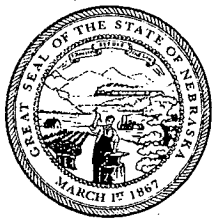


STATE OF NEBRASKA



DEPARTMENT OF NATURAL RESOURCES
Roger K. Patterson
Director

March 25, 2004

IN REPLY REFER TO:

Mike Johanns
Governor

Stephen F. Ronshaugen
Acting Area Manager
Nebraska-Kansas Area Office
U.S. Bureau of Reclamation
P.O. Box 1607
Grand Island, NE 68802

Dear Steve,

I am writing to you concerning the final allocation of the FY 2004 Emergency Drought Assistance and Drought Planning Assistance funds for Nebraska that I first requested in a March 28, 2003 letter. I have attached revised proposals for those funds, as well as a summary budget sheet. We anticipate this assistance would be received pursuant to Section 202 of Title I of the Reclamation States Emergency Drought Relief Act of 1991 and drought funding assistance pursuant to Title II of the same act.

The projects we would like to see funded are as follows:

| | | | |
|---|--------------|----|---|
| ✓ | \$ 50,000 | 1 | Platte/McConaughy Water Set Aside |
| ✓ | \$ 150,000 | 2 | Assistance for Republican Irrigation Districts |
| ✓ | \$ 30,000 | 3 | Add to Soil Moisture Monitoring Network |
| ✓ | \$ 25,000 | 4 | Update Drought Mitigation Plan |
| ✓ | \$ 12,000 | 5 | Water Conservation TV Broadcast Campaign |
| | \$ 163,500 | 6 | Improve Dist. of Streamflow Information via the Internet |
| ? | \$ 200,000 | 7 | Meter Cost Share Assistance for South Platte NRD |
| ? | \$ 50,000 | 8 | Mid-High Plains Education Initiative |
| | \$ 50,120 | 9 | On-Site Computer Capabilities for SW Distribution |
| | \$ 15,000 | 10 | Place a New Gage on the South Platte Near Paxton |
| X | \$ 100,000 | 11 | DeWitt Public Water Supply |
| | \$ 50,000 | 12 | Proposal to Study Flow Augmentation to Meet State Line Target Flows for Blue River Compact |
| | \$ 16,500 | 13 | Equip DNR with Flow Measurement Equip. |
| | \$ 18,500 | 14 | Upgrade Gaging Equipment in Republican Basin |
| X | \$ 333,000 | 15 | Drought Water Savings Program |
| X | \$ 150,000 | 16 | Meter Cost Share Assistance for North Platte NRD |
| ✓ | \$ 333,000 | 17 | Hypolimnetic Aeration of Lake Ogallala |
| | \$ 1,746,620 | | TOTAL |

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DNR 009262

Mr. Stephen Ronshaugen
March 26, 2004
Page 2

The total budgetary request we have provided is for \$1,746,620. We recognize that the funding level available may well not come to that amount. Should funding be less than required, our preference would be that reductions be made in the following amounts until required levels are achieved. These potential reductions do not represent general judgments about individual proposals, and usually are for only partial reductions. In order (first to reduce to last to reduce), the potential reductions would be:

| Project # | Amount Reduction | Remaining Budget | Title |
|-----------|------------------|------------------|---|
| 15 or 17* | \$333,000* | \$333,000* | #15 Drought Water Savings Program or #17 Hypolimnetic Aeration of Lake Ogallala |
| 11 | \$100,000 | \$ - | DeWitt Public Water Supply |
| 16 | \$150,000 | \$ - | Meter Cost Share Assistance for N Platte NRD |
| 12 | \$ 50,000 | \$ - | Study Enhanced Mgmt for Blues |
| 7 | \$100,000 | \$100,000 | Meter Cost Share for S Platte NRD |
| 2 | \$ 50,000 | \$100,000 | Assistance for Repub. Irrigation Districts |
| 6 | \$ 50,000 | \$113,500 | Improve Dist. of Stream Info via Internet |
| 8 | \$ 25,000 | \$ 25,000 | Mid-High Plains Education Initiative |
| | \$858,000 | | TOTAL |

* It seems unlikely that there will be sufficient funding available to fund both of these projects as well as meet other priorities. For that reason we suggest that one, but not both of these projects be first to be reduced. We believe that environmental issues surrounding drought induced flow reductions and lake levels are very important to address. Our preference would be that Project # 15 the Drought Water Savings Program be funded first. However, should there be eligibility problems with that program, we would ask that Hypolimnetic Aeration of Lake Ogallala be funded in its place.

Any funding you could make available for these important projects would be extremely helpful. Please feel free to contact me if you need additional information.

Sincerely,



Roger K. Patterson
Director

sg
Attachments

DRAFT DROUGHT ASSISTANCE PROPOSAL FUNDING PACKAGE –

| Current Budget | Project # | |
|-------------------|--------------|--|
| \$ 50,000 | 1 | Platte/McConaughy Water Set Aside (New) |
| \$ 150,000 | 2 | Assistance for Republican Irrigation Districts (New) |
| \$ 30,000 | 3 | Add to Soil Moisture Monitoring Network (New) |
| \$ 25,000 | 4 | Update Drought Mitigation Plan (02) |
| \$ 12,000 | 5 | Water Conservation TV Broadcast Campaign (New) |
| \$ 163,500 | 6 | Improve Dist. of Streamflow Information via the Internet (02, 03, & New)** |
| \$ 200,000 | 7 | Meter Cost Share Assistance for South Platte NRD (New) |
| \$ 50,000 | 8 | Mid-High Plains Education Initiative (New) |
| \$ 50,120 | 9 | On-Site Computer Capabilities for SW Distribution (02) |
| \$ 15,000 | 10 | Place a New Gage on the South Platte Near Paxton (New) |
| \$ 100,000 | 11 | DeWitt Public Water Supply (03) |
| \$ 50,000 | 12 | Proposal to Study Flow Augmentation to Meet State Line Target Flows for Blue River Compact (03) |
| \$ 16,500 | 13 | Equip DNR with Flow Measurement Equip. (03 & New) |
| \$ 18,500 | 14 | Upgrade Gaging Equipment in Republican Basin (New) |
| \$ 333,000 | 15 | Drought Water Savings Program (New) |
| \$ 150,000 | 16 | Meter Cost Share Assistance for North Platte NRD (New) |
| \$ 333,000 | 17 | Hypolimnetic Aeration of Lake Ogallala |
| | | |
| \$1,746,620 | TOTAL | |

The numbers in parentheses at the end of each item refer to the year in the item was first requested from the Bureau of Reclamation's Emergency Drought Assistance/Relief or Drought Planning Assistance programs. Because of changing conditions, the totals for a project may not be those originally applied for and some items may have been added to or removed from the original project description. In some instances the request is entirely new and that is noted. In other instances, especially for the final item, it is an amalgam of items applied for in previous years with some new items combined into a different package.

** In addition to this amount \$20,000 in previously awarded Bureau Drought grant funding will separately be used to upgrade satellite capability and help distribute streamflow information via the internet

PROJECT # 1 – PLATTE/MCCONAUGHY WATER SET-ASIDE - 2004
(3/25/04)

Background

Lake McConaughy, located in Keith County in western Nebraska, is the largest reservoir in Nebraska. This proposal would pay irrigators that rely on Lake McConaughy to not use surface water in 2004, thereby leaving more water in Lake McConaughy as a benefit for recreation, hydropower production, power plant cooling purposes, and fish and wildlife habitat. The Central Nebraska Public Power and Irrigation District (Central) received bids from its irrigation customers for not using surface water in 2004. A summary of the results is attached.

Central estimates that funding of \$100,000 would retain approximately 2,500 acre-feet of water in Lake McConaughy that would otherwise be released from the lake. Central has committed \$50,000 in funding and is requesting \$50,000 in matching funds.

Benefits

Lake McConaughy is currently at its lowest level since the mid-1950s. Should drought conditions persist through 2004, Lake McConaughy is likely to fall below levels experienced during the drought of the 1950s. Continued drought in 2004 and 2005 may ultimately result in Lake McConaughy water supplies being completely exhausted, causing detrimental impacts to recreation, energy supply, fish and wildlife, and irrigation supplies. The Nebraska Game and Parks Commission has made retention of storage in Lake McConaughy a priority. While the pilot project will make a relatively small contribution toward restoration of Lake McConaughy's water level, each approach to saving water is important.

This proposal is but one of many conservation efforts Central has employed to extend Lake McConaughy's water supply. No single action or program can make up for the lack of precipitation and inflows, but the combined effects of Central's efforts have had a positive impact on water levels at Lake McConaughy.

Recreation

Lake McConaughy is one of the most popular tourist and vacation destinations in Nebraska. On average, more than half a million visitor-days are recorded at the lake each year. Central and the Nebraska Game and Parks Commission have lengthened boat ramps to allow continued access to the lake, but low water levels threaten to diminish the number of lake visitors with a subsequent effect on Keith County's economy.

Energy Supply

Water from Lake McConaughy passes through five hydroplants that have a combined capacity of 139 megawatts. Generation of hydropower has declined significantly during the current drought. Generation at Central's hydroplants fell to record lows in 2002 and 2003 as Central operated in a

conservation mode to extend the lake's water supply. Lower hydropower generation has necessitated the use of alternative sources of power to meet demand in Nebraska.

Fish and Wildlife

Water is important to wildlife and the environment, and it become critical during periods of drought. Lake McConaughy is a unique aquatic habitat in an otherwise semi-arid grassland. The lake and the wetlands in the Sandhills to the north attract species not found in typical grasslands. Drought and falling water tables dried the smaller wetlands of the area and the lake has become a refuge for a variety of mammals, amphibians and reptiles as well as songbirds, waterfowl and shore birds like the endangered interior least tern and the threatened piping plover. The least tern is dependent upon the diversity of small fish present in the lake, and the piping plover is dependant upon emergent invertebrates associated with the shoreline of the lake. In 2003, 111 pair of piping plovers successfully nested at Lake McConaughy, one of the largest concentrations of this species ever identified in Nebraska.

In addition, Lake McConaughy is one of the most important recreational fisheries in the State. The depth of the lake as well as the volume of water it contains impact both recreational and non-recreational species. With the lake at low levels, the slope of the beaches increases such that small changes in volume cause significant changes in depth. The depth of Lake McConaughy also has an impact on the water quality in Lake Ogallala, a trout fishery managed by the Nebraska Game and Parks Commission.

Lake McConaughy also contains an Environmental Account, which is a "block of water" set aside in Lake McConaughy to supplement flows in the Platte River. Water is released from this account when needed downstream. These water releases are tracked and protected by Nebraska water law so that the water may provide beneficial instream flows for threatened and endangered species.

Irrigation

More than 220,000 acres in the Platte Valley rely on Lake McConaughy for irrigation water. Another 300,000 acres benefit from groundwater recharge from the surface water delivery systems. The drought has forced many irrigation districts and companies in southern Nebraska to reduce or eliminate irrigation deliveries. In the Platte Valley, low water levels at Lake McConaughy will restrict irrigation deliveries to more than 11,000 acres in 2004. However, drought protection provided by Lake McConaughy has helped offset the lack of precipitation and ensure crop production. In fact, average corn yields in Phelps County – where Central serves more than 50,000 acres -- were the highest in Nebraska in 2003.

Budget

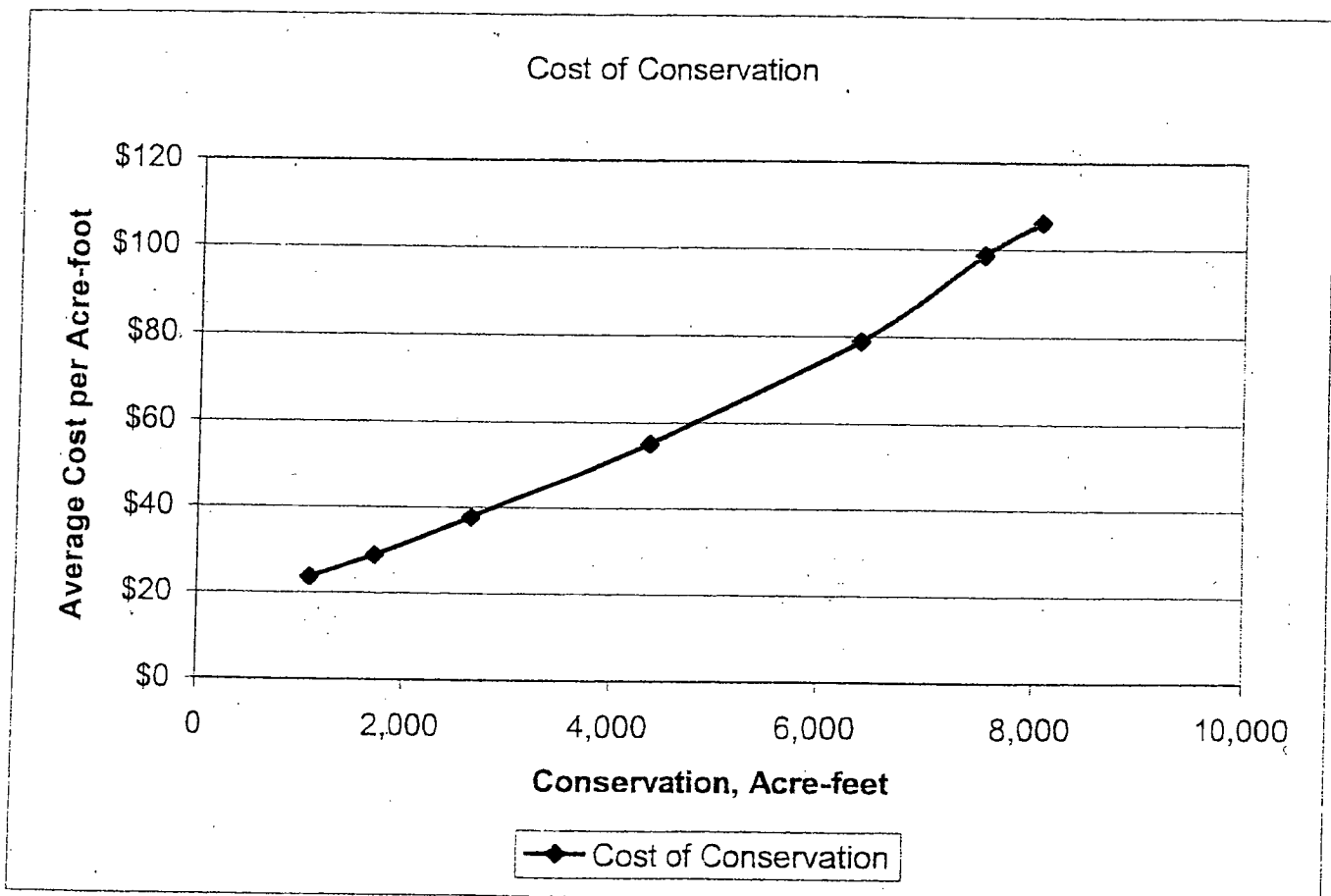
The Drought Assistance proposal budget for this activity is \$50,000 in Bureau funds and \$50,000 in matching funds from Central Nebraska Public Power and Irrigation District.

The Central Nebraska Public Power and Irrigation District

Surface Water Use Reduction Pilot Program

Bid Summary:

| Funding Level | Acre-feet of savings | Avg. Cost per AF |
|---------------|----------------------|------------------|
| \$25,769 | 1,097 | \$23 |
| \$49,202 | 1,718 | \$29 |
| \$99,659 | 2,647 | \$38 |
| \$240,115 | 4,359 | \$55 |
| \$502,786 | 6,373 | \$79 |
| \$742,055 | 7,520 | \$99 |
| \$853,950 | 8,046 | \$106 |



**PROJECT #2 --ASSISTANCE FOR REPUBLICAN IRRIGATION DISTRICTS -- 2003
MAINTENANCE OF IDLE DELIVERY SYSTEMS**

(3/8/04)

Background

Declining inflows throughout the Republican Basin have significantly reduced storage supplies for Reclamation Irrigation Districts in Southwest Nebraska. This area has suffered effects of the current drought since 2000. 2002 was the first year that H & RW Irrigation District project lands did not receive water due to supply shortages. In 2003, H & RW again elected not to deliver the small amount of water available. Also in 2003, the Frenchman-Cambridge system did not deliver water to project landowners in the Meeker-Driftwood Unit, and the Red Willow Unit (includes Red Willow and Bartley Canals) for the first time since the District began delivering water.

Natural flows in the Frenchman Creek and storage water from Enders Dam and Reservoir provides the water supply for project lands of the Frenchman Valley Irrigation District and the H & RW Irrigation District.

Natural flows in the Republican River and Red Willow Creek and storage water from Trenton Dam and Swanson Lake, Red Willow Dam and Hugh Butler Lake, and Medicine Creek Dam and Harry Strunk Lake provide the water supply for the Frenchman-Cambridge Irrigation District.

Natural flows in the Republican River and storage water from Harlan County Dam and Lake provide water supplies for both the Bostwick Irrigation District in Nebraska and the Kansas Bostwick Irrigation District No. 2.

Declining inflows to these reservoirs have drastically reduced these Districts' water supplies. 2003 saw record low water deliveries for these Districts. Water delivery projections for 2004 are 1 inch for Frenchman Valley and H & RW project lands, 4 inches for 3 of Frenchman Cambridge ID's 4 canal systems, and 1.5 inches per acre for the Bostwick Irrigation District in Nebraska project lands.

Statement of Need

Not operating a canal system for an irrigation season presents unusual maintenance challenges.

Canal systems that do not operate or have limited operation seasons still require maintenance in order to keep these systems in shape for future operations. Even though Districts may not be delivering water through these canal systems, the Districts must maintain these systems. This type of maintenance includes weed control (spraying, burning, mowing), canal reshaping, sediment removal, rodent control, painting, and operating turnouts, check structures, and gates.

Many Irrigation District's are faced with decisions of reducing operating costs during times of little or no water supply. The seemingly easiest way to cut District costs is to lay off employees when canal systems are not in operation. This causes a delayed effect on district costs and operations by falling behind on maintenance and the loss of experience equipment operators and ditchriders. When water supplies do return, the maintenance workload is much greater on abandoned canal systems and new employees must be trained in canal operations and maintenance activities. District delivery efficiencies will be lower with inexperienced ditchriders and with canals in poor condition.

Benefits to Nebraska

By providing delivery system maintenance assistance during non-operating or extremely low water supply years, these Districts can continue to keep canal systems in operation condition, which will allow these systems to return to operations without future major maintenance problems. This will also assist Districts in retaining experienced staff and continue to meet target system delivery efficiencies when full water supplies return.

This assistance may also provide the District with some incentives for leaving minimal storage water in the reservoirs for future years. Saving the minimal storage water for future years would result in higher reservoir levels, which would provide fish and wildlife and recreation benefits to the reservoir areas.

Budget

Idle delivery system maintenance estimates were based on a cost per mile, with the cost dependent on the initial capacity of the canal or lateral.

| | |
|--|------------|
| Frenchman Valley Irrigation District 21 miles of canal, 27 miles of laterals | \$ 16,000 |
| H & RW Irrigation District 27 miles of canal, 44 miles of laterals | \$ 21,000 |
| Frenchman-Cambridge Irrigation District 107 miles of canal | \$ 45,000 |
| Bostwick Irrigation District in Nebraska 117 miles of canal, 90 miles of laterals | \$ 68,000 |
| | ===== |
| TOTAL | \$ 150,000 |

PROJECT #3 – ADD TO NEBRASKA’S SOIL MOISTURE MONITORING NETWORK
(Revised 3/2/04)

Background

Drought is a normal feature of Nebraska’s climate, and the state is vulnerable to significant economic losses and environmental degradation resulting from its occurrence. In 2000, 2002 and 2003 severe drought affected many parts of the state. Monitoring the development and progression of the drought, so that a timely response by the state could be coordinated, involved a collaborative effort of the state’s Climate Assessment and Response Committee (CARC), UNL extension, the High Plains Regional Climate Center (HPRCC), and the National Drought Mitigation Center (NDMC). However, in spite of these efforts, the early detection capability and the ability to monitor drought severity are both in need of further improvement.

Soil moisture is one of the most important variables in drought monitoring. Low soil moisture at critical times can cause water stress and reduce vegetative growth and yield and/or increase consumptive water use for irrigation. In the past, soil moisture data was collected through sporadic, costly and time-consuming field campaigns. In recent years, the soil moisture sensor technology has changed significantly and, as a result, automated soil moisture sensors are now available that are stable and accurate. Currently, Nebraska’s Automated Weather Data Network (AWDN) monitors meteorological variables at locations throughout Nebraska and soil moisture measurements are now available at most of these sites, providing daily soil moisture values at 10, 25, 50, 100 cm depths in the soil profile (<http://www.hprcc.unl.edu/soilm/>). This information has proven to be very helpful to CARC during times of drought.

Statement of Need

Although the current soil moisture monitoring sites give some indication of conditions around the state, it is clear that the state would benefit from additional soil moisture sensors. Adding soil moisture sensors to 10 existing stations within the AWDN would greatly expand Nebraska’s soil moisture monitoring capability, and would improve the early warning and monitoring of drought across the state.

Benefits to Nebraska

Development of a continuous soil moisture monitoring network throughout the state will allow for timely assessments of available water in the soil root zone at critical times, before, after, and during the growing season, thereby providing the opportunity for the early detection of agricultural drought. This *ground-truth* soil moisture data set is essential for determining the *crop-specific* soil water needs. This information would be especially beneficial to producers, and could provide important guidance for irrigation scheduling.

The soil moisture information could also be provided as supplementary information as part of the

applications to the Farm Service Agency (FSA) for the timely release of CRP land for haying and grazing during drought events.

Soil moisture information also proves beneficial during periods of surplus moisture, and could serve as an important early warning tool for flood events around the state. Such information would be helpful for the Nebraska Emergency Management Agency (NEMA). Currently, soil moisture data collected by a statewide network in Oklahoma is being used to monitor the potential for flash flooding events in that state.

All soil moisture information provided by a network would be available on the HPRCC web site, with a direct link to this information located on the CARC and NDMC web sites, providing this real-time information to decision makers (producers, lawmakers, municipalities, NRD, water and natural resource managers, etc.) across the state. In 2002 this project received Bureau of Reclamation Drought Assistance funding for updating 25 current sites plus adding 10 sites. Adding soil moisture monitoring to 10 additional sites as proposed here would further improve the network.

Budget

Ten (10) AWDN sites updated to include soil moisture measurements
1 each @ \$3,000

\$30,000

PROJECT # 4 - UPDATE STATE DROUGHT MITIGATION PLAN

(3/2/04)

The State of Nebraska first adopted a drought plan in 1986. This plan, Nebraska's Drought Assessment and Response System (DARS), was developed through cooperation between state and federal agencies and the University of Nebraska. This plan has been revised on several occasions and was formalized in 1991 with passage by the Nebraska Legislature of Legislative Bill 274. This bill established the Climate Assessment and Response Committee (CARC) under the leadership of the office of the Governor. CARC broadened the range of authority of the previous drought plan to include other potential climate-related natural hazards. In spring 1998, at the suggestion of the National Drought Mitigation Center (NDMC) at the University of Nebraska, CARC agreed to revise the state's drought plan. This revision process has had the full support of the Governor's office. The goal of this revision process was to derive a plan that would place greater emphasis on mitigation measures to lessen the risk (i.e., impacts) associated with the occurrence of drought and to incorporate new technologies for monitoring drought and water supply conditions that were now available to the committee. That version of Nebraska's Drought Mitigation and Response Plan was approved by CARC at their meeting in June 2000. However, updating of the plan would now be useful. The experience of drought in the last several years may contribute to better awareness of planning needs.

Nebraska recognizes that its drought plan must address both the emergency or response element of drought and longer-term issues associated with the reduction of vulnerability and, therefore, risk. The intent of Nebraska's drought plan is to provide government with an organizational structure to systematically address the impacts of drought in a more effective, timely, and coordinated manner. Thus, drought mitigation planning is considered to be an ongoing process that the state will need to continue to address in the long term. CARC understands that its role is to provide leadership and coordination in the pursuit of the goal to reduce the impacts of drought in Nebraska while preserving our natural and agricultural resource base for future generations.

A Risk Assessment Committee (RAC) was organized under the drought plan to identify those sectors, population groups, or regions most at risk from drought and the most probable impacts. The RAC has conducted a preliminary drought risk assessment for Nebraska and assembled a list of mitigation and response actions that will reduce these impacts in the long term. To implement these actions, the Risk Assessment Committee, through the actions of its subcommittees and in close collaboration with CARC and the Monitoring Committee, must further develop these mitigation programs through collaboration with appropriate state and federal agencies, develop appropriate triggers for the implementation of mitigation and response programs, and identify appropriate drought management areas for the state that reflects regions and sectors most at risk. Support is requested to complete this portion of the state's drought mitigation planning activity.

Budget

| | |
|---|----------|
| Staff support for development of triggers, drought management areas | \$25,000 |
|---|----------|

Project # 5 - Water Conservation Television Broadcast Campaign in Central Nebraska

(3/8/04)

Background

With frequent news of drought implications on agriculture and energy providers, Lake McConaughy standing at 1/3 of its capacity, and another summer of potential drought, additional long-term measures to promote conservation in western and central Nebraska need to be considered. Water conservation campaigns are commonplace where water resources are more scarce. The economic impact of dropping water levels in Lake McConaughy could be very significant. Most Nebraskans are unaware of the low levels of the Lake's water supply and of the potential impacts. An annual broadcast TV campaign, focusing on water conservation tips for domestic and agricultural benefits, would create awareness for this critical topic. Although the heart of Nebraska's drought in recent years has been in western Nebraska, drought conditions have also extended eastward and the low precipitation throughout the Platte Basin has resulted in low flows in both western and central Nebraska.

Benefits/Needs

The current partners in this project are Central Nebraska Public Power and Irrigation District and Nebraska Public Power District. This project would involve NTV, an ABC television network affiliate in Kearney, making six 30 second commercials at no charge, contributing \$5000 of free airtime, and giving a 10% reduction for "drought relief" to rates. Potential spots include:

NTV- ABC

Good Morning America – 104 spots

ABC daytime rotation – 72 spots

NTV News at 5 – 52 spots

NTV News at 10 – 26 spots

Nightline Specials – 26 spots

NBA Playoffs/Finals – 14 spots

British Open – 5 spots

Regular PGA Tour Events – 15 spots

Regular College Football Season – 12 spots

Husker Game/BC Bowl – 1 spot

FOX 4 KSNBC and 17 KTVG

Fox Broad Rotation – 520 spots

NASCAR – 5 spots

NFL Football – 13 spots

The spots would have consistency of Theme – all spots would have the same music, narrator, opening, and closing – a donut will be created to change content from spot to

spot – close commercials, “There are a number of ways to save water and they all start with you”. There would be contests. In the “Its My Water” conservation contest, viewers would write their station and explain what they have been doing to conserve their water. There would be monthly winners and prizes given from participating sponsors. NTV would produce promos and announce winners in news.

Budget

The total project budget would be \$24,000 with \$12,000 being provided through Central Nebraska Public Power and Irrigation District and Nebraska Public Power District. Other partners are also being sought. The other \$12,000 would be provided through the Drought Assistance program.

**PROJECT #6 – IMPROVED DISTRIBUTION OF STREAMFLOW
INFORMATION VIA THE INTERNET**

(3/2/04)

Background

The Nebraska Department of Natural Resources currently operates over 100 stream and canal gages through their Stream Gaging program. "Real-time" data from these gages is available only after it has been downloaded and processed by the field office personnel. In addition, the Department annually produces a "Hydrographic Report" detailing the year's record of flows for many of the gages. In times of drought, analysis of stream gage data can help in optimizing use of small quantities of water.

Statement of Need

In order for the Department to make the transition to serving "real-time" stream gage data over the Internet, three upgrades would be necessary. First, the Department will need to purchase or develop the software necessary to serve the data over the Internet, secondly, the Department will need to upgrade the surface water management program it uses to calculate "real-time" flows and the annual records, and third, the Department will need to upgrade the communication capabilities in both the field and at the office. The first step of this project will be accomplished by utilizing funds from last year's drought assistance. This step will include purchasing a portion of the surface water management program and for data collection/satellite system authorization and documentation. This process is currently underway and will utilize the remaining \$20,000 of last years drought assistance package. Funding this proposal would complete that effort.

Benefits

Providing stream gage data through the Internet would allow for improved and timelier water management decisions. Field office personnel would be able to access the data while in the field and make timely and accurate decisions regarding the regulation of water rights. A major advantage would be enhancement of the ability to analyze and manage water in critical times of drought. While this is especially important in the more drought stricken western areas of the state, it can also be important in eastern areas trying to maintain sufficient flows for threatened species in times of drought. It is possible to provide an upgrade to more real-time conditions through either telephone or through satellite data collection platforms and the internet. The option depicted below would be through satellite data collection platforms.

Budget

NOAA DCS real time system (complete gage coverage for Cambridge, Lincoln, Ord, Norfolk areas)

| <u>Cost</u> | <u>Items</u> |
|-----------------|--|
| \$33,000 | Upgrade Big Blue River gaging stations to DCPs |
| \$ 9,200 | Upgrade two Platte River gages to DCPs (Cedar River Fullerton, Loup Pwr. Cn. Ret.) |
| \$61,100 | Upgrade Ord field office gages to DCPs + four modems for Bridgeport |
| \$15,000 | Purchase DCS processing toolkit & web software with installation/training |
| \$ 6,000 | Hydrological Data Manager Administrative Package |
| \$ 6,000 | Server to House Hydrological Data Manager Software and Data. |
| \$13,200 | Upgrade four Norfolk stations to DCPs |
| \$20,000 | Consulting contract/assistance on webpage upgrade and data presentation |
| <hr/> \$163,500 | |

PROJECT # 7 - METER COST SHARE ASSISTANCE FOR THE SOUTH PLATTE NATURAL RESOURCES DISTRICT

(3/2/04)

Background

Over the past four years, conditions in the South Platte Natural Resources District have been dry and drought conditions have continued into early 2004. Managing water resources with precision and equity has become even more of a priority given these conditions. The South Platte Basin is also part of an area where conditions for recovery of threatened and endangered species are being examined as part of a Platte River Cooperative Agreement. Significant surface water – ground water interrelationship issues also exist in the basin and new options for addressing those have potentially been made available through the findings of a state Water Policy Task Force. The South Platte Natural Resources District has remained very active in these challenging conditions and has adopted a variety of policies to address its water related issues. One cornerstone of its adopted approach is mandatory installation of meters on a phased schedule between May 1, 2004 and March 1, 2009. Monitoring is especially important in dry years. This proposal provides for cost share for meters to monitor ground water use.

Benefits

Cost share for meters would help address drought in a number of ways. First, it would allow landowners to better manage their water, resulting in less pumping by water users. The conservation that meters allow is most important in drought years. The better knowledge of pumping rates will also be useful in implementing whatever decisions are made under the Platte River Cooperative Agreement. Finally, the meters are essential to the districtwide groundwater management area being implemented by the Natural Resources District. That plan is being used to facilitate the proper management of ground water for concerns of quality, quantity, and integrated management. The usefulness of the funds would be extended by the 50% cost share provided by individual landowners.

Budget

The South Platte Natural Resources District currently has about 1,200 irrigation wells of which approximately 250 already have meters. At approximately \$480 per meter in cost share, the \$200,000 grant would supply cost share for about 417 meters. Future additional cost share funds can be sought from state and local sources.

PROJECT #8 – MID-HIGHPLAINS EDUCATION INITIATIVE

Background

The Mid-High Plains Education Initiative (MHPEI) is a 5-year educational program of the Groundwater Foundation to inform citizens of the Republican River Basin about water issues. The Republican Basin is an area that has been heavily impacted by drought in recent years and the region will require sustainable management of water in response to long standing drought conditions and to comply with the settlement of an interstate water lawsuit. An important outcome of this project is to provide a mechanism for continuing water education and partnership development throughout the basin.

This project began in June of 2001 and with the support of the Bureau of Reclamation. Project goals have included developing an understanding of: 1) basic groundwater concepts especially as they relate to surface/groundwater management and regulation, 2) the impact of drought on the region and the importance of drought planning and response in sustaining water supplies 3) the importance of protecting the region's water supplies through local action and leadership, and 4) the creation and launch of the project database for continued education and communication.

Benefits/Needs

The project addresses several water issue areas within this drought affected area, including:

- A need for continuing education about drought preparedness and water management in water short years
- Conflict and litigation between states and the need for proactive water planning and management to prevent future litigation
- The need for diverse stakeholders to be involved in understanding drought and taking action in drought years

Partners

A major partner for the project includes the National Drought Mitigation Center at the University of Nebraska-Lincoln. The lead contact for the project at the Drought Center will be Dr. Michael Hayes, Climate Impacts Specialist. The Groundwater Foundation will work closely with Dr. Hayes and his staff to develop educational content and strategies for action that focus on drought planning, monitoring, understanding risks, and mitigation. In addition, University of Nebraska faculty from the Institute of Agriculture and Natural Resources have also agreed to offer needed expertise as needed.

The other major partner for the project is the Nebraska Republican River Management Districts Association (NRRMDA). This association includes representatives from such entities as Natural Resources Districts, professional and agricultural organizations, state and federal agencies, educators, and interested citizens. Moving forward, the Foundation plans to focus effort on including members of the financial community in NRRMDA and this project's activities. This expansion of stakeholders is in response to the fact that financial leaders are often instrumental in land-use decisions and will play an important role in drought response and the implementation of sustainable agricultural practices. All participants have had and will continue to have the opportunity for discussion, feedback, and input.

Past topics have included:

- Basic groundwater concepts including groundwater/surface water interaction
- Water use for agricultural, municipal, recreational, industrial and other purposes
- The impact of drought on water supplies and the need for water conservation
- Kansas v. Nebraska lawsuit and settlement
- Current and future groundwater/surface water policy options
- Federal and State agency responsibilities
- The connections between water quality concerns and water availability and supply

Past audiences have included: farmers and ranchers, municipalities, recreation based businesses, irrigation districts, municipal business owners, natural resources districts, farm dependent or related businesses, financial institutions, school districts, well drillers, and county extension offices. These audiences will continue to participate and target audiences will expand as the project continues to develop with an increasing focus on sustaining water supplies.

Areas of emphasis if the grant should be received will be:

- Drought planning and response
- Importance of including members of the financial community in water education
- Encouraging conservation practices throughout the basin as part of planning for drought
- Examining the settlement with residents of the basin and the changes in practice the settlement will require
- Examining economic impacts to the basin from drought
- Separating fact from fiction regarding policy and practice
- The formation of partnerships to continue education and communication between stakeholders

Budget

The budget for this activity is estimated to be \$50,000.

**PROJECT # 9 - ON-SITE COMPUTER AIDED CAPABILITIES FOR
DISTRUBUTION OF SURFACE WATER**

(3/2/04)

Background

The drought brings with it diminished stream flows throughout the state. Recently approved instream flow rights for fish and wildlife establish varying yet specific target flows and various sites on the Platte River. Other users upstream from these instream flow target sites must be regulated and/or closed to assure the targets are being met. This includes some 2100 irrigation permits that rely on the streams in the Platte, Loup, Elkhorn Rivers and their tributaries for their water supply. The drought stricken Republican River Basin although not subject to the instream flow demands on the Platte River is closely monitored for proper distribution of water among some 600 surface water irrigation users. Surface water use in the Republican is monitored to comply with terms of an interstate compact. The staff of the Department of Natural Resources Field Offices monitors use of irrigation permits closely. The tighter the water supplies are, the more important it is for them to be effective and efficient in their water distribution duties.

Benefits/Needs

Currently in order to accomplish this, the field staff must carry with them a large collection of maps, water right listings and measuring equipment. They set rates and operation times "by hand". The maps and listings they must carry with them is often unmanageable. A computer-integrated system would eliminate their map burden and eliminate regulating calculation errors and automate the writing of regulation orders. Record keeping of water administration activities will also be enhanced by such a system, allowing for more efficient use of the field staff.

A system to integrate water right information and computer aided issuance of regulating orders has been developed. This system adds effectiveness and efficiency to the water distribution activity.

Budget

Additional equipment is needed to implement the newly developed system. Laptop computers, portable printers and specialized software are needed. One system is needed for water administration in the Lower Platte Basin, two in the Elkhorn Basin, five in the Central Platte and Loup Basins, four in the upper Platte Basin, and two on the Republican Basin are needed. The cost for each of these 14 systems, (includes laptop computer, portable printer, specialized software, and power inverter) is \$3500.

Total cost for the 14 systems is \$50,120.

**PROJECT # 10 - PLACE A GAGE ON THE SOUTH PLATTE RIVER IN THE
AREA OF PAXTON AND THE KORTY DIVERSION DAM**

(3/8/04)

Background

Additional and more timely data on South Platte River stream flows would help Nebraska with water administration, help optimize deliveries to users, and provide data to help meet the objectives of a three state cooperative agreement on the river. The Paxton – Korty area is important because of South Platte flows.

Benefits/Need

A gage on the South Platte River in the area of Paxton or the Korty Diversion Dam would result in better knowledge of flows and allow more precise administration of water during times of drought. This would be especially useful for administration of environmental water. It would also be helpful in running the Platte Water Assessment Program and in any type of water decision support system the state may adopt in the future. A new gage would assist greatly in surface water accounting and would help better account for the South Platte. Paxton and the Korty Diversion Dam are seven miles apart and discussions are underway about precise placement of the gage.

Budget

The estimated cost of installing the gage, including the cost of a dedicated phone line is \$15,000.

PROJECT # 11 – DEWITT PUBLIC WATER SUPPLY
(3/2/04)

Background

Drought impacts experienced by DeWitt Nebraska, located in Saline County, were first reported in July of 2002. Two wells, 67-1 and 86-1, were reported as experiencing increased depth to static water levels. These two wells are the primary water supply for the Village. Normal pumping capacity of well 67-1 is 320 gpm and that of 86-1 is 300 gpm. Both wells are less than 60 feet in depth. These wells serve a population of approximately 600 people. Another well, constructed in the early to mid-1960s, is currently on emergency status and not in use due to elevated nitrate concentrations.

Historical static water level measurements recorded by the Village indicate 20 feet in well 67-1 and 21 feet in well 86-1. Static water levels recorded in mid-July of 2002 show 31 feet in well 67-1 and 39 feet in well 86-1. Water use restrictions were imposed at that time, which limited the demand placed on the system by lawn watering. The two Village wells were throttled down during this time to maintain the pumping level above the pump bowls. The restrictions remained in place through fall and winter. Static water levels, although improved during the winter of 2002, have not fully recovered.

The two existing wells are located in a thin saturated thickness of the aquifer. Water level impacts correlate with irrigation season. Exploration for new well locations has been conducted. Two potential well locations have been selected. One site is located approximately 3 miles South of the Village and another is located approximately 5 miles South. Preliminary investigation of these proposed sites indicates a potential pumping capacity of over 500 gpm per well.

The Village consulting engineer has conducted a preliminary engineering report for this proposed project. Median Household Income (2000 MHI) for DeWitt is \$38,056. State MHI is \$39,250. Estimated costs for needed improvements consisting of approximately five miles of transmission main and two wells are on the following page. These costs are provided by the engineer's estimate. Since this funding was originally requested, a sizable grant has also been received from the Economic Development Administration.

It is recognized that many of the items on the following page would not be eligible under the Drought Assistance program. Only funding for \$100,000 of actual well construction costs is being requested.

ESTIMATED PROJECT COST

Village of DeWitt

March 27, 2003

| <u>ITEM</u> | <u>AMOUNT</u> |
|--|--------------------|
| Transmission Line (approx. 5 miles) | \$677,500 |
| Well Houses, Wells, Pumps and Discharge Piping | \$242,000* |
| Access Roads | \$7,000 |
| Chain Link Fencing | \$9,000 |
| Electrical and Ventilation | \$25,000 |
| Emergency Generator | \$40,000 |
| Controls | \$17,000 |
| Creek Crossing | \$64,000 |
| Railroad and Highway Crossings | <u>\$104,000</u> |
| CONSTRUCTION COST | \$1,185,500 |
| Engineering Fees (contract %) | \$146,544 |
| Land Acquisition | \$30,000 |
| Construction Contingency @ 10% | <u>\$118,550</u> |
| TOTAL PROJECT COST | \$1,480,594 |

* Requested \$100,000 would be towards this item.

Requested Funds Under Drought Assistance Program **\$ 100,000**

**PROJECT # 12 – PROPOSAL TO STUDY ENHANCED MANAGEMENT AND
FLOW AUGMENTATION TO MEET STATE LINE TARGET FLOWS FOR
BLUE RIVER COMPACT**

(3/2/04)

Background

In 1971, Nebraska entered into the Kansas-Nebraska Big Blue River Compact. Part of the compact sets out “target” state-line flows on both the Big Blue and Little Blue rivers. If it were possible to make releases from reservoirs to meet the state-line target flows, it would mean that the 800 junior water rights in the Big Blue basin and 200 junior water rights in the Little Blue basin could continue to divert water during the critical irrigation season.

Statement of Need

During the summer of 2002, the state-line target flows were in danger of not being met on the Big Blue River. Instead of shutting of the over 800 junior water rights, the Department of Natural Resources was able to work with the Lower Big Blue NRD to secure water releases from some of the NRD’s reservoirs near the state-line. Even though there was not enough water to meet the state-line target flows for a few days, many junior irrigators were able to continue irrigation during a critical period. The Lower Big Blue NRD estimated that the benefits of releasing the water at over \$1 million dollars.

The Kansas-Nebraska Big Blue River Compact Administration, Nebraska Department of Natural Resources, Lower Big Blue Natural Resources District, and Little Blue Natural Resources District would like to begin the process of studying methods of enhancing management or operation of reservoirs as well as physical modifications to meet state-line target flows for future drought years.

Benefits

The study would provide a road map for the future operation, management and improvements that would be able to meet state-line target flows during drought periods.

Budget

The cost requested for the study is \$50,000.

**PROJECT # 13 – EQUIP DEPARTMENT OF NATURAL RESOURCES FIELD
OFFICE PERSONNEL WITH FLOW MEASUREMENT EQUIPMENT**

(3/2/04)

Background

Field Staff within the Nebraska Department of Natural Resources have the responsibility to administer Water Rights in accordance with Nebraska Law. During times of drought, the number of calls for water administration increases greatly.

Statement of Need

The water administration process requires the field staff to be able to quickly gage the flow in streams so that it can be correctly distributed out to water rights holders and to be able to calculate the pumping rates at diversion sites. The best equipment that exists today to quickly and accurately calculate streamflow are AquaCalcs. At the present time about half of the department field staff use a rating table and calculator to compute streamflow. Three AquaCalcs would allow the field staffs to more timely compute streamflow discharge and eliminate the errors associated with computation using a rating table and calculator.

In addition, the Lincoln Field Office needs an additional dopler flow meter so that all of its personnel are equipped with devices to measure pumping rates at diversion sites.

Ultrasonic open channel flow meters are needed for the DNR's Bridgeport Office to provide more flexibility. The Water Division administered by Bridgeport has been experiencing severe drought for several years and has also experienced reduced inflows due to reduced snows in the mountains.

Benefits

There are at least five benefits to equipping the field office staff with additional flow measurement equipment: 1) it will reduce the likelihood of miscalculations that can occur with streamflow is hand calculated, 2) it will provide more timely streamflow measurement, 3) all of the field office staff will be using the same equipment, 4) greatly reduced checking time of measurement notes, and 5) it will allow for easier storage of measurement note in electronic form.

The benefit of equipping the Lincoln Field office with a dopler flow meter is that it allows all of the staff to measure diversion rates at different sites during critical periods.

Budget

| | |
|--|------------------|
| <i>2 Ultrasonic open channel flowmeters for measuring streamflow</i> | <i>\$ 9,000*</i> |
| <i>1 Dopler Meter for Lincoln Field Office</i> | <i>\$ 1,150</i> |
| <i>3 Aqua-Calcs</i> | <i>\$ 6,350</i> |
| <i>TOTAL</i> | <i>\$16,500</i> |

**PROJECT # 14 - UPGRADE GAGING EQUIPMENT IN THE REPUBLICAN
BASIN
(3/2/04)**

Background

This proposal would upgrade streamgaging equipment and reporting capabilities in a basin where drought has taken a heavy toll in recent years. Included in this package would be upgrades for 5 satellite links at \$2,700 apiece. Also included would be a walkway bridge for the cableway at Cambridge (\$4,000) and a ladder at Medicine Creek (\$1,000). The equipment would help with management in a basin that is currently implementing an interstate settlement. Accurate and timely measurement is very important to water management in these circumstances and drought accentuates the importance.

Budget

The total budget for this proposal would be \$18,500.

PROJECT # 15 – DROUGHT WATER SAVINGS PROGRAM
(3/30/04)

Background

Lake McConaughy on the North Platte River continues to experience record low levels due to the ongoing drought. The Republican River Agreement between Colorado, Nebraska and Kansas requires Nebraska to limit/reduce water use, which due to the current impacts of the drought many irrigators may face severe water restrictions. All sources of water conservation incentive funds are being sought to make payments to irrigators to temporarily relieve the water shortage caused by the drought. This program would be used to pay irrigators in critical areas to not irrigate, thus making water available for other uses, including fish, wildlife and recreation activities, as well as water for the Environmental Account on the Platte River. Areas selected for participation in this program will be determined with input from the Nebraska Department of Natural Resources, local Natural Resource Districts, Nebraska Game and Parks Commission, U. S. Fish and Wildlife Service, and others. The water savings may also be extended by other programs. This program could help water tables and surface water flows from becoming more depleted in those areas during time of drought.

Benefits/Needs

The reduction in irrigation would result in additional dryland acres. There are other benefits to crop rotations that include dryland. Crop rotations with small grain provides additional food, habitat and diversity for wildlife, including pheasants and quail. Crop rotations will break weed and insect cycles reducing the need for pesticides. Crop rotations including fall seeded wheat will shift weed pressure to annual weeds, which are much easier to control.

The primary benefit of this program will be the significant reduction in demand for irrigation water. Converting lands from irrigated to dryland will result in a water application savings of about 18 inches of water per acre per year. Although only a portion of that water will actually be a real long term savings to the entire system, this program may provide current year benefits such as increased flow in critical reaches of streams or increased carryover storage in reservoirs.

Budget

This program would be administered by the Nebraska Department of Natural Resources which would provide payments to landowners through the Natural Resources Districts in a manner similar to that currently done through the natural resources districts. Cooperating NRDs will work with Local Work Groups to establish local focus areas where priority points will be awarded to applications for this rotation.

This proposal seeks \$333,000 in Bureau Drought Assistance funds. An effort would be made to expend the funds in a timely manner.

**PROJECT # 16 – METER COST SHARE ASSISTANCE FOR THE NORTH
PLATTE NATURAL RESOURCES DISTRICT**

(3/2/04)

Background

The North Platte Natural Resources District has experienced drought conditions and reduced river inflows in recent years. Managing water resources with precision and equity has become even more of a priority given these conditions. The North Platte Basin is also part of an area where conditions for recovery of threatened and endangered species are being examined as part of a Platte River Cooperative Agreement. Significant surface water – ground water interrelationship issues also exist in the basin and new options for addressing those have potentially been made available through the findings of a state Water Policy Task Force. The District has been addressing its challenges through its groundwater management planning process. This proposal provides for cost share for meters to monitor ground water use.

Benefits

Cost share for meters would help address drought in a number of ways. First, it would allow landowners to better manage their water, resulting in less pumping by water users. The conservation that meters allow is most important in drought years. The better knowledge of pumping rates will also be useful in implementing whatever decisions are made under the Platte River Cooperative Agreement. Finally, the meters could assist in the districtwide groundwater management area being implemented by the Natural Resources District. The usefulness of the funds would be extended by the 50% cost share provided by individual landowners.

Budget

The North Platte Natural Resources District currently has about 3000 irrigation wells of which approximately 500 already have meters. At approximately \$480 per meter in cost share (50%), the \$150,000 grant would supply cost share for about 312 meters. Additional cost share funds will be sought from state and local sources.

PROJECT #17 HYPOLIMENTIC AERATION OF LAKE OGALLALA

Background

Lake Ogallala, a tailwater impoundment located immediately downstream of Kingsley Dam (Lake McConaughy) is one of the premier trout fisheries in the State of Nebraska. This project would help sustain the trout population in Lake Ogallala, a 798-acre impoundment in Keith County, Nebraska by aerating the deep, cold water of the lake's North Basin. This would be accomplished without mixing the water column, which would increase water temperatures throughout. Trout need cold (<70 F), well-oxygenated (>5 ppm) water, which has been increasingly difficult to provide in Lake Ogallala during the drought. Aeration would be provided through hoses on the bottom of the lake and would likely be similar to a system recently installed at the Two Rivers State Recreation Area trout lake, near Venice, Nebraska. Efforts are currently underway to determine whether this type of system would be the most efficient and cost-effective way to sustain the trout population, or if another approach (e.g., injection of liquid oxygen) would be more appropriate.

Benefits

The ongoing drought has resulted in major challenges for water usage and water storage along the North Platte and South Platte Rivers. The combination of severe drought in both the mountains of the upper basin and in the irrigated areas of western Nebraska has created high demand for water along with very low supply. It has also meant heavy use and depletion of storage from the Bureau of Reclamation reservoirs in the upper North Platte River Basin as well as from Lake McConaughy. Reduced inflow into Lake McConaughy, coupled with irrigation demand from the lake has caused serious depletions to Lake McConaughy storage the last three years. By the end of the 2004 irrigation season, Lake McConaughy is expected to contain 11-12% of the volume it holds at capacity and cover only 20% of its potential area. Reduced reservoir depth will result in warmer water being discharged into Lake Ogallala. By summer, the only area expected to contain water cold enough to support trout will likely be limited to the bottom of the North Basin. But, this water will not contain sufficient oxygen to support trout.

Lake Ogallala contains among North America's highest-quality rainbow trout populations. Fish weighing up to nine pounds have been caught this past winter and early spring. The fish themselves and the economic impact they create, primarily for the local area, through sport fishing have a value that exceeds \$1 M per year. If this fishery is lost, it would take several years to replace. Aeration that does not break down thermal stratification in Lake Ogallala could provide a refuge for trout and sustain viable rainbow and brown trout populations.

Budget

This proposed aeration system cost is estimated at \$400,000 to \$500,000, of which Reclamation funds would be used to supply \$333,000, with the remainder coming from state or local match. Annual operating costs would likely run in the range of a few

thousand dollars per year and would be assumed by the Nebraska Game and Parks Commission.