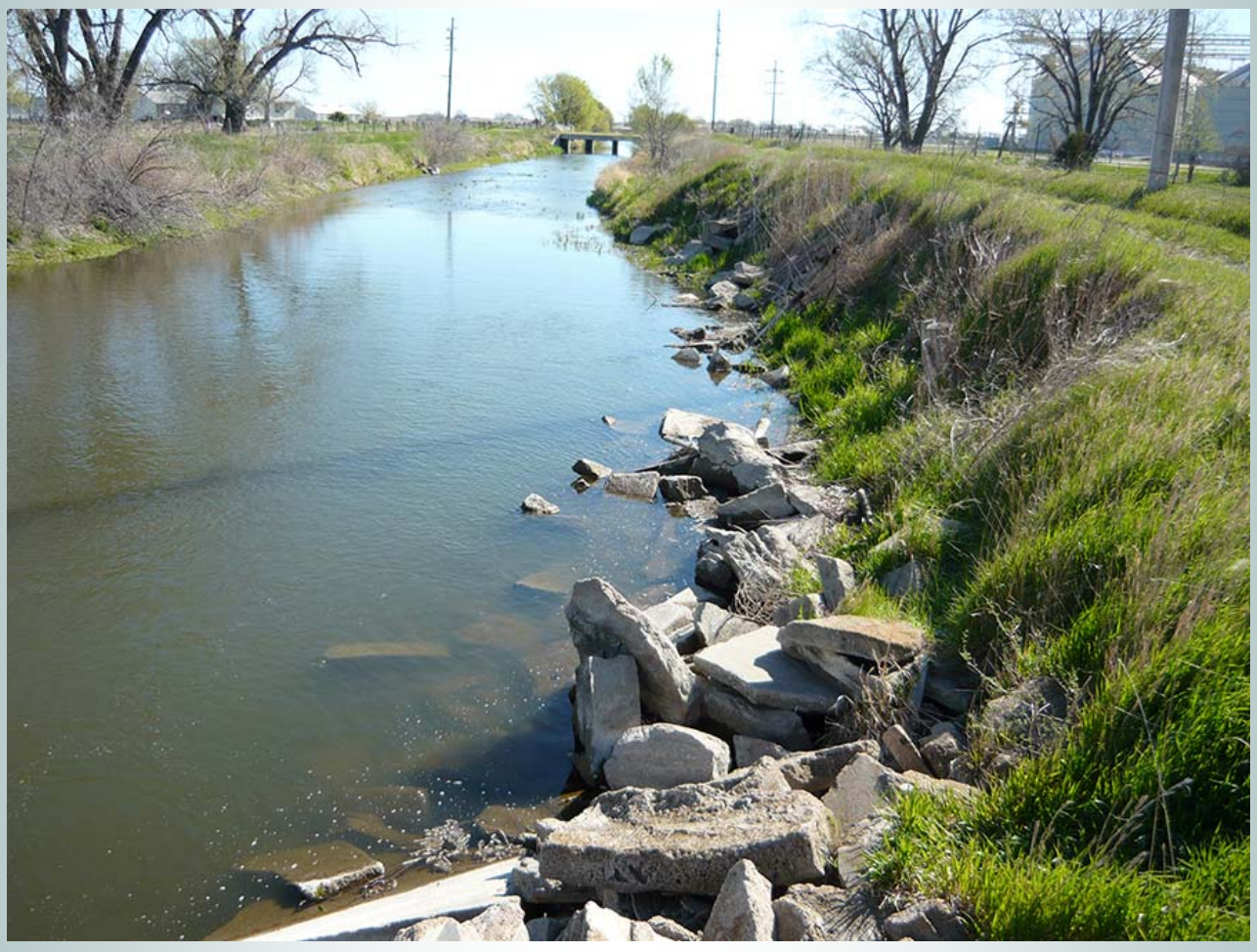
CPNRD
CENTRAL PLATTE
NATURAL RESOURCES DISTRICT

# Long Range Implementation Plan

## For Fiscal Years 2016-2021



**This Plan was approved by the Central Platte NRD board of directors on July 28, 2016.**

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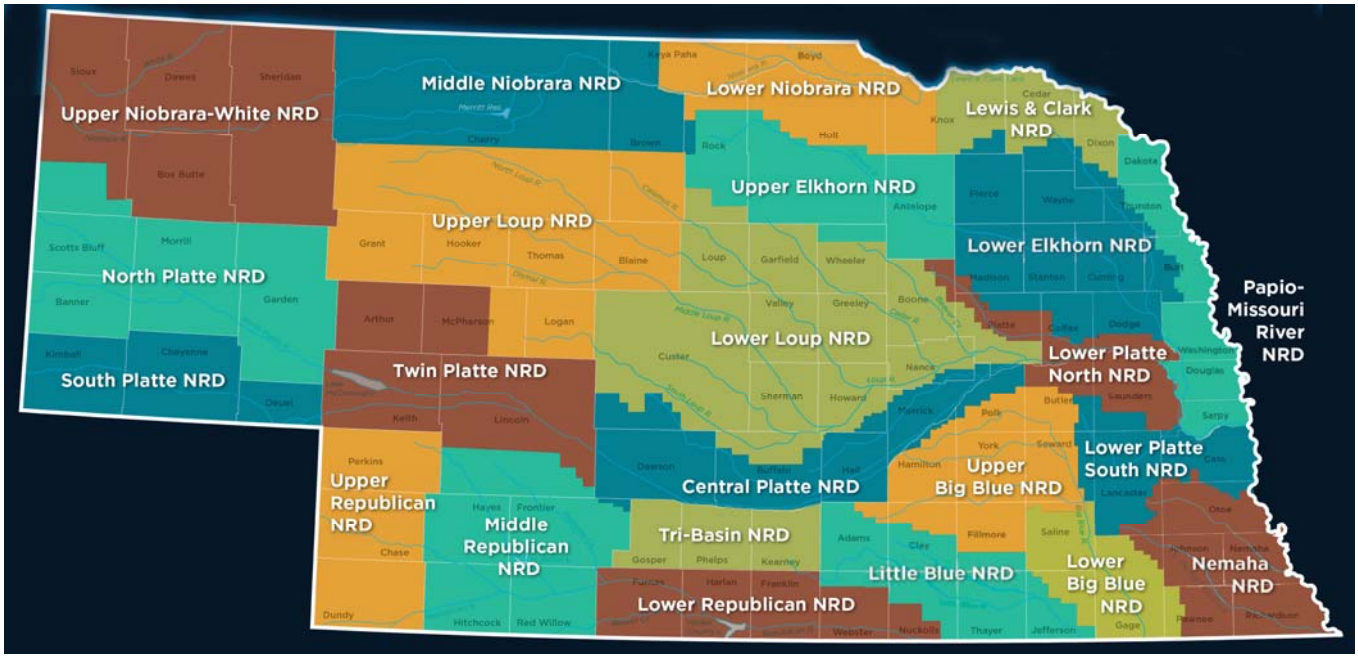
# I. District Authority

This Long Range Implementation Plan is developed by the Central Platte Natural Resources District to meet the requirement to prepare and adopt a long range implementation plan under the Nebraska Natural Resources District Act. It summarizes planned district activities and includes projections of financial, manpower and land right needs of the district for the next five years. For planning purposes, areas of responsibilities are consolidated under the act into the nine categories that are listed in **FIGURE 4 on page 5**. The Act also requires a Master Plan to be updated every ten years, the current Master Plan is in place for years 2011-2021. The district is required to prepare and adopt individual project plans as it deems necessary to carry out projects approved by the district. If those project plans involve state regulations or state financing, they must be filed with the appropriate agency in accordance with state law that specifies the powers and authorities to be exercised by NRDs in fulfilling their purposes of developing and executing the plans, facilities, work and programs relating to the topics.

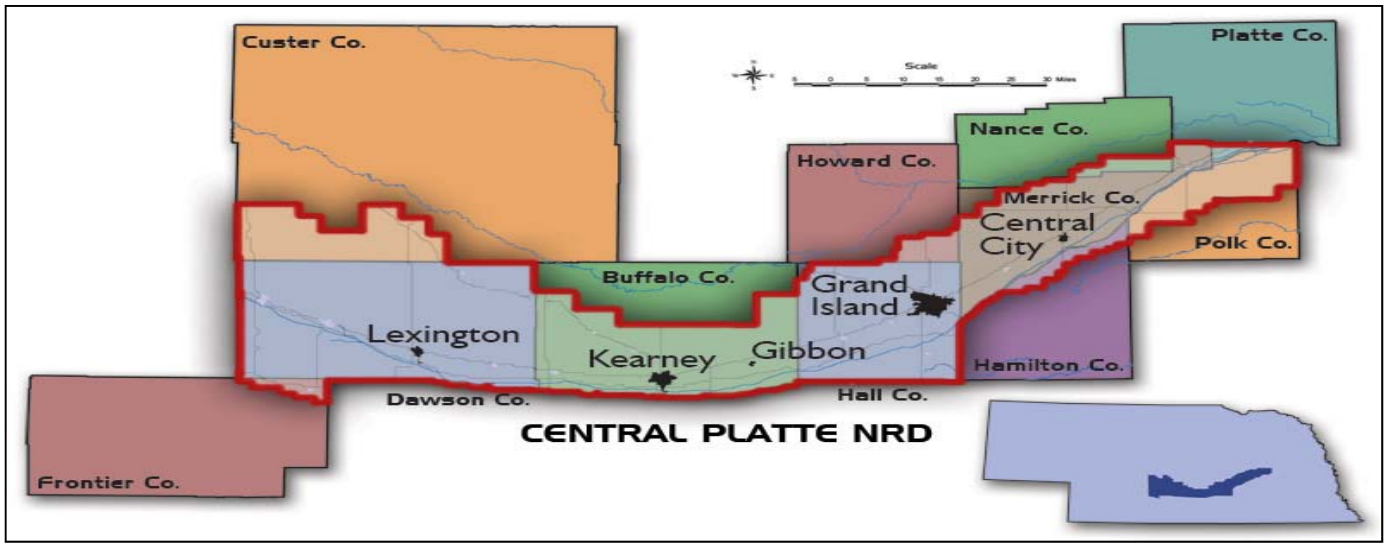
Fertile soils and abundant water come together in the District to provide a productive union that multiplies their values, resulting in the extensive agricultural production upon which the economy of the Central Platte Valley is built. As use of our resources increases with growing population and desire for a quality life, we need to ensure that the use is wise, efficient and non-destructive. Regardless of what we may think or desire, there are limits to our resources. Within the time available to develop the plan and considering the ever-changing technology and law, it's not possible to develop a plan that incorporates all features of resource development and management that are within the areas of the NRD's responsibility and authority. The plan is designed as a flexible guide to outline the orderly development, management, preservation, utilization and conservation in order to best serve the people of the district and the state. In addition to complying with the statutory requirements, this document is designed to allow the public to understand the needs and goals of the NRD in order to make intelligent decisions as to the advisability of the projects and programs planned by the district. The District's planning relies to some degree on the input of other agencies, organizations and individuals. Public information meetings are held periodically and comments from hearings held are considered in the planning process. Representatives from outside agencies and from other local governments are included in the board's committee process whenever it is appropriate.

**District Location** Central Platte is one of 23 natural resources districts in Nebraska-see **FIGURE 1** below. It lies in the south central part of Nebraska, straddling the Platte River. There are 2,136,304 acres in the district. CPNRD extends for about 175 miles from the Lincoln-Dawson county line on the west near Gothenburg, to Hwy 81 on the east near Columbus. In 2001, 38 square miles of Frontier County (originally in the CPNRD) were added back to the District after a petition request from landowners and transfer approval from the Secretary of State.

## FIGURE 1. Nebraska's 23 Natural Resources Districts (NRDs)



## FIGURE 2. Counties in the Central Platte Natural Resources District




**Counties** Eleven counties have land included in the district. All of Dawson County and parts of Frontier, Custer, Buffalo, Howard, Hall, Nance, Merrick, Hamilton, Platte, Polk. Bordered by Lower Loup, Lower Platte North, Upper Big Blue, Little Blue, Tri-Basin, Middle Republican and Twin Platte NRDs.

**Population** According to the 2010 census, the population of the NRD grew during the 10 years since the previous census from 125,349 to 137,966 and increases are expected for both the urban and rural populations in the future. Rural population increases will likely occur at a slower pace than the urban change.

**First Class:** 3 cities with populations of more than 5,000/less than 100,000: Grand Island, Kearney, Lexington.

**Second Class:** 7 cities with populations of more than 800/less than 5,000: Cozad, Gothenburg, Central City, Gibbon, Wood River, Shelton, Elm Creek.

**Villages:** 17 villages with populations under 800: Doniphan, Cairo, Overton, Alda, Silver Creek, Duncan, Clarks, Chapman, Amherst, Sumner, Riverdale, Farnam, Hordville, Oconto, Miller, Eddyville, Eustis.

## FIGURE 3. Municipal Populations in the Central Platte NRD (Based on 2010 U.S. Census)

Grand Island 48,520; Kearney 30,787; Lexington 10,230; Cozad 3,977; Gothenburg 3,574; Central City 2,934; Gibbon 1,833; Wood River 1,325; Shelton 1,059; Elm Creek 901; Doniphan 829; Cairo 785; Overton 594; Alda 642; Eustis 401; Silver Creek 362; Duncan 351; Clarks 369; Chapman 287; Amherst 248; Sumner 236; Riverdale 182; Farnum 171; Hordville 144; Oconto 151; Miller 136; Eddyville 97 **TOTAL: 137,966**

**Topography** The broad Platte River valley has lowlands, loess hills, dissected plains and sandhills. In the western part, the upland tablelands merge into the rolling loess hills, which in turn drop into the flat lowlands of the valley. These lowlands, in some areas, consist of several flat terraces with relatively steep slopes between the terraces. The dissected plains and loess hills have a very well developed drainage pattern that discharges onto poorly drained flat valley lands. The valley is broad through the central portion and the drainage pattern becomes less well developed toward the eastern end of the district.

The Platte River is an important feature of the district. It's also the largest river in the state, traversing the entire length of the state from west to east and serving as a major tributary to the Missouri River. With origins in Colorado, the Platte is formed by 2 branches, the North and South Platte, converging near the city of North Platte. While there are some minor tributaries in the NRD that flow into the Platte, the major tributaries of the Loup and Elkhorn rivers, join the Platte east of the District. The Platte River is too shallow for navigation and is used primarily for irrigation, recreation, generation of hydroelectric power and as habitat for wildlife.

**Land Use** CPNRD's land use includes cropland, pastureland, rangeland, some woodland and other minor cover, urban/residential development, streams and other water, and transportation. The majority of the irrigation in the NRD uses groundwater, which, in the western part of the District comes from the Ogallala Aquifer and in the eastern part of the District comes from Pleistocene (Wisconsin) sands and gravel. Groundwater is also the major source of drinking water in the District.

**River System** River system within the NRD includes 205 miles of the Platte River, 49.9 miles of the North Channel and 173 miles of the Wood River.

**Congressional District** The entire district is within the Third Congressional District.

**Court Districts** Four county court judicial districts and four district court judicial districts serve portions of CPNRD.

**Nebraska Legislative Districts** Districts 22, 23, 33, 34, 35, 36, 37, 41, 43.

**Department of Roads** parts of the NRD lie within 4 of the 8 Field Districts- 3, 4, 6,7

**Public Service Commission** parts of the NRD lie within 3 of the state's 5 Districts- 3, 4, 5

**Nebraska Game & Parks Commission** parts of the NRD are within 4 of the state's 7 Districts-3, 4, 5, 6

**Agriculture** Largest industry within the NRD, as well as the entire state. Major crops grown include corn, soybeans, alfalfa and wild hay. Livestock raising is prominent featuring cattle, hog and turkey operations along with some dairy and sheep. Livestock feeding operations are scattered throughout the District. Many of the NRD's industries are related in a major way to agriculture, which is important in generating income for the state's (and NRDs) largest economic sectors: service, government and manufacturing. Tourism also plays a role in the NRD's economy.

**Education** Education is an important aspect for the population of the NRD including two community college areas, three educational service units (ESU 7, 9, 10). Branches of the Universities and Central Community Colleges exist at Kearney and Grand Island, with off-campus centers in many communities within the NRD.

## Administration

When Nebraska joined the Union in 1867, natural resources issues were treated as issues of property and often pitted neighbor against neighbor, so the State Legislature was usually asked to provide solutions to specific problems. The Legislature usually responded by creating a special-purpose governmental unit that could resolve an issue, but often without sufficient authority or funding to provide effective long-term solutions instead of just stopgap measures. By the late 1960s, Nebraska had over 500 special purpose districts including: irrigation, drainage, soil conservation, watershed, rural water, watershed improvement boards, reclamation, sanitary improvement districts and sanitary drainage districts. In addition, state agencies were empowered to deal with some natural resources issues. The solution was for the state to create a unique system of natural resources districts (local government districts) that could deal with a wide variety of natural resource-related problems and opportunities.

In 1972, 24 NRDs (now 23) were established to replace 154 special purpose districts. The designated Mid-Platte East NRD covered portions of the Platte Valley that were being served by four watershed districts and several Soil and Water Conservation Districts in an 11-county area. One of the first acts by the district's board of directors was to change the NRD's name to Central Platte Natural Resources District. The city of Grand Island was selected by the first board as the headquarters. Ron Bishop, general manager of the watershed district, became the first general manager. Lyndon Vogt was hired as general manager in June 2013 when Bishop retired. Vogt was previously manager of the Upper Niobrara White NRD in Chadron and Lower Niobrara in Butte.

## FIGURE 4. CPNRD's Consolidated Areas of Responsibilities

1. Soil conservation and erosion control.
2. Flood prevention, control & channel rectification.
3. Drainage.
4. Groundwater, surface water and water supply.
5. Water quality, pollution control, solid waste disposal and sanitary drainage.
6. Fish and wildlife habitat.
7. Forestry management.
8. Recreation and parks.
9. Range management.

**Partnerships** The District works in collaboration with the NRCS, Nebraska Game and Parks Commission, Bureau of Reclamation, the Army Corp of Engineers and other organizations on projects within the District. In recent years, however, the NRD filed a lawsuit against the Farm Service Agency (FSA) to receive data records for producers within the District. In August 2011, the NRD lost the lawsuit in appellate court. Attorneys suggested that CPNRD concentrate on trying to get the law changed since the only option left would be to have it heard before the U.S. Supreme Court; who probably wouldn't hear the case. In April 2012, U.S. Senator Ben Nelson spoke with the board via conference call regarding the Farm Bill and announced that provisions had been included in the Senate version of the proposed Farm Bill. There has been no progress in this effort.

**FIGURE 5. Board of Directors** The board of directors is elected to protect and preserve a wide scope of natural resources within the district. There are 21 members, each serving a four-year term. The board consists of one At-Large member and two directors in each Subdistrict - who are elected in alternate election years.

| SUBDISTRICT | BOARD MEMBERS CHAIR/DELEGATE POSITIONS |
|---|---|
| At Large | Charles Bicak |
| 1 | Brian Keiser / Jay Richeson: Chair- Water Resources Committee |
| 2 | Dwayne Margritz / Chris Henry |
| 3 | Steve Sheen / Marvin Reichert |
| 4 | Keith Stafford / Bob Schanou: Chair- Programs Committee |
| 5 | Deb VanMatre / Jim Bendfeldt: Vice-Chair of Board, President-NARD Board, Chair– Western Projects |
| 6 | Jerry Milner / Mick Reynolds: Chair- Eastern Projects, Nebraska Natural Resources Commission Rep. |
| 7 | Ed Stoltenberg / Jerry Wiese |
| 8 | LeRoy Arends / Alicia Haussler |
| 9 | Ladd Reeves / Ed Kyes: Chairman of Board |
| 10 | Charles Maser: Treasurer of Board / Barry Obermiller: Secretary of Board |

**FIGURE 6. Staff** The general manager is responsible for the hiring and management of NRD employees. There are currently 25 employees including four secretaries in NRCS offices. Temporary employees are hired to help with tree planting and other activities as needed.

General Manager: Lyndon Vogt

Assistant Manager: Jesse Mintken

Data Compliance Officer: Sandy Noecker

GIS Coordinator: Angela Warner

Information/Education Specialist: Marcia Lee

Manager: Thirty Mile ID-Jim Harris

Projects Assistant: Tom Backer

Resources Conservationist: Shane Max

Secretary-Central Platte NRD: Deb Jarzynka

Secretary-NRCS: Samantha Keith, Lexington

Secretary-NRCS: Shelly Lippincott, Kearney

Technician: Thirty Mile ID-Mike Ostergard

Water Resources Specialist: Dan Clement

Administrative Director: Dianne Miller

Biologist: Mark Czaplewski

Engineering Hydrologist: Duane Woodward

GIS Image Analyst: Luke Zakrzewski

Manager: Cozad Ditch: Bill Jacobson

Programs Coordinator: Kelly Cole

Range Management Specialist: David Carr

Resources Conservationist: Tricia Dudley

Secretary-NRCS: Marcyne Johnson, Grand Island

Secretary-NRCS: Sara Carlson, Central City

Secretary-Thirty Mile ID: Marci Ostergard

UNL/CPNRD Demo Project Coordinator: Dean Krull

# II. Flood Control/Drainage

**GOAL:** To control floodwaters and/or to provide open floodways that will keep floodwater damages to an acceptable minimum.

Much of the area of the NRD has long been plagued by floods. On the average, there's a flood every year in some area of the District, with major floods occurring every six to eight years. The land area within the District is unusual in the fact that most of the tributaries of the Platte River run almost parallel to the Platte itself. Consequently, the tributaries span many miles of the flat terrace or bottom lands adjacent to the Platte before emptying into the river. In the central and western ends of the District, most of the tributaries originate in the uplands where flood control structure sites are plentiful, but then drop off into the flat terrace or bottom lands and meander for many miles before reaching the Platte River. Many of the District's other streams, such as Silver Creek, Warm Slough and the North Branch, originate in the flat terraces or bottom lands where there are no sites for flood control structures. Even Prairie Creek has no flood control structure sites except in its extreme upper reaches.

The Wood River has approximately 173 miles of channel meandering through the fertile Platte River Valley. There are numerous flood control structure sites in its upper reaches. However, in the flood of June 1967 on the Wood River, most of the rain contributing to the flooding in the Grand Island area fell east of Kearney where there are few flood control structures sites. Although flood control structures are, or could be, of great benefit to this area, total protection cannot be achieved without some form of channel rectification. The Board has adopted, as a general policy, the design and construction of flood control measures on a watershed basis. Structures are designed to provide for orderly development of flood control and other related resources activities in watersheds, with each watershed plan encompassing a number of individual project plans in the total watershed development. The NRD has plans or works, in various stages of development, for flood control in numerous watersheds. On the following pages, you will find the majority of projects that the NRD has completed, projects being maintained and projects in planning Plans for individual projects that are subject to state and/or federal regulations or require financing from state and/or federal sources are on file with the appropriate agencies as well as with the NRD. CPNRD also has a continuing maintenance program on the snagging/clearing projects to reduce flood damages in the District.

**PROJECTS COMPLETED**

1.**Snagging and Clearing Projects** In December 2015, the board voted to discontinue the snagging and clearing program with the exception of projects already in progress including the Kearney Whitewater Association; who had requested $2,200 to aid in removing trees that have fallen into Turkey Creek along the Whitewater Trail. The trail is available for use by canoes, kayaks, rafts, and paddleboards.

**2. Warm Slough/Trouble Creek Flood Control Project** Due to a history of flood damage to agricultural and urban property within Central City, a project was proposed for reducing flooding along those streams; caused by storm runoff into the Warm Slough, Dry Run and Trouble creeks. That project would have included construction near Grand Island in order to take care of storm runoff from the city, as well as channel clearing and renovation from Grand Island to Central City. A study determined that portions of the project were not economically feasible. A revision was made that subsequently dropped the infeasible portions from the plans. Partial funding was provided by the state through the Nebraska Natural Resources Development Fund. Cosponsors, with varying shares of the local matching portion, were CPNRD, Merrick and Hall counties, and cities of Grand Island and Central City. Construction was completed in 1993 and maintenance responsibilities were turned over to Merrick County and Central City. In 2002, the NRD performed snagging and clearing of the Lower Warm Slough from Grand Island to Central City with an initial cost of $110,000. Additional funds in the amount of $23,000 were transferred to complete the project since the construction company was required to truck the dirt away due to close proximity of wetlands in the area. From June 1-8, 2008, Central City received over 6" of rainfall, which exceeded a 100-year event. The project has improved drainage of the entire watershed.

**3. Prairie-Silver Flood Control Project** A flooding problem was studied by the NRD in central Hall County, just west of the city of Grand Island. CPNRD determined that the problem was caused by two short stretches of Prairie Creek and Silver Creek that produced channel overflow after large storm events. A project was developed to correct

the problem by cleaning out the channels and constructing training levees to prevent the overflow. Construction was completed on the project in 1986. Construction and land leveling in the area disturbed natural drainage flows along the Prairie/Silver Creek, northwest of Grand Island. In 2000, a design proposed by the NRCS was approved by the board to install a uniform drain and add culverts for a two-mile stretch. The total cost was $22,000 of which the NRD provided $17,500.

**4. Clear Creek Watershed** Clear Creek watershed, located in Polk County, encompasses 75,700 acres. It has a long history of flooding. A feasibility report for flood prevention and watershed protection was developed and completed in 1978 which lead to the construction of 15 flood control structures completed in Clear Creek Watershed over the last several years. Cost share from the Natural Resources Development Fund was received on five of the larger structures. Polk County provided cost share funds to construct additional smaller structures including road structures. There are no definite plans for construction of large structures in the Clear Creek Watershed; however, the NRD is planning to continue construction of smaller structures when needed.

**5. Lepin Ditch Flood Control Project** Landowners petitioned CPNRD in 1993 to solve excess storm runoff that was overloading the "old north channel" of the Platte River, north of I-80 in southwest Hall County. A study by Nebraska Department of Roads (NDOR) & CPNRD determined that the problem resulted when I-80 was constructed and an attempt was made to redirect runoff from the Lepin Ditch to another crossing site under the Interstate, and that a culvert should've been placed in the vicinity of the natural channel to allow runoff to flow under the Interstate. A joint project was developed at $700,000 with partners including CPNRD, NDOR and Hall County. Easements were obtained from area landowners for construction and maintenance of the ditch. The county provided site preparation and ditch excavation and provides maintenance. CPNRD contributed $120,000; which was completed in 1995. NDOR provided cost-share money for the culvert under I-80.

**6. Cairo Downtown Improvement Project** In 2007, the NRD approved $50,000 in flood control funds to aid in the construction of adding a 48" drainage outlet for the Project to divert excess water along the Hwy 11 corridor. The previous drainage system couldn't handle a one-year rainfall event, which caused overflow ponds and flooding in low areas. The community of Cairo contributed $2 million to the project.

**7. City of Gibbon** The City of Gibbon filed a formal request for help with a drainage project. Olsson Associates proposed solutions to the city's current drainage system including relocating the existing sluice gate, improvements on hydraulic conditions at the outfall and installing an automated sluice gate system. Total cost of the project is estimated at $150,000. The project will be added to the Hazardous Mitigation Plan so it will be considered for Federal funding in the future. In 2008, provided $50,000 to the City for improvements to the storm water system and the project was completed in 2010. In April 2015, OA reviewed what the City of Gibbon had accomplished towards drainage issues and the additional needs in order to resolve remaining issues. Staff has facilitated meetings with the City of Gibbon, Buffalo County and CPNRD to address the remaining drainage problems.

**8. Odessa Area Flood Control Project** Miller & Associates of Kearney completed the final design of the Odessa Area FCP in 2008 and completed it in 2010. The Project is located east and south of Odessa Project boundaries include the Odessa Rd to the west, 24$^{th}$ Rd to the North, and Sartoria Rd to the east. The projects consists of improvements to approximately two miles of existing roadside and field drainage ditches, replacement of culverts and supplementing existing culverts with a cost up to $15,000.

**9. Doniphan Drainage** The Village of Doniphan requested $4,000 to pump standing water from a detention cell located in the city park and into the curb and gutter system. In 2015, the board approved the request. The project was completed in 2015.

**10. Lake Helen** In 2013 and 2014, CPNRD provided $75,000 towards the restoration of Lake Helen in Gothenburg for water quality conditions. The lake was drained to accommodate: excavation of 171,773 cubic yards of sediment, stabilization of 3,391 linear feet of shoreline, development of underwater shoals, installation of a circulation system, dam repair, installation of a pier and boat ramp. Sediment and nutrient loading from outside the lake boundary was addressed by treating the lake with aluminum sulfate to precipitate phosphorus, installing a deeper well to access lower phosphorus water, and stocking recreational fish. The total cost of the water quality and habitat project was nearly $1.8 million. The ribbon cutting ceremony was held on May 20, 2016.

## PROJECTS UNDER MAINTENANCE

**1. Kearney Northeast Flood Control Project** A cooperative effort involving the City of Kearney, Buffalo County and CPNRD, was initiated in 1990 due to the expansion of the city of Kearney. The expansion toward the northeast has resulted in increased flooding on an unnamed tributary of the Wood River resulting mainly from storm runoff. The NRD obtained aerial photography and participated in survey work needed for topographic mapping of the affected area. After the mapping was completed in 1991, NRCS conducted a feasibility study to determine what options were available.

In 1995, Miller & Associates was hired to develop a plan for the watershed; including channel improvements, drop structures, road crossings & a detention cell. Cosponsors shared costs of the project & agreed to do the construction in phases so taxpayers would not have a large one-time impact. To stop a serious erosion problem at the point where water had been entering the Wood River, a drop structure was constructed in 1996 at the cost of $240,000 by the NRD. As part of it's bridge replacement program, the County also built a road structure used by the project.

The project was completed in three phases: **Phase I:** The existing channel was widened starting at the drop structure and meandered westerly and south to a point near 56th Street on Eaton Road. **Phase III:** (Completed before Phase II) In 2000, properties were bought and construction was completed on the detention cells and channel improvements. Detention cells are located 1/2 mile north of "N" Ave and 56th St in Kearney. Construction included 300,000 yards of excavation with a 50 ac/ft storage design for a 100-year storm and a 50 ac/ft storage design for a 25-year storm on the other cell. In 2003, the NRD approved a contract change to complete channel improvements south of the detention cells and to control erosion. There were 800,000 cubic yards of soil excavated to create the channel. Storage capacity is 200-300 ac/ft. **Phase II:** This was the last phase to be completed. It consisted primarily of channel improvements from the Phase I channel south to about 39th Street and then westward to Antelope Road. Phase II to Phase III, from 56th Street to Avenue N was completed in the spring of 2006. Total cost of the project was $3.4 million.

**2. Kearney West Clearing Project** In the fall of 1999, landowners west of Kearney requested a clearing project to assist them with flooding problems along Turkey Creek, which is also known as the Platte River North Channel. About 2 1/2 miles were cleared after the request. In 2000, an additional mile was cleared and snagged. Snagging & clearing was also performed on the North channel in 2001 at a cost of $8,650. In 2002, the NRD was notified that the North Channel of the Platte River/Turkey Creek had eroded to within 5 feet of a local sandpit. The U.S. Corps of Engineers surveyed the problem and provided an Emergency 404 permit to the NRD to stabilize the bank. The City of Kearney provided 25% of the total cost (approximately $1,850) and the NRD provided $13,500.

**3. Dry Creek Clearing Project** Debris from a wind storm or tornado fell into the Dry Creek channel northeast of Cairo in 1997, prompting a request from landowners for a clearing project. The NRD Board authorized a clearing project. The cost of the project completed in the winter of 1998 was approximately $11,500. Area landowners had petitioned the NRD to complete about 21,000 feet of additional clearing. The project was completed in the winter of 1999-2000 at a cost of about $42,000. In July 2011, $15,000 been added to the 2012 budget to complete the three-mile channel improvement to the west of the Central Nebraska Airport. The board approved a motion to prioritize work with Hall and/or Merrick counties to construct an additional culvert under Gunbarrel Road. Maintenance is performed by the NRD as needed.

**4. Amick Acres Project** The Amick Acres Project improvement area is in south central Hall County, just to the west of Doniphan. It diverts flood and drainage water away from the Amick Acres residential subdivision by utilizing part of a county road ditch for approximately one mile of channel. The initial cost of the project was $25,000; most of which was assessed to the benefiting landowners. Maintenance is performed as necessary at a estimated cost of $500-$1,000 annually. Actual costs are calculated and assessed to benefiting landowners.

**5. Platte County Project** The Platte County Project is an improvement area in Platte County, located just southwest of Duncan. The project provides drainage improvement and minor flood control benefits to 1,300 acres of irrigated cropland in southwest Platte County. Maintenance is performed as necessary at an estimated cost of $500-$1,000 annually. Actual costs are calculated and assessed to benefiting landowners.

**6. Wood River Watershed** Snagging and clearing was completed from the mouth of the stream to Gibbon in 1972. In 2002, one mile was cleared at a cost of $20,000. Annual maintenance for the Wood River Clearing Project is about $10,000. Additional spot clearing is continuing in the western portion of the District.

**7. Moores Creek Flood Control Project** In the 1980s, CPNRD and others recognized the need for flood control in Hall and Merrick counties on Moores Creek. A feasibility study was authorized by project sponsors including CPNRD, City of Grand Island, Merrick County and Hall County. The feasibility study was submitted to the Nebraska Natural Resources Commission in January 1984. The Commission subsequently approved the Moores Creek Project and agreed to cost share at a 65% rate. A three-phase construction plan was developed and carried out. **Phase I:** Channel improvements from the mouth near Archer upstream to the Hall-Merrick county line. Completed in 1990. **Phase II:** Three detention/retention and wildlife habitat enhancement cells improved the Moores Creek channel from the Hall-Merrick county line upstream to Grand Island. **Phase III:** Waterways and bridges constructed to enable storm runoff from the Capital Heights area, northwest of Grand Island, to drain into the improved Moores Creek channel. Project was completed in 1995. Annual maintenance performed as needed with an approximate cost of $20,000.

**8. Wood River Flood Control Project** After 30 years of planning, the Wood River Flood Control Project was put to the test on May 11, 2005, and recognized as an event that exemplified the importance of flood control projects within the District. The 300 foot-wide channel of the diversion project provided flood control protection for 1,500 homes and businesses. A total of 7.21 inches of rain fell between May 11th -May 12th, more than any one-day of rainfall during the 1967 Flood. (In 1967, 10 inches of rain fell over nine days from June 7-15, with the most falling on June 13 at 3.2 inches.) The project was put to the test again in June 2008, when the area received 6" of rain from June 1-8. After the extensive damage in Grand Island caused by the Wood River and Warm Slough in 1967, the area is now protected by the Wood River Flood Control Project. The U.S. Army Corps of Engineers participated in studies in the early stages of the Project. After new rules for such projects were adopted in the 1980s, the Corps reviewed its findings and conducted reconnaissance studies to determine whether a project was possible after the criteria changed; which indicated highly feasible floodway projects using several different routes. Following public hearings in 1989, the Corps narrowed the choices and began a study to determine the actual feasibility of a route to carry excess water from the Wood River and Warm Slough into the Platte River.

**FIGURE 7. Wood River Flood Control Project**

Appropriation and construction-start authorizations were obtained from Congress in 1996. The Corps' revision of plans and increased projected cost required new Congressional re-authorization and accomplished in 1999. Construction began in March of 2000. In 2002, the Corps contract was increased by $1 million due to miscalculations regarding the amount of topsoil needed for the project. 180,000 yards of soil was added with cosponsors paying $95,000 of the increase. A total of 500 acres were involved in land acquisition for the project, which was constructed from 2 miles west of Hwy 281 to the Hwy 34 bridge along the Platte River. Five bridges were constructed. Then, a reappraisal of Hall County Park resulted in an agreement/compensation for damages to the RV park with the Hall County Board. The board proceeded with the remaining 11 tracks of land needed for the project.

Benefits of the project include flood control for flood zones in the Grand Island, rural Hall and Merrick counties and groundwater quality improvement. Close to 7,000 acres of land were taken out of the flood zones. FEMA revised its floodplain maps in 2004, taking away the need for flood insurance in southern Grand Island. Landowners had been paying $317,000 to protect $56 million worth of property prior to the revision of the floodplain maps. Full funding of the Federal share enabled construction to be completed on schedule. The NRD borrowed funds in the

amount of $1.1 million at an interest rate of 6.5%, to meet the needs of project construction over a 2-3 year period. All monies were reimbursed to CPNRD by the State of Nebraska through a cost share grant and the other local sponsors. The entire project was completed and dedicated in May 2004. Total cost was about $15 million in the following amounts: $7,148,000- U.S. Army Corps of Engineers $4.million– Nebraska DNR $1.4 million- CPNRD, $1.2 million-City of Grand Island $352,000- Hall County $200,000-Merrick County. CPNRD is responsible for maintenance, with costs split between the cosponsors. In May 2015, the board approved $25,000 for JEO to complete design work for the Wood River Flood Control Project's System Wide Improvement Framework. The board also approved $20,000 for maintenance and repairs required by the Corps of Engineers.

**9. Prairie Creek Clearing Project** Flooding from Prairie Creek caused considerable damage to agricultural property in the past. While the Prairie-Silver Creek Flood Control Project had a local effect, it didn't solve all of the flooding problems on Prairie Creek, nor did it evolve that a feasible project could be developed to solve all of the flooding problems on the stream. However, further study indicated that damages could be reduced by keeping the channel clear. Snagging and clearing projects involving the selective removal of timber, trash and debris from the stream channel in an area of 35 feet on either side of the center of the channel were initiated. All projects are completed from the mouth of Prairie Creek in Merrick County to the Hall-Buffalo county line. Annual maintenance is approximately $10,500.

**10. Buffalo Creek Watershed-Structures** Feasibility planning for flood control was completed in the Buffalo Creek Watershed, located in Custer, Dawson and Buffalo counties. CPNRD received approval for cost-share funding from the Natural Resources Development Fund to construct seven flood control structures in the watershed: B-1, B-3, C-5, F-l, F-3, F-5 and F-7. Additional work:

**B-1:** the largest structure, was completed in 1983 along with the supply canal, 1.6 miles of power line relocation and 1/2 mile of county road improvement. In addition to flood control, the purpose of the project was expanded to include recreation and groundwater recharge. Cracks were identified in the B-1 structure in the fall of 1983. Repair consisted of installing a chimney drain system on the back side of the structure. Repair was completed in 1985. In 1987, the reservoir was opened for day fishing. In 1995, a petition from numerous landowners requested that the NRD discontinue filling the reservoir because they were concerned that the reservoir contributed to high water tables in the county. Hydrological studies conducted by the NRD showed that the B-1 reservoir made no significant contribution to the high water tables and that projected groundwater declines had not materialized due to continued strong annual rainfall amounts. However, the request to stop filling the reservoir was granted effective January 1, 1996. In May 2009, the board voted to start filling the B-1 Reservoir in Lexington every other year starting in spring of 2010 and was required to fill the reservoir once every five years to keep the NRD's water right. In March 2011, the board approved leasing water from B-1, for a one-year basis, to 40-45 individuals who needed 1-15 ac/ft of water. In March 2013, the board voted to start filling the reservoir every year and to get it back to its original concept. The NRD will receive 4,000 acre/feet of water per year from NPPD to fill the reservoir and there are plans to have the NGPC begin stocking the reservoir within this planning period.

**F-7:** Cracks were identified in the structure and repair was completed in 1990 at a cost of $11,500. Two sites in the Buffalo Creek Watershed north of Lexington were studied by a Kearney engineering firm to determine their potential as flood control structures. Based on the study, the NRD board determined that construction of flood control structures at those sites was not feasible and that all further planning efforts for the watershed would be discontinued. Operation & maintenance continues for all of the structures in the watershed including dam safety checks. In addition, the NRD will fill the reservoir periodically with the minimum amount of water to satisfy the project's Platte River water right.

**11. Silver Creek Watershed** Located in Merrick County, this watershed encompasses approximately 90,000 acres. A feasibility study was completed in 1979 to provide flood relief in the watershed. The project was completed in four parts and consisted of mainly channel improvement. **Phase 1A:** Lower 4.1 miles of Silver Creek. **1B:** One mile of Silver Creek and 15 miles of the Clarks drain. **Phase 2:** Continued upstream on Silver Creek for 6 miles. **Phase 3:** The next 10 miles upstream. **Phase 4:** Wasn't completed until the fall of 1987 due to wet weather in the 1985 and 1986 construction seasons. The 11-mile stretch upstream from Hwy 14 north of Central City to Silver

Creek's headwaters west of Chapman. The Board approved extension of the project at a cost of $7,500 in February 2000 due to additional flooding. Maintenance costs are approximately $20,000 annually.

**12. County Road Structures** The NRD has established a road structure program to help counties provide minor flood control. Under the program, the counties replace bridges on their roads with structures that generally consist of an earthen embankment with a culvert or tube at the bottom. Storm water is stored in small reservoirs to prevent damage to agriculture land below the road structure. CPNRD has completed several structures in cooperation with the county highway departments. The "county road structures" programs are primarily conducted on a request basis. The NRD will continue its responsibility for maintenance on these county road structures.

## PROJECTS UNDER CONSTRUCTION/PLANNING

**1. Upper Prairie Silver Moores Flood Control Project** The NRD and the City of Grand Island completed a detailed analysis of the hydrology and 100-year floodplain in the upper parts of the Dry, Prairie, Silver, and Moores Creek watershed located south of Hwy 2 and east of Hwy 281. To accomplish flood control, upland and lowland flood control structures will be created including roadways to act as dams, berms will be built to keep the creeks within their banks, water detention cells will be built on 500 acres at the former Cornhusker Army Ammunition Plant. Because of the widespread improvements to croplands and expanding development of urban property in the study area, an application and feasibility study report were filed with the Nebraska Natural Resources Commission for cost sharing for a 10-year, $15.5 million construction project. The project was approved and received $8.3 million in state funding, with the remaining $7.2 million to be financed by the cosponsors. The completed project will include:

- 3 P.L.566-type floodwater retarding sites in upland areas of the Prairie Creek watershed southwest of Cairo
- one upland detention site in the Dry Creek watershed
- a series of small excavated floodwater detention sites in lowland areas along upper Prairie Creek
- 3 excavated off-channel detention sites in the Silver Creek Watershed
- one low-level berm to prevent basin overflows from Silver Creek into Moores Creek
- Other parts of the Prairie Creek channel are slated for clearing to improve their capacity

Construction was phased over a 10-year period, starting with construction of the off-channel lowland sites in Silver Creek and stepping through the rest of the facilities depending on their contribution to flood control. The study showed that a 100-year flood would inundate 23,000 acres of lands south of Hwy 2, producing crop damages of $3 million a 10-yr flood would cause $1.6 million in crop damages. In addition, the flood waters would collect along Hwy 2 resulting in large quantities of water flowing east into developed areas of northwest and west Grand Island. The results of the study proved true on May 11, 2005 when central Nebraska was hit with a flood. The city of Grand Island sustained an estimated $3-5 million in damages and Hall County sustained a total of $12-15 million. There were 2,769 homes and businesses damaged in the area that would've receive flood relief from the project. Acquisition of or easements included 1,800 acres (mostly dryland crops or pasture), excavation of 3,500 AF of off-channel storage in lowland areas, construction of 6 upland floodwater detention dams and outlet works and installation or replacement of a few roadway culverts under Hwy 2 and other county roads. 500 acres of irrigated cropland were acquired for the flood detention cells at strategic locations. The design phase began in 2005, construction began in 2006. In 2011, directors approved a revised agreement with Hall County on the White Cloud Road dam. As part of the agreement, CPNRD set up a maintenance fund for up to $10,000 for 10 years for erosion, gravel, etc.

In 2015, an amendment contract was approved in the amount of $118,650 to allow JEO to submit a Conditional Letter of Map Revision (CLOMR) to FEMA that provides an early-stage assessment of the flood risk reductions due to proposed flood control measures. When completed, the project will protect northwestern Grand Island from Prairie and Silver Creek flooding; reduce future flood damages to crops, properties/infrastructures; and eliminate an estimated $130 million in damages during a 100-year (1% annual chance) event.

All four upstream flood control dams have been completed and 60% of the detention cells are complete. Major work to be finished includes 2.3 million cubic yards of excavation for the detention cells. Construction will start in the fall of 2016 at an estimated cost of $7.3 million. The mile-long levee is under final design, construction will also be in 2016 with an estimated cost of $750,000. The potential FEMA map revisions also need to be finalized. The entire project is scheduled to be completed in 2018.

**2. Hazardous Mitigation Plan** The board hired engineering firm JEO apply for a Hazardous Mitigation Plan for Federal Emergency Management Agency. JEO sent the application to FEMA for 75% cost share to develop the study. Many communities in the NRD expressed interest in pursuing the study since the potential FEMA funds available would enable communities to take action and reduce threats from natural disasters. In September 2008, the NRD was awarded a FEMA grant to develop the multi-jurisdictional All-Hazard Mitigation Plan. Public input from officials and landowners were a key component of the hazard mitigation planning process. Regional meetings were held in February to obtain input on the hazard mitigation plan in the initial stages. Potential hazards affecting the area and individual communities were identified, critical facilities located, and potential mitigation actions or projects were listed. Among the many projects being considered to protect people and property are flood and drainage system improvements, purchasing backup generators for critical facilities, evaluating/replacing alert sirens, purchasing weather radios, constructing public tornado shelters/safe rooms, tree inventory and maintenance programs to reduce electrical outages. Kirkham Michael Engineering of Lincoln, Nebraska, assisted in the development of the plan. The Plan became active in July 2012. In July 2015, the board approved a contract with JEO Consulting to update the Plan in the amount of $120,000 (must be updated every four years.) In order to be eligible for emergency funds, each county, community, and school are required to actively participates in the process.

**2. Ice Jams** In July 2011, the board approved an inter-jurisdictional cooperative agreement on how to deal with ice jams in the Middle Platte River, with the formation of a continual escrow (interest-bearing) account in the amount of $50,000. If an ice jam were to begin, CPNRD would be the first entity to start the process of calling FEMA and NEMA; in which the entire process could be completed in one day. The agreement is signed by seven partners who have deposited $37,000 in an emergency fund to use in the case of an ice jam on the Platte River. In 2016, the board voted to dissolve the existing Platte River Ice Jam Removal Agreement. Instead, the agreement partners plan to develop a working agreement that will focus on emergency preparedness in the event of an ice jam related to flooding and safety education. All funds in the ice jam account will be returned to the partners who include: Tri-Basin NRD and Buffalo, Hamilton, Merrick, Phelps, and Kearney counties.

**3. Elm Creek/Turkey Creek Watershed** A feasibility study was conducted for $125,000 and submitted to the Nebraska Resources Development Fund to request cost share. A community meeting was held in June 2006, on the feasibility study for Elm Creek Watershed Flood Control Project. 130 landowners attended. Olsson Associates' Plan consisted of a 975-acre flood control and re-regulating reservoir located northwest of the Village of Elm Creek and two dry flood control structures located on Turkey Creek. The reservoir would provide both traditional flood reduction benefits to the Village of Elm Creek and non-traditional environmental benefits including recreation.

The Turkey Creek structures would reduce current peak flows to downstream areas. Together, the flood control structures would provide flood protection to the Village of Elm Creek and downstream cropland. Preliminary cost estimate was $22.8 million. The board approved a study with OA to perform a geotechnical investigation/ seepage analysis of the area. The study involved the drilling 30 test borings at the reservoir site and adjacent lands to determine if leaching would raise adjacent water tables to a level that would create problems for either cropland or basements. OA developed a preliminary design feasibility study and CPNRD applied for Resources Development Funds. In June 2012, the board again reviewed the project due to a potential new source of funding from the Nebraska Water Cash Fund. The board authorized staff to work with OA, Nebraska Public Power District (NPPD), State of Nebraska & Platte River Program on options to move forward with a project. The proposed project was estimated at 6,800 -12,000 AF depending upon future agreements with a projected cost of at least $35 million. In 2013, the board approved the transfer of funds in the amount of $631,465 that was originally designated for the proposed Elm Creek Re-Regulating Reservoir to the CNPPID's new J-2 Reregulating Reservoir project; cutting the Elm Creek project from the budget.

**4. LiDAR** A LiDAR agreement was approved in July 2012 to provide district-wide coverage of topographic elevation developed from aerial radar detection. The NRD's cost will be $40,000 for Custer County, providing necessary data for several projects and programs. Data is scheduled to be collected from November 2012 to March 2013, with results available for use in August 2013. Other NRDs & partners involved in the agreement to collect statewide data

**PROJECTS UNDER PLANNING/CONSTRUCTION**

include: Lower Platte North, Twin Platte, Lower Loup, North Platte, and Middle Niobrara NRDs; Nebraska Department of Natural Resources, Department of Environmental Quality and the Natural Resources Conservation Service.

**5. GI Dewatering Study** The NRD began participating in the Grand Island Dewatering System Study in September 2000. The Study identified a practical groundwater dewatering system to remove groundwater from residential basements and minimize impacts on the project area. The study also assessed potential transmission and discharge location options, financing options, potential impacts on water quality and quantity, and subsidence issues; using both low and high capacity vertical wells. The NRD delivered public opinion surveys to the northwest and southeast project areas prior to the initiation of the Study, with the majority of responses returned as "very interested" in the Study. The Study areas fall within the "Valleys" topographic region, characterized by low relief along streams that are underlain by alluvial clay, silt, sand and gravel. The general direction of groundwater flow is east to northeast generally paralleling the Platte River.

Evapotranspiration (ET) losses are relatively high due to a shallow water table; saturated thickness of Quaternary deposits in/around Grand Island ranges between 80-200'. Depth to water table ranges from 5-20' below ground level. In 2012, Olsson Associates presented information to the board about the draft 2012 Study to improve and expand project implemented in 1998. The original study involved 29 dewatering wells compared to 33 in the 2012 updated study. Three dewatering areas and areas of contamination were taken into account with wells proposed to be outside of those plumes. Prior reported that the Grand Island City Council was receptive to the proposed updates and that the Council would like the NRD to be involved in the project. There has been no further contact from the Grand Island City Council.

**6. Clarks Floodplain** Silver Creek is the major source of flooding in the area. The board approved participation in the Clarks Floodplain mapping study up to $5,000; which is 50% of the expected cost of the study and needed to meet FEMA requirements. The study and funding was added to the 2014 Fiscal Budget.

**7. Doniphan Drainage** In September 2015, funding was approved in the amount of $4,000 for the Village of Doniphan to pump standing water from the detention cell that is located in the city park and into the curb and gutter system. The Village will pay the remaining $4,000 of the project; total cost is estimated to be $8,000. The project will be completed in the fall of 2015.

***Objectives***

1. *To establish management practices on cropland and grassland that would keep a minimum 2,000 pounds per acre of vegetative cover on, or above, the ground surface at all times.*
2. *To design floodwater retarding storage in all structures that have a suitable site.*
3. *To have a minimum of 75% land treatment established, or in the process of being established, before starting construction of a floodwater retarding structure.*
4. *All land shaping will consider its effect upon reducing flood damage, including upstream and downstream.*
5. *To preserve open floodways adjacent to streams and channels adequate to carry a 100-year-frequency storm with a rise in water elevation of one foot, or less, above the existing conditions.*
6. *Secure public awareness/acceptance of the need for & application of needed measures to reduce floodwater damage.*
7. *To carry out floodwater control practices at a satisfactory rate.*

# III. Soil Conservation and Erosion Control

**GOAL:** To use each acre within its capability and to treat each acre according to its needs as set forth in the technical guidelines adopted by the District.

**Central Platte NRD Cost Share distributed through 2016 = $295,046.42**

**60% Cost Share:** Well Abandonment
**50% Cost Share:** Streambank Stabilization, Windbreaks and Weed Barrier, Flow Meters, Urban Forestry Program, Prescribed Burn Program, Grassland Conservation, Cover Crops
**75% Cost Share:** Phragmites Control

## FIGURE 8. Central Platte NRD Cost Share Programs

| PRACTICE | CPNRD FUNDS SPENT |
|---|---|
| Trees & Weed Barrier | $16,388.50 |
| Center Pivots | $56,135.41 |
| Streambank Stabilization | -0- |
| Well Decommissioning | $17,735.93 |
| Urban Forestry | -0- |
| Phragmites Control | $135.00 |
| Cover Crop | $772.97 |
| Soil Moisture Sensors | $10,000.00 |
| Grazing Deferment | $29,104.50 |
| Flow Meters | $8,360.68 |
| Prescribed Fire | $1,400.00 |

| PROGRAM | CPNRD FUNDS |
|---|---|
| Corners For Wildlife | $2,700.00 |
| Buffer Strip | $47,470.38 |
| WILD Nebraska | -0- |
| NSWCP | $63,098.32 |

**Total Cost Share Distributed Since 1972: $10,565,157.76**

**Funding From Other Sources**

**WILD Nebraska Program:** **NRD provides annual payments, NGPC provides grass payments.**

**Buffer Strip Program:** **Nebraska Department of Agriculture**

**Corners for Wildlife:** **Pheasants Forever**
Total payments through CPNRD were $2,700.00

**Grassland Conservation** **NET Grant** $111,590.01

The Nebraska Soil and Water Conservation Program (NSWCP) is administered by CPNRD for NDNR. The program provides financial assistance to landowners to encourage conservation measures on privately owned land that will produce long-term benefits for the general public. Landowners apply to the NRD for these funds. After determining eligibility and the availability of funds, the NRD acts on the application. Landowners whose applications are approved have five months to complete the work. **2015-2016 NSWCP Cost Share distributed $70,937.67**

**50% Cost Share:**

* terrace systems, terrace underground outlets, water impoundment dams, grade stabilization structures
* diversions, grassed waterways, water & sediment control basins, dugouts for livestock water
* pasture planting/range seeding, critical area planting, planned grazing systems
* windbreaks/renovation, drip systems, weed barrier, brush management, streambank stabilization
* repair of practices, irrigation tailwater recovery pits, underground return pipe from reuse pits

- Irrigation Management: surge valves, flow meters, goose necks, drop pipes/conversion nozzles, rainfall auto-shutoff valves, buried pipeline to convert gravity systems to pivots, subsurface drip irrigation, soil moisture sensors, data readers

**NRCS Annual Funding**

The year 2015 was the largest funding year landowners have ever received with 116 contracts totaling $3,063,785 and conservation practices contracted on 39,396 acres. The increase is credited to the new Farm Bill Funding and the use of programs such as EQIP, RCPP and CSP. EQIP contracts approved in 2015:

- Water Conservation: $1,146,733.39 million; 50 contracts/5,625 acres
- Grazing Lands: $229,179.98; 10 contracts/3,637.6 acres
- Soil Health: $269,177.96; 17 contracts/2,523.9 acres
- Forestry: $19,541.09; 6 contracts/48.6 acres

**FIGURE 9. 2016 Goals—Natural Resources Conservation Service and Central Platte NRD**

| CPNRD PERFORMANCE MEASURE | GOAL |
|---|---|
| Conservation applied to improve environmental quality. | 49,000 Acres |

**NRCS Technical Service** The USDA-NRCS provides technical assistance to landowners to help solve conservation problems while carrying out the NRD's programs. The NRD assists with this effort by providing personnel to NRCS to assist with their activities and to help administer the NRD's programs. The following list indicates projected annual goals for this program for this planning period. Continued support for the District's cost sharing programs is expected from the Board of Directors. A continuous evaluation is conducted to ensure that cost share programs are providing necessary assistance for landowners to develop conservation practices and best management practices.

**Conservation and U.S. Agriculture** Non-federal agricultural and forest lands cover 70% of the lower 48 states or 1.4 billion acres. These lands produce strong agricultural/forest sectors, supply habitat for wildlife, filter groundwater supplies, regulate surface water flows, sequester carbon and provide open space and scenic vistas. However, farming/ranching may or may not have negative environmental consequences including: water & air pollution, soil erosion and loss of wildlife habitat.

**Conservation Programs Today** USDA programs address conservation/environmental concerns in 4 ways:

1) Educational and technical assistance.
2) Financial incentive payments through conservation on working farm, ranch and forest lands (EQIP, CSP, WHIP, etc.) and conversion to conservation use to achieve specific environmental benefits (WRP, GRP).
3) Protection of agricultural lands from conversion to other uses (FRPP): conservation compliance, regulatory requirements through Clean Air/Clean Water/Endangered Species (CNMPs, HFR).
4) Conservation technical assistance.

**Conservation and Environmental Benefits**

· Soil erosion—43% decline from 1982 to 2003. Livestock—establishing CNMPs through EQIP.
· Wetlands—Decline in losses from 1950's to 1990's; net gain of 260,000 acres from 1997-2003.
· Wildlife habitat—increases in grassland bird, waterfowl populations and Western State pheasant, elk, mule deer, white-tailed deer and pronghorn antelope.
· Water Quality—CRP—reduced sediment benefit $266 million—Swampbuster, WRP, EQIP also contribute.
· Air quality—anaerobic waste digesters supported by EQIP can help reduce odors and methane emissions; 12 million tons reduced carbon emissions expected by 2012.

**Key issues:** Excess nutrients in rivers/streams, hypoxia in Gulf of Mexico/Chesapeake Bay, water availability, declines in soil condition, invasive species, endangerment of native species, rising greenhouse gases, renewable energy, demands on agriculture.

**NRCS offices within the CPNRD:**

**Central City-** 1708 31st St Ste 2 (308) 946-2251
**Columbus-** 3276 53rd Ave (402) 564-1802
**Grand Island-** 2550 N Diers Ave, Ste L (308) 395-8586
**Kearney-** 4009 6th Ave Ste 4 (308) 237-3118
**Lexington-** 721 E Pacific Ste 2 (308) 324-6314
**Osceola-** PO Box 547 (402) 747-2461

***Objectives***

1. *To establish adequate permanent cover on all Class VI & all Class VII land.*
2. *To establish approved cultural management practices, vegetative practices or structural measures, as needed on all lands to prevent wind and water erosion.*
3. *To safeguard the land for the continued production of food and fiber.*
4. *To establish erosion control measures, as needed on all industrial development sites, residential development sites, or road construction sites and other non-agricultural development sites.*
5. *To apply irrigation water management techniques to all of the irrigated land in order to properly conserve and efficiently utilize soil, water, fertility and energy.*
6. *To develop proper range and pasture use and management plans or programs in order to properly conserve and efficiently utilize those range and pasture areas.*
7. *To re-establish vegetative cover on those range and pasture sites classified as "poor" condition.*

# IV. Water Quality

**GOAL:** To protect and enhance the quality of surface and groundwater within the District.

**CPNRD Groundwater Quality Program** Nebraska Legislation gives responsibilities to NRDs for all forms of pollution. While all forms of pollution are a concern, the problem of high nitrates will remain a priority for the District during this planning period. CPNRD has 21,002 registered irrigation wells. Nearly 800 producers participate in the Groundwater Quality Management Program. The Program's goal is to lower average nitrate levels district-wide. When the Program started, average nitrate levels in the District were 19.24 parts per million (ppm.) Levels have been lowered through management efforts by landowners; however, the board realizes how much work remains and the years that must pass before the problem is solved. The District continues to work with farmers, agriculture business operators, and the general public to further reduce high nitrates in groundwater.

**Groundwater Pollution** The chief source of groundwater pollution in the District is nitrate-nitrogen in amounts greater than the maximum contaminant level of 10 ppm (parts per million) allowed by the state and federal government. High nitrates are a problem in varying degrees throughout much of the District. In the western portion of the NRD, concentrations of sulfate are not uncommon. High iron and magnesium levels, along with high total dissolved solids in many areas, have the potential for considerable problems in municipal supplies, particularly in areas where large quantities of water are used for industrial purposes. Some chemical concentrations in the groundwater can be stabilized, either by preventing the chemical from becoming sufficiently prevalent to cause a problem or by preventing the chemical from leaching into the groundwater. The NRD's nitrogen management program was adopted in response to increasing high concentrations in large areas of nitrate-nitrogen in the groundwater and vadose zones (areas between the root zone and the top of the water table).

**Management Program** The Groundwater Quality Management Program is having a beneficial impact on the nitrate levels in groundwater by undertaking a long-term solution for the District's widespread high groundwater nitrate-nitrogen problems. Until the Program was adopted, the nitrate level in the high nitrate Area of the district had increased at a rate of about 0.5 ppm (parts per million) per year to 19.24 ppm. High groundwater nitrates in some areas of the valley were first identified in 1961. Excessively high nitrates can lead to methemoglobinemia, a condition known as "blue baby syndrome." High nitrates also are a potential hazard to livestock. Scientific studies have shown that commercial nitrogen fertilizer is the primary cause (though not the only cause) in the Central Platte Valley for high nitrates in groundwater. Many of those affected by the high nitrates in the drinking water are farmers and their families. Numerous meetings with farmers, crop consultants, fertilizer industry representatives and others were conducted in an effort to determine how best to implement solutions that were suggested by the research. Hearings, to obtain public input, were also conducted. As a result of the meetings, hearings and research, the Board

**FIGURE 10. Ground Water Quality Phase Boundaries**

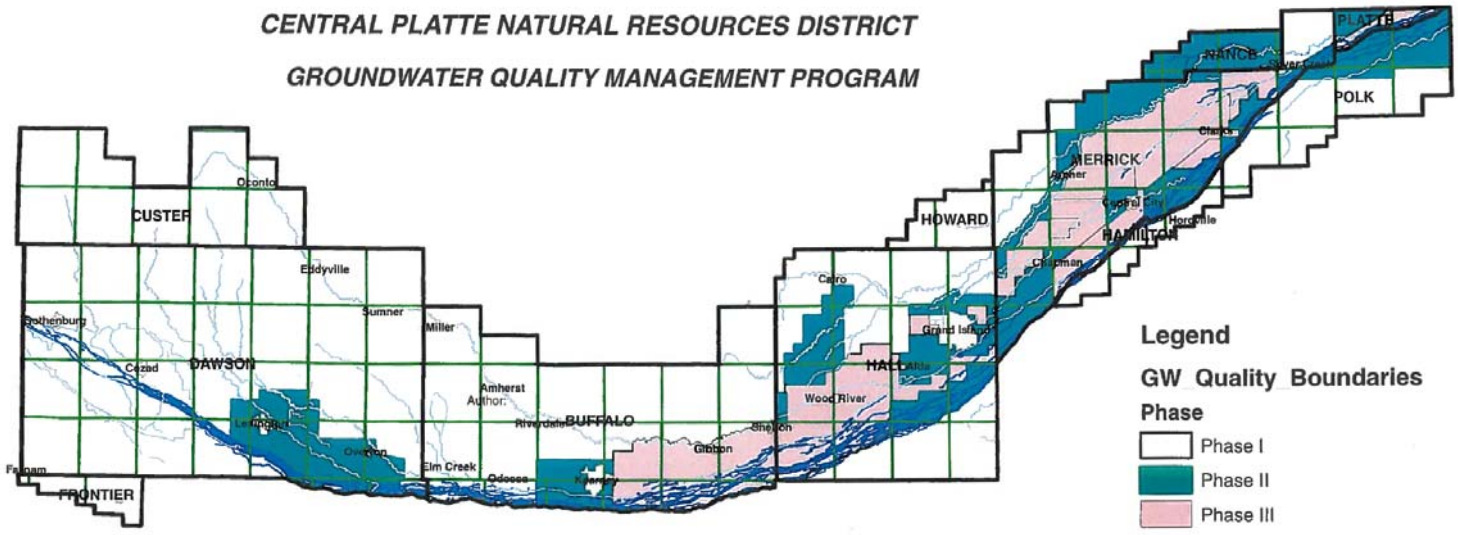


**FIGURE 11.**

## CPNRD Quality Management Rules & Regulations

Rev.01-2016

Commodity Crop Growers in the Central Platte NRD must adhere to the following regulations.

**Phase I: 0 - 7.5 ppm  Phase II: 7.6 - 15 ppm  Phase III: 15.1 ppm or higher**

**Phase IV: Areas where nitrate levels are not declining at an acceptable rate.**

Surface water irrigators are not required to take water samples/monitor water applications, since NRDs do not have authority to regulate surface water.

| | Phase I | Phase II | Phase III | Phase IV |
|---|---|---|---|---|
| Fall applications of N fertilizer **on sandy soils** are prohibited. | X | X | X | X |
| Fall N applications **on heavy soils** are permitted after November 1. | X | | | |
| Application of commercial nitrogen fertilizer is prohibited on all soils until after March 1. | | X | X | X |
| Commercial nitrogen fertilizer can be applied on sandy soils **after March 1**. | X | X | | |
| **Farm operators** using nitrogen fertilizer **must be certified**. Certification good for 4 years. | | X | X | X |
| Spring application of commercial nitrogen fertilizer will **require** split application [pre-plant/ pre-emergent and sidedress (post-emergent)] or the use of an approved inhibitor on corn and sorghum. Up to 80 lbs. of pre-plant/pre-emergent nitrogen can be applied without an inhibitor. **Operators who pre-plant/pre-emergent apply are required** to furnish **certification** from dealer than **inhibitor** was used at the recommended rate. | | | X | X |
| **All crops must be reported** (including corn, sorghum, potatoes, beans, alfalfa, small grains and any other commodity crop), on District approved report forms. **Reports will be due each crop year by March 31st and include** the legal description of well(s) irrigating the crop, acres of each crop and the crop planted. Crops other than corn, sorghum and potatoes do not have to take soil and water tests. | | X | X | X |
| **In addition to the above, the report for corn, sorghum, and potatoes** must list the following for the **upcoming crop year**: expected yields, water and soil test results, credits for past legume crop and manure or sludge, and the UNL's recommended nitrogen application rate. The report will also include the following for the **previous crop year:** actual yields, fertilizer applied as pre-emergent or sidedress, and irrigation water applied. **Laboratory reports for soil, water and manure analysis, and an inhibitor receipt if used, must be submitted with the annual report.** | | X | X | X |
| An annual **deep soils analysis** for residual nitrogen (NO3-N) on each field or 80 acre tract growing corn, sorghum or potatoes, whichever is smaller, with the analysis to be conducted by a laboratory participating in the University of Nebraska Soil Testing Program. A composite sample tested must consist of a mixture from no less than one three-foot probe every five acres. **The report from the lab must be attached to the annual report**. | | X | X | X |
| A **groundwater analysis** for nitrogen (NO3-N) content on each field growing corn, grain sorghum or potatoes must be made **annually. The report from the lab must be attached to the annual report.** | | X | X | X |
| If **manure or sludge** is used, a **credit** for the nitrogen in the manure or sludge must be **used in the calculation** for the nitrogen recommendation. A laboratory analysis must be conducted for each source of manure or sludge and attached to the report form. | | X | X | X |
| A **credit for previous year's crop** if the previous year was in beans, alfalfa, etc., must be used in the calculation for the nitrogen recommendation on corn and sorghum. | | X | X | X |
| The **expected yield** to be **set by the District** (last 5 year average of regulated crop + 5%) | | | | X |
| **Nitrogen applications** must not exceed District Recommendations with a copy of a fertilizer receipt attached to the annual report. | | | | X |
| NRD Staff work with individuals on best management practices | | | | X |
| Operators must **monitor groundwater applications** to allow for the better management of fertilizer applications and control leaching of nitrates. | | X | X | X |
| Phase II, III and IV areas can be established in the future based on N levels in **Vadose Zone** or based upon **nitrate levels not declining** at an acceptable rate as determined by the Board of Directors. | | X | X | X |

of Directors adopted the necessary rules, regulations, boundaries and controls for the first quality management program, which was included in the comprehensive Groundwater Management Plan adopted by the NRD in July 1987 and became effective in August 1987. The plan uses a phased approach, with lesser restrictions in areas that are not high in nitrates and additional regulations applying to areas with higher nitrate concentrations in the groundwater. Because the phases are by area, individual wells in a Phase Area may be higher or lower than the designated range of nitrate concentrations. Other factors, including proximity to a municipal water supply and vadose zone nitrates are also used in determining the Phase Areas.

**GWM Area Changes** In January 2016, parts of southern Hall and northern Hamilton counties within CPNRD, south of the Platte River, were transferred from a Phase I to a Phase II Groundwater Management Area due to increasing nitrate levels.

**Additional Testing** In April 2016, the board approved an agreement with the University of Nebraska in the amount of $80,000 to revisit 27 vadose zone core sites originally collected in the 1990s and determine where additional cores may provide the best overall information to characterize nitrate storage and estimated transport rates to the water table. After Central Platte NRD obtains permission from landowners to collect new core samples, the University of Nebraska will arrange and schedule collections using the Nebraska Conservation and Survey drilling equipment and crew. The project will help in the development of standardized protocol to collect vadose zone cores by detailing textural descriptions and additional measurements of ammonia, pH, moisture and organic content, and isotope analysis. Determination of water retention properties and hydraulic conductivity of undisturbed cores will help estimate the rate of travel of nitrate concentration at new sites; and ultimately the evaluation of land use practices on nitrate movement to the water table. Annual reports will be provided to the board by the UNL.

**Online Reporting Form** In August 2015, the board approved a contract with GIS Workshop in the amount of $64,500 to develop a new system for producers to fill out their annual Groundwater Management forms online. Upon logging in, producers use their User ID and may log in throughout the year to record their water and soil test results, and their actual yields prior to submitting the form. Producers benefit by having all past information in one location. The system significantly reduces the amount of administrative time it takes the NRD staff to manually enter the 6,000-7,000 forms submitted each year, and will streamline the process of generating letters and reports. Meetings were held across the District to update producers and demonstrate how to use the new online form.

### Projects and Research

**Central Platte Demonstration Projects** Practices that impede nitrogen fertilizer from leaching into the aquifer have been successfully demonstrated throughout the District. Farmers from throughout the District with varying soils and conditions, were recruited to work with the NRD in using the best management practices to demonstrate that nitrates can be managed efficiently and effectively while maintaining crop yields. As farmers began using the new tools, word of mouth spread the story of their effectiveness.

As new technology develops to help farmers practice better management, the District's board modifies cost share programs to accommodate new tools. Initially, emphasis was given to reducing the commercial fertilizer input by counting the contribution from residual sources. However, the leaching problem has two components: fertilizer and water. Reductions in the amounts of applied water normally produce less leaching than just reduction of fertilizer inputs. The Board decided to make the practice of monitoring well outputs mandatory in Phase II and Phase III, because research indicated that most farmers didn't know how much water they were using during irrigation.

The Nitrogen and Irrigation Management Demonstration Project is one of the longest-existing demonstration projects in Nebraska and possibly the nation. Other state and national demonstration projects have been modeled after this educational effort that has been conducted in cooperation with the NRD. The Project was initiated in 1984 following the Hall County Water Quality Special Project. The primary financial supporter for the project has been the NRD with grants exceeding $1.3 million since its initiation.

The Platte Valley Project includes parts of 11 counties in the central Platte Valley which includes the entire area of the CPNRD. Within these boundaries there are areas with groundwater nitrate-N concentrations in excess of 40 ppm, which are among the highest in Nebraska. Due to a combination of coarse-textured soil, shallow ground

water, intense irrigation and over application of nitrogen on acres in corn production; nitrate contamination exists in a large portion of the NRD. With areas of the NRD exceeding the 10 ppm set by the EPA, the NRD was required to develop a groundwater management plan to address groundwater quality. In 1988, State of Nebraska requirements forced the NRD to develop regulations involving nitrogen application. This plan has addressed the contamination problem using a phased system based on the average nitrate-N found within the NRD.

Over 400 demonstration sites have been located on producers' cornfields in the project area. Randomized replicated levels of nitrogen application have been placed on most of these locations, usually in increments of 50 lbs. above and 50 lbs. below the calculated nitrogen recommendation, based on the University of Nebraska's algorithm. These plot locations have provided a point of focus for over 290 field days and winter meetings. Results from these field length, producer applied, and producer harvested plots have been instrumental in the adoption of water quality practices by the producers of the CPNRD. Producer survey results taken in 1997 showed that 54% of producers responding tested irrigation water for nitrates, 34% used a nitrification inhibitor and 70% attended a tour or meeting on best management practices to protect water quality.

The project emphasis has changed over the years, as new technology become available to the agricultural sector. Evaluation and demonstration of these technologies are incorporated within the activities of the project. Some of these technologies include use of ET Gage, watermark sensors for scheduling irrigation, soil moisture capacitance probes, application of a polymer material to an irrigated field to evaluate its effects on leaching of nitrate-nitrogen, evaluation and demonstration of slow-release or controlled release nitrogen fertilizer products, and nitrogen fixation using cover crops in seed corn. Extension and demonstration efforts in areas of irrigation management have also been a part of the project. Such things as a demonstration surge trailer have been influential in the adoption of more efficient ways of irrigation. The project coordinator, Dean Krull, has been working with the NRD since 1984 and has an office in the NRD headquarters. Krull also contributes articles in the NRD's *In Perspective* newsletter to educate producers on results of the demonstrations and on best management practices.

**Crop Irrigation & Demand Network** Started in 2013, this program receives data collected by McCometer Connect Telemetry which provides a vast amount of real-time data. Duane Woodward, hydrologist, and Dean Krull, UNL-CPNRD demo coordinator, contact producers interested in cooperating with the District in areas targeted for the pilot program. The Program allows the NRD to view information such as water usage and soil moisture from fields where producers have installed this telemetry equipment. The program also allows landowners the opportunity to check their own readings such as gallons per minute used, inches applied each day and throughout the season, and soil moisture readings through a website at McCrometer.net.

The goal of the project is being accomplished by measuring water pumped and precipitation at selected locations to would provide data that could be use to develop irrigation efficiencies by irrigation equipment type, soil water holding capacities, and crop type. This advanced program was initiated through the NRD in 2013 with $60,000 budgeted for the project and expanded by a $750,000 NDNR grant in 2014. There have been 77 sites established across the NRD; with 11 sites in 2013, 30 sites in 2014; and 36 sites in 2015. The project's goal was to monitor different types of irrigation systems. Currently, there are 52 pivots, 18 gravity and 7 sites. Water pumped, system pressure and rainfall are monitored at all locations, with soil moisture monitored at 30 locations. Partners include DNR, UNL Extension, Seim Ag Technology, CPNRD and McCrometer.

**Project SENSE** CPNRD began participating in UNL's Project SENSE (Sensors for Efficient Nitrogen Use and Stewardship of the Environment) in 2015. This pilot program promotes in-season nitrogen fertilization for corn to improve the efficiency of nitrogen fertilizer applications through the use of canopy sensors. Other participants in the Upper Big Blue NRD, Lower Platte South NRD, Lower Platte North NRD, Lower Loup NRD, the USDA-NRCS and the Nebraska Corn Board. Results from 2015 plots showed that the crop canopy sensor management saved 40 pounds of Nitrogen per acre, saving producers $10.35 per acre on average. Annual field days are held to update the public and producers.

**Cover Crops** Producers in the CPNRD are working with the UNL Extension to research the effects of cover crops on soil health. Field days are held annually to show crop mixes planted on different dates and to compare above-ground biomass with below ground. Research includes whether compaction and infiltration are impacted, how

biological activity and organic matter are affected, which mixes provide the highest quality forage for grazing, and how much crop usable nitrogen can be expected. Partners include UNL, USDA-NRCS, CPNRD, Arrow Seed, Green Cover Seed and O'Hanlon Seed Inc.

**Irrigation Run-Off** In 2005, CPNRD received an irrigation run-off complaint in which the Western Projects Committee decided to keep open throughout the 2005 irrigation season to see if the situation improved. The land-owners worked with the NRCS to remedy the problem. The District has adopted rules and regulations designed to control groundwater irrigation runoff that have been in effect since January 1977.

**Decommissioned Well Program** The number of abandoned wells that exist is unknown, but the potential danger and the damage they can cause to the groundwater supply is a concern. Recognizing dangers posed by improperly abandoned wells, the NRD has for several years urged landowners to locate, fill and seal wells, cisterns, cesspools and other similar cavities on their property, but the problem persisted. The most dramatic danger caused by improper well abandonment is a hole into which children, animals or equipment might fall. A more likely danger, though, is the creation of a path through which contamination of the groundwater might occur. Abandoned wells that have not been properly filled and sealed can act as a direct conduit for pollutants to the water supply beneath the earth's surface. State law requires that abandoned wells be properly sealed. NRDs, the State of Nebraska and NRCS provide well owners with financial and technical assistance to get the job done right through well decommis-sioning programs. In 2013, the NRD made a change to no longer providing cost share for replacement wells. Cost share is available for any old irrigation well (60%), up to $500 on any well that pumps 50 gpm or less, $750 for any well pumping over 50 gpm, and for any hand-dug well up to a $1,500 maximum. A licensed water well contractor or licensed pump installation contractor is required to abandon the well and verify that the water well was decom-missioned in accordance with state law, standards, rules and regulations.

**Buffer Strips** In 1998, the Nebraska Legislature established the Nebraska Buffer Strip Program to use filter strips for reducing the amount of chemicals that run off farm fields into the streams around the state. Cost share assistance is provided under the program to landowners who replace cropland with grass buffer strips along the banks of perennial and intermittent streams or permanent bodies of water. A buffer strip traps chemicals before they reach the waterway. As a result, the chemical dissipates instead of polluting the stream.

**Chemigation Program** This program assists irrigators that chemigate to comply with Nebraska's Chemigation Act and Regulations adopted by the Nebraska Department of Environmental Control (now Quality) and CPNRD. The Act requires any farmer applying chemicals through a closed irrigation system to have specific safety equipment, the operator be properly trained and certified, and that a permit must first be obtained from the appropriate natural resources district before chemigating. Whether or not the permit holder is certified, the person who actually applies chemicals through an irrigation system must be certified; which consists of attending a course of instruction offered through the UNL Ext Service and passing a written exam. Certification is good for four years, after which renewals are required. By state law, a chemigation permit must be obtained before any person can legally chemigate.

In 2014, LB 272 was approved by the Legislature; which changed provisions relating to chemigation permits and fees. The bill allowed each NRD to set fees for new, special, renewal and emergency permits rather than being set by the Nebraska Environmental Quality Council. The bill also clarifies that emergency permits must be approved within two working days, and emergency permits can't be issued on Saturdays, Sundays or federal or state holidays.

**Changes:** The signature of the permit holder & certified applicator(s) are required on all chemigation applications. Permit Fees: Original application fee is $60. Special permit application is $60. Annual renewal is $20. An emer-gency permit application fee is $500. If staff is required to make a second trip to complete a chemigation inspec-tion, a $50 fee is charged to the permit holder/applicator. The fee is increased to $100 on the third trip.

*See Annual Chemigation Report on following page...*

## FIGURE 12. 2015 Annual Chemigation Report

| | New | Renewal | Total |
|---|---|---|---|
| **Applications Received** | 239 | 1,149 | 1,388 |
| **Applications Approved** | 223 | 1,149 | 1,372 |
| **Fees Collected** | $14,340 | $22,980 | $37,320 |

| **Inspections** | **Initial** | **Routine** | **Follow-up** | **Total** |
|---|---|---|---|---|
| | **231** | **383** | **14** | **628** |

| Fertilizer/Pesticide Used Crop Season 2015 | Total Amount Applied (Gallons) |
|---|---|
| Fertilizer | 6,283,127.2 |
| Brigade | 23.4 |
| Frenzy Delox | 4.9 |
| Headline | 483.4 |
| On Guard | 60 |
| Reveal | 76.5 |
| Satori | 34.2 |
| Stratego | 24.5 |
| Tilt | 9.2 |
| Treflan | 16.3 |
| Tundra | 65.1 |
| Total Acres Treated | 119,595 |

***Objectives***

1. *To reduce groundwater nitrate levels in areas that exceed 10 parts per million (ppm), the amount allowed by the state and the federal government.*
2. *To maintain groundwater nitrate levels at or below the permitted levels in areas that are less than 10 ppm.*
3. *To monitor groundwater quality for other contaminates along with nitrates.*
4. *To develop necessary groundwater quality management program(s) if other non-point source contaminants show signs of approaching or exceeding maximum safe levels.*

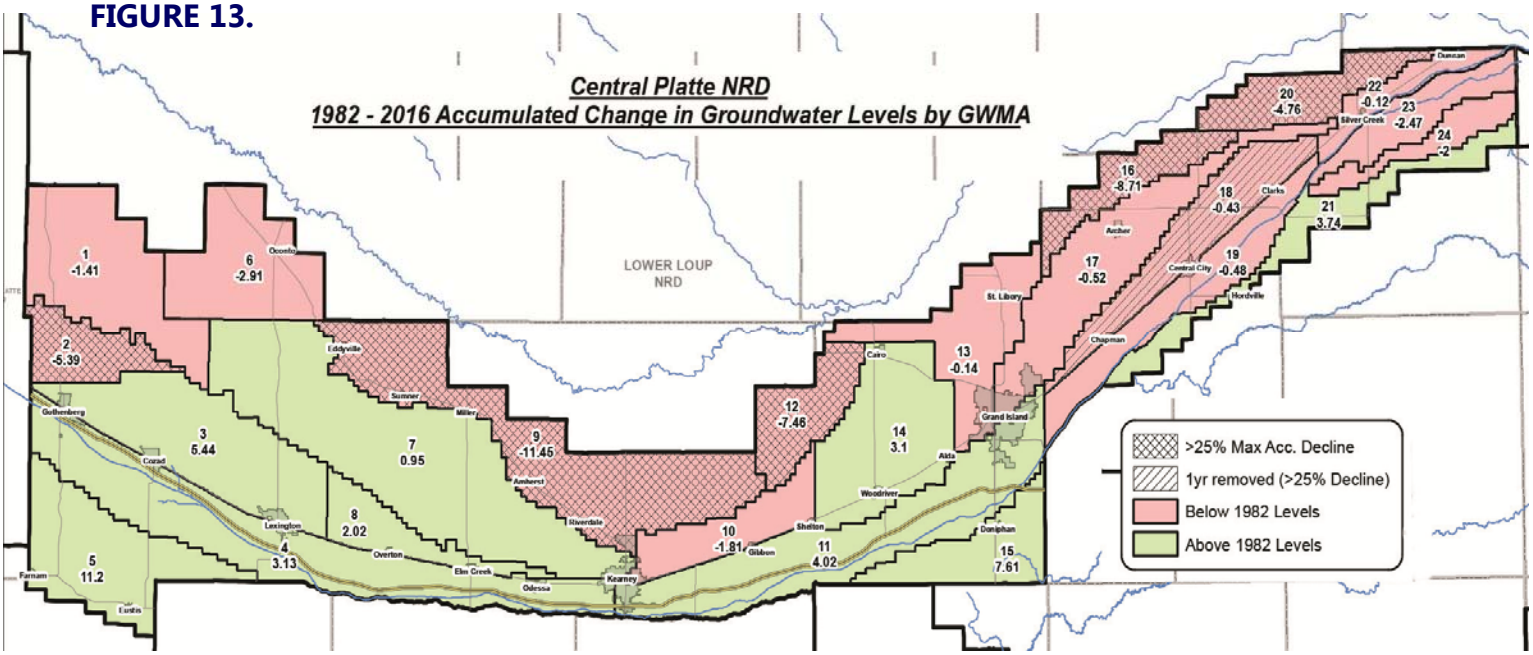
# IV. Water Quantity

**GOAL:** To assure an adequate supply of water for feasible and beneficial uses, through the proper management, conservation, development and utilization of the District's water resources.

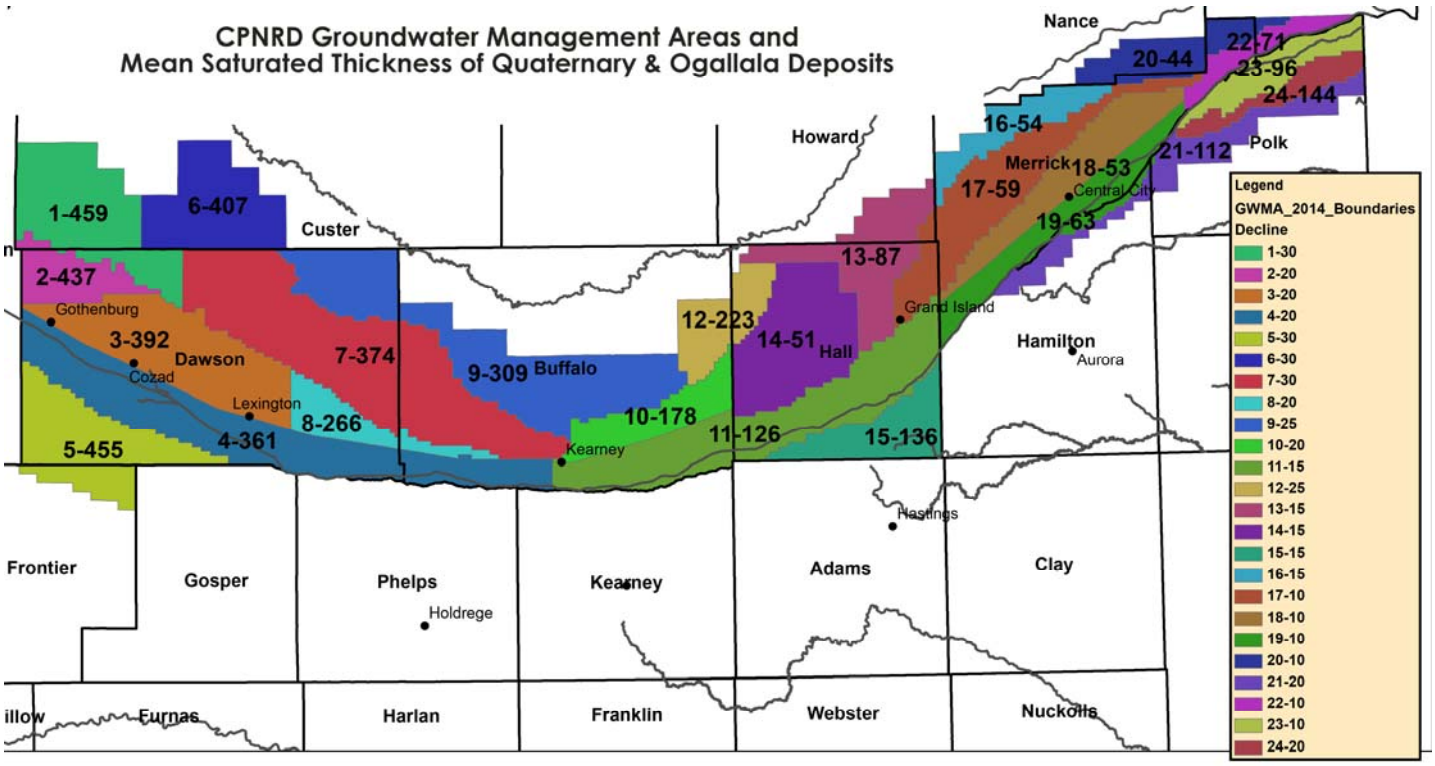
Being in the Platte River Watershed, the District's primary surface water feature is the Platte River. However, most farmers rely on groundwater for their irrigation needs since groundwater is abundantly available across the District. Water supply is under continuous monitoring throughout the District and a groundwater supply management plan to address potential shortages has been adopted by the NRD's board of directors and has been in effect since 1987. Groundwater is the District's chief source of drinking water and primary economic resource, since we depend on it for irrigation; which, in turn, enables us to have a strong economy rooted in agriculture. Water tables declined in the late 1970s and early 1980s. Rainfall increased in the mid-1980s-1990s, which caused water tables to rise, but the historic record suggests complete groundwater recovery from the dry periods during the wet periods does not always occur in all areas. Careful management of the resource is necessary. Aquifer thickness varies from 25-300+ feet across the district, so a drop of one foot has a more significant impact on some parts of the District than others.

Groundwater depths and thicknesses were charted and used to help establish 24 groundwater supply management areas. Besides the aquifer conditions, the soils and topographic characteristics are similar in each management area. The 1982 groundwater levels were established as the standard for the management plan since rainfall and recharge were above average several years since 1982. The maximum acceptable decline for each of the management areas was calculated, establishing a margin of safety in each area. It was determined that as an area's average groundwater level declined through that margin of safety, certain controls sought to be mandated to slow the decline. In 1987, the board established the Groundwater Management Plan with a phased program to implement controls when needed. The maximum acceptable decline ranges from 10' in the eastern end of the District to 30' in portions of the western end of the district. If the water table falls to 50% of that maximum decline (5'-15' feet respectively for each of the range parameters), Phase II would go into effect for any area or areas affected, triggering mandatory reductions in irrigated acres and establishing spacing limits for new irrigation wells. Further declines to 70%, 90% and 100% of the maximum acceptable decline will trigger Phase III, IV and V controls respectively, mandating additional cutbacks in irrigated acreage and increased spacing limits for new wells. Complete details of the controls are available in district publications. Because of the differences in the aquifer depth and conditions, it is conceivable that some areas could be in the higher phases while other areas may always be in Phase I. The *Rules & Regulations for Groundwater Use in the Fully and Over Appropriated* Areas are updated as needed.

**FIGURE 13.**



## FIGURE 14. Mean Saturated Thickness per GW Management Area




**Groundwater Levels** NRD staff measures 600 wells, twice a year, in conjunction with the Conservation and Survey Division, UNL and the U.S. Geological Survey. The measurements are taken in all 11 counties served by the NRD to monitor the District's groundwater levels. The groundwater levels of 1982 are used by the district as the benchmark year to compare groundwater level changes. This was established as part of the 1987 Groundwater Management Plan. The plan established 24 subdistricts across for monitoring groundwater level changes, seen in the map above. The change in level is an average, based on the wells measured in each subdistrict. The map above shows the mean saturated thickness for Quaternary and Ogallala Deposits across the District and in each of the groundwater management areas. Average saturation zone ranges from 459' in Custer County to 44' in Nance County.

For nearly two decades, there has been more groundwater in storage in the spring than there was in the spring of 1982, the base year. Groundwater levels vary over time based on rainfall amounts and irrigation water use. The small water level change is in spite of an additional 250,000 acres of groundwater irrigation being developed between 1982-2004, the year the NRD and NDNR placed a freeze on new irrigated acres and new wells. New farming techniques & practices that conserve water and reduce consumption, like minimum tillage and a switch from high pressure to low pressure sprinkler systems, are credited with the water savings that make the aquifer report so positive despite severe drought conditions. Several areas within the District continue to show signs of drought. Of the 24 groundwater management areas (GMAs) in the district, 18 areas showed some signs of drought since 1982.

As of June 2016, accumulated groundwater levels had declined less than one foot since 1982, with the accumulated change from spring 2015 measurements just 0.75 feet below the measurements taken 33 years ago. Ground Water Manangement Area (GWMA) #5, in the southwestern part of Dawson County and northeastern part of Frontier County, had the largest increase of 11.22 feet. GWMA #9 in northern Dawson and central Buffalo County had the largest decrease of -11.46 feet. Six of the 24 GMAs will remain at 25% of the maximum acceptable decline established by the CPNRD, and will no longer be allowed to transfer new uses or drill supplemental wells in those areas until the average water level is less than 25% of the allowable decline for two consecutive years. For Phase II and Phase III areas, where landowners are required to document gallons per minute used, CPNRD offers cost share in the amount of $100 per field per landowner to assist with the cost of an ultrasonic flow meter. The change in level is an average, based on the wells measured in each subdistrict. Aquifer thickness varies from 25 feet to 300+ feet across the district, so a drop of one foot has a more significant impact on some

parts of the District than on others. New farming techniques and practices that conserve water and reduce consumption, like minimum tillage and a switch from high pressure to low pressure sprinkler systems, are credited with the water savings that make the aquifer report so positive despite drought conditions in recent years.

**Cooperative Hydrology Study (COHYST)** When former Nebraska Governor Ben Nelson and the governors of Wyoming and Colorado signed the Platte River Recovery Implementation Program (PRRIP) in 1997 with the U.S. Dept. of Interior, questions arose about its potential impacts on activities along the Platte. It became apparent that data wasn't available to use in evaluating proposals. With the help from the Nebraska Environmental Trust (NET) grant, the NRD and a coalition of state and local agencies; water and environmental organizations started a hydrology study of the Platte Basin known as the Cooperative Hydrology Study (COHYST). COHYST improves the understanding of the hydrological and geological conditions in the Basin. The goal of the study is to provide scientifically supportable databases, analyses and detailed computer groundwater models to more accurately identify and quantify the relationship between the Platte River and adjacent groundwater resource. The Study also provides valuable information necessary to develop a plan to address "new depletions" to flows in the central stretch of the Platte River. The Study also assists Nebraska in several avenues: to meet its obligation under the PRRIP by helping analyze proposed activities, assists the NRDs along the Platte River in providing appropriate regulation and management, provides a basis to develop policy and procedures related to ground & surface water, and helps analyze other programs in Nebraska.

NET awarded $500,000 for the first year and $450,000 for second and third-year intents. Groundwater models were completed in 2004 and peer reviewed by Eagle Resources of North Carolina. A team of senior hydrologists was hired to design, oversee and supervise the database that is being developed. Duane Woodward, hydrologist, is a senior member of the Technical Committee. COHYST developed computer databases that quantified existing groundwater use, and river data, and aquifer data in the Platte River Basin. The databases are used to develop regional computer models to provide a better understanding of the groundwater flow system, the inter-relationships between ground & surface water, the geology of the region, and other characteristics of the groundwater aquifer.

The models enable researchers to represent real-world features such as rivers, streams, groundwater aquifers, groundwater pumping, or canals as a set of mathematical equations, which reproduce observed water levels and stream flows. The models are used as tools to predict how changes to or "stresses" on the groundwater system may impact flows in the Platte River. Stresses are additions and subtractions of water from the groundwater system, including pumping from wells, evapotranspiration by vegetation, aquifer storage and recovery, flow to drains, groundwater recharge from precipitation, deep percolation from irrigation, enhanced recharge due to certain land uses, recharge from canal and lateral leakage, and recharge from lakes and reservoirs. The models also help predict how water supply or proposed conservation projects proposed affects groundwater levels and river flows.

**FIGURE 15. COHYST Reaches by NRD**

| NRD | New groundwater irrigated acres 1997-2005 | Average Stream Flow Change (AF) |
|---|---|---|
| North Platte | 15,300 | 8,000 |
| South Platte | 16,700 | 700 |
| Twin Platte | 53,500 | 7,700 |
| Central Platte | 74,500 | 3,400 |
| Tri-Basin | 33,200 | 5,000 |

COHYST groundwater models estimated changes in stream flow as a result of new irrigated acres between 1997-2005. Changes in stream flow were made for reaches of the Platte River above Elm Creek, NE using a 50-year average. The reach changes were subdivided by NRD area**– see chart.** These estimates are used in the Platte River Basin plan as targets for stream flow depletions needed to be offset to get back to 1997 level of development.

COHYST 2010 is an effort to build on the existing COHYST databases and models. The study includes new NET funding of $616,800 over two years and a smaller COHYST area that covers the Platte River from Lewellen, NE, on the North Platte and Julesburg, CO, on the South Platte downstream to Duncan, NE, on the Platte mainstream. The study included a new work plan with three phases. Phase I work completed a overall water budget for the new COHYST area. Phase II is developing water budget analysis tools to manage ground and surface water resources in the Platte Basin. Phase III will develop sub-regional models across the area as needed for focused water management areas and apply the developed tools. Sponsors of the current study include CNPPID; Central Platte, Twin Platte, Tri-Basin NRDs; Nebraska Game & Parks Commission, and NPPD.

In 2012, the Sponsors Group entered into a contract to look at updating land use acres from 2006-2010 with a GIS company called Riverside from Colorado. The basic acreage data sets are being updated through that time period so the data will be ready to move into the next step of COHYST when the sponsors start looking at such things as future depletions. The new data sets are extensive, including 27 land types and uses. Previous land use sets put together go back to the 1950s. The modeling group has completed the focus on small areas of the entire COHYST area to identify how to get the models to better match the water levels and base flow returns to the river; and are putting changes back into the entire model. In 2013, the technical committee completed model calibration on three models and selected Mike McDonal to conduct an outside peer review. The Watershed Model (CROPSIM), the Surface Water Model (STELLA), and the Groundwater Model (MODFLOW) were integrated to simulate the hydrologic cycle. The simulation compares water budget fluxes to data-driven calibration targets. The models will be used for water management decisions for projects such as the percentage depletion maps, conjunctive water management and to determine the real effects of operating irrigation canals differently.

In August 2014, the Integrated Model results for the watershed, surface water, and groundwater models were within 8% difference for calculated gage flows versus historic gage flows; which is positive indication that the COHYST models are calibrated correctly. The following minor changes were made to the models:
- **Watershed:** soil information and weather data from climate stations were added.
- **Surface Water:** seepage return from Sutherland Reservoir, seepage from Lake McConaughy, addition of runoff and irrigation demands; storage/natural flow and environmental storage account.
- **Groundwater Model:** match evapotranspiration cells to expected locations, adjusted elevations, routed seepage to new discharge point, use groundwater model outputs for Lake McConaughy seepage.

The 2016 Work Plan for COHYST 2010 is underway and scheduled to be completed by December 2016. The plan includes wrapping up the Graphical User Interface (GUI), extending the model in time, final model improvements, recalibrating and documenting the model, and project oversight. The total budget for January-December 2016 is estimated at $151,000. The model is currently being used for conjunctive management decisions, such as irrigation canal projects with NPPD, CNPPID and Tri-Basin NRD.

**Suspension on Drilling New Wells & Expansion of Irrigated Acres** In February of 2006, the entire District was placed in a suspension area when the Board adopted the *Rules and Regulations For Closing the Management Area to the Issuance of New Well Permits, Preventing the Expansion of Irrigated Acres and Increased or Expanded Uses of Groundwater for Other Beneficial Purposes*. The rules were adopted after the NDNR designated the entire District as fully appropriated. The Plan has been amended several times and is now titled Rules & Regulations for Groundwater Use in Fully and Over Appropriated Areas. Revisions were made in June 2006, November 2006, April 2007, December 2007, June 2008, July 2009, January 2013, June 2013, April 2014, and most recently June 2016.

The original suspension was imposed in November 2003, when the CPNRD Board imposed a temporary suspension of drilling new wells within parts of the District. The area included in the temporary suspension runs 185 miles (length of district from Gothenburg to Columbus) and 6-8 miles either side of the Platte River. The temporary suspension was put in place to allow the board and NDNR to look over the conflicts between ground and surface water to determine if a problem exists and how bad it might be by developing a study of the district's surface and groundwater supplies. In 2004, NDNR indicated that the Platte River Basin was fully appropriated and in some places, especially upstream from Elm Creek, over-appropriated. The board made the changes since existing surface and/or groundwater users would've been faced with less water supply. Wells not subject to the suspension included: wells that pumping less than 50 gpm, replacement wells, dewatering wells pumping less than 90 days and test hole wells. Variances were granted if determined that construction of a new well was necessary to alleviate an emergency situation involving provision of water for human consumption or upon other good cause shown. Public hearings were held throughout the district in 2003 to discuss the temporary suspension. Of 450 in attendance, 237 responded to opinion surveys handed out at the hearings with 166 of those who responded were very opposed.

Three situations influenced the passing of the suspension. The first is the drought cycle that the state of Nebraska was in, which really exemplified the need to "take stock" of the water budget. The other two situations were LB962 introduced following a recommendation by the Water Policy Task Force, and unknown future requirements follow-

ing the implementation of the Platte River Recovery Implementation Program. The State is to mitigate or offset any new depletions after July 1997 as part of the Program. If the State doesn't pick up their obligation, the responsibility will likely fall back to NRDs or water users who would be required to offset depletions from post-1997 wells by giving up part of their irrigated acres.

**Water Policy & Funding Task Forces** In 2002, LB 1003 established the Task Force to address the management and use of Nebraska's surface and groundwater. CPNRD had two appointed representatives: Ron Bishop, general manager, representing the NRDs; and Dick Mercer, director-representing the Middle Platte Basin. The Task Force presented its report to Governor Johanns in 2003, recommending that basic components of existing surface and groundwater law be left in place; but that Nebraska adopt a stronger, more proactive approach to the integrated management of surface water and hydrologically connected groundwater. Key goals were to address potential problems between groundwater and surface water users before conflicts arise and to manage the water resources of the State to sustain a balance between hydrologically connected water uses and water supplies. The Nebraska Legislature then adopted LB 962 which makes the state and the 23 NRDs more proactive in anticipating and/or preventing conflicts between groundwater and surface water users. In July of 2004, the NDNR declared that all or portions of 9 NRDs were considered "fully appropriated." In addition, the Platte River Basin, above the Kearney Canal Diversion, the North Platte River Basin and the South Platte River Basin were designated as over-appropriated.

Nebraska is also required to comply with the Republican River Compact, a 1943 agreement with Colorado & Kansas overwater use in the river's basin. The agreement allocates 49% of the Republican River's water to Nebraska, 40% to Kansas and 11% to Colorado. Kansas long-accused Nebraska of violating the compact by allowing farmers to divert more than their legal share of the river's water for private use. The case went before Special Master William J. Kayatta in August of 2012. The State of Kansas sued Nebraska asking for up to 300,000 acres permanently retired from irrigation and up to $80 million in damages for water use in 2006. In December 2013, Kayatta instead recommended Nebraska pay $5.5 million in damages. He didn't recommend a massive shutdown as Kansas had requested, which is a victory worth more than $100 million annually to Nebraska's economy. The U.S. Supreme Court is currently hearing this case.

In 2004, conclusions reached by the Governor's Water Policy Task Force led to the passage of LB 962 and set the stage for a water management policy based on sustainability. The legislation was a success, with one exception: it fell short due to lack of funding. LB 517 was approved to fill that gap by creating a Water Funding Task Force. The Task Force included 16 members of the Nebraska Natural Resources Commission, 11 citizens appointed by Governor Heineman, 6 state senators and director of the NDNR. CPNRD board members Dick Mercer and Mick Reynolds served as Task Force members. In December 2013, the Task Force submitted its recommendations to the Nebraska Legislature for a strategic, long-term funding plan for Nebraska's water projects. The Nebraska Legislature and Governor Heineman approved funding to establish a permanent, stable funding source to ensure that Nebraska's water resources are managed effectively and efficiently.

The Bill includes creating a two-step application process for water projects, allocating an annual funding amount of $50 million & expanding the Natural Resources Commission to oversee the allocation of funds. The members spent 5 months conducting education sessions/tours and holding public meetings across the state. During the tours, Task Force members gathered input and learned of the water issues/funding challenges facing water users in Nebraska. The information gathered at the meetings helped the group prioritize the goals that led to the five recommendations. The Task Force reached consensus in early December and all 34 members supported the recommendations presented in their report. Their top priorities for water programs, projects and activities included :

- Ensuring that water projects funded through the new Water Sustainability Fund demonstrate their ability to contribute to the goals of water sustainability for the state by protecting the ability of future generations to meet their needs through various methods. These include increasing aquifer recharge, reducing aquifer depletion, increasing stream flow and remediating threats to drinking water
- Contributing to multiple water supply management goals, such as flood control, agricultural use, municipal and industrial uses, recreational benefits, wildlife habitat, conservation and preservation of water resources
- Providing increased water productivity and enhancing water quality

- Using the most cost-effective solutions available
- Complying with compacts, decrees, and other state contracts and agreements

**Fully & Over Appropriated Designations** A basin is determined to be fully appropriated if further development were to occur, the balance between water use and water supplies could not be sustained. An over-appropriated basin is one where the extent of development is not sustainable over the long term, or that the already permitted uses are in excess of what can be supported by the water supply over the long term. As a result of the designations, DNR placed the following stays on new uses of surface and groundwater: immediate stay on any new natural-flow, storage, or storage-use appropriations in the whole of the over-appropriated basins, and a stay on new water well construction permits in all of the geographic area within which surface water and groundwater are hydrologically connected. Stays are also imposed on the construction of certain new water wells unless such construction has commenced prior to the effective date of that stay or a still valid construction permit for such water well has been previously obtained from an NRD; and on the use of an existing water well to increase the number of acres historically irrigated. DNR placed stays on any increase, through use of an existing surface water right, of the number of acres historically irrigated.

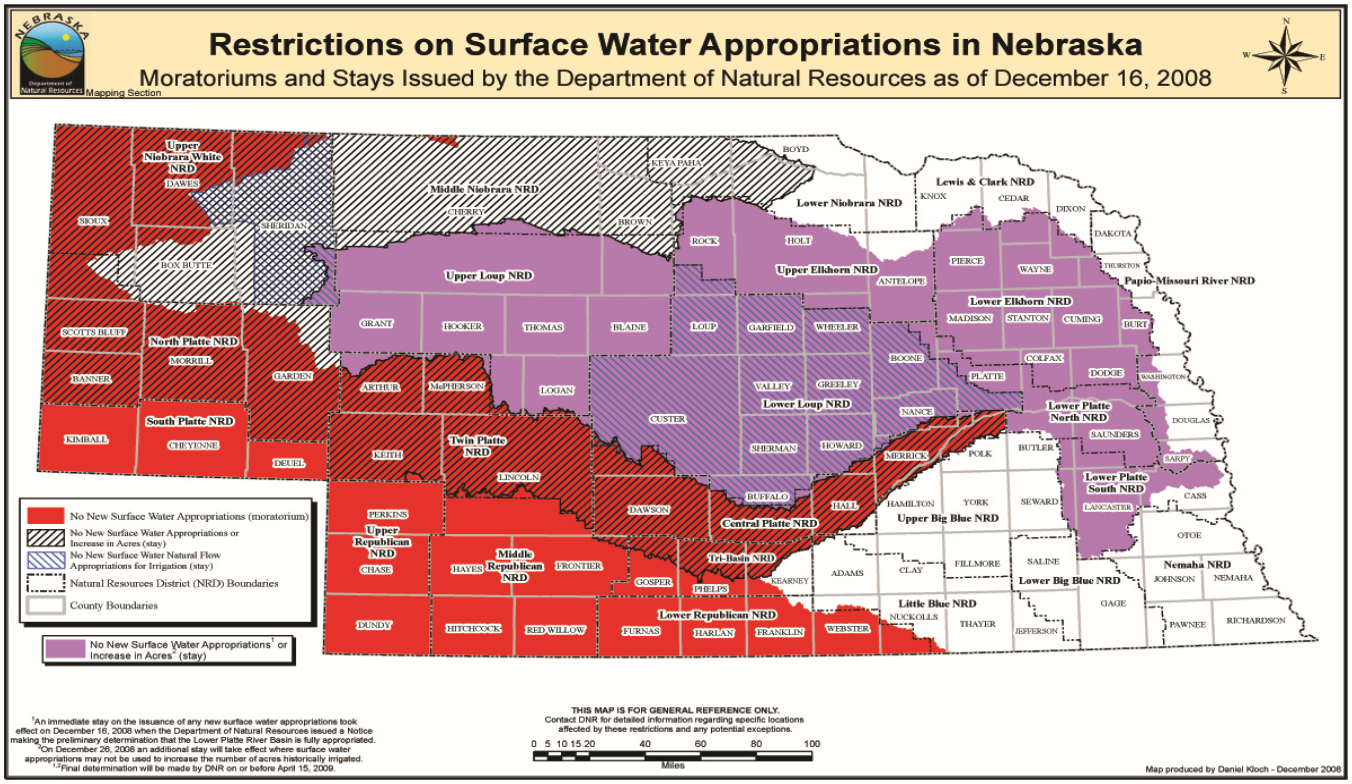
All additional stays became effective September 2004 and remain in effect until NDNR determines that the affected basins are not over-appropriated, or the stays expire pursuant to the provisions of LB 962. In 2006, NDNR started making annual determinations of basins not previously designated as fully appropriated or over-appropriated to see if they had become fully appropriated. CPNRD was designated as over-appropriated from Elm Creek west and the rest of the District was designated as fully appropriated. CPNRD directors, staff and DNR worked with Stakeholders to develop an Integrated Management Plan for the NRD. CPNRD also participated in the development of a basin-wide plan for the Platte Basin. In 2013, the board approved an agreement to allow Twin Platte and Tri-Basin NRDs to purchase water from CPNRD annually to provide flows back to the Platte River. The agreement states that if Central Platte has excess flows available, the TPNRD may purchase up to 1,500 AF of water until 2019; and Tri-Basin NRD may purchase up to 2,000 ac/ft until 2019. Any remaining flows would be sold to the Platte River Recovery Implementation Program. It was estimated that CPNRD would have between 3,000-4,000 AF of excess flows once the canal rehabilitations in Dawson County are completed.

**Maintaining Irrigation Status** After January 1, 2010, in order to maintain irrigation status the land must be: a. Irrigated at least 2 out of 10 years, or; b. Land is enrolled in a federal conservation program (CRP, CREP, etc.) or; c. Land that is growing alfalfa in the sub-irrigation areas in the District; d. Pasture or hayland that can be shown to have been irrigated at least 2 out of 10 years and will remain as irrigated pasture or irrigated hayland, unless the average annual consumptive use is transferred to another use and/or location pursuant to the NRD's Rules and Regulations. In May 2012, the Variance/Appeals Subcommittee revisited the 2 &10 Rule to discuss how owners/operators would be notified to make sure their irrigation was protected. The year 2019 is the end of the first 10 years of the rule. In 2015, the NRD will send out notifications to landowners that have fields not showing irrigated proof & let them know that they have until 2019 to get water to the acres in question for two years of proof. In 2017, the NRD will again send out notifications to the landowners that have fields not showing irrigated proof through aerial photography and request that they contact the NRD. Options included proof of irrigation through FSA records, plans to irrigate marked acres over the next two years, and whether they are going to water bank with the NRD or another related water bank transaction.

On April 10, 2014 Senators passed a bill (48-0 vote) creating the Water Sustainability Fund (WSF) and restructuring of the Nebraska Natural Resources Commission, to better emphasize water sustainability. LB1098, introduced by Senator Tom Carlson, requires that the WSF be used to contribute to multiple water supply management goals, fund municipal sewer infrastructure projects, increase water productivity, enhance water quality & comply with interstate compacts or other agreements. Funds will be distributed equitably throughout the state with no more than 10% dedicated annually to sewer infrastructure projects.

Three state Natural Resources Commission members were appointed by the governor and 13 elected to represent river basins across the state. LB 1098 added 11 members to the commission who were appointed by the governor, representing these interests: agribusiness,; agriculture; groundwater irrigators; irrigation districts; manufacturing; metropolitan utilities districts; municipal water users; outdoor recreation users; public power districts; range live-

## FIGURE 16. Restrictions on Irrigation




stock owners; surface water irrigators; and wildlife conservation. The bill also requires basins including three or more NRDs operating under an integrated management plan to develop a basin-wide plan for any areas with hydrologically connected water supplies. The Legislature's Appropriations Committee will conduct a biennial analysis of the WSF, beginning in the 2019-2021 biennium.

**Certification of Irrigated Acres** All irrigated acres are certified, including variances and water bank transactions. In April 2006, the NRD began the process of certifying irrigated acres by mailing out packets to landowners who live in Custer, Dawson and Frontier counties. To ensure accounting of irrigated acres was accurate, landowners were provided with aerial maps and the number of acres the NRD had on record as irrigated that was taken from infrared imagery. If a landowner disagreed with the number of acres provided, they were required to show CPNRD proof of their claims by obtaining records from their local FSA office; including an aerial photo and a printout of their irrigated land. Landowners then made an appointment with the NRD staff on location. Most of the changes made were less than 10 acres while about 1/3 of the fields that the NRD determined as irrigated needed no changes at all. The board set a deadline of December 31, 2014 to certify irrigated acres.

At the end of 2015 the CPNRD had a total of **1,028,044** irrigated acres of which **936,554** acres are groundwater only; **14,315** acres are surface water only and **77,175** acres are a co-mingled use. The overall irrigated acres base has increased **11,455** acres, in part to acres still being certified, two years of additional acres being added east of Chapman, NE (both have supporting documentation) and because of our transfer process, which allows for the consumptive use of water to be changed, (either in location or purpose) without causing an increase in depletions to the river or an impact to existing surface water or groundwater users.

**Certification Website** In 2007, the NRD launched the first irrigation certification website in the state, developed by GIS Workshop of Lincoln. It allows public access to scanned documents that show proof of the number of irrigated acres for all landowners in the District, infrared imagery taken by the NRD and all registered wells. Users may search information for specific parcels of land by using the clickable map interface or by searching the site by landowner or tenant name, legal description or field ID number. The site also allows landowners to view and print aerial photos taken by the District to show how their land has developed since 2003 and view any improvements that have been made. The website was overhauled in 2011 and again in 2015. The public will now have several search options, have access to drawing tools to create their own proposed transfer maps and print the maps to share with

NRD staff. The public and staff sites are linked, so all information is simultaneously updated and reduces the time it takes to complete water transfers and other changes. The website is located at: **cpnrd.gisworkshop.com.**

**Irrigation Violations** Irrigation violation letters were mailed to 36 landowners in April 2016. A total of 153.6 acres are involved in violations; which range from 1.03 to 29.11 acres. The number of violations continues to decrease each year. There were 72 violations in 2014, 119 in 2013, and 169 in 2012.

**Transfers** For calendar year 2015 the CPNRD allowed **160** transfers. The certified acre total for 2015 involved in these transfers to new irrigated lands was **1,955** acres. The total number of certified acres used to offset the new uses was **1,094** acres. Each transfer resulted in no net increase in stream depletions when computed using the CIR offset calculator developed from COHYST. There were also a total 160 groundwater acres retired.

**Irrigation Well Registration** A free service to landowners is available from the NRD to verify and correct registrations of wells across the District. Wells currently registered with the DNR often list the wrong owners and some didn't have an accurate location. Some registered wells have been decommissioned and other wells that exist are not registered. Under state law, wells that are not properly registered are considered to be "illegal wells," which is considered a Class 4 criminal misdemeanor violation of the law. The penalty for such a violation is a fine of $100 (minimum) to $500 (maximum) per conviction. Another possible consequence of such a violation is a court order to discontinue pumping from the illegal wells. Often wells are part of the property inventory when the ownership changes hands. There is no automatic procedure for correcting the well registration- it becomes the new property owner's responsibility to verify the registration. There is no charge by the NRD to help verify the registration of an irrigation well. However, DNR charges a fee of $110 to register each well, whether it is newly dug or is an existing well that has never been previously registered. There is no charge from either the NRD or the state to correct the location or change the ownership information.

**Water Well Permits** Permits are required before water wells are drilled. In 1986, state law began requiring NRDs to have a permit program for new wells that are drilled or existing wells that are modified in management areas. CPNRD began issuing permits in July 1988. These permits assure landowners and the District that spacing requirements for such management areas are being maintained. State law provides that a new irrigation well cannot be drilled within 600 feet of an existing irrigation well not owned or controlled by the applicant. A new irrigation well cannot be placed within 1,000 feet of an industrial or municipal well and no industrial or municipal well can be drilled within 1,000' of any registered irrigation well. CPNRD's plan calls for a 900' spacing if groundwater declines trigger a Phase II designation in a given management area. The plan calls for a 1,200' spacing in Phase III, a 1,500' spacing in Phase IV and an 1,800' spacing in Phase V. Following a change in state law, NRDs are now given authority to provide a permit and define what a replacement well is. CPNRD requires a permit to drill replacement wells as well. The NRD's permit requirement is in addition to well registration requirements of the state that still apply. Replacement wells must be registered the same as any other water well, except that the timing may be different. Applications for the permits to drill wells in the District can be obtained from the NRD office. The permit fee is $50 and expires one year from the date of approval. In 2015, there were 131 well permits issued.

**Integrated Management Plans** CPNRD and NDNR began working on the Integrated Management Plan for the NRD in 2005. The NRD began meeting with Stakeholders in 2005 to begin educating them on the requirements set by DNR and the issues that would need to be considered in developing the Plan. The members included both surface and groundwater interests such as irrigators, city utilities, power districts, economic development and banking representatives. In 2006, the Group finished a draft plan including one goal and 11 objectives. Originally the Plan was to be in place within 3-5 years, however, an extension to complete the Plan set the deadline for 2009 to allow NRDs to wait for the basin-wide plans to be completed. The IMP was approved in May of 2009, with public hearings held in July 2009 in Lexington and Grand Island. In connection with the IMPs, the NRD also revised the Rules and Regulations to correlate with the requirements in the IMP. In 2010, the NDNR held an open comment period for the annual review of the basin IMPs. The revised IMP was adopted and became effective in May 2012. The goal of the Plan was to set objectives to incrementally reduce the difference between current and fully appropriated levels of development within the basin. Although the goals are being met, the original plan required that the same parties develop a second increment within 10 years after the adoption of the first increment basin-wide plan. Stake-

holders will begin the process in June with the second increment to be completed in the spring of 2019. This process also invites the public to participate– a Public Participation Plan is available on NDNR's website at: **dnr.nebraska.gov/iwm.**

**Water Banking Program** The CPNRD Water Banking Policy was approved in May 2007, which defined the process of a how a water bank works. Through the water banking program, the NRD acquires water rights from landowners. For every acre/foot of water that impacts the river that the NRD can acquire, there's that much less regulation and cutback the NRD would have to impose. In January 2007, the board approved the first water bank transaction in the district by approving a variance request and the deposit of 2.4 AF per year into the District's water bank. Jim Bendfeldt, director, made the donation of the offset water. In 2012, the board increased the rate to pay for water rights to $8,000 per acre-foot of depletion to the river; which is up from $3,750 because of the market value for water rights. The water rights purchased by the NRD are deposited into the NRD's Water Bank and used to help get water levels back to what they were in 1997; which is required by the NDNR and other water management plans. So far, the NRD has purchased 3,000 ac/ft of water and another 200 ac/ft are in planning to be purchased from landowners who have expressed interest. The COHYST model has been useful in determining the amount of AF needed to bring the Platte River back to 1997 levels. CPNRD will need to reduce river depletions by 3,400 AF to bring the Platte River back to 1997 levels. After reaching the 1997 level, the over-appropriated area west of Elm Creek will need additional water added to the Platte in order to bring it back to a 'fully' appropriated condition.

**Over-Appropriated Area Retirements** In 2015, the CPNRD acquired one perpetual conservation easement on water rights in Dawson County, and the estimated accretion to the Platte River from groundwater retirements using the latest COHYST offset calculator is 61.46 AF This retirement amounted to 149.5 acres. By the close of 2015, the CPNRD Water Bank had a balance of 2,566 AF of water rights available for offset in the over-appropriated area.

### Rehabilitation of SW Canals

CPNRD partnered with four canal companies in Dawson County with agreements to buy out one canal and totally rehabilitate the other three canals. As a Platte Basin Habitat Enhancement/Coalition Program projects, grants from the Nebraska Dept. of Natural Resources (40%) and the Nebraska Environmental Trust (20%), paid 60% of the project costs. CPNRD shared the remaining 40% of project costs with the three canal companies. The main benefits provided by the rehabilitation projects include: groundwater recharge that enhances surface water and groundwater supplies, protect water quality, and help the CPNRD get closer to a fully appropriated status. They also provide enhanced flows to the Platte River by diverting and retiming excess flows to the river; and by returning natural flow irrigation rights to the river; and help meet requirements of the Platte River Recovery Implementation Program (PRRIP) agreement between Colorado, Wyoming, Nebraska, and the U.S. government; as well as LB 962 to return the Platte River to its 1997 level of use of 3,400 acre-feet.

**Six Mile Canal** In 2010, CPNRD purchased Six Mile Canal Co. in Gothenburg; which was the first-ever buyout of a surface water irrigation canal in Nebraska. The purchase agreement provided funding for farmers to convert to more efficient groundwater irrigation and increase Platte River flows. The project also allowed the NRD to return water to the river to protect endangered species, make irrigation more efficient for farmers, put more land into crop production and improve public safety. COHYST data shows that the closure of the ditch and elimination of direct river diversions resulted in an annual savings of 130 ac/ft of water to the river, even with the same acres irrigated with groundwater. CPNRD deposited the water rights in the Water Bank to use for the Integrated Management Plan schedule to bring the over-appropriated area back to a fully appropriated status sooner. The water rights were also used as part of the NRD's responsibility to the Platte River Recovery Plan. Six Mile Canal had been in operation since 1894 and diverting Platte River water since 1894, withdrawing an average of 2,377 AF of water annually.

**Cozad Canal** The canal has been in place diverting Platte River water since its water right was approved in 1894; with water rights to irrigate over 25,000 ac. of land between Gothenburg and Lexington in Dawson County. In 2012, CPNRD partnered with Cozad Ditch Company to manage the canal and to lease surface water. Construction began in late September 2013. The massive rehabilitation was completed in three phases and included Completed in three phases and only two years, this massive project included: 152 acres of clearing and grubbing, which equals 27 miles; 21 miles of grading;13 new structures: included 4 farm crossings, 6 check structures, 1 underdrain structure, 1 siphon, and 1 county road wing wall replacement; River Return Structure which included Spring Creek Wasteway

Structure: excavation of Spring Creek Channel (1,415 LF), 22 walkway modifications/extensions, and a SCADA automated monitoring system of the Rubicon Gates with 4 flume gates and 7 slip meters. Total project cost was $6,596,860.08. Olsson Associates of Grand Island, NE was the engineering Firm. The Cozad canal has the potential to provide 7,000 -18,000 AF of water savings annually.

**Thirty Mile Irrigation District** Thirty Mile was originally constructed in 1927 and dedicated on July 13, 1928 with water rights for 15,000 acres. In 2012, CPNRD partnered with the Thirty Mile Canal Company to pay $1.9 million for half interest in the irrigation system; which includes half of the irrigation canal company's water rights and the value of buildings and equipment. The rehabilitation included replacement or installation of 8 bridges, 8 check structures, 9 drop structures, 3 pipe roadway crossings, 2 pipe laterals, 4 miscellaneous structures, 5 flow measurement devices/structures and installation of rip rap. The canal company became the Thirty Mile Irrigation District in September 2013 and is now a political subdivision of the State of Nebraska. An interlocal agreement was signed in February 2014, creating the CPNRD-TMID Stream Flow Enhancement Alliance. The agreement outlines the continued maintenance and delivery of surface water for both irrigation & groundwater recharge. Total project cost was $5,018,982.01 million. Miller & Associates of Kearney, NE was the engineering Firm. The Thirty Mile canal has the potential to provide 8,000 -13,000 AF of water savings annually.

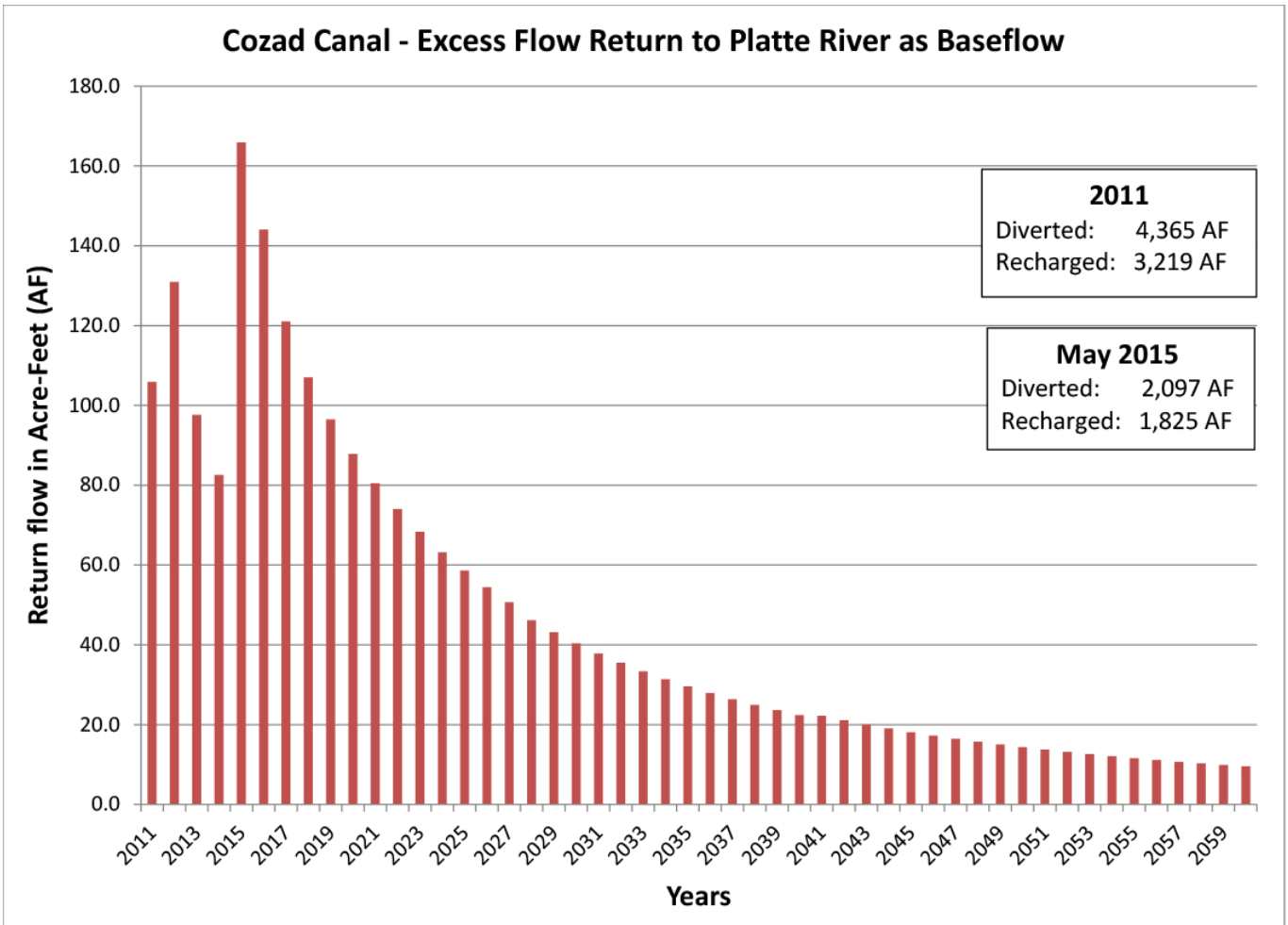
**Orchard Alfalfa Canal** The Orchard Alfalfa Canal has been in place since its water right was approved in 1898; with water rights to irrigate 4,326 acres of land. The CPNRD and Southside Irrigation Company signed a management-lease agreement in 2012. As part of the agreement, the CPNRD assists in operations for all of the irrigation district's benefits, pays half of operations and maintenance costs, and receives half of the revenues. Construction began in 2013 and included: Phase I- replacement of 7 county road box culverts; Phase II: 51 acres of clearing and grubbing; 60,200 LF of grading; irrigation turnout structure; replacement of 13 canal structures; removal of 3 farm crossings; Phase III- replacement of diversion structure; installation of slide gate with electric actuators on existing overflow structure; rip rap overflow structure for high flows. The Southside Irrigation Company is currently taking steps to become an irrigation district. Total project cost was $4,691,588.72 million. Olsson Associates of Kearney, NE was the engineering Firm. A tour and rededication ceremony for the canal was held on August 27, 2015. The canal has the potential to provide 2,500—9,900 AF of water savings annually.

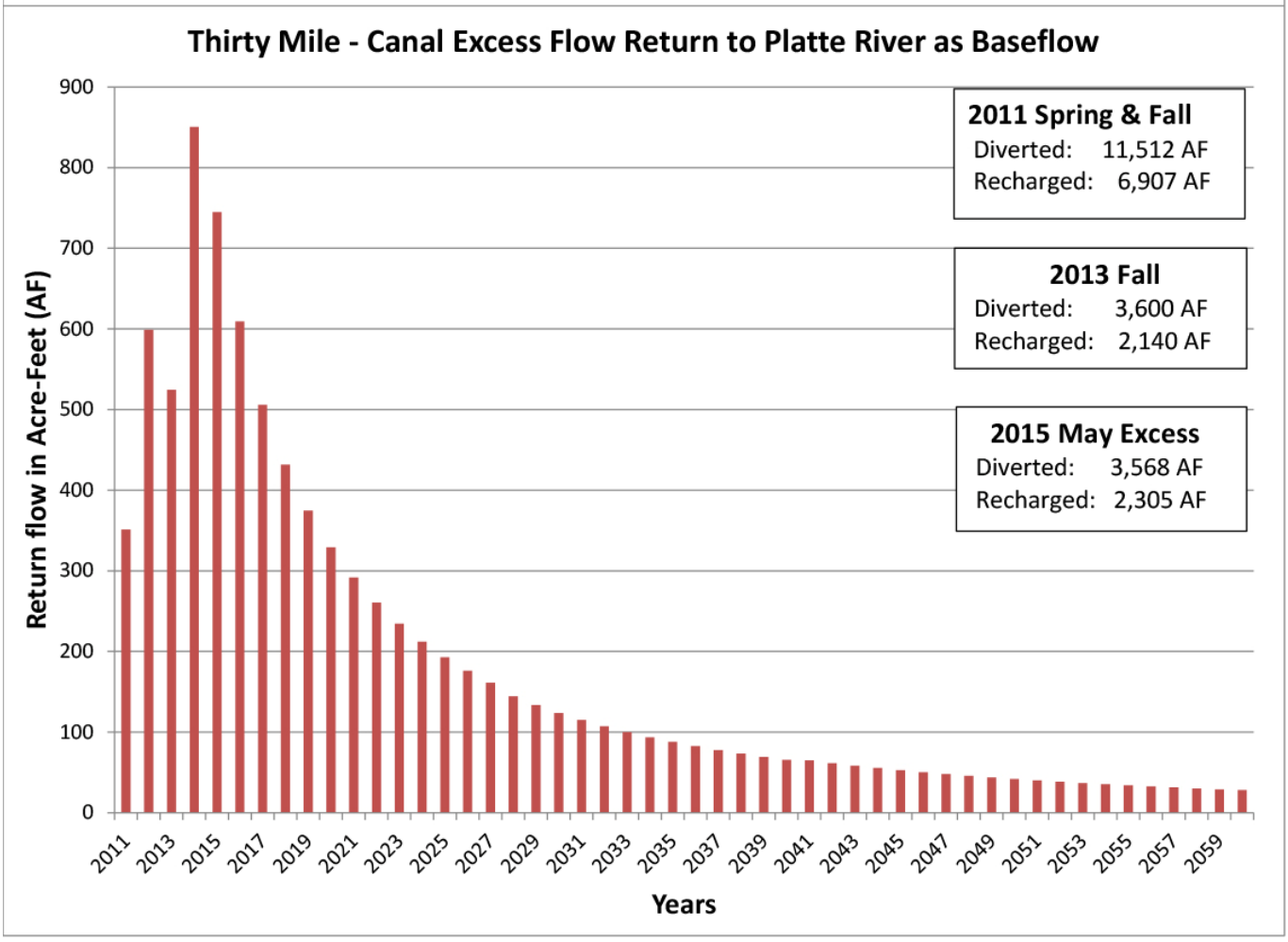
The canals will continue to be used for surface water irrigation delivery; as well as for retiming Platte River flows to enhance target flows for endangered species. The retiming of Platte River flows will be accomplished by diverting flows excess to target flows to recharge the ground water system or by transferring surface water irrigation rights to in stream use, which will be diverted from the canal back to the river. Water rights for diverting excess flow for recharge were granted to the canal systems by DNR and temporary transfer permits for returning surface water to the river for in stream use have been approved. Excess Platte River was diverted in 2011, 2013, 2014, 2015 and 2016. The total diverted in 2015 by the three canals was 37,359 AF and the computed recharge was 23,883 AF. The return to the River is computed to will be 80 - 90 AF per month. In 2015, staff worked with NDNR to test how the surface water transfer would operate during the irrigation season.

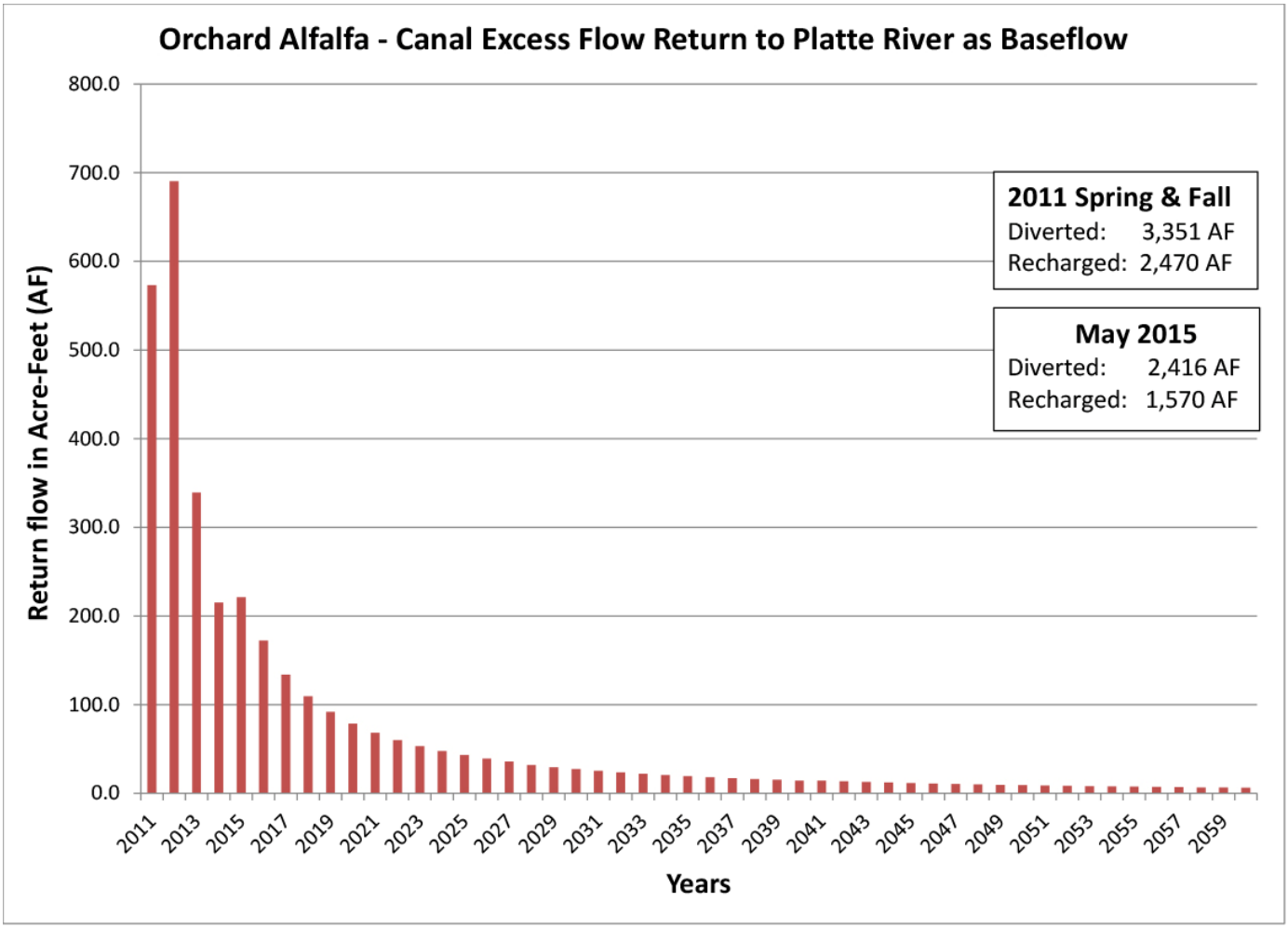
*See 2015 excess flow return charts for each canal on pages 34-35.*

**Conjunctive Water Management Study** The Platte River Conjunctive Water Management Study has been underway for some time to look at water management options for the Dawson County canals. The study is looking at surface water and groundwater management options with the goal of ensuring that the supplies in the Platte basin are optimized and managed efficiently with maximum benefits in a manner consistent with State and local policies. The studies and analysis for the irrigation canal projects are being conducted with the COHYST modeling tools with such components included: rainfall, pumping, surface water applied, total evapotranspiration, recharge, runoff and acreage. Developing plans to manage the hydrologic budget will result in better utilization of both resources. After developing management plans, an implementation phase will be needed. CPNRD's hydrologist provides technical assistance in the development and evaluation of conjunctive management scenarios for portions of Dawson and

Residents of the NRD and people from across the state enjoy the fish, wildlife and other natural resources within the District. The Platte River and its adjacent wet meadows, forests, grasslands, and croplands provide habitat for millions of migratory birds. Hundreds of thousands of sandhill cranes utilize the area for spring staging. Each


Cozad Canal - Excess Flow Return to Platte River as Baseflow
Return flow in Acre-Feet (AF)
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
2011
Diverted: 4,365 AF
Recharged: 3,219 AF
May 2015
Diverted: 2,097 AF
Recharged: 1,825 AF
2011 2013 2015 2017 2019 2021 2023 2025 2027 2029 2031 2033 2035 2037 2039 2041 2043 2045 2047 2049 2051 2053 2055 2057 2059
Years


Thirty Mile - Canal Excess Flow Return to Platte River as Baseflow
Return flow in Acre-Feet (AF)
900
800
700
600
500
400
300
200
100
0
2011 Spring & Fall
Diverted: 11,512 AF
Recharged: 6,907 AF
2013 Fall
Diverted: 3,600 AF
Recharged: 2,140 AF
2015 May Excess
Diverted: 3,568 AF
Recharged: 2,305 AF
2011 2013 2015 2017 2019 2021 2023 2025 2027 2029 2031 2033 2035 2037 2039 2041 2043 2045 2047 2049 2051 2053 2055 2057 2059
Years




Buffalo counties in the central Platte Valley. The team is developing a conjunctive water resource management plan to optimize the availability of water to groundwater and surface water users who are within both the boundaries of CPNRD and the area within which NPPD delivers natural flow and storage water for surface water irrigation systems. The existing tools will include the COHYST and CropSIM models. New tools will consist of a surface water operations model, GIS analysis tools, an aquifer water quality module, and an economic impacts module. The current partners include: NDNR, CPNRD, and Nebraska Public Power District (NPPD). This past year the partners have met several times with the consultants on the study to review the five management scenarios results.

**CNPPID Conjunctive Management Offer** A joint Middle Platte Basin Water Resources subcommittee developed a surface water model, requesting that CPNRD participate in a public opinion survey to understand the public's attitude and perceptions about water usage in Nebraska. In 2011, the board approved up to $28,000 for CPNRD and Twin Platte NRD (TPNRD) to hire a consultant, on a 50/50 basis, to conduct a survey on attitudes and perceptions in order to design an effective information and education program. The survey area was from the Lake McConaughy area to Chapman, NE. The overall goal of the effort was to provide water to all water users. In 2012, a special joint board meeting was held with the TPNRD. Both boards voted unanimously to approve an offer to the Central Nebraska Public Power and Irrigation District (CNPPID) to assist them financially at converting their surface water irrigation project to a groundwater irrigation project and recharge program.

In June 2012, CPNRD and TPNRD offered the CNPPID board financial assistance for future conjunctive management studies and financial assistance to landowners to switch to groundwater use. Since 75% of the users in that system already have irrigation wells that are used during drought conditions, the proposal would take it a step further and allow landowners to rely totally on groundwater and use the surface water for recharge. CNPPID's board took the proposal under advisement. In 2013, Brown & Caldwell presented updated findings of the pre-feasibility study on the proposed recharge project with the CNPPID at the NARD's annual meeting in Kearney. The additional modeling analysis used the OPSTUDY model to address concerns identified by the CNPPID staff. This project would provide

beneficial flows for water management plans, including the Platte River Recovery Program between Colorado, Wyoming, Nebraska and the federal government. It'd also help meet the requirements of LB 962 to return the Platte River to its 1997 level of use; and the additional requirement to return the area between Lake McConaughy and Elm Creek to a "fully appropriated" condition from the current "over-appropriated" condition. Other concerns that the study addressed were how providing groundwater recharge protects water supplies and water quality. The findings show that water supplies would increase hydroelectric power generation on the NPPD and CNPPID systems in central Nebraska. CNPPID would also see recreational benefits for Lake McConaughy as well as other lakes in the canal system. The NRDs' next step is to sit down with the CNPPID staff and work with them to address a more in-depth study of this concept and continue to work towards solutions for all water users in Nebraska.

**Groundwater Exchange Program** The Rules and Regulations for the Groundwater Exchange Program were approved in February 2016. CPNRD launched the debut of the Groundwater Exchange pilot program in March 2016. The concept of the Groundwater Exchange Program is to allow producers to buy or sell water, on a temporary leasing basis, for the upcoming irrigation season. A seller can be anyone with a certified groundwater use on irrigated acres such as pivot corners, irregularly-shaped fields or even full sections. A buyer could be anyone looking to improve or add to their currently certified groundwater use or looking to increase streamflow.

The Groundwater Exchange is the first of its kind to allow temporary leasing of groundwater. CPNRD's Rules and Regulations regarding the transfers of groundwater irrigated acres are built into the computer program. Bids are based on consumptive use and streamflow depletion to the Platte River. Pre-approved buyers and sellers went online from March 21 to March 25 to place their asking price to temporarily lease their water or place bids to buy water for the 2016 growing season. Both buyers and sellers were pre-approved by making an appointment with CPNRD staff, in which interested participants had two weeks (Feb. 29-March 11) to be pre-approved. During the pre-approval visit, staff verified the water rights to be sold or bought and provide the buyers and sellers an identification number to be used during the bidding process. For purposes of the Groundwater Exchange, a 'water right' is the certified groundwater use on irrigated acres. CPNRD has approved permanent water transfers of groundwater for over 10 years.

The board approved the first transactions of the Groundwater Exchange pilot program on April 1, 2016. Sellers placed 30 locations online for leasing, with six buyers placing bids- three for irrigation and three for streamflow rights. The computer program matched the three irrigation bids with sellers in the eastern area of the District. In June 2016, the board approved a contract with National Economic Research Associates (NERA) and the NDNR in the amount of $105,000 to design and manage a second Groundwater Exchange. The second exchange is expected to be held October-December 2016 and will include the area of the Loup Basin influence. The NDNR and CPNRD will each share 50 percent of the cost. Program information is located at: **www.market4water.com**.

### Other Water Management Projects

**J-2 Regulating Reservoirs** In July 2013, the board approved participation in Central Nebraska Public Power and Irrigation District's (CNPPID) proposed J2 Regulating Reservoirs. In 2013, CPNRD purchased 20% of the State of Nebraska's 25% of the Projects benefits. Benefits to the NRD include: opportunities to get the Platte River back to the 1997 water level and getting the over-appropriated area of the District back to fully appropriated; the ability to provide municipal offsets if needed; and receiving 2,040 ac/ft of water back to the river without having to retire any irrigated acres. Partners include: PRRIP, CNPPID, CPNRD, Tri-Basin NRD, TPNRD and NDNR. In the fall of 2015, rising Project costs resulted in the need to reconfigure the project caused delays with many issues yet to be resolved; due primarily to institutional and cost issues. In July of 2016, the GC directed the project be put on hold until further notice while the PRRIP pursues other water project opportunities involving groundwater recharge, smaller scale storage projects, and water acquisition and transfer opportunities.

**Magnetic Resonance Sounding** The NET supported a 3-year project using a Magnetic Resonance Sounding (MRS) to gather information on groundwater without drilling holes. MRS is a quick, non-invasive surface geophysical technique that directly measures groundwater and is used in place of test holes and aquifer pump tests that are sparse, time-consuming and expensive. Data collection and study findings are published in a Scientific Investigation Report by the USGS Water Service Center in Lincoln. Use of MRS parameters improves the accuracy of groundwater models and enable water resource managers to make more informed decisions.

**Other Water Management Projects (continued)**

**Aquifer Management Data Collection** CPNRD is participating in the *Advanced Hydrogeologic Frameworks for Aquifer Management Water management in the Platte and Republican River.* Basin management continues to be a difficult task for water managers and users alike. Recent drought conditions and management needs within the Twin Platte and Central Platte NRDs require new information and understanding of the natural system for determining the proper course for utilization of infrastructure and revenue. This project will provide detailed information of the aquifer conditions and the subsurface hydrogeologic framework to effectively design and apply integrated management plans. In particular, they need to understand the aquifer geometry, characteristics, inter-connection with surface water, impacts of new and existing infrastructure and interaction with adjacent aquifers. Currently, NRDs rely on the traditional method of geologic test hole drilling for information regarding the subsurface geology. This approach is vital to the understanding of the area, but alone cannot provide enough spatially distributed information to complete a detailed hydrogeologic framework of a NRDs aquifer resources. Often, these test holes are spaced on 6 mile centers, a distance that does not provide the detail to be useful in developing a local hydrogeologic framework upon which new infrastructure and future sub-regional groundwater model investigations can be developed for evaluation of the proposed management practices. The total project cost is $966,000. The applicants are requesting $670,000 (70%) in funding from the Environmental Trust to pay for developing the tool for optimizing the collection of data with the realization of limited funds. A total of $296,000 (30%) in match funds will be provided by the NRDs and Exploration Resources International in the form of cash and/or in-kind services for aerial collection and subsequent data interpretation, databases, map production, data reports and improvements to the AEM process.

**Nebraska State Climate Office** Representatives from the UNL School of Natural Resources presented information to the board in April 2016 on the new State Climate Office and their role in serving the NRDs and other agencies in real-time climate data collection and public outreach.

***NRD Objectives***

1. *To establish irrigation management practices and techniques on the irrigated lands in order to properly conserve and efficiently utilize the water.*
2. *To discourage the development of those water-using projects (irrigation) on any lands on which such development is not within the capabilities of the land.*
3. *To help secure any water supply project that is shown to be feasible, beneficial and desirable.*
4. *To develop plans and programs that will strive for a balance between water use and water availability.*
5. *To develop plans and programs that will strive for a balance between the rights of all individuals utilizing the groundwater aquifer.*
6. *To work toward balancing the needs of wildlife with needs of people in utilization of the water resources in the District.*
7. *To balance the needs of endangered and other species on the Platte River and its tributaries with the needs and rights of human users.*

# VI. Fish and Wildlife Habitat

**GOAL:** The conservation and enhancement of fish and wildlife resources for the benefit of the people.

spring, roughly 80% of the continent's sandhill cranes use the central Platte and lower North Platte Rivers as they traverse from wintering areas to their nesting habitats. Waterfowl make extensive use of area habitats, particularly during spring migration; and diverse assemblages of songbirds make significant use of riparian forests and grasslands. Resident upland game birds and big game provide area hunters with many sporting opportunities. Mammal, fish, reptile and amphibian species are also abundant in the District.

Prior to settlement, vegetation across the District consisted of tallgrass prairies and wet meadows in lowlands, and on the Platte River terrace and mixed grass prairies on the uplands with fingers of riparian forest. Today the area is a matrix of grassland remnants, cropland and expanded riparian forest. Human activity has significantly modified the native vegetation and therefore, wildlife habitat across the District. While some of these effects have had positive results on wildlife resources, others have been detrimental. The District is known to contain several federally listed endangered & threatened species including the whooping crane, least tern, piping plover, the American burying beetle and the western prairie fringed orchid. Areas that have been designated as critical habitat by the U.S. FWS for the whooping crane exists in the District. Some previously listed species have shown signs of recovery, for example the bald eagle and the peregrine falcon have been removed from the federal listing. A series of instream flow water rights on portions of the Platte River have been obtained by the NRD to protect minimum flows for fish and wildlife resources. Wet meadows along the Platte River are an important habitat resource to a diversity of wildlife including migratory birds. Working with the NPPD, CNPPID & NGPC; the NRD has completed a demonstration project to enhance and maintain wet meadows along the Platte. With a grant from the NET, the project has developed alternative methods to manage for these valuable habitats.

Large populations of wildlife can reduce crop yields. For example, deer and waterfowl utilize agricultural crops and residues as a substantial part of their diets. Their attraction to wheat fields and alfalfa can lead to damage considered excessive by farmers and ranchers. In support of the goal of conserving and enhancing fish and wildlife for the benefit of people, the District has continued to provide better and safer areas for viewing sandhill cranes and other species with the ongoing development of facilities along the Platte River. Two viewing decks and other parking areas have been provided to date. The coexistence of wildlife and people can be achieved with a minimum of disruption to the natural balance of nature by using planning and management.

Farmers and ranchers are encouraged to establish more native wildlife habitat, to carefully plan any conversion of rangeland or other native vegetation types to agriculture and to return land with marginal or poor production capabilities to habitat. Surface water, natural wetlands and wet meadows should be maintained whenever possible and enhancements to these resources should be considered in the planning for District projects. CPNRD's prescribed burn program and education programs further support and enhance wildlife resources. The practical application of effective habitat enhancement efforts reflect CPNRD's commitment to protecting wildlife resources. Incentives are provided to landowners for converting irrigation pivot corners from cropland to wildlife habitat. NDNR administers the instream flow water rights on the Platte River obtained by CPNRD and NGPC to protect minimum flows in the river for fish and wildlife purposes.

**Platte River Recovery Implementation Program** The Platte River Recovery Implementation Program (PRRIP) was developed by the federal government along with the basin states of Nebraska, Colorado and Wyoming and signed in 2006. Local, state and federal government agencies are working with groups from throughout the basin to build a framework for a long-term Program that will satisfy Endangered Species Act (ESA) requirements for water users in the basin. The first PRRIP increment, planned to last 13 years, includes completion of water projects expected to improve flows in the central Platte by an average of 130,000-150,000 ac/ft annually. A second Program element is the protection and maintenance of 10,000 acres of habitat during the first increment, ultimately working toward a 29,000-acre goal. The specifics of subsequent increments will be planned as more information is developed. Through an adaptive management process, the Program goals may be modified as appropriate.

CPNRD has a big stake in the Program's goal to improve and conserve habitat for three threatened and endangered

species on the central Platte (the whooping crane, piping plover and least tern) and the endangered pallid sturgeon on the lower Platte. The Program was developed as the states and federal governments face stiff challenges to protect threatened and endangered species using the Platte River and their habitats. The signatories to the Program hope to equitably provide greater certainty for water users facing ESA requirements. The U.S. FWS plays a major role in enforcing the ESA. Authorization legislation for federal funding was passed by Congress in 2008 and associated appropriations will be addressed in an ongoing process. District board members, management, and staff are actively involved in Program Governance and Advisory committees.

The Program is starting to develop a plan for the review of the U.S. FWS's target flows for the Platte River. Ongoing research and monitoring on the Platte is showing the Service's current target flows to be ineffective in accomplishing the objectives they have set out. The Program's Land Advisory Committee includes a member/alternate from CPNRD, member/alternate from Tri-Basin NRD, and a joint member/alternate. The Program's Water Action Committee is looking at intentional groundwater recharge through diversions through the canal systems. One of the projects that was done in fall and winter 2011, was to study recharge in the Phelps Canal, one of CNPPID canals just below the J-2 Return. In 2013, the Program's Governance Committee (GC) and CNPPID independently agreed to fund and develop the J2 Regulating Reservoirs at a cost of $13 million for five years.

In September 2015, CNPPID and its engineering contractor, RJH Consultants, Inc., provided the GC with a progress report on development of the J2 Reservoirs Project which detailed significant increases in cost from the original estimate of $63 -$170 million, not including land acquisition. The GC authorized the Program's Executive Director to work with CNPPID and NDNR to evaluate J2 Project alternatives that can be accomplished within the available budget. Central Platte, Twin Platte and Tri-Basin NRDs each purchased a percentage of the Nebraska share. CPNRD purchased 20% of the State's share (2,040 ac-ft annually) for just over $1.5 million. In the fall of 2015, rising Project costs resulted in the need to reconfigure the project caused delays with many issues yet to be resolved; due primarily to institutional and cost issues. In July of 2016, the GC directed the project be put on hold until further notice while the PRRIP pursues other water project opportunities involving groundwater recharge, smaller scale storage projects, and water acquisition and transfer opportunities.

In 2016, a contract with CPNRD and Aqua Geo Frameworks LLC was approved by the board for aerial electromagnetic survey work. The survey work includes additional coverage of flight lines to cover various project areas at a Program cost of $64,000. The GC also began detailed discussions to extend the first Increment of the Program; which expires in 2019. While milestones for land and adaptive management components have been met and exceeded, water goals have been tougher and more expensive to achieve. Initial discussions included prioritizing resolution of channel choke point issues, additional habitat acquisitions, and investigating opportunities to support pallid sturgeon use of the lower Platte River.

**Nebraska Habitat Conservation Coalition** The piping plover, a small shorebird that nests in the Northern Great Plains, Great Lakes and along the Atlantic Coast was designated as a threatened species under the ESA in 1985. The FWS proposed designation of critical habitat for the Great Plains population in 2001 in five states: Nebraska, North Dakota, South Dakota, Minnesota and Montana. Critical habitat was formally designated by the FWS in 2002. In Nebraska, critical habitat was designated along 440 miles of the Platte, Loup, Niobrara Rivers and 120 miles of the Missouri River adjacent to Nebraska. In response to this designation, the Nebraska Habitat Conservation Coalition (NHCC) was formed in 2001. The Coalition, comprised of 23 members and eight partners, was formed in response to the federal designation of critical habitat for the piping plover in Nebraska. The designation of critical habitat gives the FWS an additional instrument to evaluate activity that could impact the Platte River or it's flow, which puts groundwater pumping at a greater risk of being construed as a "take" by the FWS. Section 9 of the ESA makes it unlawful to adversely modify critical habitat, or for a person to "take" a listed species, which has been defined to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or attempt to engage in any such conduct.

In 2003, the NHCC filed a lawsuit in Federal District Court in Nebraska stating that the FWS used inadequate science in their designation of critical habitat, the designation provided questionable benefits to the species, that there were legal inadequacies in the designation process, and the FWS failed to assess the economic impact of the designation. The NHCC won its case in District Court against the FWS in 2005, requiring the FWS to redo their economic analysis and re-do their critical habitat designation in Nebraska. NHCC plans to stay closely involved in redesignation of

critical habitat as ordered by the District Court.

*Federally threatened and endangered species in CPNRD:* American burying beetle, whooping crane, Eskimo curlew, piping plover, interior least tern, western prairie fringed orchid, Rufa red knot, and Northern long-eared bat. In 2014, a new rule was proposed by the U.S. FWS regarding critical habitat designated in association with the ESA. Of concern is that the proposed rulemakings would significantly change the agencies approach to critical habitat designation and lead to over-regulation. In an effort to respond to the proposed changes, the NHCC Executive Committee and the Legal Advisory Committee
submitted comments in opposition of the proposed rule.

**Platte Basin Habitat Enhancement Project** CPNRD, working with co-sponsors including four other NRDs and two state agencies, received grants from the Nebraska Environmental Trust for the Platte Basin Habitat Enhancement Project for $3 million The remaining funding requirements are $6,000,000 from the NRDs and $6 million from the NDNR for a total of $15 million. The projects and activities funded by the PBHEP Sponsors with grants from the Nebraska Environmental Trust Fund have resulted in enhanced Platte River stream flows, reduced consumptive uses of water, recharged groundwater, and supported wildlife. Projects included the Cozad Canal Rehab Conjunctive Management Project, Thirty-Mile Canal Rehabilitation Conjunctive Management Project, the acquisition of dozens of conservation easements retiring irrigated acres across the Platte River basin, the Nebraska Cooperative Republican Platte Enhancement Project, North Dry Creek Augmentation Project, the Re-use Pit Recharge Demonstration Project, and Ground Water Recharge Demonstration Projects. PBHEP concluded its activities in late 2014.

**Platte Basin Water Project Coalition** In June 2012, the board approved an Interlocal Cooperation Agreement with NDNR and the following NRDs: South Platte, Twin Platte, North Platte, Tri-Basin & Central Platte. The agreement allows utilization of the new Water Cash Fund through the Nebraska Environmental Trust and the Legislature for Platte Basin water management activities. It will take the place of the Platte Basin Habitat Enhancement Project. Lyndon Vogt is the NRD's representative, Mark Czaplewski and Duane Woodward are alternates.

**Central Valley Phragmites Control** CPNRD began participating in the Central Valley Phragmites Project in 2008. The project includes 700 landowners who participate in herbicide spraying by helicopter and/or manual spraying of property along the Platte River from Kingsley Dam in Keith County east to Columbus, NE in the Platte and Central Valley Weed Management Areas. As of April 2016, there had been 32,300 acres cleared successfully. Funding requests will allow a maintenance program to continue to treat the Eurasian invasive species. CPNRD provides $25,000 annually towards the project. Other sponsors include the Nebraska Environmental Trust Fund, Platte River Recovery Implementation Program, Nebraska Department of Agriculture, Tri-Basin NRD and CNPPID.

**CPNRD Instream Flow Rights** CPNRD has instream flow water rights on the Platte River to protect and enhance wildlife; with the original flow water rights having a priority date of July 25, 1990, the date of the application. In 2009, the NRD complied with the required 15-year review in 2009 and was granted instream flow rights until the next review in 2024. A series of instream flow water rights on portions of the Platte River to protect minimum flows in the river for fish and wildlife purposes was approved on July 2, 1992, by the director of the NDWR (now NDNR) based on applications by CPNRD. Flows specified by the instream flow water rights are a factor in providing bird habitat on the Platte, as well as habitat for food sources consumed by those birds. The rights have no effect on levels in upstream storage reservoirs such as Lake McConaughy nor do they take water away from existing irrigators. Other water rights already existing on the river are senior to the rights; but the flows specified by the instream flow water rights must be met before any future project could take water from the Platte. The NRD's application came after extensive study by the NRD in response to concerns about low flows in the Platte, especially during the dry summer periods, which are dangerous to the fish and wildlife that depend on the river. The study indicated that the instream flow water rights wouldn't solve the existing low flow problems, but could be effective in preventing some additional low flow periods by assuring that minimum flows are met before future projects could withdraw water from the Platte. A public hearing was held by CPNRD in March 1989 on proposed instream flow rates, timing, segments and uses for a proposed water right. While there was considerable testimony applauding CPNRD for seeking the instream flow water right, there was a division of opinion about the flow rates, dates and river segments being proposed. Testimony was considered while other studies were completed, and CPNRD met with interested parties to arrive at the series of flow regimes on which the application is based. NGPC rejected the NRD's offer to join in

making its application to the NDWR. Because of insufficient detailed data available to make a determination of water and habitat needs for selection and nesting by the least tern/piping plover and stopover by ducks and geese, CPNRD did not make its applications for water rights.

On July 25, 1990, six applications for Platte River instream flow water rights to benefit wildlife were filed. Together, the applications sought to protect flows varying from 500-1,500 cfs at specified time periods in certain reaches of the river, generally extending from near Lexington to near Columbus. The applications were filed to benefit sandhill cranes, bald eagles and three species designated as threatened or endangered: least terns, piping plovers and whooping cranes. The NDWR conducted a hearing on the six applications from July 1-Sept. 25, 1991. 18 parties filed as objectors including: State of Wyoming, several environmental organizations, power and irrigation interests and several NRDs. The Audubon Society and Sierra Club changed their status to proponents during the hearing, two objectors withdrew and four parties were dismissed before the conclusion of the hearing. NDWR issued a ruling on July 2, 1992, that three of the water right applications be granted outright and a fourth be modified from the NRD's request. Two applications with flows for the bald eagle were denied.

**APPLICATIONS GRANTED**

(1) Flow of 500 cfs from Jan. 1-June 23 and from Aug. 23 - Dec. 31 from the mouth of the J-2 return, southeast of Lexington to Columbus, to maintain fish and macroinvertibrates as food sources for terns and plovers. Also a flow of 600 cfs from June 24 to Aug. 22 for the same purpose.

(2) Flow of 1,300 cfs from April 1-14 to maintain staging and roosting stopover habitat for whooping cranes and sandhill cranes for the reach of the river from the J-2 mouth to Grand Island. Increased to 1,500 cfs for April 15-May 3 and from Oct.12-Nov.10.

(3) Flow of 1,100 cfs from Grand Island to Chapman during the period of April 1-14 to maintain staging & roosting habitat for sandhill cranes.

**15-Year Review** In accordance with Nebraska statutes, these CPNRD instream flow water rights were up for a 15-year review in 2009. On October 5, 2009, the NDNR ordered that the CPNRD Platte River instream flow water rights continue to be used beneficially for the purposes for which they were granted, are in the public interest, and should continue in effect with no modifications.

**NGPC Appropriation** NGPC submitted five applications on November 30, 1993 seeking instream flow water rights for particular time periods with corresponding flow quantities for specified reaches of the river and for specified fish and wildlife. Some of the applications sought flow quantities during times and at locations that coincided with the instream flow water rights granted to the NRD. One of the applications was approved and two other applications modified for maintenance of fish communities. Another application to maintain whooping crane roost habitat was modified, and the application for flows to maintain wet meadows along the river was denied. Under Nebraska law, surface water rights are given priority on a seniority basis. Thus, the flows granted for NGPC are junior to and in addition to the NRD's instream flow water rights. The river must have flows that exceed the total of all senior water rights before a junior water right can be obtained by a potential developer.

Objectors to the NGPC application formed the Nebraska Water Conservation Cooperative to provide opposition jointly in order to save time and money. Eventually, 51 local governmental subdivisions and water users organizations joined the Cooperative. In July 1996, NGPC reduced its flow requests for several applications, but the Cooperative continued its opposition. NDWR opened a hearing on the applications on September 25, 1996; which concluded on April 8, 1997. After the hearing, retroactive changes in state law applying to instream flow water rights were adopted by the Nebraska Legislature and both parties were allowed to submit briefs and additional exhibits in reaction to the newly amended statutes. The NDWR examined the briefs, transcribed testimony (nearly 7,700 pages in length), 200-plus exhibits part of the hearing record, and issued the Order on June 26, 1998. NDWR denied the application for a water right to maintain flows to manipulate the water table underlying nearby wet meadows, saying NGPC failed to satisfactorily show a river-aquifer linkage; and he agreed with the opponents' claim that, as a matter of law, an instream flow for wet meadows is not permitted by state statute.

**NGPC applications to maintain fish communities: 1st Application:** Instream flow for 1,000 cfs on a year-round

benefit the fish community from the J-2 return near Lexington to the Loup Power return from Jan. 1-June 23. CPNRD's water rights protect a rate of 600 cfs from June 24-Aug. 22, then returns the rate to 500 cfs during the rest of the year. Varying flows are protected in different reaches of the Platte with 500-600 cfs protected above the Kearney Canal diversion dam; 1,000 cfs protected between the dam and Columbus from June 1-July 31; and 800-900 cfs, depending on the measuring station, from Aug.1-31.

**2nd Application:** Between the Loup Power Canal return and confluence of Platte & Elkhorn rivers near Waterloo, appropriation is 1,800 cfs on a year-round basis.

**3rd Application:** NGPC sought a water right for 3,700 cfs on a year-round basis between the confluence of the Platte/Elkhorn rivers and confluence of Platte/Missouri rivers near Plattsmouth. NDWR approved a maximum rate of 3,100 cfs in January; 3,700 cfs in Feb.-July and Oct.-Dec.; 3,500 cfs in August and 3,200 cfs in September.

**-Application to Maintain Whooping Crane Roost Habitat** during spring and fall migration seasons was modified. The water right sought for 2,400 cfs from April 1-May 10 and for 2,000 cfs from Oct. 1-Nov. 10, on the stretch of the Platte from the J-2 return to Grand Island, was shortened to the portion of the river affected to the stretch between the Kearney Canal diversion dam and Hwy 281 bridge south of Grand Island. The Order provides a flow of 50 cfs for April 1-14, increasing it to 1,350 cfs from May 4-10. Fall rate is a shorter stretch of 1,350 cfs for only October 1-11.

***Objectives***

1. *Maintain wetlands for wildlife habitat.*
2. *Supplement existing fish and wildlife habitat areas that are sufficient in both size and number to provide reasonable public hunting and fishing opportunities for the people of the District.*
3. *Consider potential damage to or potential for enhancement of, fish and wildlife habitat in the evaluation of District projects.*
4. *Provide, as available and appropriate, assistance to private landowners and state and federal agencies in the management of fish and wildlife habitat programs.*

# VII. Forestry Management

**GOAL:** To develop and manage trees/shrubs for the production of raw material for wood products; to reduce wind velocities; to conserve moisture; and to reduce wind erosion for the comfort of the people, livestock and wildlife; and for environmental recreation and aesthetic benefits.

Other than isolated trees or wooded areas along rivers and streams, most of the land now encompassed by the NRD was void of woodlands when this region was first settled. One of the primary reasons for so few trees was the semiarid climate of the region. Prairie fires, which periodically swept across the area, also contributed to a general lack of trees. Since European settlement of the area, trees have become more abundant. Farmers and ranchers of the area have made a concerted effort to establish trees for farmstead, feedlot and field windbreaks; livestock shelterbelts and wildlife planting. Forest resources are valued higher for environmental benefits than for commercial purposes. Environmental benefits include wildlife habitat, conservation, watershed protection, recreation uses and scenic values. In more recent years, drought, tree disease, damage from winds, development, and other factors have been challenging for trees in the cities and towns of the NRD. The NRD has developed an urban forestry program to provide monetary incentives for community groups to plant and maintain more trees in parks, on school lands and on other public property. The need for improved forestry practices remains important throughout the District.

CPNRD has provided a complete tree planting service since 1972-including purchase, distribution and planting. In 2006, a milestone was reached when tree sales exceeded three million trees. The NRD offers a fabric mulch weed barrier that is used throughout the District to protect seedling trees from competing with weeds for the sunlight and moisture that is necessary for survival. Landowners are encouraged to prepare their planting sites beforehand and to properly maintain their trees after planting. Forestry maintenance should include weed control, proper watering and replacement of stock that does not survive, and prescribed burns for volunteer cedar trees.

In 2012, new package options were designed by Bessey Nursery for landowners who don't want to plant 25 of the same type of seedling. The Small Acreage Packages available are Eastern Nebraska, Western Nebraska, Wildlife and Flowering for $40, which includes five species of seedlings and 10 of each specie. Cost share incentives for tree planting and maintenance are provided for communities as well as the rural area. A 10% early ordering incentive, paid advertising, and promotional items will be used. Alternative sources of tree stock have been added to meet customer needs and provide diversity for the program.

**Honey Locust Seedlings–** In April 2016, the board voted to discontinue offering Honey Locust seedlings as part of the CPNRD's Conservation Tree Program due to negative impacts that the volunteer seedlings have had on land and soil health within the District. In an effort to reduce the spread of Eastern Red Cedar, CPNRD staff will work with forestry experts to develop an education plan that will focus on fire risk and land health risks when volunteer cedars are not managed properly.

**FIGURE 17. Trees/Weed Barrier Sales**

| YEAR | TREES | WEED BARRIER (in miles) |
|---|---|---|
| **2016** | **45,796** | **11.77** |
| 2015 | 46,575 | 14.07 |
| 2014 | 54,175 | 17.38 |
| 2013 | 37,716 | 18.86 |
| 2012 | 48,025 | 14.91 |
| 2011 | 54,275 | 28.25 |
| | **Total since 1973: 3,653,643** | **Total since 1991: 565.17** |

**Objectives**

1. Reinforcement of under-stocked windbreaks and tree lots through interplanting with high value species.
2. Woodland improvement by thinning to achieve proper spacing.
3. To develop more optimum growing conditions through live stock exclusion.
4. To provide adequate wind and snow protection for farmsteads, feedlots, roads and fields through windbreak planting.
5. To provide benefits to wildlife, aesthetics, recreation and forestry management.

# VIII. Range Management

**GOAL:** To have rangelands in the District in a "high good" or "low excellent" condition.

Rangeland makes up approximately 36.5% of the NRD's land area; thus, it is an important aspect of the District's land use. Most of the rangeland is unsuitable for using as cropland, due to sandy soils or uneven terrain. Sandy land areas were often plowed when the area was first settled, but it was soon discovered that the land was unproductive when it lost its grass cover. If steep slopes are not kept under a permanent grass cover, the runoff potential from rains and snows is increased. Large amounts of sediment may be carried by the runoff which results in deep ravines and gullies being cut into the slopes. Rangeland can become unproductive if it's not properly managed and over-grazing can cause severe damage by its effects on individual plants and the effects on the plant communities themselves. Concern has grown in recent years because of an influx of trees on pasture land. These trees, mostly Eastern Red Cedar, diminish the natural water supply for desirable vegetation in the immediate area of the tree.

Another major concern is the encroachment of weeds that can choke out desirable vegetation. Drought years also produce concerns for range managers. Often, landowners must construct a well to provide a dependable water source for livestock. Land that is not suitable for growing crops, usually as a result of sandy soils or steep slopes, will benefit from being managed as grass to prevent erosion. If these lands are not kept under permanent cover, they can become an area of blowouts, sand dunes or gullies. Land on steep slopes is especially susceptible to water erosion. Of the rangeland needing improvement, a majority could be treated by using better management techniques to eliminate overgrazing. Planned grazing, pasture rotation and prescribed burning are encouraged. Because of location or economics, it may not be feasible to treat some of the rangeland that is in need of improvement. The damage caused by overgrazing needs to be emphasized to owners of rangeland. In some cases, if the range is not too severely damaged, eliminating the overgrazing may restore the vegetation in a few years. In other cases, re-seeding or inter-seeding will be necessary, after which grazing must be deferred for 1-3 years before the grasses are established enough to be grazed lightly again.

CPNRD conducts and assists with prescribed burns in conjunction with federal, state and local agencies. Cost-share to encourage better management of rangeland is made available through the NRD from the Nebraska Soil & Water Conservation Program. Chemical control is being replaced by the removal of trees and shrubs using mechanical methods. This has been most successful in areas where the number of undesirable woody plants is small. As the number of such plants grows beyond the capability of mechanical control, the use of a prescribed burn is often recommended to remove the unwanted trees and shrubs. Landowners are also encouraged to eliminate undesirable vegetation and other noxious weeds.

**Rangeland Programs** Landowners are encouraged to review their rangeland needs with the NRCS, which has a variety of tools available to help manage rangeland in a cost-effective way. The Nebraska Soil & Water Conservation Program provides limited amounts of cost share for a variety of conservation practices, including grazing land (rangeland) management. This state program is administered through the NRDs. Components such as pipeline, tanks, wells and cross-fence are used to complete a planned grazing system to distribute grazing more evenly over the pasture. With management of intensive grazing, pastures may be grazed for longer seasons. Dugouts are funded to provide storage for runoff water that can provide a supplemental source of water. Livestock windbreaks can provide protection from winter weather and protection for calving.

**Prescribed Fire Program** Prescribed fire can be a valuable tool in the maintenance and improvement of native grasslands. Rangeland areas devoid of fire occurrence are often sites of problems involving invasive Species. These invasive species such as Eastern Red Cedar can take away natural grassland acres that is necessary for grazing as well as for wildlife. In addition, rangelands that are always grazed in the fall or winter with no spring treatment may become areas dominated by native and non-native cool season grasses and invasive weeds. These areas offer a reduced food value to livestock and are of reduced value to native wildlife. When prescribed fire is used along with appropriate grazing practices, the result is increased economic output and wildlife benefit. CPNRD implemented the Prescribed Fire Program in 2004 and developed a cost share program to help landowners treat their rangelands with the implementation of burns. Since the inception of the program, the NRD Fire Crew has conducted 174 burns for a total of 17,676 acres.

**Grassland Conservation Program** In April 2015, CPNRD was awarded a three-year grant in the amount of $775,735 from the Nebraska Environmental Trust to reduce invasive cedar trees and improve rangeland in Dawson County and other pastures in the District. Rangelands are being improved through grazing deferment, EQIP approved conservation practices, mechanical cedar reduction and prescribed burning. To aid in the success of this effort, the board approved a new *Grazing Deferment* cost share program in 2013. The program provides $15 per acre for landowners to defer grazing on a pasture for one year. The goal of the program is to allow a prescribed burn to be successfully applied the following year to help in cedar reduction. There is a limit of one application per landowner/year. The maximum amount a landowner is eligible for is $30,000. Other partners include the NRCS, NGPC, and the Nebraska Forest Service. In February 2016, the board selected Chloeta Fire of Edmund, Oklahoma as contractor for the NRDs Grassland Conservation Program in the amount of $37,373.00 for crew and equipment to perform prescribed burns in the District for 19 days. David Carr, range management specialist, said the goal is to burn up to 5,000 acres this spring to cut cedar trees and implement a landscape-style burn.

**Cost Share Program** Cost share is available for costs incurred while directly implementing prescribed fire by a contractor. CPNRD reimburses at a rate of 50% of actual costs and up to a maximum of $2,500/cooperator/lifetime. The actual burn and claim for payment must be made within 9 months of the date the application is approved by the NRD. If the CPNRD burn crew does the burn, then cost share is not used, as the NRD reduces the cost for landowners. Landowner cost is $10 per acre for the first 40 acres, $5 per acre for anything over 40 acres. CPNRD's set minimum charge is $300 per burn.

**Training Program** CPNRD's range management specialist does training events and outreach with landowners, other NRDs, other agencies, firefighters and fire marshals. By providing training and assistance, CPNRD is helping to prevent costly accidents while at the same time enhancing grasslands for economic return and habitat. There are many fields in poor condition needing a burn, and CPNRD helps to facilitate that project safely and professionally. Fields which are moderately grazed and periodically burned are: more drought tolerant, more diverse in plant and wildlife species, more productive in late summer, less at risk for devastating summer wildfire, and less at risk for run-off and erosion. The CPNRD has conducted over 40 training events with over 600 students trained.

Some other successes:

- Managed Prescribed Fire grant projects totaling over $1.5 million.
- Assisted with the formation of Landowner Prescribed Burn Associations.
- Built 8 firefighting pumper units and distributed them to local burn associations.
- Assisted with Fire Learning Network program to help train firefighters from around the world.
- Created in-roads in Nebraska for liability insurance coverage for prescribed burning.

**Native Prairie Outreach Project** In 2008, CPNRD began conducting the Native Prairie Outreach Project at Husker Harvest days, distributing native prairie seed packets and educational materials to approximately 1,500 people annually. In 2015, approximately 300 packets of seed totaling 11 acres worth of restored prairie were handed out. Visitors to the booth were also given information on native plant propagation and patch burn grazing systems. The event is sponsored by CPNRD, other NRDs, with assistance from NARD.

***Objectives***

1. *To establish adequate permanent cover on all Class VII land, with minor exceptions in accordance with NRD Rules and Regulations.*
2. *To establish approved cultural management practices, vegetative practices or structural improvements.*

# IX. Outdoor Recreation

**GOAL:** To assist in meeting the parks and recreation needs of the District.

Possibilities for developing outdoor recreation resources in the District are limited only by the willingness of the people to support a program. Development of parks & recreation facilities is an expensive endeavor and the pace of development is highly dependent upon the public value and priorities for the tax dollars that are needed. Water harnessed under flood control projects and other multipurpose reservoirs can and does serve recreation needs.

**Trails** The NRD has been involved in the following trails to some degree:

**-Kearney** In 2005, the Board approved funds to support a 13-mile trail system for the Kearney Area Trail System. CPNRD funded $60,000 in 2007 for Phase IV and $50,000 in 2008 for Phase V. The partners include the Nebraska Department of Roads, Kearney Recreation Department, NGPC and CPNRD. The original completion date was set for 2009, however, construction is behind schedule due to a fire that burned a bridge over the Platte River. The overall federal trail program is going through some major changes and timing of new trail projects is going to be extended significantly. The NRD will keep the original funds agreed upon in the budget this fiscal year to provide assistance to rebuild the bridge. In 2014, a new bridge was built, the entire 1.7 mile trail was paved, and repairs were made to the main channel bridge.

**-Grand Island** A hike & bike trail was established by the city of Grand Island on the projects levee system. The western portion of the trail is either completed or under construction with future plans extending the length of the entire project.

**-Central City/Marquette** In 2006, a request was made by Pat Carlson of Central City for the NRD to take ownership of a proposed Central City to Marquette Trail. The board of directors agreed to investigate the possibility of entering into a Joint Action Agency to help develop a plan for a Central City/Marquette Hike and Bike Trail. In 2011, the Nebraska Trails Foundation agreed to ownership of the trail and it has since repaired a bridge south of Central City and opened the trail. In 2016, the board approved $5,000 in funding to the Platte PEER Group to complete the final mile of the trail.

**Crane Meadows Stabilization** In 2001, the Crane Meadows Nature Center received $2,600 for bank stabilization erosion control for Phase I of the trail stabilization. The board approved assistance for the 200 feet of bank stabilization; 10,000 square feet of wetland restoration and reseeding; and erosion control of an island.

**Archway Stabilization** In 2002, the Great Platte River Road Archway Monument received assistance for a streambank stabilization project just west of the Archway in Kearney. The North Channel of the Platte River and Turkey Creek eroded to within 5' of a local sandpit. The Corps of Engineers surveyed the erosion and provided an Emergency 404 permit to CPNRD. The City of Kearney provided 25% of the cost of the repair. CPNRD's cost was $13,500.

**Crane Viewing Sites** In 1993, a task force of various governmental & private agency representatives was brought together by CPNRD to develop ideas in response to concern about safety for local residents, farmers and crane watchers in the Central Platte valley, especially during early morning and late afternoon hours on local roads. The Task Force developed a comprehensive plan known as the Central Platte Historic, Scenic & Trails Project to be completed in phases. Approval was granted in 1994 by the Nebraska Department of Roads under the federal Intermodal Surface Transportation Efficiency Act (ISTEA) for Phase I of the comprehensive plan developed by the task force. According to the grant application, the multi-year project promoted awareness of the historic importance of the Central Platte Valley as a transportation corridor dating from the early 1800s. The corridor was used by explorers such as Stephen H. Long and John Charles Fremont and by fur traders who passed back and forth on and along the Platte River. In the period from the 1840s-1860s, the Platte River Valley was a virtual "superhighway" as the major transcontinental route of the covered wagon migration; it became known as "The Great Platte River Road."

Three roadside turnout areas between Doniphan and Shelton on the road along the south side of the Platte were developed in Phase I. A portion of the cost was paid under the ISTEA and the remaining cost was contributed by the NRD and participating counties-Hall and Buffalo. The Audubon Society provided land for a roadside turnout near Shelton. Use of the Platte River for recreational purposes occurs now, but it is restricted by accessibility and use of

the river by endangered and protected wildlife species. The public viewing decks provide free crane/waterfowl viewing and provide a safe and bird-friendly way to view cranes throughout the day. Parking is available at each deck. Locations: Richard Plautz Crane Viewing Site is1.5 miles south of 1-80 Exit 285 (Gibbon), Alda Crane Viewing Site is 2 miles south of 1-80 Exit 305 (Alda), three additional roadside turnouts are located south and east of the Alda interchange on Platte River Drive, and west of the Rowe Sanctuary office on Elm Island Road. Because safety was the original purpose of the task force, a top priority for Phase I was given to getting people off roads and bridges during the crane viewing season. The plan includes parking areas, access to the river for canoeists, scenic roads, viewing decks and turnouts, historic trail designations and proposed recreational trails. The crane viewing site near Alda was designated as a "green site" by the Groundwater Foundation in 2010. Kiosks at the viewing decks were updated in the spring of 2015.

**B-1 Reservoir** The B-1 Reservoir northwest of Lexington was constructed in the 1980s for flood control purposes, with the secondary purpose of providing groundwater recharge. A parking area and access area were constructed by CPNRD. Also, in cooperation with the NGPC, the reservoir was stocked with game fish. The District opened the reservoir for day fishing in 1987. In 1995, petitioners from Dawson County cited high groundwater levels and objected to the recharge purpose for the reservoir. The board of directors responded to the petition by agreeing to stop storing water annually. In March of 2013, the board approved a motion to start filling the reservoir every year and to get it back to its original concept. The NRD will receive 4,000 ac/ft of water per year from NPPD to fill the reservoir and there are plans to have the NGPC begin stocking the reservoir within this planning period.

Other potential park and recreation projects will be evaluated as received.

***Objectives***

1. *To incorporate, wherever feasible and desirable, park and/or recreation features into other District programs.*
2. *To assist, as time and funds permit, other organizations, individuals, groups and government agencies in developing facilities to meet park and/or recreation needs of the District.*

# X. Pollution Control and Solid Waste Disposal

**GOAL:** To protect and enhance the quality of land, air, surface water and groundwater within the District.

Pollution control, solid waste disposal and sanitary drainage have been addressed by CPNRD, although federal and state governments have taken most of the responsibility for all of these. Additionally, municipalities and county government are mandated by state law to share the responsibility. The biggest role for NRDs appears to be in the area of non-point source groundwater pollution, although the NRDs have responsibilities for all forms of pollution.

**Air Quality** Air quality across the District is excellent. Complaints are sometimes received by the District, but they are generally handled by local health departments, the NDEQ or the US EPA. Complaints sometimes develop when farmers cause smoke by burning residue in their fields. Other common complaints involve odors from feedlots. These conditions are generally of short duration and can usually be settled on a local basis. Industrial air pollution is limited in its extent since there are no metropolitan-size industrial cities in the District, and most plants make an effort to comply with industry and government regulations that prevent major problems. During certain times of the year, when the combination of dry weather, strong winds and open fields are all present, the air quality is poor due to blowing dust. Tree planting is encouraged by the NRD to reduce this problem.

**Land Quality** Improper disposal of solid waste, petroleum products, chemicals and other waste products may cause land pollution and contribute also to water quality concerns. CPNRD will continue to play a minor role in the area of solid waste management, providing technical information/expertise for disposal studies and working within a multi-government framework to meet regional needs. In 1992, the Nebraska Legislature adopted LB 1257 to address solid waste disposal problems.

The law, known as the Integrated Solid Waste Management Act, requires municipalities and counties to provide for solid waste management services. Many communities already had sites for disposal of solid wastes, however, most dumps and landfills did not meet the Act's regulatory requirements and needed to be improved or relocated in order to meet those standards. The NRD will continue to monitor the quality of natural resources and will initiate or update current programs as necessary.

CPNRD has provided funding to the Grand Island Area Clean Community System for educational programs and cleanup events, and to the City of Kearney's Household Hazardous Waste Program.

***Objectives***

1. *To establish irrigation water management techniques on all irrigated land to properly conserve and efficiently utilize soil, water and fertility.*
2. *To protect and preserve the quality of ground and surface waters that presently meet acceptable standards as adopted by the US Public Health Service and the Nebraska Department of Environmental Quality.*
3. *To improve the quality of groundwater and surface water not presently meeting the standard to such a level as to at least meet water quality criteria contained in the standards.*
4. *To establish adequate permanent cover on all Class VI & VII lands and re-establish cover on those range and pasture sites classified in "poor" condition in order to reduce erosion and sedimentation in surface waters.*
5. *To establish approved cultural management practices, vegetative practices and structural measures, as needed, on all land to prevent wind and water erosion, in order to reduce erosion and sedimentation in surface waters.*
6. *To establish erosion control measures as needed, on all industrial development sites, residential development sites, road construction sites & other non-agricultural sites; in order to reduce erosion and sedimentation in surface waters.*

# XI. Information and Education

**GOAL:** That the public will develop a connection with natural resources conservation and management through accurate knowledge and understanding of the District's objectives.

Because CPNRD is a unit of local government, the board of directors depends on the public to be informed about the projects and programs of their NRD. Also, the Nebraska Legislature has given the NRDs a larger regulatory role, providing the NRDs with an increased need to keep the public informed about its programs and requirements. With a District that stretches some 175 miles from west to east and serving a population of 138,000 people; the logistics of offering information and education are key objectives of the NRD. CPNRD is responsible for responding to issues that the public is focused on, recognizing constituents' priorities and expectations, and providing factual information relating to natural resources issues. The main focus of adult education is water issues, both groundwater quality and quantity. High nitrate areas, Rules & Regulations, management plans, conjunctive management, and research studies are just some of the issues the public needs to be informed about.

**Information** Brochures are available for all NRD programs. The NRD's website at **www.cpnrd.org** was overhauled in 2015 and is updated weekly, providing up-to-date information on all programs and projects. Publication of the "In Perspective" bi-monthly newsletter is sent to over 6,200 landowners, state agencies, public officials and cooperating organizations. Displays providing information about NRD programs are also provided at local conferences, agricultural trade shows and workshops. Staff members address civic organizations and other groups as requested. In 2008, NARD adopted the new *Protecting Lives, Protecting Property, Protecting the Future* slogan being used by the NRDs in public outreach efforts. In 2015, CPNRD expanded social media efforts and created accounts for Facebook and Twitter; which are updated bi-weekly.

**Education** The NRD provides avenues of natural resources education for both educators and students. The NR Corner Newsletter is sent to all schools within the District twice a year. Staff provides presentations to classrooms as requested including: SOAR Summer Camp, Nebraska Children's Groundwater Festival, high schools, middle schools, and several elementary schools. Programs are added as requested including:

**-Arbor Day** In 1992, the CPNRD began providing seedlings to area schools to celebrate the Arbor Day holiday. CPNRD provides 2,000 chokecherry shrubs to participating educators within the District.

**-College Scholarships** In 2007, the NRD began providing scholarships for high school students to further their natural resources education, funding 10 students at $1,000 per year. In 2014, the scholarship name was changed to the Ron Bishop– CPNRD College Scholarship Program to honor former manager, Ron Bishop.

**-Educational Materials** Educational materials are provided to instructors through Project Wild, Project Wet, Project Learning Tree, Outdoor Classrooms, Arbor Day and other credible sources of natural resources education.

**-High School Contests** CPNRD's I&E specialist coordinates high school contests for the central region Envirothon, Land Judging and Range Judging and serves on the steering committees for each of these committees. The NRCS and UNL Extension help prepare for the land and range judging contests.

**-Nebraska Children's Groundwater Festival** In 2004, the programs coordinator and information/education specialist began coordinating the Nebraska Children's Groundwater Festival held for 4th-5th grade students at the Central Community College and College Park in Grand Island after the Groundwater Foundation requested that CPNRD take over coordination of the program. CPNRD is the main sponsor of the festival, providing $10,000 towards the festival. Donations through the Grand Island Community Foundation from local businesses and residents allow schools to attend at no cost. Nearly 1,000 students attend annually from across the state and around 300 presenters and volunteers help with the event.

**-Outdoor Classroom Grants Program** CPNRD's OC Program provides funding for educators through three types of grants including: Outdoor Classrooms, Community Grants, and Mini-School Grants. The requirements for each were updated in 2010 to accommodate the different types of funding needed by educators to provide hands-on learning experiences. Outdoor classrooms are found in both primary and secondary schools within the CPNRD. Schools that have received funding in the past include: Grand Island Northwest; Lexington District #22; Wood River

Elementary; Centura Public Schools; Horizon Middle School, Northeast Elementary, and Glenwood Elementary in Kearney; and Doniphon-Trumbull Elementary. In 2015, Cozad Community Schools and Grand Island Senior High were each approved for $2,500 for their projects. The new Kearney High School grant was approved in 2016.

**-Outdoor Learning Area** CPNRD's I&E specialist is a member of the Grand Island Groundwater Guardian Team (GWG). In 2011-2012, the GWG team received over $47,500 in grant monies to implement an Outdoor Learning Area (OLA) at the Nebraska State Fair. A groundbreaking ceremony was held in October 2011 and an unveiling of the first phase of the project was held on August 31, 2012. Staff has been active in continued development, maintenance, improvements, and publicity of the OLA.

**-Platte Basin Timelapse–** In June 2016, the board approved a funding request in the amount of $2,000 towards the *Timelapse: Monitoring Change Over Time* project. The NARD board approved partnering with Michael Forsberg and the NET to create STEM curricula, meeting Nebraska standards for schools. Materials will be developed in consultation with teachers and curriculum designers, with input from agricultural subject matter experts and the Nebraska Department of Education.

**Outreach/Events** CPNRD participates in community projects and events with the following partners: Grand Island Groundwater Guardian Program, Great Western Bank, Husker Harvest Days, NRCS, Nebraska Association of Resources District's Foundation & Wellness programs, Nebraska State Fair, SOAR-Summer Orientation About Rivers, UNL Extension and other opportunities as they arise.

**-Conservation Awards** In 2013, Great Western Bank approached CPNRD to partner in recognizing landowners who use best conservation practices. Two winners were selected the first year. In 2014, awards were given in three categories including cropland, grassland and community. Nominations are accepted through early November and presented at a ceremony following the December board meeting. CPNRD is responsible for advertising and promoting the program, while Great Western Bank provides a $100 gift card and outside sign to winners, and provides refreshments at the awards presentation.

**-New Logo** In 2016, a new logo was selected by board and staff to represent the Central Platte NRD. The new logo is an updated version of the logo designed in 1972 and adds the color green; which is more representative of the various management responsibilities of CPNRD.

**-Media Relations** News releases, print advertising, radio advertising and social media are all avenues used to provide timely information to the media. News releases are emailed and faxed to all newspapers and radio stations in the District at least twice a month. This typically includes 15 radio stations, three television stations and 27 newspapers. Media is contacted through email, telephone, Facebook and Twitter correspondence. CPNRD also participates in a radio talk show with KRVN radio station. In 2014, CPNRD began inserting the *In Perspective Newsletter* in the District's 12 local newspapers and continued mailing/emailing to landowners living out-of-state. Previously, it was sent to landowners in Phasee II & III GWMAs and other agencies reaching 6,500 households.

**-Nebraska State Fair** CPNRD and NARD started coordinating two booths at the Nebraska State Fair. In 2014, CPNRD staff helped develop concepts and information that was included in several displays in the Raising Nebraska Building. In 2016, CPNRD and Little Blue NRD will have an activity in the new STEM educational building.

**-NRD History Project-** CPNRD provided $3,710.00 towards the hour-long video- *Keeping Nebraska Local: A Unique Approach to Resource Management.* Produced by NETV, it features Nebraska's 23 NRDs. The program is available on DVD and on the NETV website at: netnebraska.org. CPNRD director Mick Reynolds was the narrator.

**-Wellness Program** In 2010, the I&E specialist began coordinating wellness activities for staff members including fitness and nutrition challenges, quizzes, and provided wellness tips by email and posters. NARD initiated an effort with all NRDs to start wellness programs since data shows that employee health management initiatives bring value to employees and performance in a multitude of ways. In 2013, a Wellness Committee was formed, who developed an anonymous Worksite Wellness Employee Interest Survey to determine employees interests in health promotion and health-related activities. The committee continues to educate the board and staff about many types of health-related topics, holds lunch and learns, and promotes participation in the Wellness Program by offering bi-annual health-themed challenges. Staff also participates in health screenings and CPR/AED/First Aid trainings.

***Objectives***

1. *Establish and implement information and education programs for the general public about NRD's duties, responsibilities and objectives.*
2. *Establish and implement information and education programs for those people with direct interests in the District, specific projects and programs.*
3. *Work with the news media in order to improve the understanding of the general public about the District and its projects and programs.*
4. *Assist in developing curricula for use in educating elementary, secondary and post-secondary students about natural resources, conservation and environmental issues.*
5. *Assist in training teachers and leaders of educational organizations to maximize the use of the curricula that have been developed.*
6. *Promote communications program designed to enhance the knowledge and understanding of the District's directors and staff about the priorities and expectations of the citizens of the District.*

# APPENDICE

## Summary of Projected Needs -*Annual Work Hours Required*

| PROGRAM/PROJECT | STAFF | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| **ADMINISTRATION** | | | | | | |
| General Manager | Lyndon Vogt | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Administrative Director | Dianne Miller | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Assistant Manager | Jesse Mintken | 200 | 200 | 200 | 200 | 200 |
| Biologist | Mark Czaplewski | 200 | 200 | 200 | 200 | 200 |
| Data Compliance Officer | Sandy Noecker | 200 | 200 | 200 | 200 | 200 |
| Hydrologist | Duane Woodward | 100 | 100 | 100 | 100 | 100 |
| Info/Education Specialist | Marcia Lee | 300 | 300 | 300 | 300 | 300 |
| Programs Coordinator | Kelly Cole | 220 | 220 | 220 | 220 | 220 |
| Projects Assistant | Tom Backer | 200 | 200 | 200 | 200 | 200 |
| Secretary/Receptionist | Deb Jarzynka | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 |
| Water Resources Specialist | Dan Clement | 60 | 60 | 60 | 60 | 60 |
| Range Management Specialist | Dave Carr | 200 | 200 | 200 | 200 | 200 |
| GIS Image Analyst | Luke Zakrzewski | 60 | 60 | 60 | 60 | 60 |
| GIS Coordinator | Angela Warner | 60 | 60 | 60 | 60 | 60 |
| Resources Conservationist | Shane Max | 40 | 40 | 40 | 40 | 40 |
| Resources Conservationist | Tricia Dudley | 40 | 40 | 40 | 40 | 40 |
| **OPERATIONS AND MAINTENANCE** | | | | | | |
| General Manager | Lyndon Vogt | 40 | 40 | 40 | 40 | 40 |
| Assistant Manager | Jesse Mintken | 160 | 300 | 300 | 300 | 300 |
| Biologist | Mark Czaplewski | 100 | 100 | 100 | 100 | 100 |
| Projects Assistant | Tom Backer | 500 | 500 | 500 | 500 | 500 |
| Secretary/Receptionist | Deb Jarzynka | 20 | 20 | 20 | 20 | 20 |
| Water Resources Specialist | Dan Clement | 80 | 80 | 80 | 80 | 80 |
| Range Management Specialist | Dave Carr | 200 | 200 | 200 | 200 | 200 |
| GIS Image Analyst | Luke Zakrzewski | 40 | 40 | 40 | 40 | 40 |
| GIS Coordinator | Angela Warner | 60 | 60 | 60 | 60 | 60 |
| Resources Conservationist | Shane Max | 40 | 40 | 40 | 40 | 40 |
| Resources Conservationist | Tricia Dudley | 40 | 40 | 40 | 40 | 40 |
| **PLANNING** | | | | | | |
| General Manager | Lyndon Vogt | 240 | 240 | 240 | 240 | 240 |
| Administrative Director | Dianne Miller | 20 | 20 | 20 | 20 | 20 |
| Assistant Manager | Jesse Mintken | 200 | 200 | 200 | 200 | 200 |
| Biologist | Mark Czaplewski | 200 | 200 | 200 | 200 | 200 |
| Hydrologist | Duane Woodward | 200 | 200 | 200 | 200 | 200 |
| Info/Education Specialist | Marcia Lee | 400 | 400 | 360 | 360 | 360 |
| Programs Coordinator | Kelly Cole | 120 | 120 | 120 | 120 | 120 |
| Projects Assistant | Tom Backer | 100 | 100 | 100 | 100 | 100 |
| Secretary/Receptionist | Deb Jarzynka | 5 | 5 | 5 | 5 | 5 |
| Range Management Specialist | Dave Carr | 400 | 400 | 400 | 400 | 400 |
| GIS Image Analyst | Luke Zakrzewski | 40 | 40 | 40 | 40 | 40 |
| GIS Coordinator | Angela Warner | 40 | 40 | 40 | 40 | 40 |
| Resources Conservationist | Shane Max | 40 | 40 | 40 | 40 | 40 |
| Resources Conservationist | Tricia Dudley | 40 | 40 | 40 | 40 | 40 |
| **RANGE MANAGEMENT** | | | | | | |
| General Manager | Lyndon Vogt | 10 | 10 | 10 | 10 | 10 |
| Range Management Specialist | Dave Carr | 1,080 | 1,080 | 1,080 | 1,080 | 1,080 |

## Summary of Projected Needs *(continued)*

| PROGRAM/PROJECT | STAFF | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| **INFORMATION & EDUCATION** | | | | | | |
| General Manager | Lyndon Vogt | 40 | 40 | 40 | 40 | 40 |
| Assistant Manager | Jesse Mintken | 50 | 50 | 80 | 80 | 80 |
| Biologist | Mark Czaplewski | 200 | 200 | 200 | 200 | 200 |
| Info/Education Specialist | Marcia Lee | 1,600 | 1,600 | 1,640 | 1,640 | 1,640 |
| Programs Coordinator | Kelly Cole | 400 | 400 | 360 | 360 | 360 |
| Secretary/Receptionist | Deb Jarzynka | 15 | 15 | 15 | 15 | 15 |
| Water Resources Specialist | Dan Clement | 80 | 80 | 80 | 80 | 80 |
| Range Management Specialist | Dave Carr | 200 | 200 | 200 | 200 | 200 |
| GIS Image Analyst | Luke Zakrzewski | 40 | 40 | 40 | 40 | 40 |
| GIS Coordinator | Angela Warner | 60 | 60 | 60 | 60 | 60 |
| Resources Conservationist | Shane Max | 20 | 20 | 20 | 20 | 20 |
| Resources Conservationist | Tricia Dudley | 20 | 20 | 20 | 20 | 20 |
| **GROUNDWATER, SURFACE WATER & WATER SUPPLY** | | | | | | |
| General Manager | Lyndon Vogt | 800 | 800 | 800 | 800 | 800 |
| Administrative Director | Dianne Miller | 15 | 15 | 15 | 15 | 15 |
| Assistant Manager | Jesse Mintken | 400 | 400 | 400 | 400 | 400 |
| Data Compliance Officer | Sandy Noecker | 400 | 600 | 600 | 600 | 600 |
| Hydrologist | Duane Woodward | 1,800 | 1,900 | 1,900 | 1,900 | 1,900 |
| Programs Coordinator | Kelly Cole | 220 | 220 | 220 | 220 | 220 |
| Projects Assistant | Tom Backer | 200 | 200 | 200 | 200 | 200 |
| Secretary/Receptionist | Deb Jarzynka | 110 | 110 | 110 | 110 | 110 |
| Water Resources Specialist | Dan Clement | 840 | 840 | 840 | 840 | 840 |
| GIS Image Analyst | Luke Zakrzewski | 1,860 | 1,860 | 1,860 | 1,860 | 1,860 |
| GIS Coordinator | Angela Warner | 1,820 | 1,820 | 1,820 | 1,820 | 1,820 |
| Resources Conservationist | Shane Max | 1,325 | 1,325 | 1,325 | 1,325 | 1,325 |
| Resources Conservationist | Tricia Dudley | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Thirty Mile Canal | Jim Harris | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 |
| Thirty Mile Canal | Mike Ostergard | 1,800 | 1,800 | 1,800 | 1,800 | 1,800 |
| Thirty Mile Canal | Marci Ostergard | 380 | 380 | 380 | 380 | 380 |
| Cozad Canal | Bill Jacobson | 1,900 | 1,900 | 1,900 | 1,900 | 1,900 |
| **WATER QUALITY, POLLUTION CONTROL, SOLID WASTE DISPOSAL, ETC.** | | | | | | |
| General Manager | Lyndon Vogt | 180 | 180 | 200 | 200 | 200 |
| Administrative Director | Dianne Miller | 10 | 10 | 10 | 10 | 10 |
| Assistant Manager | Jesse Mintken | 320 | 320 | 320 | 320 | 320 |
| Biologist | Mark Czaplewski | 400 | 400 | 400 | 400 | 400 |
| Data Compliance Officer | Sandy Noecker | 1,110 | 1,110 | 1,200 | 1,200 | 1,200 |
| Programs Coordinator | Kelly Cole | 170 | 170 | 170 | 170 | 170 |
| Projects Assistant | Tom Backer | 730 | 730 | 730 | 730 | 730 |
| Secretary/Receptionist | Deb Jarzynka | 25 | 25 | 25 | 25 | 25 |
| Water Resources Specialist | Dan Clement | 980 | 980 | 980 | 980 | 980 |
| GIS Image Analyst | Luke Zakrzewski | 40 | 40 | 40 | 40 | 40 |
| GIS Coordinator | Angela Warner | 40 | 40 | 40 | 40 | 40 |
| Resources Conservationist | Shane Max | 200 | 200 | 200 | 200 | 200 |
| Resources Conservationist | Tricia Dudley | 900 | 900 | 900 | 900 | 900 |

## Summary of Projected Needs *(continued)*

| PROGRAMS/PROJECT | STAFF | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| **FLOOD PREVENTION, CONTROL & CHANNEL RECTIFICATION** | | | | | | |
| General Manager | Lyndon Vogt | 100 | 100 | 100 | 100 | 100 |
| Administrative Director | Dianne Miller | 50 | 50 | 50 | 50 | 50 |
| Assistant Manager | Jesse Mintken | 300 | 300 | 600 | 600 | 600 |
| Data Compliance Officer | Sandy Noecker | 180 | 180 | 180 | 180 | 180 |
| Hydrologist | Duane Woodward | 300 | 300 | 300 | 300 | 300 |
| Secretary/Receptionist | Deb Jarzynka | 20 | 20 | 20 | 20 | 20 |
| Resources Conservationist | Shane Max | 200 | 200 | 200 | 200 | 200 |
| Resources Conservationist | Tricia Dudley | 10 | 10 | 10 | 10 | 10 |
| **DRAINAGE** | | | | | | |
| General Manager | Lyndon Vogt | 240 | 240 | 240 | 240 | 240 |
| Administrative Director | Dianne Miller | 5 | 5 | 5 | 5 | 5 |
| Assistant Manager | Jesse Mintken | 300 | 300 | 500 | 500 | 500 |
| Biologist | Mark Czaplewski | 100 | 100 | 100 | 100 | 100 |
| Data Compliance Officer | Sandy Noecker | 100 | 100 | 100 | 100 | 100 |
| Secretary/Receptionist | Deb Jarzynka | 15 | 15 | 15 | 15 | 15 |
| Resources Conservationist | Shane Max | 200 | 200 | 200 | 200 | 200 |
| Resources Conservationist | Tricia Dudley | 10 | 10 | 10 | 10 | 10 |
| **SOIL CONSERVATION & EROSION CONTROL** | | | | | | |
| General Manager | Lyndon Vogt | 40 | 40 | 40 | 40 | 40 |
| Administrative Director | Dianne Miller | 5 | 5 | 5 | 5 | 5 |
| Assistant Manager | Jesse Mintken | 100 | 100 | 100 | 100 | 100 |
| Field Personnel | Secretaries | 7,800 | 7,800 | 7,800 | 7,800 | 7,800 |
| Programs Coordinator | Kelly Cole | 400 | 400 | 400 | 400 | 400 |
| Secretary/Receptionist | Deb Jarzynka | 20 | 20 | 20 | 20 | 20 |
| Water Resources Specialist | Dan Clement | 100 | 100 | 100 | 100 | 100 |
| Resources Conservationist | Shane Max | 200 | 200 | 200 | 200 | 200 |
| Resources Conservationist | Tricia Dudley | 40 | 40 | 40 | 40 | 40 |
| **FORESTRY MANAGEMENT** | | | | | | |
| General Manager | Lyndon Vogt | 20 | 20 | 20 | 20 | 20 |
| Programs Coordinator | Kelly Cole | 350 | 350 | 350 | 350 | 350 |
| Projects Assistant | Tom Backer | 650 | 650 | 650 | 650 | 650 |
| Secretary/Receptionist | Deb Jarzynka | 25 | 25 | 25 | 25 | 25 |
| **FISH & WILDLIFE HABITAT** | | | | | | |
| General Manager | Lyndon Vogt | 40 | 40 | 40 | 40 | 40 |
| Assistant Manager | Jesse Mintken | 250 | 250 | 250 | 250 | 250 |
| Biologist | Mark Czaplewski | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Data Compliance Officer | Sandy Noecker | 100 | 100 | 100 | 100 | 100 |
| Programs Coordinator | Kelly Cole | 300 | 300 | 300 | 300 | 300 |
| Secretary/Receptionist | Deb Jarzynka | 15 | 15 | 15 | 15 | 15 |
| **RECREATION & PARKS** | | | | | | |
| General Manager | Lyndon Vogt | 20 | 20 | 20 | 20 | 20 |
| Assistant Manager | Jesse Mintken | 200 | 200 | 200 | 200 | 200 |
| Biologist | Mark Czaplewski | 200 | 200 | 200 | 200 | 200 |
| Projects Assistant | Tom Backer | 50 | 50 | 50 | 50 | 50 |
| Secretary/Receptionist | Deb Jarzynka | 10 | 10 | 10 | 10 | 10 |

# Fiscal Budgets

Below is the FY 2016/2017 Fiscal Budgets that were adopted by the Central Platte NRD Board of Directors, in accordance with state statutes.

The money that the NRD receives from local property taxes provides funding for flood control, water quality and water quantity programs, soil health, tree planting, wildlife restoration areas, and many other natural resources benefits. The NRD strives to conserve and preserve natural resources for the residents of central Nebraska.

**NOTE: This page will be updated following board approval of the budget levy in August.**

| GENERAL & SINKING FUNDS | FISCAL 2016 | PROPOSED FISCAL 2017 |
|---|---|---|
| Cash, Investments & Co. Treasurer | $8,125,401.75 | $8,281,157.25 |
| Revenue | $6,261,009.89 | $9,032,426.32 |
| Total Balances on Hand & Revenue | $14,386,411.64 | $17,313,583.57 |
| | | |
| General Fund Requirements | $14,323,371.04 | $17,938,959.37 |
| County Treasurer Commission | $44,809.19 | $47,192.39 |
| Delinquent Tax | $75,000.00 | $75,000.00 |
| | | |
| Sinking Fund Requirements | $6,043,941.24 | $5,566,279.47 |
| County Treasurer Commission | $14,999.81 | $14,724.16 |
| Total Requirements-Both Funds | $20,502,121.28 | $23,642,155.39 |
| **Property Tax Required** | | |
| General Fund | 4,600,728.58 | $4,841,431.20 |
| Sinking Fund | $1,514,981.06 | $1,265,243.62 |
| Total Both Funds | $6,115,709.64 | $6,106,674.82 |
| The proposed Property Tax for both funds for Fiscal 2017 is down $9,034.82 from last year. | | |

| | | | |
|---|---|---|---|
| Fiscal 2016 Levy | General Fund | 0.02890 | Total Both Funds |
| | Sinking Fund | 0.0952 | 0.03842 |
| Fiscal 2017 Levy | General Fund | 0.02790 | Total Both Funds |
| *Estimated | Sinking Fund | 0.00857 | *0.03519 |

*Estimate based on a 9% valuation increase*


**CONTACT INFORMATION:**

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