holders below Harlan County Reservoir that the U.S. Bureau Reclamation has estimated the irrigation supply in Harlan County Reservoir to be less than 130,000 acre- feet, therefore all permits junior to February 26, 1948 would be denied surface water in 2006. On June 23, 2006 all junior permits between Harlan County Reservoir and Guide Rock Diversion Dam were closed as required by the Final Settlement Stipulation (V.A 2) and all senior permits were regulated to their legal limit. This order was lifted on August 17, 2006.

From July 5, 2006 to July 12, 2006 all permits junior to August 26, 1940 located upstream of Superior, Nebraska and downstream from Harlan County Reservoir were closed to satisfy a natural flow permit located near Superior. This administration was repeated again from July 30<sup>th</sup> to August 8<sup>th</sup>.

Storage water released from Hugh Butler and Harry Lakes was protected from the Reservoir to the designated diversion dam.

The Frenchman Cambridge Irrigation District did not place a call for natural flow as this would have required upstream Reclamation Reservoirs to by-pass inflow.

On August 25, 2006 Reclamation placed a call on all appropriated storage reservoirs located above Swanson Lake, Enders Reservoir, Hugh Butler Lake and Harry Strunk Lake in the Republican Basin and Box Butte Reservoir located on the Niobrara River.

The following appropriations were ordered to by-pass inflow:

- Fifteen appropriations located above Swanson Lake,
- No appropriations above Enders Reservoir,
- Two appropriations above Hugh Butler Lake, and
- Thirteen appropriations above Harry Strunk Lake.

These orders remain in effect today with the exception of the 13 appropriations located above Harry Strunk which were opened on March 19, 2007.

**Water Administration Summary  
Republican River Basin 2006-2007  
Page 2 of 2**

**Water Administration 2007:**

Pioneer Irrigation District irrigated as normal.

Meeker-Driftwood, Red Willow and Bartley canals did not divert due to a shortage of storage water.

Frenchman Valley, Riverside, Cambridge, Naponee, Franklin, Franklin Pump, Superior and Courtland Canals were compensated not to irrigate in 2007.

The estimated consumptive use portion of Frenchman Valley and Riverside canals is being protected through Harlan County Lake; 26,000 acre-feet has been released from Harry Strunk lake and the estimated consumptive use portion of that water was protected to Harlan County Lake. 12,500 acre-feet of Nebraska Bostwick's storage supply was purchased and made available for use by Kansas Bostwick Irrigation District. In addition to the 12,500 acre-feet of storage water, all of the natural flow available at the Guide Rock diversion dam was made available to Kansas Bostwick.

On June 30, 2007 the irrigation supply in Harlan County Lake was less than 130,000 AF, On July 4, 2007 senior permits were regulated and closing notices were issued to all permits junior to February 26, 1948 located between Harlan County Lake and Guide Rock diversion dam as required by the Final Settlement Stipulation (V.A.2) this order remains in effect today.

No Reclamation project canals in Nebraska are operating this year so all natural flow permits located above Harlan County lake are regulated to their legal limit.

**RESOLUTION OF THE REPUBLICAN RIVER COMPACT ADMINISTRATION  
HONORING  
Mr. DAVID L. POPE**

**WHEREAS**, David L. Pope of Topeka, Kansas, has resigned his position as Kansas Chief Engineer and thus Kansas Commissioner of the Republican River Compact Administration (RRCA) after having served faithfully in that position for over 24 years.

**WHEREAS**, as the Kansas Commissioner to the RRCA, and the Chief Engineer of the Kansas Department of Agriculture's Division of Water Resources, David has diligently represented the Compact interests of the State of Kansas and residents of the Republican River valley in Kansas;

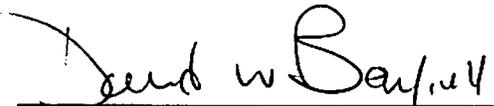
**WHEREAS**, while diligently representing the State of Kansas and its constituents, David has continually reached out to the States of Colorado and Nebraska to compile the most accurate accounting possible of the waters of the Republican River, to identify issues in dispute, and to reach fair and reasonable solutions to the many issues associated with the Republican River Compact;

**WHEREAS**, David's expertise, positive attitude, friendly personality, and congenial temperament have been an asset to the RRCA and the State of Kansas;

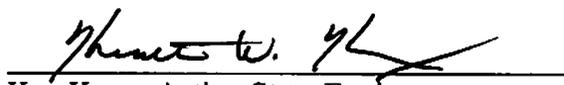
**NOW THEREFORE**, be it hereby resolved that the Republican River Compact Administration does hereby express its sincerest gratitude and appreciation to David L. Pope for his dedicated service to the RRCA in his position of Kansas Commissioner.

Be it further resolved that the RRCA honors Mr. Pope's service by including this resolution and appropriate dedicatory remarks in the RRCA annual report for Compact year 2006 and hereby instructs the Kansas Commissioner to send copies of this resolution to the Pope family and the Governor of the State of Kansas.

Entered, this 15<sup>th</sup> day of August, 2007, at the annual meeting of the RRCA held in Junction City, Kansas.

  
\_\_\_\_\_  
David W. Barfield, Acting Chief Engineer,  
Kansas Commissioner (Chairman)

  
\_\_\_\_\_  
Ann Salomon Bleed,  
Nebraska Commissioner

  
\_\_\_\_\_  
Ken Knox, Acting State Engineer,  
Colorado Commissioner

**RESOLUTION OF THE REPUBLICAN RIVER COMPACT ADMINISTRATION  
HONORING  
Mr. Hal D. Simpson**

**WHEREAS**, Hal D. Simpson of Denver, Colorado, has faithfully served as the Colorado State Engineer, Director of the Colorado Division of Water Resources and Colorado Commissioner of the Republican River Compact Administration (RRCA) for fifteen years and,

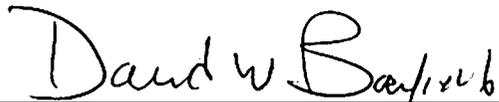
**WHEREAS**, in his capacity as the Colorado State Engineer and as the Colorado Commissioner of the RRCA in addition to serving as the Colorado representative to the Republican River Engineering Committee for twelve years, Mr. Simpson represented the Compact interests of the State of Colorado and residents of the Republican River basin in Colorado with conscientiousness and diligence, displaying admirable expertise of water matters and,

**WHEREAS**, during his tenure as Colorado's representative, Mr. Simpson exhibited professionalism and integrity and provided leadership and guidance towards addressing the complexities of water administration and compact compliance issues, promoting mediation over litigation.

**NOW THEREFORE**, be it hereby resolved that the Republican River Compact Administration does hereby express its sincerest gratitude and appreciation to Hal D. Simpson for his dedicated service to the RRCA in his position of Colorado Commissioner and extends its best wishes to Mr. Simpson in all his future endeavors.

Be it further resolved that the RRCA honor Mr. Simpson's service by including this resolution and appropriate dedicatory remarks in the RRCA's annual report for Compact year 2006 and hereby instructs the Colorado Commissioner to send copies of this resolution to the Simpson family and the Governor of the State of Colorado.

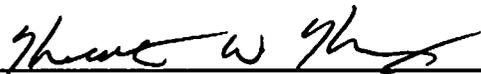
Entered this 15<sup>th</sup> day of August, 2007, at the annual meeting of RRCA held in Junction City, Kansas.



David W. Barfield, Acting Chief Engineer,  
Kansas Commissioner (Chairman)

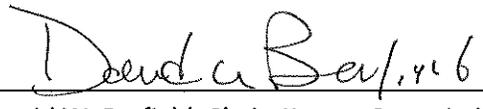


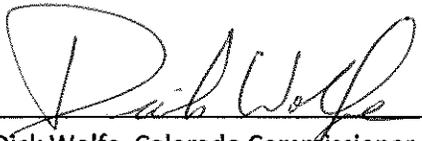
Ann Salomon Bleed,  
Nebraska Commissioner



Kenneth W. Knox, Acting State Engineer,  
Colorado Commissioner

The 46<sup>th</sup> annual RRCA report is hereby approved on this 12<sup>th</sup> day of September 2013.

  
\_\_\_\_\_  
David W. Barfield, Chair, Kansas Commissioner

  
\_\_\_\_\_  
Dick Wolfe, Colorado Commissioner

  
\_\_\_\_\_  
Brian Dunnigan, Nebraska Commissioner