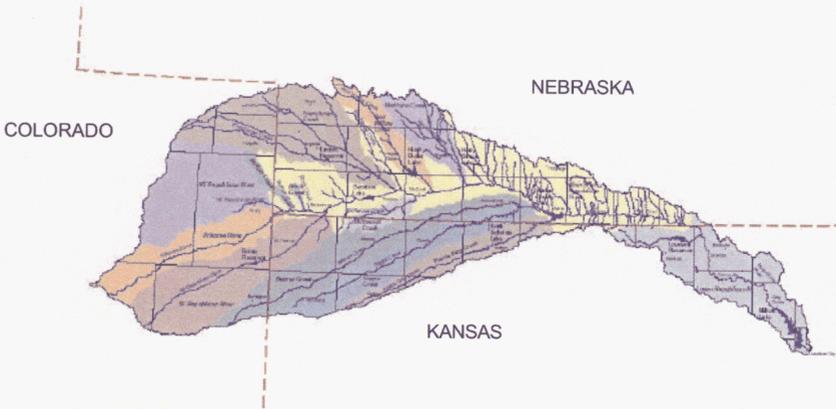




# REPUBLICAN RIVER COMPACT ADMINISTRATION

## FORTY-THIRD ANNUAL REPORT

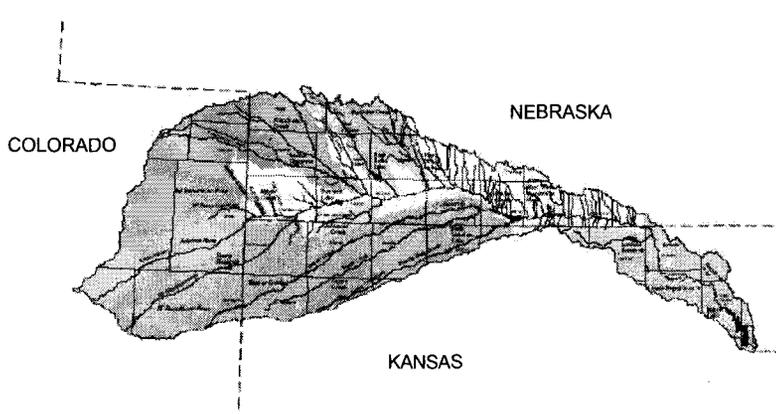


For the Year 2004

Burlington, Colorado  
June 9, 2004

# REPUBLICAN RIVER COMPACT ADMINISTRATION

## FORTY-THIRD ANNUAL REPORT



**For the Year 2004**

**Burlington, Colorado  
June 9, 2004**

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**ANNUAL REPORT  
44<sup>th</sup> ANNUAL MEETING  
REPUBLICAN RIVER COMPACT ADMINISTRATION**

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**Minutes**

In lieu of a transcript of this meeting, an audio CD of the meeting was provided to each of the states since a court reporter did not attend the meeting. Below is a summary of the meeting.

**Introductions**

The meeting was called to order by Chairman Simpson at 9:00 a.m., June 9, 2004, at The Route Steak House in Burlington, Colorado. Chairman Simpson welcomed everyone in attendance. Chairman Simpson of Colorado, Commissioner Patterson of Nebraska, and Commissioner Pope of Kansas each introduced their staff and others in attendance. Those in attendance were:

| <b>Name</b>             | <b>Representing</b>   |
|-------------------------|---|
| Hal D. Simpson          | Colorado Commissioner   |
| Roger K. Patterson      | Nebraska Commissioner   |
| David L. Pope           | Kansas Commissioner   |
| Ken Knox                | Colorado Division of Water Resources                          |
| Megan Sullivan          | Colorado Division of Water Resources                          |
| Marta Ahrens            | Colorado Division of Water Resources                          |
| Mark Hillman            | Colorado State Senate District #1                             |
| Carol Angel             | Colorado Attorney General's Office                            |
| Peter Ampe              | Colorado Attorney General's Office                            |
| Ann Bleed               | Nebraska Department of Natural Resources                      |
| Brad Edgerton           | Nebraska Department of Natural Resources                      |
| Mike Thompson           | Nebraska Department of Natural Resources                      |
| David Barfield          | Kansas Department of Agriculture, Division of Water Resources |
| Leland E. Rolfs         | Kansas Department of Agriculture, Topeka, Kansas              |
| George Austin           | Kansas Division of Water Resources, Topeka, Kansas            |
| Scott Ross              | Kansas Division of Water Resources, Stockton, Kansas          |
| Steve Ronshaugen        | Bureau of Reclamation, McCook, Nebraska                       |
| Marv Swanda             | Bureau of Reclamation, McCook, Nebraska                       |
| Jack Wergin             | Bureau of Reclamation, Grand Island, Nebraska                 |
| Gordon Aycock           | Bureau of Reclamation, Billings, Montana                      |
| Phil Soenksen           | U. S. Geological Survey, Lincoln, Nebraska                    |
| Robert Andrews          | Frenchman-Cambridge Irrigation District, Nebraska             |
| Roy Patterson           | Frenchman-Cambridge Irrigation District, Nebraska             |
| Clarence Jankovits, Jr. | Culbertson Frenchman Valley                                   |
| Don Suda                | Southwest Public Power District, Palisade, Nebraska           |
| Curtis Kayton           | Southwest Public Power District, Palisade, Nebraska           |
| Fred Rogge              | Kansas River Water Assurance District, Kansas                 |
| Dennis Coryell          | Colorado Ground Water Commission                              |
| Jack Dowell             | W-Y Ground Water Management District, Yuma, Colorado          |

|                   |   |
|-------------------|---|
| Stan Murphy       | Plains and East Cheyenne Ground Water Management District, Colorado |
| Robin Wiley       | Yuma County Commissioner, Colorado                                  |
| Steve Kramer      | Plains Water District, Colorado                                     |
| John Thorburn     | Tri-Basin NRD, Holdrege, Nebraska                                   |
| Dale Book         | Spronk Water Engineers, engineering consultant for Kansas           |
| Willem Schreüder  | Principia Mathematica, engineering consultant for Colorado          |
| Don Felker        | Frenchman Valley H&RW Irrigation                                    |
| Kenneth Albert    | Frenchman Valley Irrigation District                                |
| Joseph Van Cleave | Regional Manager, Colorado Farm Bureau                              |
| Bob Hipple        | Upper Republican NRD, Imperial, Nebraska                            |
| Ricky Zion        | Arikaree Ground Water Management District, Colorado                 |
| Leon Allen        | Colorado F.B.   |
| Mike Clements     | Lower Republican NRD, Nebraska                                      |
| Pete Wilson       | Self  |

### **Approval of Agenda**

The agenda was approved as proposed:

1. Introduction
2. Adoption of Agenda
3. Approval of Previous Annual Meeting Minutes
4. Report of Chairman
5. Commissioners' Reports
  - Kansas
  - Nebraska
6. Federal Reports
  - Bureau of Reclamation
  - Corps of Engineers
  - Geological Survey
7. Engineering Committee Report
8. Unfinished Business
  - Irrigation District Water Service Contract Renewals
9. New Business and Assignments to the Compact's Committees
10. Remarks from the Public
11. Future Meeting Arrangements
12. Adjournment

### **Approval of 42<sup>nd</sup> Annual Report and the Minutes**

Commissioner Patterson moved to approve the Minutes of the 42<sup>nd</sup> annual meeting for publication; the motion was seconded by Commissioner Pope and approved unanimously. Commissioner Patterson stated that a copy of the final transcript will be provided to each of the states.

### **Report of the Chairman**

Chairman Simpson reported that drought conditions continue statewide and Colorado entered into its fifth year of drought with below average snowpack and water supplies. The Republican River basin has been extremely dry for several years, and this year continues to be well below

average. Bonny Reservoir is currently at 16,700 acre-feet, which is only half-full and is gradually dropping because of lack of inflow from normal summer rains. As a result of the drought, under the Republican River Compact, Colorado has to adjust allocations downward in proportion to the amount of reduced surface water supply, which creates problems for Colorado and Nebraska.

Chairman Simpson stated that in July 2003, this administration was presented with a ground water model, which was approved at the RRCA annual meeting during August 2003. Colorado began using that model to update depletions and allocations through 2002 and it showed that Colorado was consuming more water than it was entitled to. A coordinating committee was created in late 2003, which included Senator Hillman and Representative Brophy, to discuss how to deal with potential compact violations. As a result of those meetings, the Republican River Water Conservation District was developed through legislation as Senate Bill 235, and signed by the Governor, and will be managed by a 15-person board. Some of the powers of this district are to assist with compact compliance, acquire property and water rights, enter into contracts with state and federal agencies and local entities, and collect sales and ad valorem taxes to fund activities. A tax package will be presented to the voters in November. The intent is to create voluntary local solutions to avoid regulation by the Ground Water Commission or the State Engineer of all wells in the basin, to work with the Federal government on a conservation reserve enhancement program, and to start reducing consumption of water in the Republican River basin.

Chairman Simpson reported on two other bills in Colorado dealing with water. SB-225 increases the authority to enforce the conditions on well permits in Designated Ground Water Basins. It enables the state to take a violator to court and the court can fine the violator up to \$500 per day plus attorney fees. SB-278, which was approved in 2003 and gave the State Engineer authority to collect a water rights administration fee to cash-fund a part of the State Engineer's Office operations due to the budget crisis in Colorado, was repealed this year and the State Engineer was directed to refund any monies that were collected.

### **Report of the Commissioner from Kansas**

Commissioner Pope reported that it was another busy year and another year of drought for most of Kansas. The northwestern portion of Kansas, the upper Republican River basin, was the hardest hit, the fourth year of below normal rainfall. The lower Republican River basin was feeling the affects of the activities upstream with very limited water for the Kansas Bostwick Irrigation District and considerable other lands. In the remainder of the basin, the rains and runoff this spring helped improve soil moisture content and helped refill Milford Reservoir for the first time in several years, although streamflows did not recover sufficiently to discontinue minimum desirable streamflow administration.

Commissioner Pope stated that a broad effort is underway regarding management of the High Plains aquifer, which includes a major portion of the Ogallala aquifer. This was identified as a top priority issue for the use of state water plan dollars and in targeting resources of the state that need additional management and/or regulation, or other programs. Each groundwater management district has developed a protocol to identify hydrologic subunits to target programs. The next steps are to establish water use goals, reduce pumping and consumptive use, and to deal with the depletion.

A considerable amount of time was spent in developing an irrigation transition program, which will offer an incentive program to irrigators to transition to dry land over a period of time. A pilot program was approved by the legislature for this year. They are working with the NRCS in

tailoring and targeting their programs through EQIP, which will give priority to the High Plains aquifer areas that have the most significant problems. They are also working with the Northwest Kansas GMD No. 4 in Colby to come up with a metering program in northwest Kansas to assist with enforcement programs. Last year, Kansas adopted rules in implementing the new authority they have to levy administrative fines for violations of water rights or state law related to use of water appropriations to prevent over-pumping.

Commissioner Pope reported that the Prairie Dog Creek sub-basin area was the most intensely developed for irrigation use. Due to the drought, there was a limited amount of water available for delivery to the irrigation district. Norton Reservoir also has significant recreation interests. A two-year agreement was made that the Almena Irrigation District will not call for any water below a fixed elevation in the next two years, and to allow potential transition to a mostly recreation project.

With regard to legislation, Commissioner Pope stated that the biggest issue in Kansas was education. The budget continues to be very tight. The Legislature extended the sunset that was placed on fee revenues. Bills were considered related to bonding for water for infrastructure for the future.

Commissioner Pope stated that Kansas is committed to compliance with the compact and he hopes that each state takes it seriously.

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

Commissioner Patterson reported that Nebraska is also suffering from the fifth year of drought. Frenchman Valley is only diverting natural flow; the Culbertson extension is looking at no water again this year; and the Frenchman-Cambridge is hoping to get eight inches in the Cambridge Canal. With regard to mitigation issues, they are working with Congressman Osborne's office to get drought funding from the Bureau of Reclamation for several projects. They were able to get about one million dollars of drought funding for several projects. Commissioner Patterson reported that Nebraska is making an application to the Conservation Reserve Enhancement Program for up to 100,000 acres in the Republican and the Platte basins to allow farmers the opportunity to bid into the program for 15 years to reduce irrigation use.

The NRD's are continuing to implement the metering programs and develop management plans, which will result in rules and regulations that will control how much water is used and how many acres are irrigated throughout the basin. The goal is to put management plans together so that the farmers know what to expect so they can make plans.

With regard to interstate litigation, Commissioner Patterson stated that after 14 years, the Corps of Engineers issued the master manual on the Missouri River and it is before the judge. Regarding the cooperative agreement on the Platte River, the National Academy of Science issued a report stating that the decisions made were reasonable based on the science. Negotiators are within a few months of having a program they can take to the public.

In regards to new statutes for dealing with water, LB-962 was adopted to implement the recommendations of the Water Policy Task Force, a task force established by the legislature to address integrated surface and ground water issues. Starting on July 16, additional staff will be hired to implement the provisions. This bill will require the state to do an annual assessment of each basin and sub-basin in Nebraska and make a determination on whether they are fully

appropriated. They will consider not only the commitments on surface water rights, but also on the ground water development that has taken place and what the impact on streamflow of that ground water development is and will be in the future. In those basins determined to be fully appropriated, the development of management plans is mandatory and one of the goals is sustainability. They received \$2.5 million to kick-start the implementation of the project.

Mr. Brad Edgerton discussed water administration activities and adjudication hearings and commented that they have been a major effort (report attached).

Commissioner Pope asked questions regarding the public meetings and the proposed rules to develop management plans. He expressed Kansas' frustrations regarding the significant new lands being brought into irrigation in the lower basin of Nebraska despite the moratorium on new well drilling. Commissioner Patterson responded that the two criteria will be a limitation on the number of acres that can be irrigated from each well and the amount of inches that can be applied to those acres under each well. With regard to the moratorium, Commissioner Patterson stated that there were no new wells drilled after the December 9, 2002 deadline.

#### **Report by the Bureau of Reclamation, U. S. Department of Interior**

Mr. Marv Swanda, from the McCook field office, stated that Fred Ore, the area manager, moved to the Commissioners office in Washington D.C. The new area manager is Alice Johns, from the eastern Colorado office, who will start her new job at the end of June. Mr. Swanda provided a summary of the Operation and Maintenance Report for 2003 and 2004 (report attached). He reported on the reservoir operations and levels, and dam safety issues. Mr. Jack Wergin, the Water Conservation and Drought Coordinator from the Grand Island office, reported on drought projects and water conservation activities. Mr. Wergin also reported on the Lower Republican River Basin Appraisal Study, which identifies alternatives to better utilize water available in the lower part of the basin. They received letters of support for the Appraisal Study from Kansas and Nebraska. The appraisal study identified a federal interest to proceed to a feasibility study, which must be authorized by Congress. Legislation has been introduced for the feasibility study, but it has not yet been finalized.

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

There was no report.

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

Mr. Phil Soenksen, from the USGS in Lincoln, Nebraska, reported that the Survey operates 14 real-time streamflow gages on the Republican River Basin and two reservoir stations, and they work with the Department of Natural Resources (DNR) in Nebraska to put three more sites on web (report attached). They receive Federal money to operate the ten compact stations, three sites are supported by the Corps of Engineers (COE), and three sites are operated by the state of Nebraska and they get support for data collection platforms and review and publishing of those records, and another site is a combination of the COE and the Nebraska DNR. The current records and historic published data are available on the web, not only for the ones that they operate, but for other Survey offices. Most of their records are on a water-year basis, October 1 to September 30, and some of the records are done on a calendar year basis. Mr. Soenksen stated that they will not be

providing any paper copies of the annual water resources data report in the future because it is released as an online report, or it may be requested on a CD.

### **Engineering Committee Report**

Mr. Ken Knox presented the Engineering Committee Report, dated June 9, 2004. He summarized the eight tasks that were assigned to the Engineering Committee at the 2003 meeting by the Compact Administration, the work activities, and the recommendations by the Engineering Committee for completing suggested tasks with indicated deadlines. The Engineering Committee Report is attached to these minutes. The accounting for 2003 will be accomplished by September 30, 2004. Commissioner Pope expressed his appreciation for the tasks that were completed by the Engineering Committee and they worked together very well. Commissioner Patterson made a motion to approve the Engineering Report; the motion was seconded by Commissioner Pope with the clarification that in doing so the RRCA was approving the changes in the Accounting Procedures recommended in the report. The report was approved unanimously.

### **Unfinished Business** – Republican River Compact Conservation Committee Report

Mr. Gordon Aycock, of the Bureau of Reclamation Great Plains Regional Office, in Billings, Montana, provided background of soil and water conservation structures that were built in the basin, including land terracing, and the effect on both surface and ground water supplies. As part of the settlement stipulation, a requirement was included that a study proposal be prepared by a Conservation Committee to determine a methodology to quantify the impact of land terracing and non-federal reservoirs on the basin water supply. Since most of the structures are in Kansas and Nebraska, the proposal recommends that the University of Nebraska and Kansas State University work jointly on the technical work, with review and input provided by the Colorado State University. The four major components include: data collection and inventory of structures in the basin; detailed monitoring on small sample sites to determine the hydrology of structures, how much water moves in, the amount of evaporation and evapotranspiration that occurs, and how much ground water recharge is occurring at those structures; from that information, a water balance model would be developed; and the ground water model that currently exists will be used to evaluate how the ground water recharge that occurs from terraces and reservoirs impacts base flow. Finally, a report will be provided to the RRCA for their use. The 5-year study is to start this summer and run through 2009.

Commissioner Patterson moved that the RRCA accept the draft "Memorandum of Understanding for the Republican River Basin Water Supply: Impacts from Non-Federal Reservoirs and Land Terracing" prepared by the Conservation Committee, with two changes. First, on page 4, at the end of Paragraph I.B.1, add a new paragraph that repeats verbatim the text of the Final Settlement Stipulation at paragraph VI.B.3. Second, on page 11 of the MOU, at the beginning of paragraph V, add a paragraph that states, "This MOU, and the official acceptance of the study by the RRCA, shall become effective once it has been signed by all five individuals on page 2." The motion was seconded by Commissioner Pope with the caveat that if the motion passes, then the Administration will be approving the MOU with the amendments that Commissioner Patterson has stated becoming effective upon the MOU being signed. The motion was approved unanimously.

## **New Business**

Commissioner Pope moved that each of RRCA Commissioners hereby agree, subject to each state's contract procedures, that each state will enter into a contract with Principia Mathematica, Inc. to perform the following general tasks as further outlined in the proposal that was presented to the Administration at the work session yesterday. The task would be to coordinate with the RRCA Engineering Committee, or their designated representatives, to develop the RRCA Ground Water Model (model) input data sets, run the model, review and post the results on the Republican River Compact Administration website, and perform other tasks as directed by the RRCA. The specific tasks that will be performed by Principia Mathematica, Inc. include:

- Update, review, and check the stream package in the model
- Update, review and check precipitation data
- Update, review and check Colorado data
- Update, review and check Kansas data
- Update, review, and check Nebraska data
- Generate model input files, run the model
- Host and maintain the RRCA website and post the results on said RRCA website
- Document and report results

The states of Colorado, Kansas, and Nebraska will each be responsible for an equal share of the costs associated with the performance of the aforementioned tasks that are not to exceed one-third, or \$4,000 each, of the total annual cost of not to exceed \$12,000 for calendar year 2004. The states will also be responsible for an equal share of the costs associated with performance of the aforementioned tasks that are not to exceed one-third, or up to \$4,000 each, of the total annual cost of not to exceed \$12,000 for calendar year 2005. Commissioner Pope also added that it is the intent of this motion to allow some flexibility to implement this contract or agreement so it fits within each states' administrative contract procedures as may be appropriate to accomplish this motion because there are three state governments to work with. The motion was seconded by Commissioner Patterson and approved unanimously.

## **Assignments to the Compact's Committees**

Chairman Simpson stated that the Engineering Committee assignments include the nine that were approved in their report and inquired if there were additional assignments. Commissioner Pope stated that the assignments included the work to finish the 2003 and other associated accounting that was already discussed along with the deadlines. A formal motion was not required as it was covered in the Engineering Committee report.

## **Remarks from the Public**

Mr. John Thorburn, Manager of Tri-Basin Natural Resources District in Holdrege, Nebraska, stated that on Monday of that week he attended a meeting of the Ground Water Management Districts Association, and he wanted to express his appreciation to Mr. Ken Knox for his excellent presentation to the Association on the Republican River Compact Administration Ground Water Model.

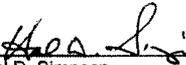
**Future Meeting Arrangements**

Chairman Simpson stated that in light of the Engineering Committee's recommendation to complete a number of items by September 30, a suggestion was made that a meeting needs to be held in Denver near DIA. The date selected was October 13-14, 2004, to review the Engineering Committee Report and amend the RRCA's rules to adopt the revised RRCA ground water model and accounting procedures.

The next annual meeting of the Compact Administration will be held on June 8-9, 2005, in Burlington or Wray, Colorado.

**Adjournment**

The meeting was adjourned at 11:20 a.m., June 9, 2004.

  
\_\_\_\_\_  
Hal D. Simpson  
Colorado Commissioner (Chairman)

  
\_\_\_\_\_  
Roger K. Patterson  
Nebraska Commissioner

  
\_\_\_\_\_  
David L. Pope  
Kansas Commissioner

**Exhibits**

- Nebraska Water Administration Report by Brad Edgerton
- Bureau of Reclamation Report
- U.S. Geological Survey Report
- Engineering Committee Report

**EXHIBIT 1**

**NEBRASKA WATER ADMINISTRATION REPORT**

**REPUBLICAN RIVER BASIN 2003-2004**

**By  
Brad Edgerton**

Water Administration  
Republican River Basin 2003-2004  
(Brad Edgerton June 9, 2004)

On January 10, 2003, 135 water appropriations were closed for failing to file a 2002 water use report. During the following 2 months, 69 reports were filed with the department.

On June 28, 2003 Harlan County Reservoir began making releases to the river and the Department closed 120 junior permits on July 1.

On July 3, 2003 112 junior permits above Cambridge Diversion Dam were closed and 27 senior permits were regulated.

The 15 junior permits and 10 senior permits above Swanson Reservoir were regulated to their legal limit. It was determined that closing junior permits above Swanson Reservoir would be futile due to approximately 15 miles of dry sandy river bed.

On July 11, 58 junior permits between Franklin Canal and the Cambridge Diversion dam were closed and 14 senior permits were regulated.

On July 21, 31 junior permits located between the Medicine Creek / Republican River confluence and the Culbertson diversion dam were opened. Due to the 25 miles of dry sandy riverbed it was determined that keeping these permits closed would be futile.

On July 22, 4 junior permits located between the confluence of Turkey Creek and the Cambridge diversion dam; 16 junior permits on Sappa and Beaver Creek; and 2 junior permits on Prairie Dog Creek were opened as it was determined keeping them closed would be futile.

On August 14, 21 junior permits above Culbertson Diversion Dam were opened when diversions ceased.

On August 16, the remaining 36 junior permits above Franklin Canal were opened when diversions ceased.

On August 20, 122 junior permits below Harlan County Reservoir were opened when releases into the river ceased.

During the fall of 2003 the Cambridge Field office conducted field investigations of 90 natural flow permits located between Cambridge Diversion Dam and the confluence of the Frenchman Creek. Adjudication hearings were held during the last week in March. Approximately 6000 acres were called to hearing and to date about 3300 acres were canceled.

On January 17, 2004 64 permits were closed for failing to file a water use report with the department. During the next several months most of the delinquent reports have been filed and currently 16 permits are closed.

Many of the futile calls that were made during July of 2003 will more than likely occur before the start of this irrigation season. I anticipate closing permits in the Medicine Creek watershed and the junior permits below Harlan County Reservoir. I am also anticipating more administration on the small tributaries for individual permits.

**EXHIBIT 2**

**BUREAU OF RECLAMATION REPORT**

# **BUREAU OF RECLAMATION**

## **OPERATION AND MAINTENANCE REPORT**

### **REPUBLICAN RIVER COMPACT MEETING**

**BURLINGTON, COLORADO**

**JUNE 9, 2004**

## REPUBLICAN RIVER COMPACT MEETING

June 9, 2004  
Burlington, Colorado

### 2003 Operations

As shown on the attached Table 1, precipitation in the Republican River Basin varied from 73 percent of normal at Harlan County Dam to 119 percent of normal at Lovewell Dam. Total precipitation at Reclamation dams ranged from 15.40 inches at Enders Dam to 32.42 inches at Lovewell Dam.

Inflows varied from 26 percent of the most probable forecast at Harlan County Lake to 84 percent of the most probable forecast at Harry Strunk Lake. Inflows into Harlan County Lake were 38,430 AF and Lovewell Reservoir 47,555 AF.

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

| <u>District</u>                         | <u>Farm Delivery</u> |
|---|----------------------|
| Frenchman Valley                        | 4.1 inches           |
| H&RW                                    | 0.0 inches           |
| Frenchman-Cambridge                     |                      |
| - Meeker-Driftwood, Bartley, Red Willow | 0.0 inches           |
| - Cambridge Canal                       | 7.0 inches           |
| Almena                                  | 3.7 inches           |
| Bostwick in NE                          | 6.3 inches           |
| Kansas-Bostwick                         | 8.2 inches           |

### 2003 Operation Notes

**Bonny Reservoir**--Started the year 13.4 feet below the top of conservation. Annual computed inflow of 7,348 AF was the second lowest ever recorded at this site. Below normal inflows were recorded during every month of the year. Due to the low water supply, releases were not made to Hale Ditch (second consecutive year). The end of year storage was at an historical low, 15.1 feet below the top of active conservation.

**Enders Reservoir**--Started the year 26.2 feet below the top of conservation. Annual computed inflow of 5,940 AF was the lowest ever recorded. Eight of the twelve months recorded record low inflows. H&RW Irrigation District did not divert water due to the extremely low water supply for the second consecutive year. The end of the year storage was the lowest ever recorded for December 31<sup>st</sup> (26.5 feet below the top of conservation).

**Swanson, Hugh Butler, and Harry Strunk Lakes**—Swanson, Hugh Butler and Harry Strunk lakes started the year 26.5 feet, 19.1 feet and 12.4 feet below the top of conservation. Annual computed inflows were the lowest ever recorded at Swanson and Hugh Butler lakes and the third lowest at Harry Strunk Lake. Due to the low water supply, releases were not made from Swanson or Hugh Butler lakes for

diversion into Meeker-Driftwood, Bartley and Red Willow canals (first time ever). At the end of the year, Swanson was 24.2 feet below the top of conservation, Hugh Butler was 15.9 feet below and Harry Strunk was 9.5 feet below. Concrete repairs were made to the spillway notch at Medicine Creek Dam and to the river gate located below the dam in 2003.

**Keith Sebelius Lake**—The total inflow of 5,207 AF was between the dry and normal-year forecasts. The reservoir started the irrigation season 11.5 feet below the top of conservation and ended the year 16.9 feet below conservation.

**Harlan County Lake**—The lake elevation at the beginning of 2003 was 13.6 feet below the top of conservation. Inflow for the year totaled 38,430 AF, the lowest ever recorded. The lake finished the season at elevation 1927.65 and ended the year at an historical low level of 1926.34 feet (19.4 feet below full).

**Lovewell Reservoir**—The reservoir level began 2003 at only 2.6 feet below the top of conservation. The reservoir pool was filled to elevation 1584.6 feet in May (2.0 feet into the flood pool). Lovewell Dam recorded 9.39 inches of precipitation overnight on June 22<sup>nd</sup>. The reservoir level peaked at 1586.52 feet (3.9 feet into the flood pool). The reservoir level at the end of the irrigation season was 7.7 feet below the top of active conservation. Diversions of Republican River flows via Courtland Canal were maintained through the end of the year to increase the reservoir storage. At the end of the year the reservoir level was 2.6 feet below the top of conservation. A new broad-crested weir (ramp flume) was constructed in the spring of 2003 on Courtland Canal just downstream of Lovewell Dam to improve water measurement accuracy.

### Current Operations

Table 2 shows a summary of data for the first five months of 2004.

**Bonny Reservoir**--Bonny is presently 15.1 feet from full. Due to the low reservoir storage, releases have not been made to Hale Ditch for the past two years.

**Swanson Lake**--Presently 22.8 feet from full. Inflows for 2004 are only 19% of most probable. Current level is 1.2 feet below last year at this time. Frenchman-Cambridge Irrigation District is not planning to irrigate from Swanson Lake for the second consecutive year due to the low water supply.

**Enders Reservoir**--The reservoir is 25.5 feet from full. Inflows for 2004 are only 32% of most probable. Current level is 2.1 feet below last year at this time. H&RW Irrigation District will not irrigate this season for the third year in a row due to the water supply shortage.

**Hugh Butler Lake**--Presently 14.1 feet from full. Current level is only .9 foot above last year at this time. Frenchman-Cambridge Irrigation District is not planning to irrigate from Hugh Butler Lake for the second consecutive year due to the low water supply.

**Harry Strunk Lake**—Presently 2.4 feet below the top of conservation. Inflows in 2004 are at all time record low. Frenchman-Cambridge Irrigation District expects to deliver 8 inches to acres served by Cambridge Canal.

**Keith Sebelius Lake**--Presently 16.8 feet below full. Unless significant improvement in reservoir inflows and storage, Almena Irrigation District will not request reservoir releases this year.

**Harlan County Lake**--Presently 19.0 feet below full. Inflow for 2004 is 13% of most probable. Current level of 1926.7 feet is below contracted shut off level. Need to experience significant improvement of inflows and storage before Bostwick Irrigation District in Nebraska or Kansas Bostwick Irrigation District would request a release from Harlan County Lake this year.

**Lovewell Reservoir**--Presently 1.5 feet above the top of conservation pool. Kansas Bostwick Irrigation District expects to deliver 6 inches below Lovewell.

## Other Items

### Inspections

Comprehensive Facility Reviews (CFR) were conducted at Merritt and Virginia Smith Dams in 2003. Periodic Facility Reviews (PFR) have been conducted in 2003 at Red Willow, Davis Creek, and Medicine Creek Dams. Annual inspections were conducted at the remaining project dams in 2003.

### Safety of Dams

Virginia Smith Dam—In 2002 the drain system under the river outlet works structure was determined to have failed. This system was grouted shut in the spring of 2003. A similar drainage system is located beneath the spillway outlet structure. An investigation program is underway and this system will also be grouted shut. *Levy*

Norton Dam—At the present time there are concerns related to seepage through the left abutment foundation. It is anticipated that over the next 3 years there will be site investigation, design fix, and construction activities related to this problem.

### 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.

A Functional Exercise of the Norton Dam EAP took place in 2003. A Tabletop Exercise of the Glen Elder Dam EAP was conducted in 2003.

### Standing Operating Procedures

The Standing Operating Procedures (SOP) for Norton and Enders dams were republished in 2003. All the SOP's for the 15 dams are scheduled to be republished by the end of 2005.

### Sedimentation

A sedimentation re-survey was done for Waconda Lake in 2001 with new area-capacity data available in January 2003.

### 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. A threat assessment leading to a risk analysis is underway on project dams. Once the risk analyses are complete, we will make structural and non-structural changes to ensure a proper level of security and safety.

### Hydromet

Installation of data collection equipment (DCPs) continues on all canal diversion points and other key locations within the Republican River Basin. DCPs have been installed at all canal sites in the basin with the exception of Courtland Canal, Mile 34.8. We intend to install data collection equipment at Courtland Canal, Mile 34.8 prior to the 2004 irrigation season. In cooperation with Nebraska Department of Natural Resources, five DCPs were installed in 2002 at key locations between Harlan County Dam and the Superior-Courtland Diversion Dam to improve stream flow monitoring and enhance project operations. Additional instrumentation equipment was added at the Superior-Courtland Diversion Dam in the spring of 2003 to monitor river flows passing through the sluice gates as well as the river flows passing over the control weir. Remote monitoring equipment has also been installed at several canal wasteways within the Basin.

Historical data collected by the DCPs as well as real time data during the operation season are available by accessing Reclamation Hydromet Data System through the Internet site ([www.usbr.gov/gp](http://www.usbr.gov/gp)).

**TABLE 1**  
**NEBRASKA-KANSAS PROJECTS**  
**Summary of Precipitation, Reservoir Storage and Inflows**  
**CALENDAR YEAR 2003**

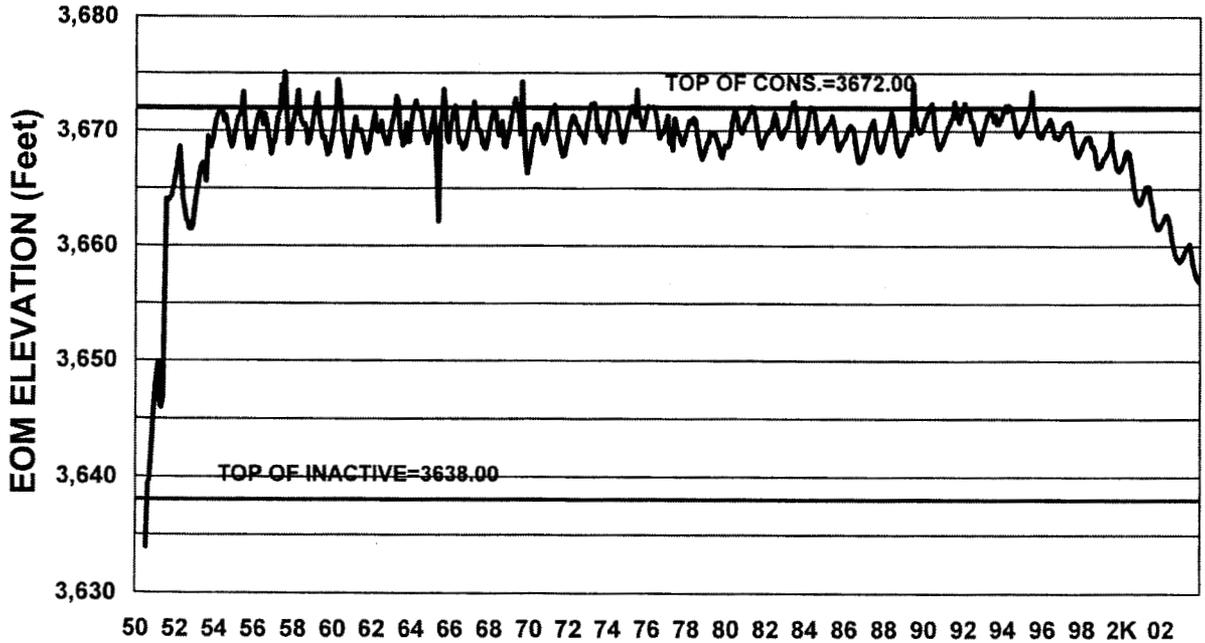
| Reservoir      | Total   | Percent Of | Storage  | Storage  | Gain or | Maximum | Storage | Minimum | Storage | Total   | Percent |
|----------------|---------|------------|----------|----------|---------|---------|---------|---------|---------|---------|---------|
|                | Precip. | Average    | 12-31-02 | 12-31-03 | Loss    | Content | Date    | Content | Date    | Inflow  | Of Most |
|                | Inches  | %          | AF       | AF       | AF      | AF      |         | AF      |         | AF      | %       |
| Box Butte      | 16.99   | 99         | 7,717    | 6,895    | -822    | 14,195  | JUL 8   | 3,579   | AUG 24  | 12,456  | 72      |
| Merritt        | 20.49   | 102        | 68,560   | 68,831   | 271     | 75,665  | MAY 4   | 31,104  | SEP 7   | 180,034 | 95      |
| Calamus        | 16.12   | 68         | 103,572  | 87,654   | -15,918 | 134,490 | APR 3   | 48,044  | OCT 3   | 257,697 | 97      |
| Davis Creek    | 22.27   | 94         | 6,339    | 10,111   | 3,772   | 31,719  | JUN 28  | 5,910   | APR 10  | 68,053  | 143     |
| Bonny          | 18.51   | 107        | 18,952   | 16,726   | -2,226  | 21,202  | JUN 19  | 16,726  | DEC 31  | 7,348   | 51      |
| Enders         | 15.40   | 81         | 11,485   | 11,267   | -218    | 13,755  | MAY 19  | 10,861  | NOV 1   | 5,940   | 31      |
| Swanson        | 17.51   | 88         | 21,864   | 26,599   | 4,735   | 32,943  | JUN 2   | 21,844  | JAN 1   | 14,393  | 28      |
| Hugh Butler    | 18.37   | 93         | 12,640   | 15,587   | 2,947   | 17,160  | JUN 30  | 12,657  | JAN 1   | 9,577   | 59      |
| Harry Strunk   | 19.40   | 94         | 18,155   | 21,540   | 3,385   | 34,222  | JUN 29  | 16,087  | AUG 23  | 30,606  | 84      |
| Keith Sebelius | 20.63   | 83         | 13,510   | 9,172    | -4,338  | 14,900  | JUN 20  | 9,093   | DEC 2   | 5,207   | 69      |
| Harlan County  | 16.70   | 73         | 160,456  | 113,346  | -47,110 | 178,914 | JUN 17  | 113,346 | DEC 31  | 38,430  | 26      |
| Lovewell       | 32.42   | 119        | 28,514   | 28,358   | -156    | 48,538  | JUN 24  | 17,100  | AUG 19  | 47,555  | 67      |
| Kirwin         | 18.19   | 78         | 41,637   | 24,575   | -17,062 | 43,944  | JUN 3   | 24,575  | DEC 30  | 7,548   | 32      |
| Webster        | 18.35   | 78         | 35,497   | 19,143   | -16,354 | 36,773  | MAY 24  | 19,143  | DEC 30  | 5,170   | 27      |
| Waconda        | 24.16   | 94         | 174,301  | 168,625  | -5,676  | 182,879 | JUN 12  | 157,927 | SEP 10  | 58,963  | 38      |
| Cedar Bluff    | 19.87   | 94         | 145,890  | 130,225  | -15,665 | 145,953 | MAR 27  | 130,225 | DEC 30  | 11,284  | 90      |

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

JANUARY - MAY 2004

| Reservoir      | Precip. | Percent Of | Storage   | Storage   | Gain or  | Inflow | Percent  |
|----------------|---------|------------|-----------|-----------|----------|--------|----------|
|                | INCHES  | Average    | 5/31/2003 | 5/31/2004 | Loss     | AF     | Of Most  |
|                |         | %          | AF        | AF        | AF       | AF     | Probable |
|                |         |            |           |           |          |        | %        |
| Bonny          | 4.81    | 74         | 20,698    | 16,878    | (3,820)  | 3,209  | 41       |
| Enders         | 5.06    | 74         | 13,722    | 12,070    | (1,652)  | 2,462  | 32       |
| Swanson        | 4.75    | 66         | 32,748    | 30,001    | (2,747)  | 6,191  | 19       |
| Hugh Butler    | 5.53    | 83         | 16,487    | 17,462    | 975      | 4,297  | 57       |
| Harry Strunk   | 5.84    | 80         | 30,291    | 31,411    | 1,120    | 11,885 | 71       |
| Keith Sebelius | 5.76    | 64         | 14,659    | 9,350     | (5,309)  | 1,721  | 58       |
| Harian County  | 8.35    | 105        | 175,629   | 116,731   | (58,898) | 9,417  | 13       |
| Lovewell       | 11.54   | 122        | 42,836    | 40,866    | (1,970)  | 16,553 | 106      |
| Kirwin         | 6.71    | 76         | 43,783    | 24,401    | (19,382) | 2,098  | 19       |
| Webster        | 5.28    | 60         | 36,603    | 18,189    | (18,414) | 1,092  | 11       |
| Waconda        | 7.00    | 78         | 182,106   | 188,625   | (13,481) | 17,539 | 24       |
| Cedar Bluff    | 4.44    | 60         | 144,961   | 125,395   | (19,566) | 2,733  | 59       |

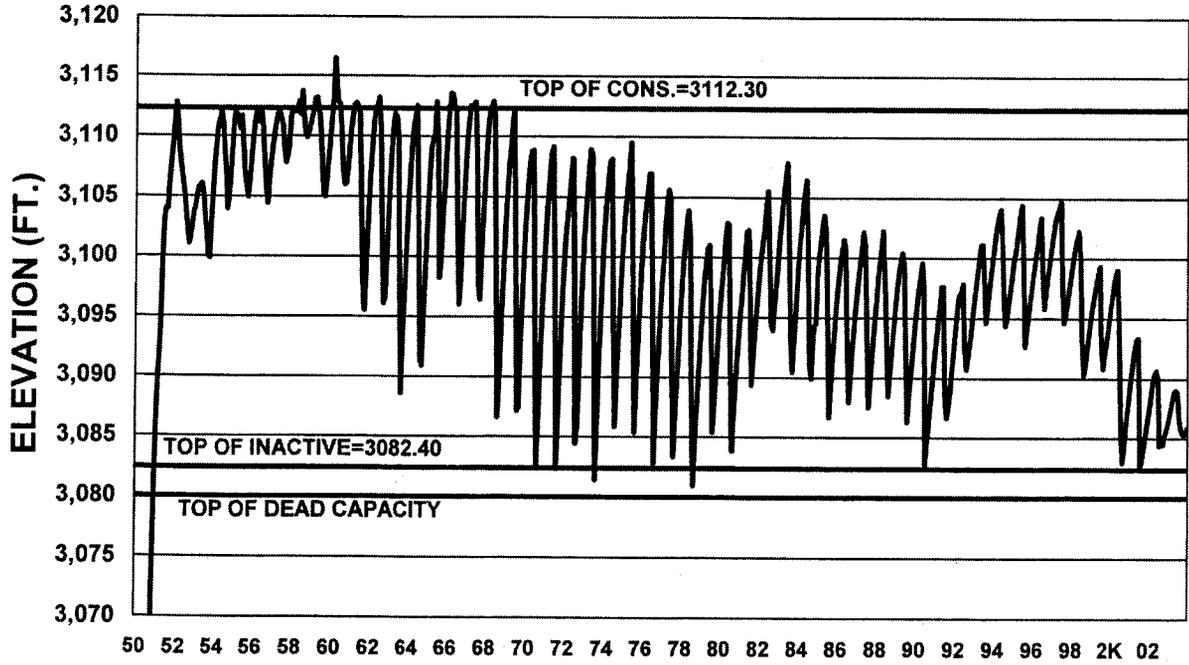
# BONNY RESERVOIR END OF MONTH ELEVATION



- 20 -

JUL 1950 THROUGH DEC 2003

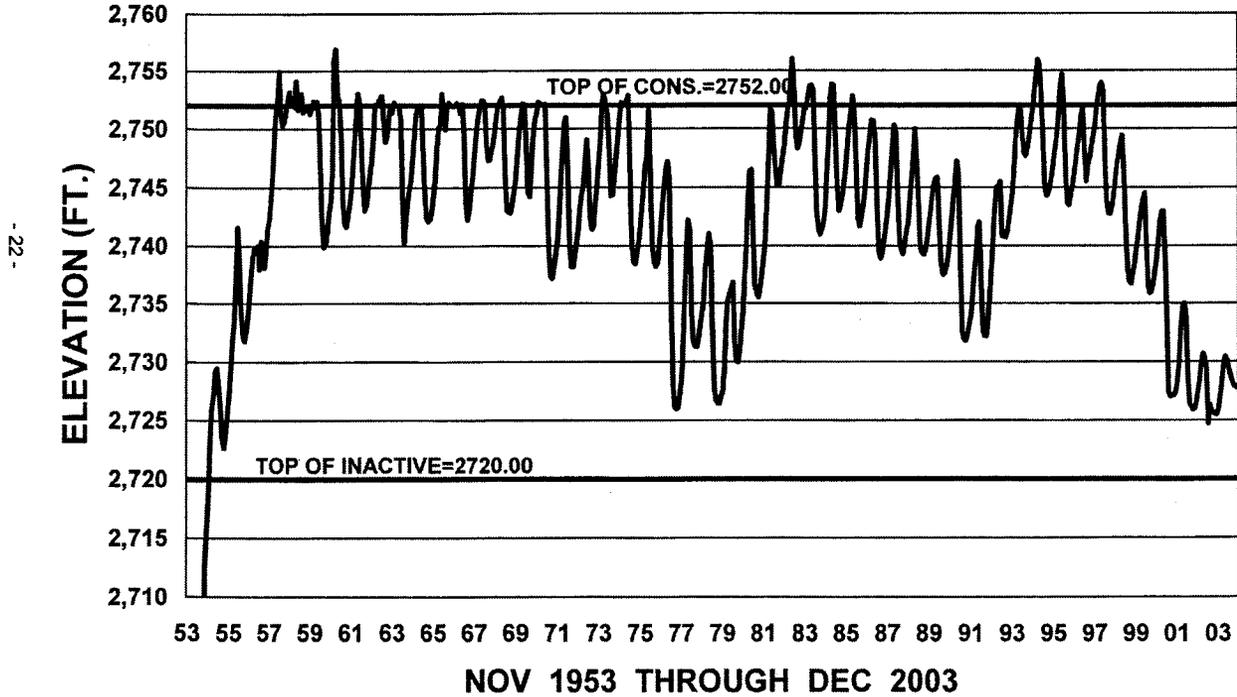
# ENDERS RESERVOIR END OF MONTH ELEVATION



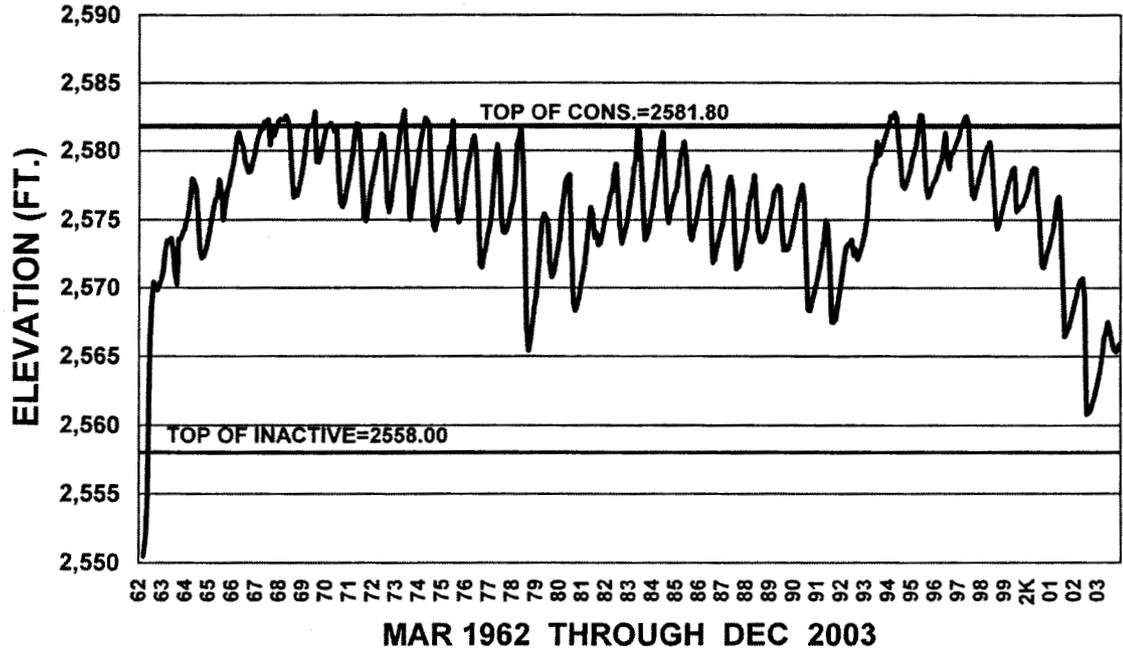
- 21 -

OCT 1950 THROUGH DEC 2003

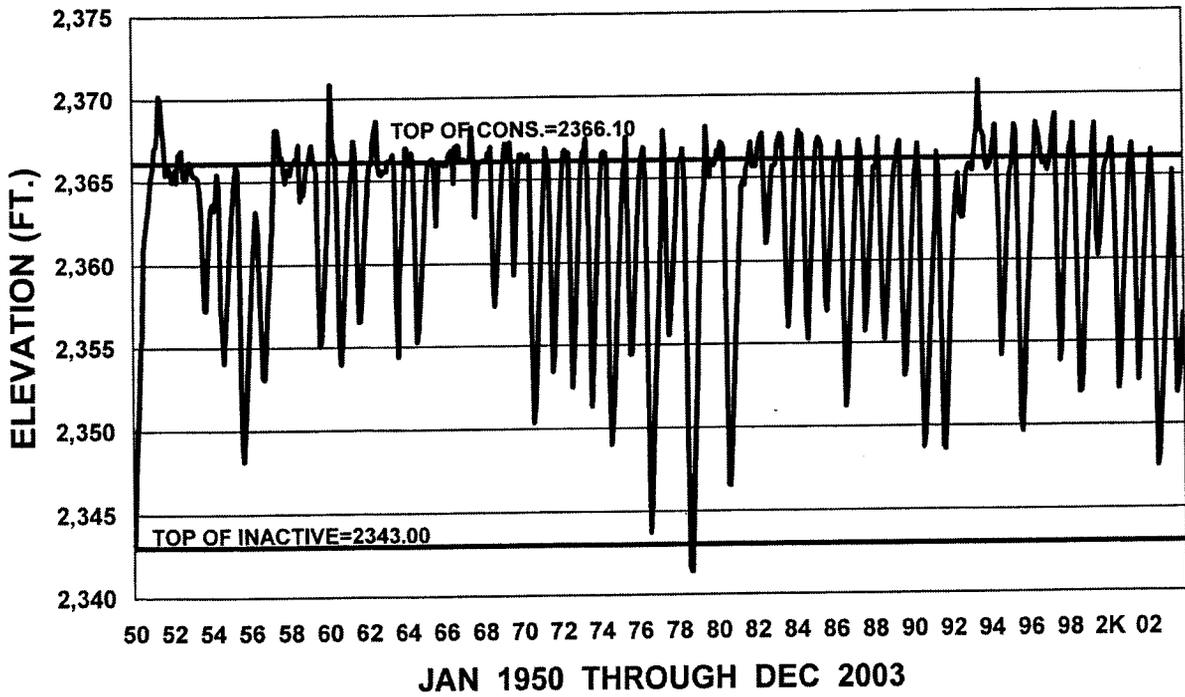
# SWANSON LAKE END OF MONTH ELEVATION



# HUGH BUTLER LAKE END OF MONTH ELEVATION

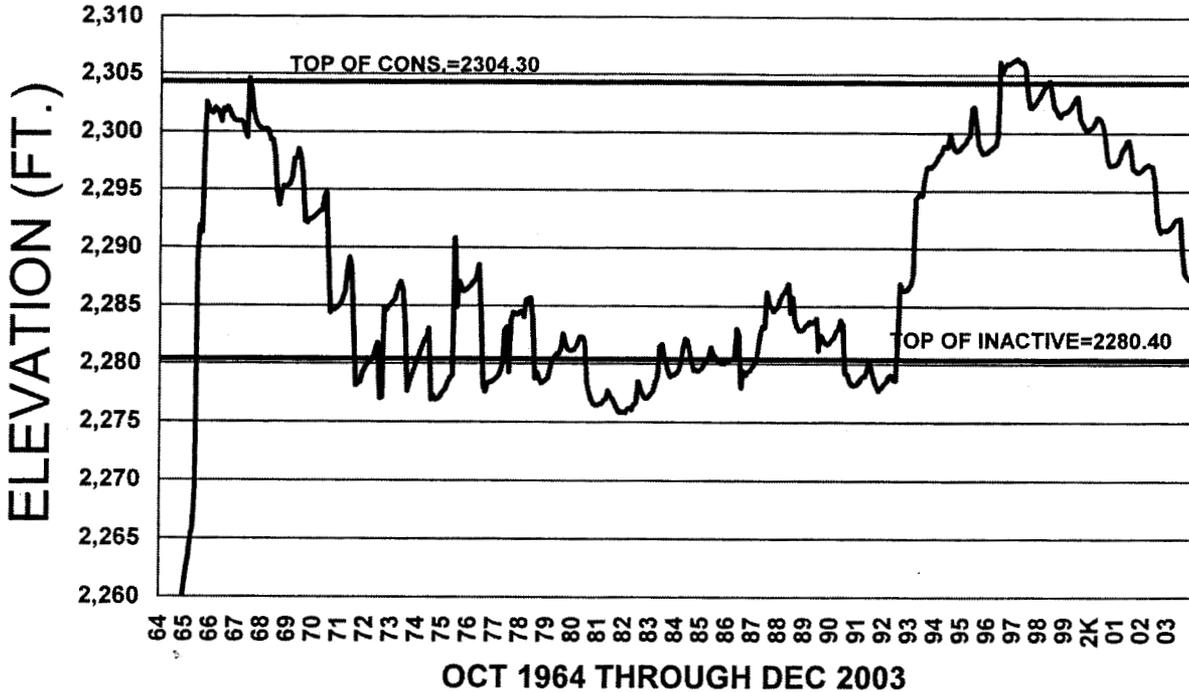


# HARRY STRUNK LAKE END OF MONTH ELEVATION

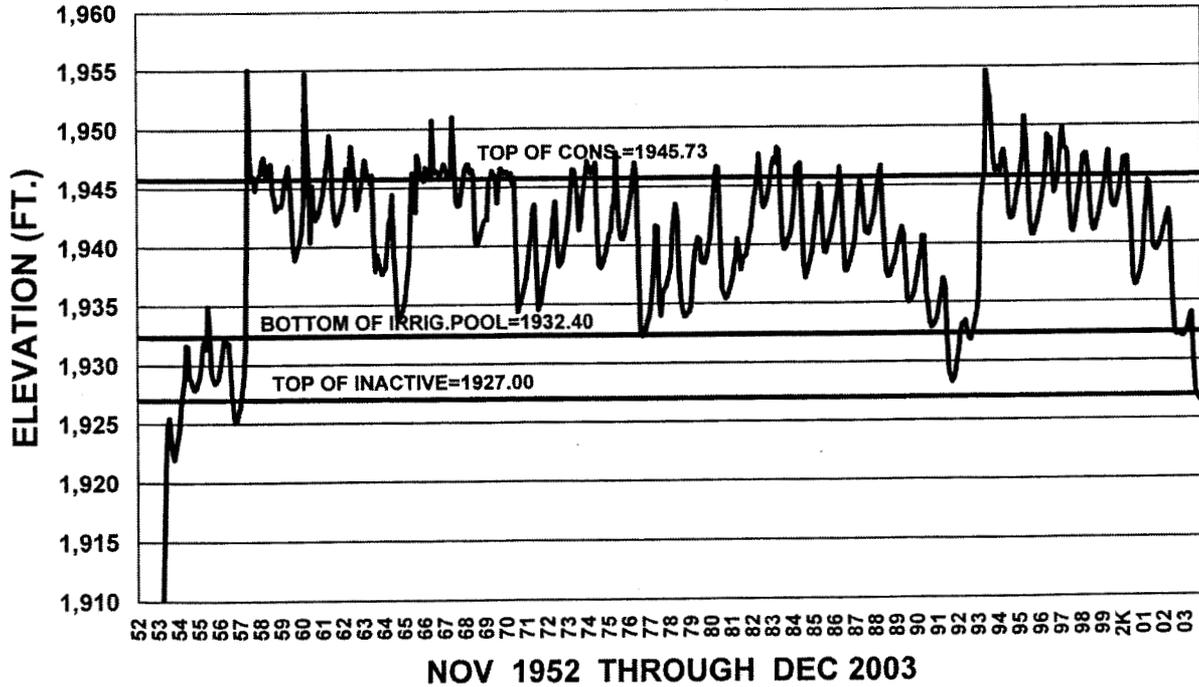


- 24 -

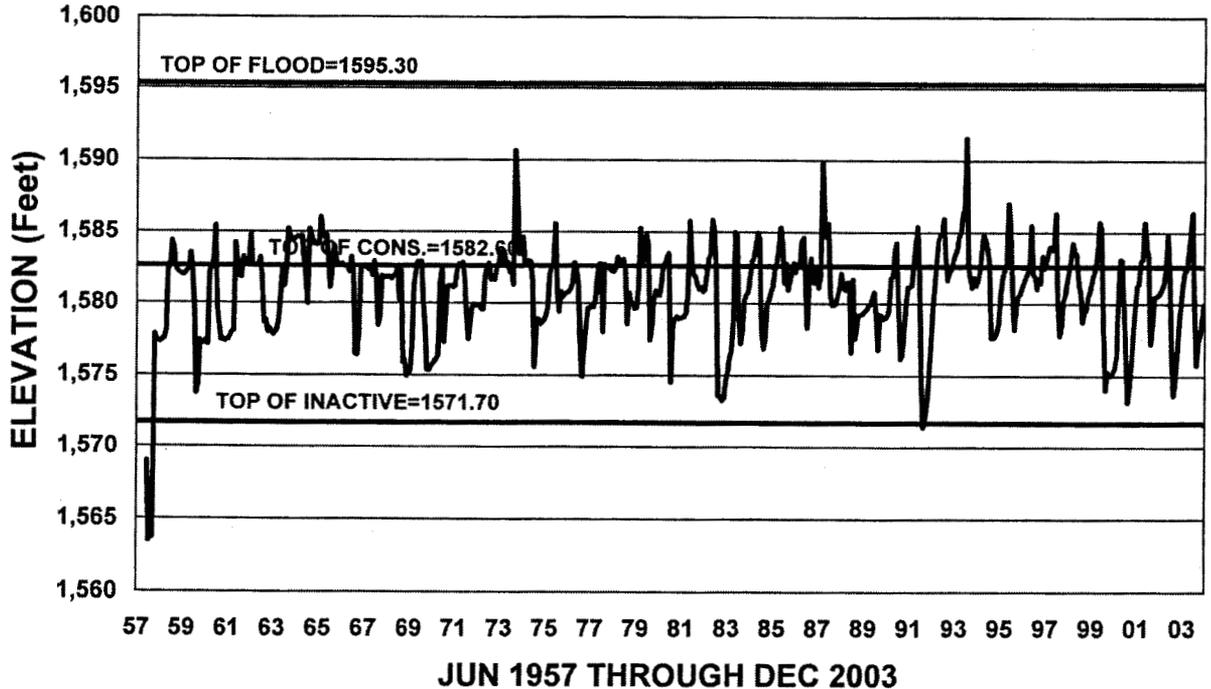
**KEITH SEBELIUS LAKE  
END OF MONTH ELEVATION**



# HARLAN COUNTY LAKE END OF MONTH ELEVATION



# LOVEWELL RESERVOIR END OF MONTH ELEVATION



**EXHIBIT 3**

**U. S. GEOLOGICAL SURVEY REPORT**

**REPUBLICAN RIVER COMPACT ADMINISTRATION**  
**U.S. Geological Survey—Water Year 2003**

The U.S. Geological Survey (USGS), Nebraska District, operates 14 real-time streamflow gaging stations and 2 reservoir stations in the Republican River Basin; the USGS also supports the real-time transmission, review and publishing of data from 3 streamflow stations operated by the Nebraska Department of Natural Resources (DNR) (see attached table). Funding for 10 of the USGS stations comes from the National Streamflow Information Program (NSIP), into which the Federal Collection of Basic Records program has been incorporated. The U.S. Army Corps of Engineers (USACE) provides funding to the USGS for 3 streamflow and 1 reservoir station and for 1 station in conjunction with the DNR; the USACE also provides funding to the USGS for operation of the real-time data transmission for the 3 stations operated by the DNR and for one of the NSIP stations. The U.S. Bureau of Reclamation supports 1 reservoir station and provides the satellite data collection platform (DCP) in support of real-time data transmission for 1 of the streamflow stations. All funding received from DNR is matched by the USGS through its Cooperative funding program.

Current (real-time), recent, and historic published data on surface-water, ground-water, and water-quality for the Nation can be accessed online via the general Water Resources Web site or from the National Water Information System Web (NWISWeb) site. Daily, monthly, and annual streamflow statistics are also available from NWISWeb. Real-time data—up to 3 days of instantaneous values or 18 months of daily values—for Nebraska and nearby streamflow stations can also be accessed directly from the Nebraska District Web site.

<http://water.usgs.gov/>

Water Resources Web site

<http://waterdata.usgs.gov/nwis/>

NWISWeb site

<http://ne.water.usgs.gov/>

Nebraska District Web site

Before the data are finalized, updates and revisions are made as needed, based on a series of quality checks and reviews. Finalized values of daily discharge and summary statistics are published in the Survey's annual water-resources data report for Nebraska. Streamflow data for water year (WY) 2003 have been published for Nebraska, including the Republican River Basin stations. Beginning last year, and continuing into the future, the data report is being released primarily as an online report. It, and those from other states, can be accessed at the Web site show below.

<http://water.usgs.gov/pubs/wdr/>

USGS Water Data Reports

Mean stream flow for WY 2003 was well below normal for most of the basin. Only Courtland Canal had an annual mean flow near the long-term mean, and 14 of the 17 stations published by the USGS had flows less than 50 percent of the long term mean (see attached table). Record lows were set for 10 of the stations for the 2003 WY and 7 of those stations had record lows the previous year. Only 3 stations had more flow than the previous year, but 2 of those were still the second lowest on record, the other was the fourth lowest. For each of the 10 Compact stations operated by the USGS, four sets of charts and tables (one for each State and one for the record) were prepared that present the flows for WY 2003 in comparison to historic flows. These include (1) a chart comparing WY 2003 daily flows to the historic day-of-year maximum, median, and minimum flows, (2) a chart comparing WY 2003 daily flows to the historic high and low WYs, (3) a table of data for the daily flow charts, (4) a bar chart of the annual mean flows for complete WYs for the period of record, and (5) a table of data for the annual mean flow chart. The daily flow charts were scaled primarily for the WY 2002 data. Therefore, because of the generally low flows for WY 2003, many of the historic high flows do not show on the charts.

Phil Soenksen  
USGS, Nebraska District  
June 4, 2004

Republican River Basin streamflow gaging stations with records published by USGS for water year (WY) 2003

| Station ID | Station Name | Telemetry | Annual mean flow (ft <sup>3</sup> /s) |                  | Percent of long-term mean | Record high/low | WYs used for period of record | Remarks |
|------------|--------------|-----------|---------------------------------------|------------------|---------------------------|-----------------|-------------------------------|---------|
|            |              |           | Water year 2003                       | Period of record |                           |                 |                               |         |

USGS Compact stations supported by the National Streamflow Information Program (NSIP)

|          |  |           |      |      |       |            |             |                        |
|----------|--|-----------|------|------|-------|------------|-------------|------------------------|
| 06821500 | Arikaree River at Haigler, Nebr                    | Satellite | 1.52 | 18.8 | 8.2%  |            | 1932 - 2003 | 2nd lowest             |
| 06823000 | N Fk Republican River at Colo-Nebr State Line      | Satellite | 24.2 | 43.4 | 55.8% |            | 1935 - 2003 | 2nd lowest             |
| 06823500 | Buffalo Creek near Haigler, Nebr                   | Satellite | 3.15 | 6.57 | 47.9% |            | 1941 - 2003 | 4th lowest             |
| 06824000 | Rock Creek at Parks, Nebr                          | Satellite | 7.74 | 12.8 | 61.4% |            | 1941 - 2003 | 2nd lowest             |
| 06827500 | S Fk Republican River near Benkelman, Nebr         | Satellite | 1.25 | 39.1 | 3.2%  | Record low | 1938 - 2003 |                        |
| 06835500 | Frenchman Creek at Culbertson, Nebr                | Satellite | 17.4 | 71.4 | 24.4% | Record low | 1951 - 2003 | since Enders Reservoir |
| 06836500 | Driftwood Creek near McCook, Nebr                  | Satellite | 1.65 | 9.15 | 18.0% |            | 1947 - 2003 | 4th lowest             |
| 06838000 | Red Willow Creek near Red Willow, Nebr             | Satellite | 5.50 | 12.9 | 42.6% | Record low | 1982 - 2003 | since Hugh Butler Lake |
| 06847500 | Sappa Creek near Stamford, Nebr (USACE funds DCP)  | Satellite | 0.25 | 43.5 | 0.6%  | Record low | 1946 - 2003 |                        |
| 06852500 | Courtland Canal at Nebr-Kans State Line (USBR DCP) | Satellite | 77.7 | 79.2 | 98.1% |            | 1950 - 2003 |                        |

USGS stations supported by USACE

|          |  |           |      |     |       |            |             |            |
|----------|--|-----------|------|-----|-------|------------|-------------|------------|
| 06837000 | Republican River at McCook, Nebr         | Satellite | 15.0 | 140 | 10.7% | Record low | 1955 - 2003 |            |
| 06844500 | Republican River near Orleans, Nebr      | Satellite | 31.1 | 246 | 12.6% | Record low | 1948 - 2003 |            |
| 06849500 | Republican River below Hartan County Dam | Satellite | 45.5 | 214 | 21.3% |            | 1953 - 2003 | 2nd lowest |

Nebr DNR stations with USGS/USACE support for DCP, review, and publishing

|          |                                      |           |      |      |       |            |             |                         |
|----------|--------------------------------------|-----------|------|------|-------|------------|-------------|-------------------------|
| 06834000 | Frenchman Creek at Palisade, Nebr    | Satellite | 18.3 | 67.2 | 27.2% | Record low | 1950 - 2003 | since Enders Reservoir  |
| 06843500 | Republican River at Cambridge, Nebr  | Satellite | 44.9 | 228  | 19.7% | Record low | 1950 - 2003 | since Harry Strunk Lake |
| 06853020 | Republican River at Guide Rock, Nebr | Satellite | 29.6 | 285  | 10.4% | Record low | 1950 - 2003 |                         |

USGS stations with support from USACE and Nebr DNR

|          |                                    |           |      |     |       |            |             |  |
|----------|------------------------------------|-----------|------|-----|-------|------------|-------------|--|
| 06828500 | Republican River at Stratton, Nebr | Satellite | 20.6 | 108 | 19.4% | Record low | 1950 - 2003 |  |
|----------|------------------------------------|-----------|------|-----|-------|------------|-------------|--|

Indicates less than previous water year

**EXHIBIT 4**  
**ENGINEERING COMMITTEE REPORT**

Republican River Compact Administration  
Engineering Committee Report  
June 9, 2004

At the 2003 annual meeting of the Republican River Compact Administration, the Commissioners assigned the Engineering Committee eight tasks:

1. Take over the operation and maintenance of the Republican River Compact Administration Groundwater Model.
2. Recommend where and how the Groundwater Model and ground water datasets for the model should be housed.
3. Review the Republican River Compact accounting procedures and reporting requirements and recommend any necessary corrections for adoptions by the Republican River Compact Administration.
4. Develop and recommend an accounting program for adoption by the Republican Compact Administration.
5. Develop a user's manual for the Republican River Compact Administration Groundwater Model.
6. Develop data and update the Groundwater Model through 2002.
7. By April 15, 2004, exchange the data required by the Republican River Compact accounting procedure, and use these data to complete the accounting of the virgin water supply, the computed water supply, and the beneficial consumptive uses in the Basin for the calendar year 2003.
8. Develop Compact accounting for the years 1995 to 2002, using methods generally based on those prescribed in the accounting procedures. Of note is that these final data would be developed for informational purposes only.

The Engineering Committee and technical representatives from the States of Colorado, Kansas, and Nebraska participated in numerous collaborative work activities and phone conferences and met May 3-4, 2004.

The following assignments and work activities were completed:

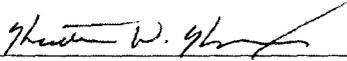
1. Based upon a review of the RRCA Accounting Procedures and Formulas, the Engineering Committee recommends adoption of the following changes:
  - a. Deletion of the Appendix C designation for the document since it is a self-standing document.
  - b. An indication of the revision date to the Accounting Procedures.
  - c. Addition of page numbers to the Table of Contents.
  - d. Page 8 - definition of RRCA groundwater model.
  - e. Page 14 - Section III. E. - Clarification that the computations done each year are for the preceding year.
  - f. Page 32 - fixed a reference to the RRCA groundwater model to be consistent with others.

- g. In section V.A.8., all the references to wells are made singular.
  - h. Re-indexing section V.A.8.
  - i. Attachment 7. The formula in Col 11 should be Col 10/Col 2, not Col 10/Col 1.
  - j. Substitution of Attachment 8 with the July 1, 2003 RRCA Ground Water Model narrative description final report.
  - k. Miscellaneous typographical errors have been corrected.
2. Exchanged model data sets and supporting data as well as streamflow, climatological, diversion, reservoir evaporation, and ground water well permitting information and data by 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 2003.
  3. Assumed operation and maintenance of the RRCA Ground Water Model. Recommend Principia Mathematica maintain and operate the website that hosts the model, its datasets, and reporting functions.

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

1. Develop a checklist and complete the exchange of data and reporting requirements described in the Final Settlement Stipulation and RRCA Accounting Procedures by July 31, 2004.
2. Continue review of the accounting procedures and formulas and development of the RRCA Accounting Spreadsheet and reach mutual acceptance on both by August 31, 2004.
3. Reach mutual acceptance of ground water pumping, diversion, consumptive use and other requisite data for the Accounting Procedures for the period 2001 through 2003 by August 31, 2004.
4. Complete the final RRCA Ground Water Model runs for the years 2001 through 2003 by September 15, 2004.
5. Complete RRCA accounting for the years 1995 through 2003 by September 30, 2004.
6. Develop a users manual for the RRCA Ground Water Model by September 30, 2004.
7. Develop a GIS coverage (electronic map) of the Republican River Basin and the designated drainage basins by September 30, 2004.
8. By April 15, 2005, exchange the data required by the Republican River Compact accounting procedure, and use these data to complete the accounting of the virgin water supply, the computed water supply, and the beneficial consumptive uses in the Basin for the calendar year 2004.

9. By June 1, 2005, the Engineering Committee will investigate the irrigation efficiencies and recharge values for different types of ground water irrigation systems and prepare a report for submittal to the RRCA by June 1, 2005.



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Kenneth W. Knox  
Engineer Adviser for Colorado



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David W. Barfield  
Engineer Adviser for Kansas



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Ann Salomon Bleed  
Engineer Adviser for Nebraska