SYNOPSIS

General

This year is the 58th consecutive year that an Annual Operating Plans (AOP) has been prepared for the Federally-owned dams and reservoirs in the Niobrara, Lower Platte, and Kansas River Basins. The plan has been developed by the Water Operations Group in McCook, Nebraska for the 16 dams and reservoirs that are located in Colorado, Nebraska, and Kansas. These reservoirs, together with 9 diversion dams, 9 pumping plants, and 20 canal systems, serve approximately 269,744 acres of project lands in Nebraska and Kansas. In addition to irrigation and municipal water, these features serve flood control, recreation, fish and wildlife purposes. A map at the end of this report shows the location of these features.

The reservoirs in the Niobrara and Lower Platte River Basins are operated by either irrigation or reclamation districts. The reservoirs in the Kansas River Basin are operated by either the Bureau of Reclamation (Reclamation), or the Corps of Engineers. Kirwin Irrigation District provides operational and maintenance assistance for Kirwin Dam. The diversion dams, pumping plants, and canal systems are operated by either irrigation or reclamation districts.

A Supervisory Control and Data Acquisition System (SCADA) located at McCook are used to assist in operational management of all 11 dams under Reclamation's jurisdiction that are located in the Kansas River Basin. A Hydromet system collects and stores near real-time data at selected stations in the Nebraska-Kansas Projects. The data includes water levels in streams, canals, reservoirs, and also gate openings. This data is transmitted to a satellite and downloaded to a Reclamation receiver in Boise, Idaho. The data can then be accessed by anyone interested in monitoring water levels or water usage in an irrigation system. The Nebraska-Kansas Projects currently have 66 Hydromet stations that can be accessed. The McCook Field Office has installed and maintains 39 Hydromet stations. When fully implemented, the projects will have a Hydromet station installed to provide real-time data on all reservoirs, most diversion dams, and most of the measuring structures in the irrigation systems. These stations can be found on the Internet by accessing Reclamation's home page at http://www.usbr.gov/gp. From the home page, select "Hydromet Data Center" under the Water Operations heading.

The Headlines 2010 that follows this synopsis is indicative of the awareness that the local people have of the natural resource development and conservation in the Niobrara, Lower Platte, and Kansas River Basins.

2010 Summary

Climatic Conditions

Precipitation at the project dams during 2010 ranged from 72 percent of normal at Cedar Bluff Dam to 143 percent of normal at Bonny Dam. Temperatures and precipitation during the first 3 months of the year were near normal throughout the projects area. Precipitation totals varied from 59 percent to 168 percent during January through March with January precipitation below normal, February precipitation near normal, and March precipitation above normal.

Temperatures were slightly below normal during the spring. Precipitation during April was generally above normal throughout the basin, while May precipitation varied across the basin.

Average temperatures were near normal through June, July, and August. Total precipitation for June was above normal project wide. July and August precipitation was generally below normal in the project with the exception of northern Nebraska in July and southwestern Nebraska in August.

September precipitation varied considerably throughout the projects while precipitation in October was well below normal. September precipitation varied from 200 percent of normal at Bonny Dam to 24 percent of normal at Medicine Creek Dam. None of the project dams recorded above normal precipitation during October. Temperatures in September and October were above normal throughout the projects area.

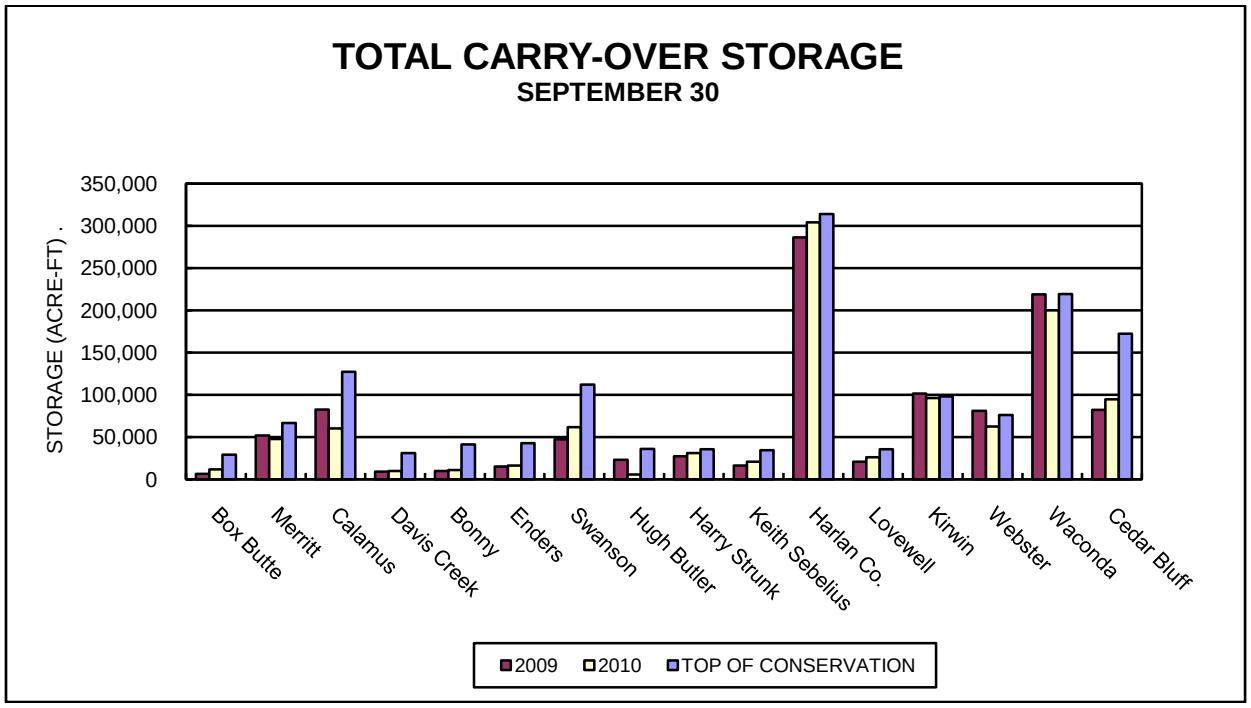
Precipitation during November continued below normal over much of the project with Davis Creek Dam recording only 9 percent of normal precipitation. December precipitation was varied among project reservoirs with Bonny Dam recording 189 percent of normal while Lovewell Dam recorded zero precipitation. Temperatures were above normal in November and December.

Storage Reservoirs

1. Conservation Operations. The 2010 inflow was above the dry-year forecast at all 16 of the project reservoirs. Enders and Lovewell Reservoirs had inflows between the dry- and normal-year forecasts. Box Butte, Merritt, Davis Creek, Bonny, Webster, and Cedar Bluff Reservoirs along with Swanson, Harry Strunk, Keith Sebelius, Waconda, and Harlan County Lakes had inflows between the normal- and wet-year forecasts. Calamus and Kirwin Reservoirs along with Hugh Butler Lake had inflows above the wet-year forecast.

Eight of the 16 project reservoirs had below average carryover storage from the 2009 water year. Reservoir releases were made from Merritt, Virginia Smith, Medicine Creek, Harlan County, Kirwin, Webster, and Glen Elder Dams to maintain or reduce reservoir levels prior to the 2010 irrigation season. Just prior to the irrigation season, Enders and Box Butte Reservoirs, along with Keith Sebelius, Swanson, and Hugh Butler Lakes, did not have sufficient storage to provide water users with a full water supply. Harry Strunk, Harlan County, and Waconda Lakes and Lovewell, Kirwin, and Webster Reservoirs had some flood storage occupied prior to the irrigation season. The irrigation demand months of July and August did little to reduce storage in those project reservoirs that had storage available for full irrigation as inflows maintained reservoir pools. Precipitation during June also helped in reducing the demands on project reservoirs. Reservoir storage was below normal at nine project reservoirs at the end of 2010.

The following summarized graph shows a comparison of 2009 and 2010 carry-over storage conditions as compared to the top of conservation storage for all reservoirs in the Niobrara, Lower Platte, and Kansas River Basins as of September 30.



2. Flood Control Operations. Harry Strunk, Harlan County, Waconda Lakes, Lovewell, Kirwin, and Webster Reservoirs utilized flood pool storage and made flood releases in 2010. The water year 2010 flood damages prevented by the operation of Reclamation's Nebraska-Kansas Projects facilities was $42,127,300 as determined by the Corps of Engineers. An additional benefit of $27,035,400 was credited to Harlan County Lake. The accumulative total of flood control benefits for the years 1951 through 2010 by facilities in this report total $2,015,704,900 (see Table 5). Box Butte, Merritt, Calamus, and Davis Creek Reservoirs do not have a designated flood pool and have not accrued any flood benefits to date.

A summary of precipitation, reservoir storage, and inflows at Nebraska-Kansas Projects facilities can be found in Table 7.

Water Service

There was 329,570 acre-feet (AF) of water diverted to irrigate approximately 201,652 acres of project lands in the 12 irrigation districts (see Tables 3 and 6). The project water supply was either inadequate or limited for 84,302 acres of the total project lands. This includes lands in Mirage Flats, Frenchman Valley, H&RW, Frenchman-Cambridge, and Almena Irrigation Districts. The project water supplies for the other units mentioned in this report were more than adequate in 2010.

The water requirements of three municipalities, one rural water district, and two fish hatchery facilities were furnished from storage releases or natural flows.

Irrigation Production

The 2010 crop yields on lands receiving project water in the Nebraska-Kansas Projects were lower than 2009. The average corn yield, the principal crop of all reporting districts, was 163 bushels per acre. This was approximately 35 bushels per acre less than in 2009. The start of irrigation releases from project reservoirs varied considerably but was generally later than normal due to abundant rainfall in June. Below normal rainfall was experienced during much of the growing season with a few exceptions. Temperatures were near normal during the season. Crop maturity progressed near normal during the growing season. Most irrigation districts had finished making irrigation releases by early September and all irrigation districts had finished delivering water by the end of September. Corn harvest generally commenced in late October and concluded in November. Only two canals did not divert water in 2010 as a result of short water supplies.

Fish and Wildlife and Recreation Benefits

The National Recreational Fisheries Policy declares that the Government's vested stewardship responsibilities must work in concert with the state managing agency's recreational fisheries constituency and the general public to conserve, restore, and enhance recreational fisheries and their habitats. The Nebraska-Kansas Area Office is available for meetings if requested with Nebraska, Colorado, and Kansas State Management Agencies to discuss the Annual Operating Plans (AOP). Information is solicited that will allow Reclamation the flexibility to enhance fisheries resources while still meeting contractual obligations with the various irrigation districts.

During the 2010 season, normal reservoir operations were favorable for recreation and fish and wildlife uses at project reservoirs with full or nearly full conservation pool levels. Higher water levels during 2010 were experienced at most reservoirs in the Kansas River Basin providing increased recreation benefits. Higher than normal inflows prevented summer drawdown from irrigation releases and thus did not allow for some late summer shoreline revegetation. Increased water levels did however submerge existing shoreline vegetation.

The Calamus Fish Hatchery is located below Virginia Smith Dam and Calamus Reservoir. The hatchery consists of an office/visitor center, laboratory, two residences, a shop and feed storage building, 51 rearing ponds lined with VLDPE and covering 45.5 acres, 24 concrete raceways, two lined effluent ponds, eight groundwater wells, a 36-inch diameter buried pipeline from Virginia Smith Dam, a groundwater degassing tank, and a computerized monitoring and alarm system. The hatchery is operated and maintained by the Nebraska Game and Parks Commission (Commission) and produces approximately 53 million fish per year. The water supply is provided by natural flows passed through Virginia Smith Dam and from Calamus Reservoir storage through an agreement dated July 28, 1988, between the Commission and the Twin Loups Reclamation District.

A rapid increase in reservoir elevation in June 2007 prompted the addition of 50,000 pounds of concrete weights to be placed on the outlet works to counter any uplift on the structure.

In 2010, the Frenchman Valley Irrigation District (along with Reclamation) again provided support for a Limited Irrigation Demonstration project with the University of Nebraska Extension Service.

Meeker-Driftwood, Red Willow, and Cambridge Units, Frenchman-Cambridge Division in Nebraska

General

Service is provided for Frenchman-Cambridge Irrigation District by Meeker-Driftwood Canal to 16,855 acres; Red Willow Canal to 4,797 acres; Bartley Canal to 6,353 acres; and Cambridge Canal to 17,664 acres. The water supply for these lands is provided by storage in Swanson, Hugh Butler, and Harry Strunk Lakes, and inflows of the Republican River and Red Willow and Medicine Creeks. The Frenchman-Cambridge Irrigation District has replaced all of the open ditch laterals which were economically feasible with buried pipe which has significantly increased both system and on-farm efficiencies.

2010 Summary

The annual precipitation total of 23.01 inches at Trenton Dam was 115 percent of normal. The inflow of 41,512 AF to Swanson Lake was between the normal-year and wet-year forecasts.

The lake level began the year at elevation 2738.17 feet and gradually increased to a peak elevation of 2745.59 feet (6.41 feet below the top of conservation) on June 22. The reservoir level decreased during the irrigation season and reached a minimum elevation of 2739.54 feet on November 11. The district diverted 19,469 AF from June 23 through September 3 and delivered 6,705 AF to the farms. At the end of the year the reservoir level was 11.86 feet below the top of conservation at 2740.14 feet. The Corps of Engineers determined that Swanson Lake prevented $2,478,500 in flood damages.

The annual precipitation total of 21.73 inches at Red Willow Dam was 111 percent of normal. The annual inflow of 20,120 AF into Hugh Butler Lake was slightly above the wet-year forecast. The reservoir level at the first of the year was 2554.07 feet, 27.7 feet below the top of conservation. Due to dam safety concerns, releases were made throughout the year to maintain the reservoir elevation between 2552.00 and 2554.00 feet. June precipitation totaled 7.46 inches, the greatest June total recorded at the site. June inflow, 4,874 AF, was the greatest June inflow since 1972. Runoff from the June storms increased the reservoir level to a peak of 2556.03 feet on June 23. Releases were increased to 190 cfs and the pool level was drawn down to 2554.00 feet by the end of the month. No irrigation releases were made from Hugh Butler Lake in 2010. The end of year storage at Hugh Butler Lake was the lowest end of December storage ever recorded at the site (elevation 2553.52 feet), 28.28 feet below the top of conservation. The Corps of Engineers determined that Hugh Butler Lake prevented $8,800 of flood damages during 2010.

During an inspection at Red Willow Dam in July 2005, a small quantity of fine sand was discovered near the river outlet works stilling basin drain outlet. Five piezometers were installed in April 2006 adjacent to the outlet works and spillway stilling basins, and temporary plugs were placed in the under-drain outlets in May. An Internal Alert was issued and remains in effect. Grouting of the under-drain system was scheduled for the fall of 2009. On October 21, 2009 a small hole was observed on the face of the downstream embankment in a location 130 feet upstream of the outlet works gatehouse on the alignment of the outlet works conduit. Dye was introduced into the hole and subsequent excavation revealed cracks in the embankment material. Reclamation geotechnical engineers and geologists were onsite to conduct the investigations in coordination with the NKAO staff. A Response Level I was declared and remain in effect. A Dam Safety decision document was signed calling for a reduction of the reservoir water surface elevation to a range within 2552 to 2554 feet msl. Releases will continue as necessary to maintain the reservoir level within the operating level of 2552.00 to 2554.00 feet until permanent corrective actions are made to the dam.

The annual precipitation total of 21.46 inches at Medicine Creek Dam was 104 percent of normal. The inflow of 49,407 AF was between the normal-year and wet-year forecasts. The reservoir level at the beginning of 2010 was only .5 foot below the top of conservation. Releases were made during the first 4 months of 2010 to maintain the reservoir elevation approximately .5 foot below the flood pool. The reservoir was allowed to fill on April 16 and the reservoir level gradually increased to elevation 2368.76 feet (2.66 feet into flood pool) on June 23. Medicine Creek Dam recorded 5.74 inches of precipitation during June, 159 percent of average. Uncontrolled spills reached approximately 90 cfs from the dam during the month. Irrigation releases began on July 14 and ran through September 7 reducing the reservoir level to 2363.15 feet.

The district diverted 24,280 AF into Cambridge Canal and delivered 8,487 AF to 15,384 acres of district lands. Late fall and early winter inflows increased the level of Harry Strunk Lake to only 0.4 foot below the top of conservation at the end of the year (2365.71 feet). A release of 40 cfs was made during November and December to maintain the pool level. The Corps of Engineers determined that Harry Strunk Lake prevented $2,457,400 in flood damages.

In 2008, the district began making water measurement improvement upgrades on Meeker, Red Willow, and Cambridge Canals, including improving farm turnouts, lateral turnouts, and canal measurement structures. Reclamation provided financial assistance for this project through a cooperative agreement with the district.

Almena Unit, Kanaska Division in Kansas

General

Service is available to 5,764 acres in the Almena Irrigation District. The project water supply is provided by Prairie Dog Creek flows and Keith Sebelius Lake storage.

The water service contract for the city of Norton, Kansas provides for a maximum annual use of 1,600 AF from Keith Sebelius Lake.

2010 Summary

The annual precipitation at Norton Dam totaled 27.48 inches, which is 112 percent of normal. The total inflow of 12,245 AF was between the normal-year and wet-year forecasts. The reservoir was 9.7 feet below the top of conservation pool at the first of the year (2294.64 feet). The reservoir level slowly increased to elevation 2296.33 feet on June 11 when Norton Dam received 3.86 inches of rain overnight. Runoff from the storm increased the level of Keith Sebelius Lake approximately 2.5 feet. An additional 3 inches of rain over the following 2 weeks increased the lake level to a peak of 2299.48 feet on June 24. Norton Dam recorded 7.81 inches of precipitation during June. Irrigation releases were made during July and August reducing the lake level by 1.4 feet. The lake level ended the year at elevation 2296.81 feet (7.49 feet below the top of conservation). The Corps of Engineers determined that Keith Sebelius Lake prevented $20,800 in flood damages.

Franklin, Superior-Courtland, and Courtland Units, Bostwick Division in Nebraska and Kansas

General

Harlan County Lake storage and Republican River flows provide a project water supply for 22,454 acres in the Bostwick Irrigation District in Nebraska, and 13,378 acres in the Kansas-Bostwick Irrigation District No. 2 above Lovewell Reservoir. This storage and natural flows, together with White Rock Creek flows and Lovewell Reservoir storage, furnish a water supply for 29,122 acres below Lovewell Reservoir in the Kansas-Bostwick Irrigation District.

The lands in the Franklin and Superior-Courtland Units are in the Bostwick Irrigation District in Nebraska. The lands in the Courtland Unit downstream of the Kansas state line are in the Kansas-Bostwick Irrigation District.

In accordance with the off-season flow alternative outlined in Reclamation's final environmental assessment dated December 16, 1983, and amended on November 21, 2002, Harlan County Lake releases will be 10 cfs during the months of December, January, and February, except when the reservoir is at low levels. During water-short years releases for these 3 months will be either zero or 5 cfs depending on reservoir levels. At the request of the state of Nebraska, releases of 30 cfs for a maximum 5-day period may be made to relieve icing conditions in the river.

Natural gain in streamflow, plus irrigation return flows, and operational bypass at Superior-Courtland Diversion Dam will provide some flow downstream.

The Kansas Department of Wildlife and Parks have requested that the Kansas-Bostwick Irrigation District and Reclamation maintain, when possible, a flow of 20 cfs into Lovewell Reservoir when the Courtland Canal is in operation and the conservation pool is below capacity. This recommended inflow provides excellent fishing around the canal inlet to the reservoir. The seepage below Lovewell Dam into White Rock Creek maintains a small live stream throughout the year.

Harlan County Dam is currently operating under an Interim Operating Plan (IOP) initiated in 2003. The IOP resulted from a “Dam Safety Assurance Study” that evaluated the adequacy of the dam as required by Corps of Engineers dam safety regulations. There were three primary findings from this study: 1) Tainter gate bearings may experience significant bearing friction when operated under increasing water load; 2) concerns of spillway stability due to water pressure in the foundation of the dam; 3) spillway was found to be hydrologically deficient when modern hydrologic criteria were applied to the dam. The IOP has resulted in a decrease of flood protection capability.

The “Lovewell Reservoir Regulation Manual” was revised in 2010 to allow for a 2 foot raise in the conservation pool for water storage during drought years. Storing additional water during drought periods increases the project’s irrigation beneficial purpose, without adversely affecting the ability to protect for the project design storm.

A calculation of available water supply will be made at the end of March to determine if additional water can be stored in Lovewell Reservoir.

Bostwick Division - Harlan County Lake Operations

2010 Summary

The annual precipitation at Harlan County Dam totaled 31.66 inches of rainfall, which is 139 percent of normal. The 2010 inflow of 239,054 AF was between the normal- and wet-year forecasts. Harlan County Lake began 2010 approximately 0.46 foot above the top of conservation pool, at 1946.19 feet. The lake level was maintained during January and allowed to fill to elevation 1947.89 feet by March 5. The additional water was temporarily stored into the flood pool so that releases could be made to verify the downstream channel capacity. River releases were staged up from 300 to 1,000 cfs from March 5 through March 9 and maintained at 1,000 cfs through March 22. It was determined that this flow was near the current channel capacity below Harlan County Dam. Flood releases resumed following the channel capacity exercise and the lake level was maintained near elevation 1947.0 feet through early June. Precipitation during June totaled 9.69 inches at the dam, the most ever recorded for the month. Runoff increased the reservoir level to a peak elevation of 1949.66 feet on June 30. River releases were staged up to 900 cfs and maintained through July 28 to evacuate flood storage. Irrigation releases started June 26 and continued through mid September. The lake level decreased to elevation 1944.85 feet on October 5. Lake levels increased through the fall and early winter. The reservoir elevation was 1946.05 feet (0.32 foot in the flood pool) on December 31, 2010. Harlan County Lake prevented $27,035,400 of downstream flood damages during 2010 according to the Corps of Engineers.

A total of 18,030 AF (approximately 28 percent of total inflow) was delivered to Lovewell Reservoir through the Courtland Canal.

Bostwick Division - Nebraska

2010 Summary

Irrigation diversions were made into Franklin, Naponee, Franklin Pump, Superior, and Courtland Canals in Nebraska in 2010. The district diverted 22,011 AF of water and delivered 7,046 AF to the farm headgates (32 percent delivery efficiency).

The district continued to replace open ditch laterals with buried pipe to reduce losses and improve system operations. In 2009, the district was selected for, Water for America Challenge Grant for the replacement of approximately 4 miles of open ditch laterals with buried pipe. Indentified laterals on the Franklin Canal include: 16.3, 21.1, 21.6, 23.2, 24.0, and a portion of 30.9. These pipe projects provide delivery system improvements by eliminating seepage losses, eliminating operational wasteways, improve water measurement and accounting by utilizing water meters, and provide on-farm benefits by allowing land owners the opportunity to convert to sprinkler irrigation

Bostwick Division - Kansas

2010 Summary

The 2010 precipitation at Lovewell Dam totaled 26.39 inches, which was 96 percent of normal. The reservoir elevation at the beginning of 2010 was 1579.26 feet (3.34 feet below the top of conservation pool). The pool level gradually increased, filling the conservation capacity on May 16 (1582.6 feet). June precipitation totaled 6.31 inches, 158 percent of average. Lovewell Dam received over 3 inches of rainfall on June 19 and 20. The reservoir level increased 2.8 feet peaking at 1587.58 feet on June 27. A 500 cfs flood release was made from July 1 through July 16. The flood release combined with canal releases to decrease the reservoir level 4.2 feet and the flood pool was evacuated on July 25. Irrigation releases to the canal began in earnest on June 23 and continued through September 14. The reservoir level at the end of the year was 1579.47 feet (3.13 feet below top of conservation). Lovewell Reservoir prevented $2,478,100 of downstream flood damages during 2010 according to the Corps of Engineers.

The Kansas-Bostwick Irrigation District diverted a total of 58,233 AF to serve 9,872 acres above Lovewell Dam and 26,886 acres below Lovewell Dam. Farm delivery efficiency averaged 56 percent in the district.

TABLE 1

RESERVOIR DATA - NIOBRARA, LOWER PLATTE AND KANSAS RIVER BASINS

		CAPACITY ALLOCATIONS 1/			
			LIVE CONSERVATION		
RESERVOIR		DEAD	Inactive	Active	FLOOD CONTROL
Box Butte	- Elevation Ft.	3969.0	3979.0	4007.0	---
	Total Acre-feet	188	2,392	29,161	---
	Net Acre-feet	188	2,204	26,769	---
Merritt	- Elevation Ft.	2875.0	2896.0	2946.0	---
	Total Acre-feet	774	4,662	66,726	---
	Net Acre-feet	774	3,888	62,064	---
Calamus	- Elevation Ft.	2185.0	2213.3	2244.0	---
	Total Acre-feet	817	24,646	127,400	---
	Net Acre-feet	817	23,829	102,754	---
Davis Creek	- Elevation Ft.	1998.5	2003.0	2076.0	---
	Total Acre-feet	76	172	31,158	---
	Net Acre-feet	76	96	30,986	---
Bonny 4/	- Elevation Ft.	3635.5	3638.0	3672.0	3710.0
	Total Acre-feet	0	0	36,508	165,328
	Net Acre-feet	0	0	36,508	128,820
Enders	- Elevation Ft.	3080.0	3082.4	3112.3	3127.0
	Total Acre-feet	7,516	8,948	42,910	72,958
	Net Acre-feet	7,516	1,432	33,962	30,048
Swanson	- Elevation Ft.	2710.0	2720.0	2752.0	2773.0
Lake	Total Acre-feet	2,118	12,430	112,214	246,291
	Net Acre-feet	2,118	10,312	99,784	134,077
Hugh Butler	- Elevation Ft.	2552.0	2558.0	2581.8	2604.9
Lake	Total Acre-feet	5,185	8,921	36,224	85,070
	Net Acre-feet	5,185	3,736	27,303	48,846
Harry Strunk	- Elevation Ft.	2335.0	2343.0	2366.1	2386.2
Lake	Total Acre-feet	3,408	7,897	34,647	87,361
	Net Acre-feet	3,408	4,489	26,750	52,714
Keith Sebelius	- Elevation Ft.	2275.0	2280.4	2304.3	2331.4
Lake	Total Acre-feet	1,636	3,993	34,510	133,740
	Net Acre-feet	1,636	2,357	30,517	99,230
Harlan County	- Elevation Ft.	1885.0	1927.0	1945.73	1973.5
Lake 3/	Total Acre-feet	0	118,099	314,111	814,111
	Net Acre-feet	0	118,099	196,012	500,000
Lovewell	- Elevation Ft.	1562.07	1571.7	1582.6	1595.3
	Total Acre-feet	1,674	11,644	35,666	86,131
	Net Acre-feet	1,674	9,970	24,022	50,465
Kirwin	- Elevation Ft.	1693.0	1697.0	1729.25	1757.3
	Total Acre-feet	4,969	8,515	98,154	313,290
	Net Acre-feet	4,969	3,546	89,639	215,136
Webster	- Elevation Ft.	1855.5	1860.0	1892.45	1923.7
	Total Acre-feet	1,256	4,231	76,157	259,510
	Net Acre-feet	1,256	2,975	71,926	183,353
Waconda	- Elevation Ft.	1407.8	1428.0	1455.6	1488.3
Lake	Total Acre-feet	248	26,237	219,420	942,408
	Net Acre-feet	248	25,989	193,183	722,988
Cedar Bluff	- Elevation Ft.	2090.0	2107.8	2144.0	2166.0
	Total Acre-feet	4,402	28,574	172,452	364,342
	Net Acre-feet	4,402	24,172	143,878	191,890
Total Storage (A.F.)		34,267	271,361	1,467,418	3,824,985 2/
Total Net Acre-feet		34,267	237,094	1,196,057	2,357,567

1/ Includes space for sediment storage.

2/ Includes total active storage for Box Butte, Merritt, Calamus, and Davis Creek Reservoirs.

3/ Bottom of irrigation pool for Harlan County Lake is 1932.5 feet, 164,111 AF.

4/ New area-capacity table Effective Jan 1, 2011

TABLE 2
SUMMARY OF 2010 OPERATIONS

FRENCHMAN-CAMBRIDGE DIVISION
FRENCHMAN UNIT

	ENDERS RESERVOIR					CULBERTSON CANAL		CULBERTSON EXT.CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	534	307	64	0.03	15,825	0	0	0	0
Feb.	566	278	78	0.66	16,035	0	0	0	0
Mar.	906	307	136	2.18	16,498	0	0	0	0
Apr.	986	298	320	3.57	16,866	521	0	0	0
May	674	307	329	1.85	16,904	2,754	37	0	0
June	936	298	504	4.60	17,038	2,203	136	0	0
July	359	307	470	2.20	16,620	2,067	174	0	0
Aug.	623	307	457	6.13	16,479	1,760	352	0	0
Sep.	339	298	283	1.50	16,237	304	72	0	0
Oct.	420	307	178	0.42	16,172	0	0	0	0
Nov.	729	298	152	0.66	16,451	0	0	0	0
Dec.	680	307	81	0.60	16,743	0	0	0	0
TOTAL	7,752	3,619	3,052	24.40	--	9,609	771	0	0

NOTE: Acres irrigated 2009: Culbertson Canal - 1,426 acres; Culbertson Extension Canal - 0 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
MEEKER-DRIFTWOOD UNIT

	SWANSON LAKE					MEEKER-DRIFTWOOD	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	3,797	61	243	0.09	58,807	0	0
Feb.	4,855	56	311	0.43	63,295	0	0
Mar.	7,970	61	542	1.94	70,662	0	0
Apr.	7,811	60	1,360	3.95	77,053	0	0
May	5,968	61	1,639	2.41	81,321	0	0
June	3,497	1,095	2,031	3.47	81,692	1,273	34
July	1,922	9,630	2,129	3.62	71,855	9,553	3,001
Aug.	2,921	8,331	1,926	5.29	64,519	7,912	3,272
Sep.	0	1,093	1,764	0.33	61,662	731	398
Oct.	0	61	1,270	0.78	60,331	0	0
Nov.	573	60	583	0.38	60,261	0	0
Dec.	2,198	61	313	0.32	62,085	0	0
TOTAL	41,512	20,630	14,111	23.01	--	19,469	6,705

NOTE: Acres irrigated 2010: Meeker-Driftwood Canal - 13,446 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
RED WILLOW UNIT

	HUGH BUTLER LAKE					RED WILLOW CANAL		BARTLEY CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	1,676	1,845	38	0.03	6,150	0	0	0	0
Feb.	1,419	1,666	42	0.58	5,861	0	0	0	0
Mar.	3,257	3,326	79	2.36	5,713	0	0	0	0
Apr.	1,795	1,190	221	2.85	6,097	0	0	0	0
May	1,351	1,230	190	2.13	6,028	0	0	1,727	0
June	4,874	4,130	331	7.46	6,441	0	0	2,145	49
July	1,369	1,266	323	2.55	6,221	0	0	2,448	1,435
Aug.	871	696	322	1.90	6,074	0	0	1,994	906
Sep.	714	631	256	0.62	5,901	0	0	275	85
Oct.	896	484	186	0.72	6,127	0	0	0	0
Nov.	897	978	94	0.35	5,952	0	0	0	0
Dec.	1,001	875	44	0.18	6,034	0	0	0	0
TOTAL	20,120	18,317	2,126	21.73	--	0	0	8,589	2,475

NOTE -- Acres irrigated 2010: Red Willow Canal - 0 acres; Bartley Canal 5,039 acres.

FRENCHMAN-CAMBRIDGE DIVISION (Continued)
CAMBRIDGE UNIT

	HARRY STRUNK LAKE					CAMBRIDGE CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	3,352	3,074	116	0.10	33,792	0	0
Feb.	3,411	2,777	127	0.80	34,299	0	0
Mar.	7,364	7,950	243	2.61	33,470	0	0
Apr.	4,327	960	675	2.51	36,162	0	0
May	3,602	2,747	626	2.47	36,391	2,172	0
June	7,705	3,673	1,099	5.74	39,324	4,939	55
July	4,355	7,577	1,012	1.59	35,090	8,348	4,452
Aug.	4,666	8,063	950	4.10	30,743	7,649	3,539
Sep.	2,429	1,549	651	0.42	30,972	1,172	441
Oct.	2,650	62	550	0.56	33,010	0	0
Nov.	2,746	1,738	280	0.41	33,738	0	0
Dec.	2,800	2,460	142	0.15	33,936	0	0
TOTAL	49,407	42,630	6,471	21.46	--	24,280	8,487

NOTE -- Acres irrigated 2010: Cambridge Canal 15,384 acres.

TABLE 2
SUMMARY OF 2010 OPERATIONS

KANASKA DIVISION
ALMENA UNIT

	KEITH SEBELIUS LAKE						ALMENA CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To City Of Norton (AF)	Diversions To Canal (AF)	Delivered To Farms (AF)
Jan.	555	51	94	0.06	17,796	20	0	0
Feb.	616	45	111	0.46	18,256	17	0	0
Mar.	916	51	207	1.83	18,914	20	0	0
Apr.	1,298	51	499	5.18	19,662	21	0	0
May	1,059	55	714	3.66	19,952	24	0	0
June	5,913	63	890	7.81	24,912	33	518	0
July	591	1,245	972	2.45	23,286	46	1,978	673
Aug.	166	854	1,162	1.82	21,436	50	834	204
Sep.	316	70	801	3.22	20,881	40	0	0
Oct.	33	66	543	0.23	20,305	35	0	0
Nov.	335	51	253	0.61	20,336	21	0	0
Dec.	447	51	132	0.15	20,600	20	0	0
TOTAL	12,245	2,653	6,378	27.48	--	347	3,330	877

NOTE: Acres irrigated 2010: Almena Canal - 1,700 acres.

BOSTWICK DIVISION
FRANKLIN UNIT

	HARLAN COUNTY LAKE Data from Corps of Engineers					FRANKLIN CANAL		NAPONEE CANAL	
Month	Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	Release To Canal (AF)	Delivered To Farms (AF)	Release To Canal (AF)	Delivered To Farms (AF)
Jan.	14,464	8,944	785	0.00	324,993	0	0	0	0
Feb.	17,238	555	919	0.50	340,757	0	0	0	0
Mar.	30,603	33,743	1,423	1.50	336,194	0	0	0	0
Apr.	30,740	25,803	3,554	5.72	337,577	0	0	0	0
May	26,385	24,530	4,620	5.74	334,812	0	0	0	0
June	54,487	15,108	5,496	9.69	368,695	0	0	0	0
July	19,051	51,290	6,998	1.93	329,458	5,285	1,105	308	81
Aug.	15,558	27,219	7,127	4.00	310,670	8,330	2,653	375	90
Sep.	6,142	6,863	5,888	1.24	304,061	264	17	7	0
Oct.	5,048	0	5,692	0.78	303,417	0	0	0	0
Nov.	9,069	0	3,008	0.53	309,478	0	0	0	0
Dec.	10,269	0	1,383	0.03	318,364	0	0	0	0
TOTAL	239,054	194,055	46,893	31.66	--	13,879	3,775	690	171

NOTE: Acres irrigated 2010: Franklin Canal - 7,357 acres; Naponee Canal - 660 acres.

BOSTWICK DIVISION (Continued)
SUPERIOR-COURTLAND UNIT

	FRANKLIN PUMP CANAL		SUPERIOR CANAL			COURTLAND CANAL - ABOVE LOVEWELL NEBRASKA USE		KANSAS USE	
Month	Diverted To Canal (AF)	Delivered To Farms (AF)	Diverted To Canal (AF)	Delivered To Farms (AF)	Total Diversion (AF)	Total (AF)	Delivered To Farms (AF)	Diversion To Canal (AF)	Delivered To Farms (AF)
Jan.	0	0	0	0	0	0	0	0	0
Feb.	0	0	0	0	0	0	0	0	0
Mar.	0	0	0	0	0	0	0	0	0
Apr.	0	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0
June	0	0	0	0	3,793	0	0	1,474	11
July	381	89	3,086	1,275	14,978	107	89	10,232	4,159
Aug.	370	83	3,403	1,494	18,675	95	70	7,508	4,254
Sep.	0	0	0	0	9,844	0	0	976	444
Oct.	0	0	0	0	0	0	0	0	0
Nov.	0	0	0	0	0	0	0	0	0
Dec.	0	0	0	0	0	0	0	0	0
TOTAL	751	172	6,489	2,769	47,290	202	159	20,190	8,868

NOTE: Acres irrigated 2010: Franklin Pump Canal - 679 acres; Superior Canal - 5,595 acres.
Courtland Canal-Nebraska use - 1,097 acres.
Courtland Canal-Kansas use - 9,872 acres.

BOSTWICK DIVISION (Continued)
COURTLAND UNIT

	Est. Flow from White Rock Creek (AF)	Inflow from Courtland 34.8 (AF)	LOVEWELL RESERVOIR Total Inflow (AF)	Outflow (AF)	Gross Evap. (AF)	Precip. (Inches)	End of Month Content (AF)	COURTLAND (Below) Release To Canal (AF)	Delivered To Farms (AF)
Jan.	1,161	0	1,161	12	141	0.15	27,536	0	0
Feb.	1,266	0	1,266	11	173	0.54	28,618	0	0
Mar.	4,499	0	4,499	12	351	3.71	32,754	0	0
Apr.	3,326	0	3,326	12	967	2.23	35,101	0	0
May	3,590	0	3,590	12	823	4.87	37,856	0	0
June	17,063	250	17,313	1,581	1,505	6.31	52,083	1,866	36
July	10,121	2,575	12,696	31,873	1,412	1.85	31,494	16,466	10,959
Aug.	1,355	7,668	9,023	16,406	1,345	2.00	22,766	15,331	10,294
Sep.	1,957	7,537	9,494	5,149	806	3.00	26,305	4,380	2,406
Oct.	112	0	112	12	691	0.26	25,714	0	0
Nov.	1,126	0	1,126	12	374	1.47	26,454	0	0
Dec.	780	0	780	12	168	0.00	27,054	0	0
TOTAL	46,356	18,030	64,386	55,104	8,756	26.39	--	38,043	23,695

NOTE: Acres irrigated 2010: Courtland Canal below Lovewell 26,886 acres.

TABLE 3

ACRES IRRIGATED IN 2010

Irrigation District and Canal	Acres With Service Available	Acres Irrigated in 2010
Mirage Flats Irrigation District		
Mirage Flats Canal	11,662	6,857
Ainsworth Irrigation District		
A insworth Canal	35,000	34,589
Twin Loups Irrigation District		
Above Davis Creek	34,053	33,751
Below Davis Creek	21,063	20,646
Total Twin Loups Irrigation District	55,116	54,397
Frenchman Valley Irrigation District		
C ulbertson Canal	9,292	1,426
H & RW Irrigation District		
C ulbertson Extension Canal	11,915	0
Frenchman-Cambridge Irrigation District		
Meeker-Driftwood Canal	16,855	13,446
Red Willow Canal	4,797	0
Bartley Canal	6,353	5,039
Cambridge Canal	17,664	15,384
Total Frenchman-Cambridge Irrigation District	45,669	33,869
Almena Irrigation District		
Almena Canal	5,764	1,700
Bostwick Irrigation District in Nebraska		
F ranklin Canal	10,920	7,357
Naponee Canal	1,650	660
F ranklin Pump Canal	2,090	679
Superior Canal	5,848	5,595
Courtland Canal (Nebraska)	1,946	1,097
Total Bostwick Irrigation Dist. in Nebraska	22,454	15,388
Kansas-Bostwick Irrigation District		
Courtland Canal above Lovewell	13,378	9,872
Courtland Canal below Lovewell	29,122	26,886
Total Kansas-Bostwick Irrigation District	42,500	36,758
Kirwin Irrigation District		
K irwin Canal	11,465	6,905
Webster Irrigation District		
Osborne Canal	8,537	4,329
Glen Elder Irrigation District	10,370	5,434
TOTAL PROJECT USES	269,744	201,652
Non-Project Uses		
Hale Ditch	700	350
TOTAL PROJECT AND NON-PROJECT	270,444	202,002

TABLE 5

FLOOD DAMAGES PREVENTED BY NEBRASKA-KANSAS PROJECTS RESERVOIRS

RESERVOIR	DURING FY 2010	PRIOR TO 2010	ACCUMULATED TOTAL
BONNY	$8,100	$2,805,700	$2,813,800
ENDERS	$8,100	$3,565,600	$3,573,700
SWANSON	$2,478,500	$27,101,900	$29,580,400
HUGH BUTLER	$8,800	$3,017,900	$3,026,700
HARRY STRUNK	$2,457,400	$10,195,600	$12,653,000
KEITH SEBELIUS	$20,800	$3,990,700	$4,011,500
HARLAN COUNTY	$27,035,400	$191,092,100	$218,127,500
LOVEWELL	$2,478,100	$149,828,500	$152,306,600
KIRWIN	$7,441,200	$87,045,400	$94,486,600
WEBSTER	$2,520,400	$110,383,300	$112,903,700
WACONDA	$22,275,500	$1,225,013,100	$1,247,288,600
CEDAR BLUFF	$2,430,400	$132,502,400	$134,932,800
TOTAL	$69,162,700	$1,946,542,200	$2,015,704,900

Estimates of damages prevented are received from the Army Corps of Engineer's Kansas City District Office. The Accumulated Totals date from 1951 through 2010. Cumulative totals are revised by the Corps of Engineers in some cases to reflect data not previously included in the reporting and may not match previous cumulative totals.

Construction Cost of storage dams was $208,954,130.
The reservoirs upstream of Harlan County Lake did not receive benefits for damages prevented from 1972 to 1993.

TABLE 6
WATER DIVERTED IN 2010
(Units - Acre-Feet)

Irrigation District and Canal	2010 Irrigation Operations From	To	10-Year Average Diversion (2000-2009)	2010 Diversion
Mirage Flats Irrigation District				
Mirage Flats Canal	7/18	8/31	9,972	9,365
Ainsworth Irrigation District				
Ainsworth Canal	5/8	9/14	76,316	70,341
Twin Loups Irrigation District				
Above Davis Creek	4/26	9/22	44,655	42,645
Below Davis Creek	5/5	9/13	42,720	38,785
Total Twin Loups Irrigation District			87,375	81,430
Frenchman Valley Irrigation District				
Culbertson Canal	4/21	9/7	5,813	9,609
H & RW Irrigation District				
Culbertson Extension Canal	Did not run.		1,710	0
Frenchman-Cambridge Irrigation District				
Meeker-Driftwood Canal	6/23	9/3	7,851	19,469
Red Willow Canal	Did not run.		2,582	0
Bartley Canal	5/3	9/7	3,461	8,589
Cambridge Canal	5/17	9/3	18,998	24,280
Total Frenchman-Cambridge Irrigation District			32,892	52,338
Almena Irrigation District				
Almena Canal	6/14	8/19	2,215	3,330
Bostwick Irrigation District in Nebraska				
Franklin Canal	7/13	9/2	14,625	13,879
Naponee Canal	7/12	9/1	1,264	690
Franklin Pump Canal	7/13	8/18	1,380	751
Superior Canal	7/9	8/31	7,171	6,489
Courtland Canal (Nebraska)	6/1	9/14	1,023	202
Total Bostwick Irrigation District in Nebraska			25,463	22,011
Kansas-Bostwick Irrigation District				
Courtland Canal above Lovewell	6/10	9/27	16,579	20,190
Courtland Canal below Lovewell	6/2	9/14	37,680	38,043
Total Kansas-Bostwick Irrigation District			54,259	58,233
Kirwin Irrigation District				
Kirwin Canal	6/28	9/1	12,548	12,905
Webster Irrigation District				
Osborne Canal	6/28	8/31	7,411	9,264
Glen Elder Irrigation District	7/10	9/3	7,101	744
TOTAL			323,075	329,570

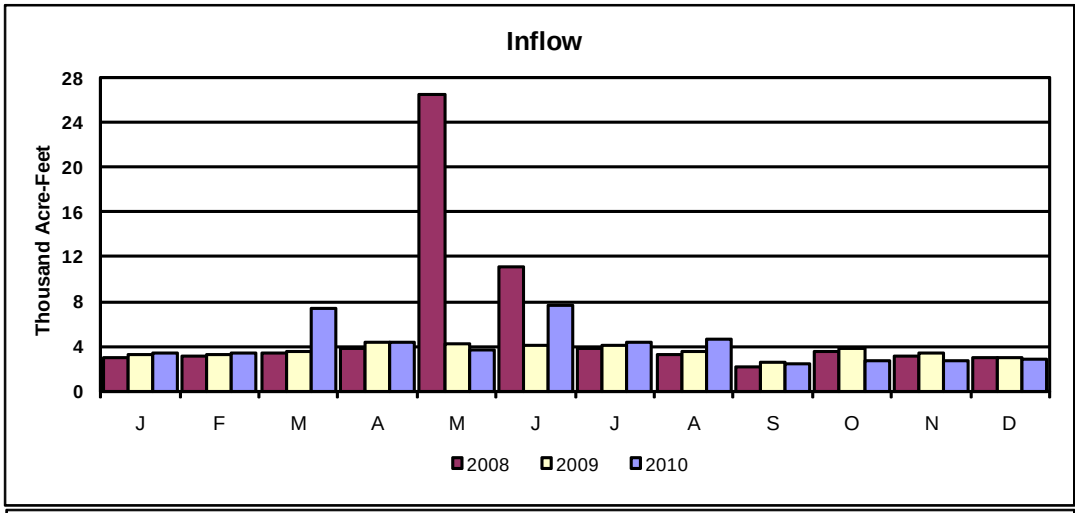
TABLE 7
NEBRASKA-KANSAS PROJECTS
Summary of Precipitation, Reservoir Storage and Inflows
CALENDAR YEAR 2010

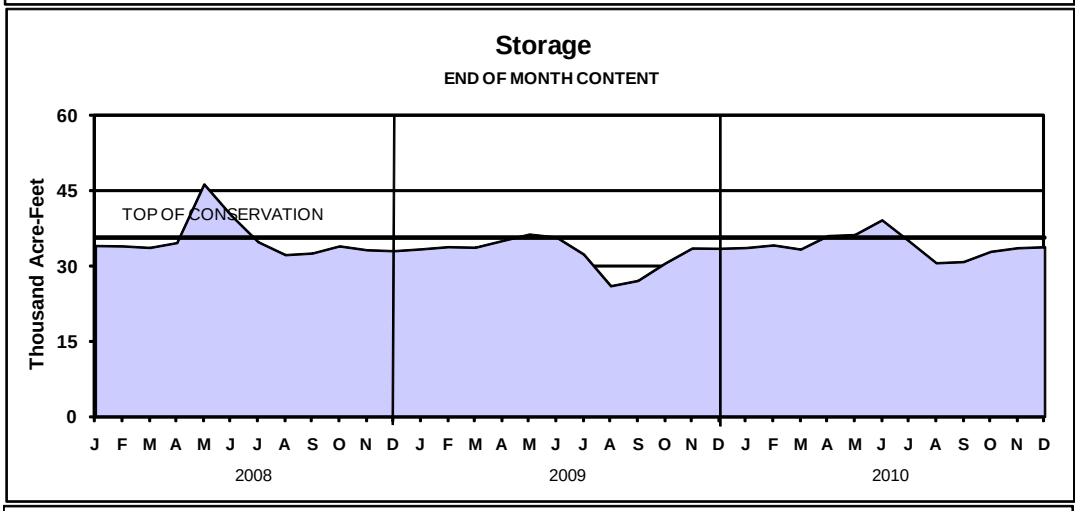
Reservoir	Total Precip. Inches	Percent Of Average %	Storage 12-31-09 AF	Storage 12-31-10 AF	Gain or Loss AF	Maximum Storage Content AF	Maximum Storage Date	Minimum Storage Content AF	Minimum Storage Date	Total Inflow AF
Box Butte	18.96	112	10,213	14,523	4,310	21500	JUL 4	10213	JAN 1	17,984
Merritt	24.14	118	61,100	60,831	-269	67896	JUN 14	39294	AUG 31	185,740
Calamus	27.59	114	107,417	108,981	1,564	137964	JUN 16	59224	SEP 20	340,094
Davis Creek	27.09	109	8,922	9,350	428	29349	JUL 19	8274	APR 28	45,405
Bonny	24.57	143	10,220	11,460	1,240	17941	JUL 8	10270	JAN 1	15,989
Enders	24.40	128	15,662	16,743	1,081	17105	JUN 24	15662	JAN 1	7,752
Swanson	23.01	115	55,314	62,085	6,771	83144	JUN 22	55414	JAN 1	41,512
Hugh Butler	21.73	111	6,357	6,034	-323	7578	JUN 23	5673	OCT 8	20,120
Harry Strunk	21.46	104	33,630	33,936	306	39813	JUN 23	29626	SEP 7	49,407
Keith Sebelius	27.48	112	17,386	20,600	3,214	25016	JUN 24	17400	JAN 1	12,245
Harlan County	31.66	139	320,258	318,364	-1,894	369129	JUL 1	303015	OCT 5	239,054
Lovewell	26.39	96	26,528	27,054	526	52419	JUN 27	22450	AUG 24	64,386
Kirwin	31.42	133	98,662	98,916	254	127401	JUN 23	93457	AUG 23	100,264
Webster	20.86	88	78,514	63,328	-15,186	86127	APR 25	61821	NOV 11	50,038
Waconda	28.09	110	213,790	198,060	-15,730	290986	JUL 24	187347	SEP 11	492,406
Cedar Bluff	15.12	72	83,699	91,110	7,411	102105	JUN 26	83738	JAN 1	26,202

EXHIBIT 9A

HARRY STRUNK LAKE

ACTUAL OPERATION





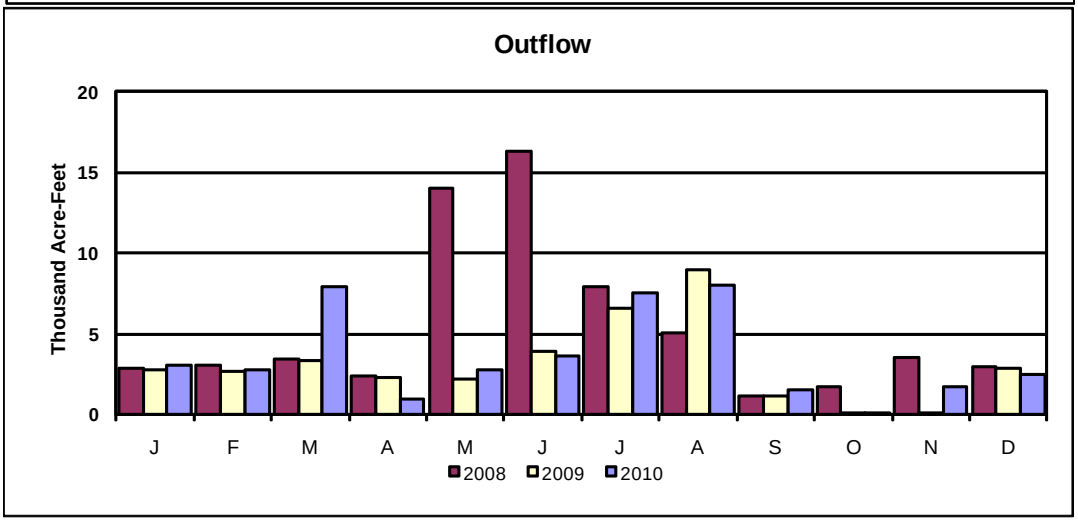
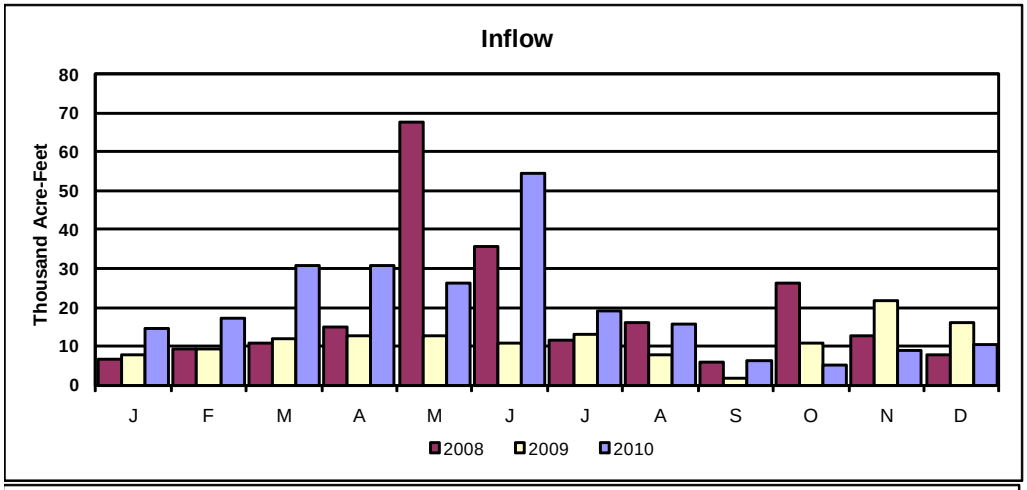
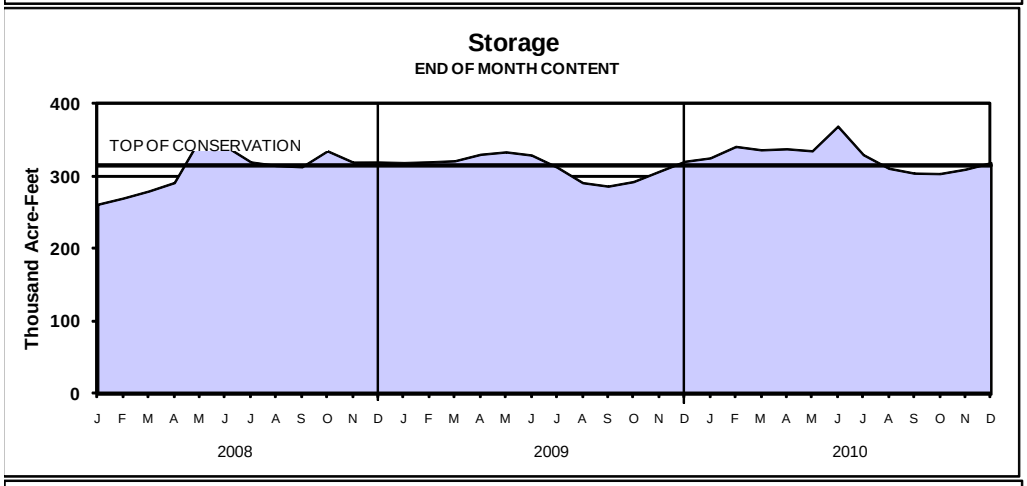


EXHIBIT 11A

HARLAN COUNTY LAKE

ACTUAL OPERATION





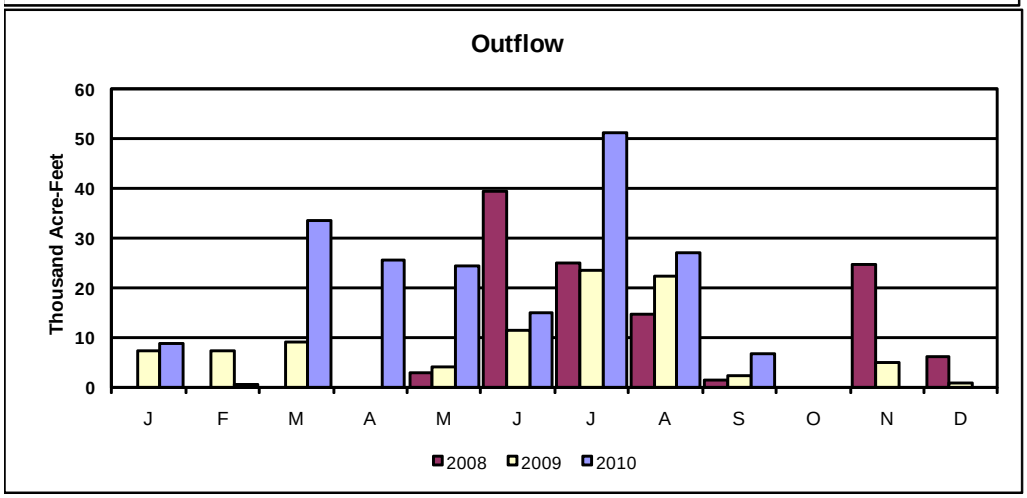
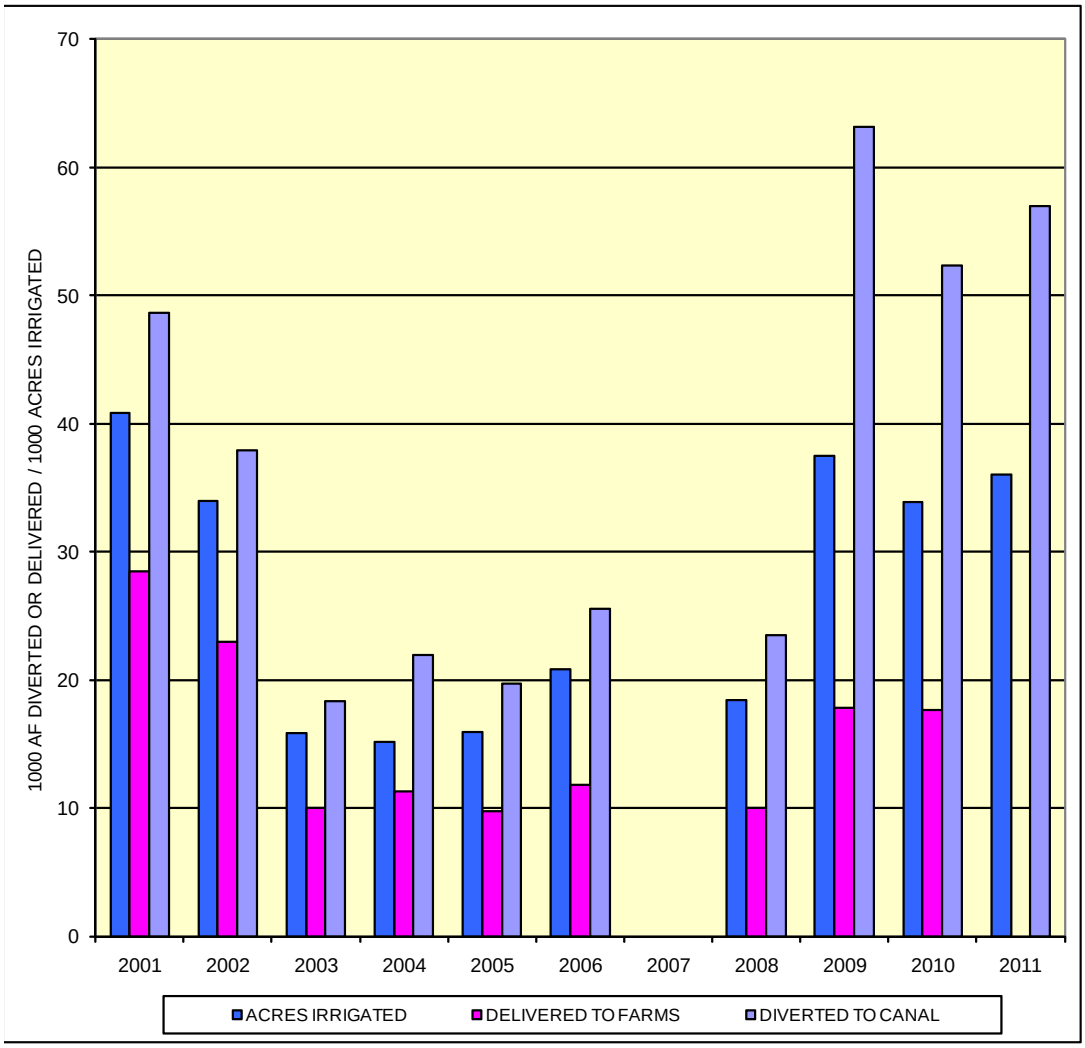


EXHIBIT 22

FRENCHMAN-CAMBRIDGE IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
DIVERTED af/acre	1.19	1.12	1.15	1.45	1.24	1.23	0.00	1.27	1.68	1.55
DELIVERED af/acre	0.70	0.67	0.63	0.74	0.61	0.57	0.00	0.54	0.47	0.52
EFFICIENCY	58%	61%	55%	52%	50%	46%	0%	42%	28%	34%

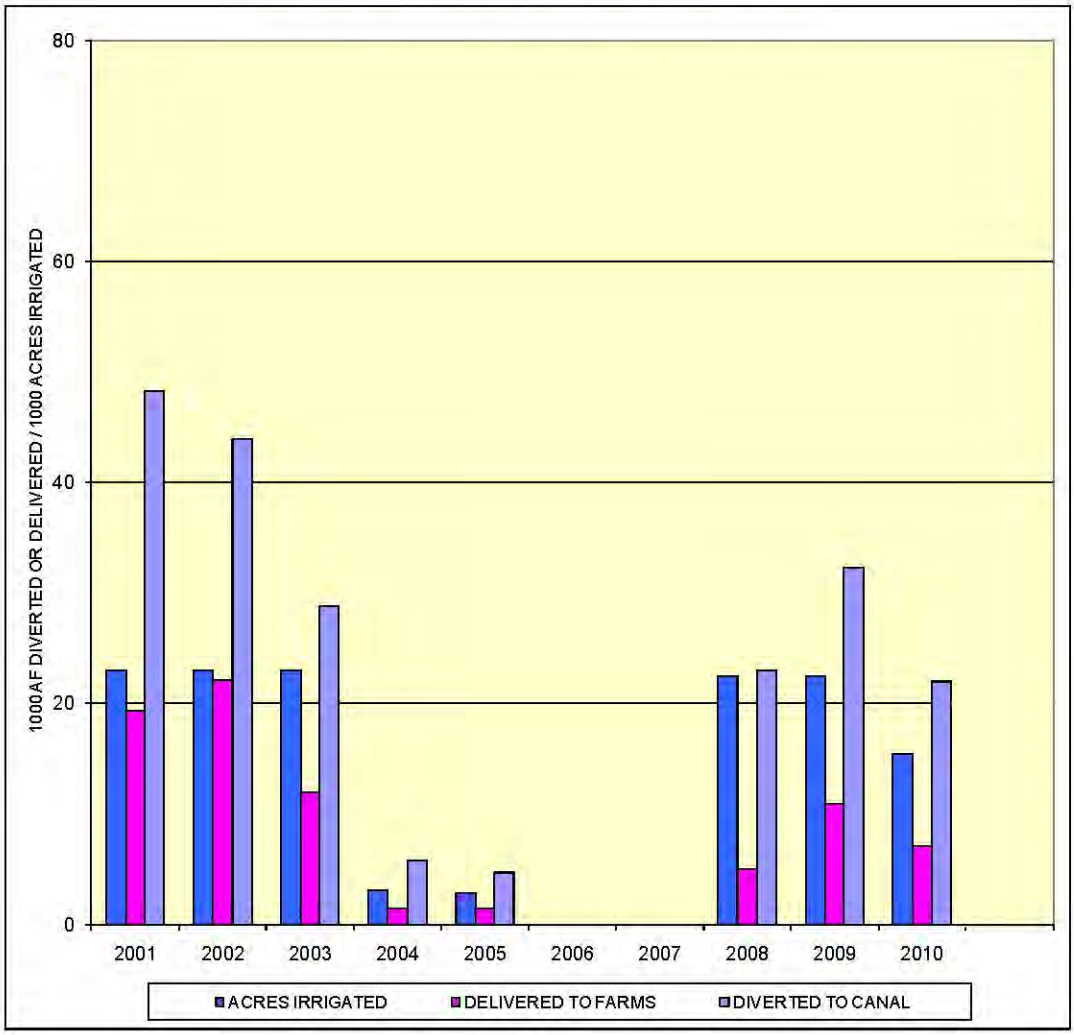
FORECASTED SHORTAGES (2011)

DRY YEAR	23,800 AF
NORMAL YEAR	4,700 AF
WET YEAR	1,400 AF

EXHIBIT 24

BOSTWICK IRRIGATION DISTRICT - NEBRASKA

CANAL DIV., FARM DEL., AND ACRES IRRIG.

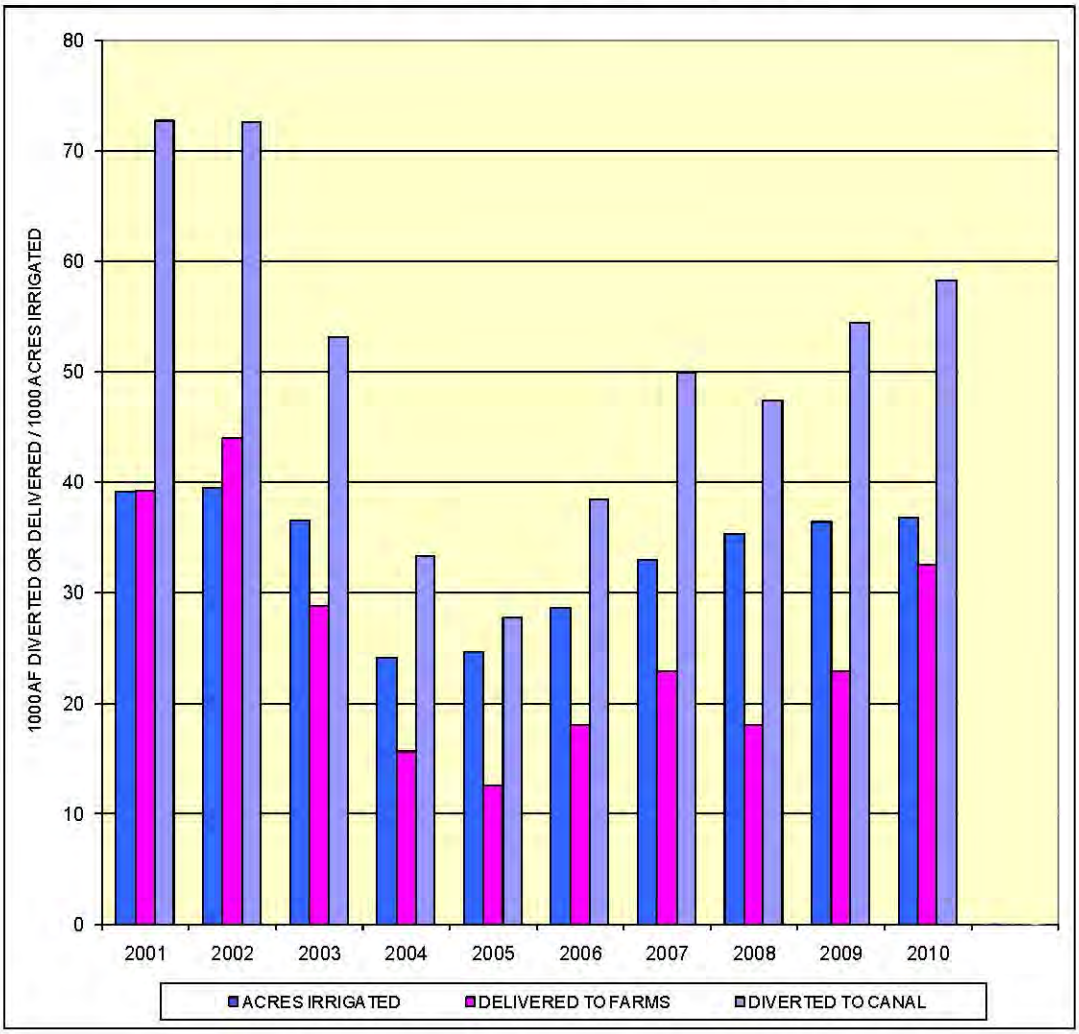


	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
DIVERTED af/acre	2.10	1.91	1.25	1.85	1.68	0.00	0.00	1.02	1.44	1.43
DELIVERED af/acre	0.84	0.96	0.52	0.47	0.53	0.00	0.00	0.22	0.48	0.46
EFFICIENCY	40%	50%	42%	25%	32%	0%	0%	22%	34%	32%

EXHIBIT 25

KANSAS-BOSTWICK IRRIGATION DISTRICT

CANAL DIV., FARM DEL., AND ACRES IRRIG.



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
DIVERTED af/acre	1.86	1.84	1.46	1.38	1.13	1.35	1.51	1.34	1.50	1.58
DELIVERED af/acre	1.00	1.11	0.79	0.65	0.51	0.63	0.70	0.51	0.63	0.89
EFFICIENCY	54%	61%	54%	47%	45%	47%	46%	38%	42%	56%