Comprehensive Resources Master Plan 2021- 2031

Adopted by the Central Platte NRD Board of Directors on December 16, 2021 in accordance with Nebraska Law (Section 2-3276).

CPNRD
CENTRAL PLATTE
NATURAL RESOURCES DISTRICT

Central Platte Natural Resources District

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Introduction

Master Plan - State Mandated

Nebraska's Natural Resources Districts are required to file a Comprehensive Resources Plan, or Master Plan, at least every ten years in accordance with state statute (Section 2-3276). The statute also declares that "no state funds shall be allocated or disbursed to a district unless that district has submitted its master plan… and until the disbursing agency has determined that such funds are for plans, facilities, works, and programs which are in conformance with the plans of the agency." Additionally, Section 2-3277 of the Nebraska statutes requires each NRD to prepare and adopt a five-year Long Range Implementation Plan under Section 2-3278 to "prepare and adopt any individual project plans as it deems necessary to carry out projects approved by the district."

History of Nebraska's NRDs

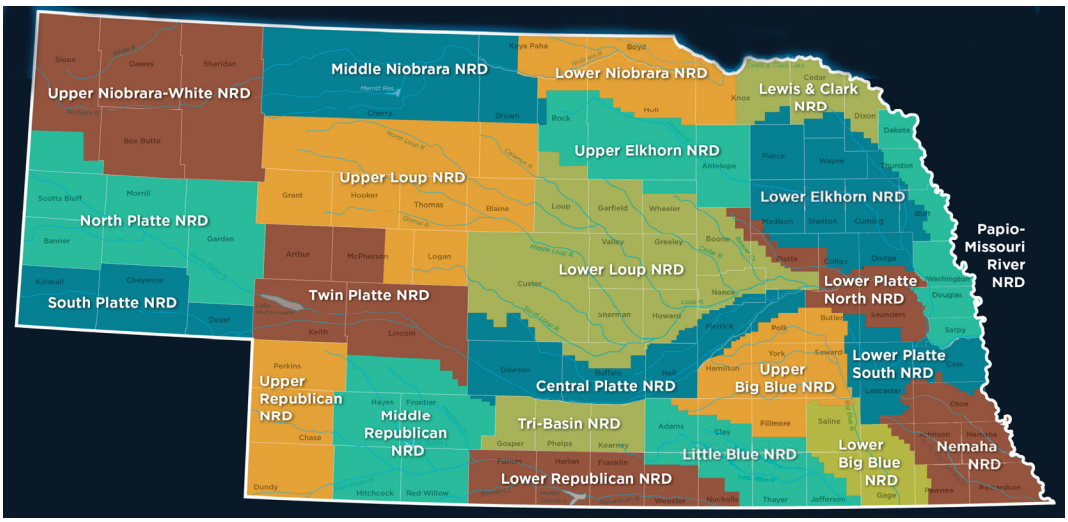
Natural resources are important factors in the history, present and future of Nebraska that affect the economic, social and physical development of the state. As settlers made their way across Nebraska on several overland trails, including the Oregon and Mormon trails, they saw the potential of these resources. Nebraskans learned to cooperate on water, soil, forestry and wildlife management issues; and develop conservation plans to allow future generations to benefit from these resources.

When Nebraska joined the Union in 1867, natural resources issues were treated as issues of property and often pitted neighbor against neighbor. State agencies were empowered to deal with issues involving fish and game, insects, predatory animal control, weeds, fertilizer and pesticide use, weather modification, economic development, energy, environmental control, water and waste management, agricultural pollution control, air pollution control, public water supplies, road construction, irrigation, surface water and groundwater.

The State Legislature was asked to provide solutions to specific problems, usually responding 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. By the late 1960s, Nebraska had over 500 such special purpose districts including: irrigation districts, drainage districts, soil conservation districts, watershed districts, rural water districts, watershed improvement boards, reclamation districts, sanitary improvement and drainage districts, and natural resources issues.

The state's solution was to create unique local government units called natural resources 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. Nebraska's system of local natural resources management is unique in the United States. Unlike the county-wide districts found in most states, Nebraska's Natural Resources Districts are based on river basin boundaries, enabling them to approach natural resources management on a watershed basis.

Figure 1. Nebraska's 23 Natural Resources Districts



District Description

Each district is autonomous, governed by a locally-elected board of directors. While NRDs share a common set of responsibilities, each district sets its own priorities and develops its own programs to best serve local needs. The board developed its plans, facilities, works and programs for implementing the 12 authorities required by state law in an integrated manner, consolidating them into nine planning and action categories to avoid the duplication of administrative effort and manpower resources. The nine planning and action categories are the titles that make up Section III of this document. ***(See Figure 2 below)***

NRD Authorities By Law

1. Erosion prevention and control.
2. Prevention of damages from flood water and sediment.
3. Flood prevention and control.
4. Soil conservation.
5. Water supply for any beneficial uses.
6. Development, management, utilization and conservation of groundwater and surface water.
7. Pollution control.
8. Solid waste disposal/sanitary drainage.
9. Drainage improvement/channel rectification.
10. Development/management fish and wildlife habitat.
11. Development/management recreational and park facilities.
12. Forestry and range management.

Central Platte Natural Resources District

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. The District's first board of directors changed the NRD's name to the Central Platte Natural Resources District and selected Grand Island as the headquarter city of the NRD. Ron Bishop, general manager of the watershed district, became the first general manager to serve the NRD. Lyndon Vogt was hired as general manager in 2013 when Bishop retired.

Planning Format

The first Central Platte NRD board of directors filed its original master plan in 1979. The comprehensive plan for land, water and related resources was developed to provide a broad framework for the efficient and orderly development and management of those resources. It also provided the framework and outline for CPNRD's Long Range Implementation Plan. Everchanging technologies and laws require that the Master Plan and subsequent updates be a flexible guide to the orderly development, management, utilization and conservation of the District's natural resources. When inventories of the existing resources and factors influencing those resources are updated, the Board reviews the new information and includes it in the process of setting goals and plans for implementation of those goals.

Figure 2. Central Platte NRD'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.

Location

Central Platte NRD lies in the south central part of Nebraska, straddling the Platte River encompassing 2,136,304 acres. The district boundaries extend 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 a part of the CPNRD) were added back to the District after a petition request from landowners and transfer approval from the Secretary of State. The river system in CPNRD includes 205 miles of the Platte River, 49.9 miles of the North Channel and 173 miles of the Wood River.

CPNRD is bordered by the following NRDs: Lower Loup, Lower Platte North, Upper Big Blue, Little Blue, Tri-Basin, Middle Republican and Twin Platte. There are 11 counties with land in CPNRD including all of Dawson and parts of Frontier, Custer, Buffalo, Howard, Hall, Nance, Merrick, Hamilton, Platte and Polk. ***(See Figure 3 below)***

The entire district is within the Third Congressional District. The following are within the CPNRD:

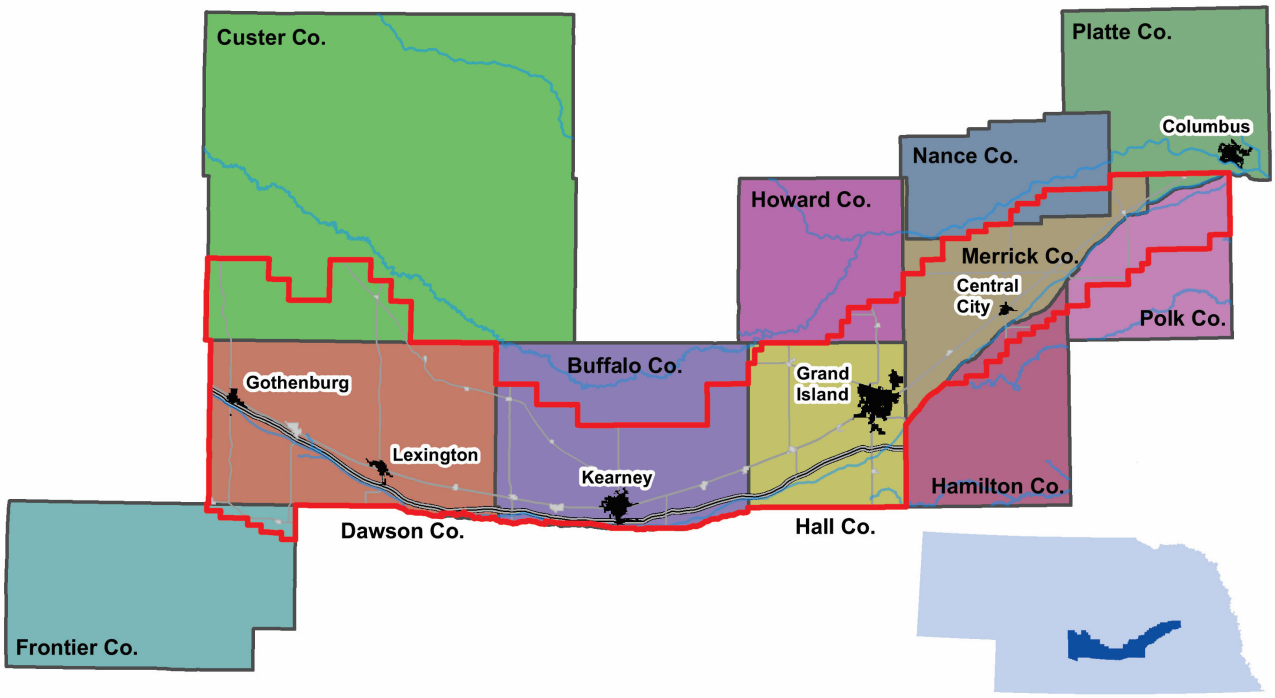
Nebraska Legislative Districts: Districts 22, 23, 33, 34, 35, 36, 37, 41, 43.

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 four of the state's 7 Districts - 3, 4, 5, 6

Figure 3. Counties in Central Platte



Topography

CPNRD includes the broad Platte River valley 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 two 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

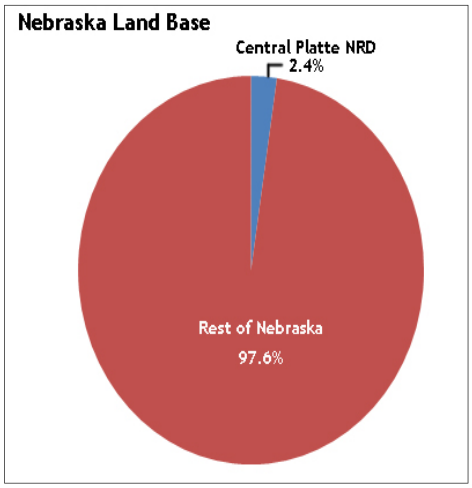
Loup and Elkhorn rivers, join the Platte east of the District. The Platte River is too shallow for navigation and is used primarily for irrigation, recreation, generation of hydroelectric power and as habitat for wildlife.

Climate

CPNRD is in two of the state's eight climatic divisions (central and east central) and is bordered directly by five of the remaining six divisions. CPNRD shares all of the state's climatic characterizations: temperature extremes and frequent changes in the weather. Tornadoes, thunderstorms, blizzards and hailstorms occur occasionally. Summers are generally hot and winters can be severely cold, temperature and precipitation vary greatly from year to year. Precipitation averages 23.90" annually, varying from as low as 11.22" during the drought of the 1930's and as high as 45.47" during wet years. Distribution of the rainfall during the growing season is generally good, but over 50% of the annual total may occur in one month.

CPNRD's Drought Mitigation Plan was developed in 2021 as a resource for mitigation and response during periods of drought. The US Drought Monitor is a key tool to define drought locally and local data from stream gauges, groundwater levels and upstream snowpacks was included. Stakeholders and water resources experts also provided insight into local vulnerabilities and past drought protocols. The effective response section of the Plan developed protocols to manage water resources during periods of regional drought and how the CPNRD's water resources will be protected for citizens who struggle to meet water needs during droughts. The Plan will be incorporated the into the Hazard Mitigation Plan, Integrated Management Plan and the Ground Water Management Plan.

Figure 4. Nebraska Land Base



Land Use

The District's land use includes cropland, pasture and rangeland, some woodland and other minor cover, urban and residential development, streams and other water and transportation. About 10% of irrigation uses are surface water, mostly from the Platte River. Most of the surface water irrigation in the District takes place in the western part. The majority of the irrigation in CPNRD uses groundwater; which in the western part of the District comes from the Ogallala Aquifer and in the eastern part from Pleistocene (Wisconsin) sands and gravel. Groundwater is also the major source of drinking water in the District.

Figure 5. CPNRD Land Use

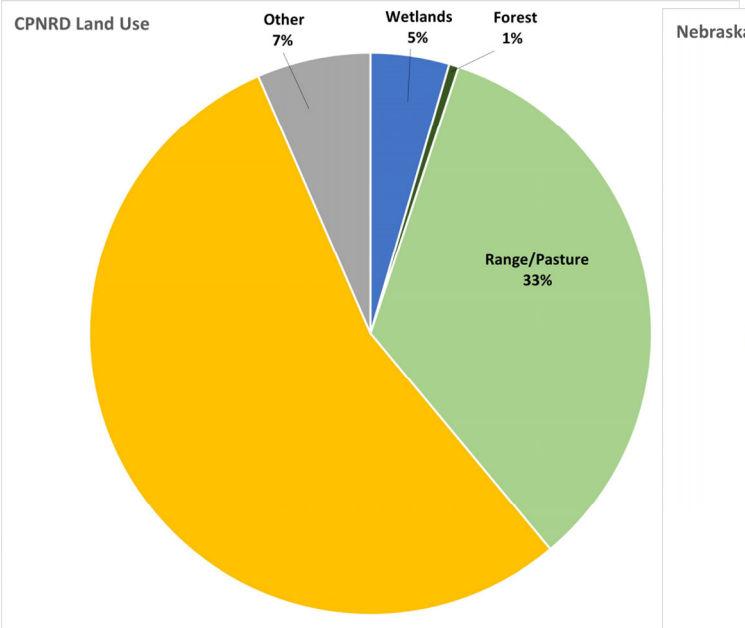
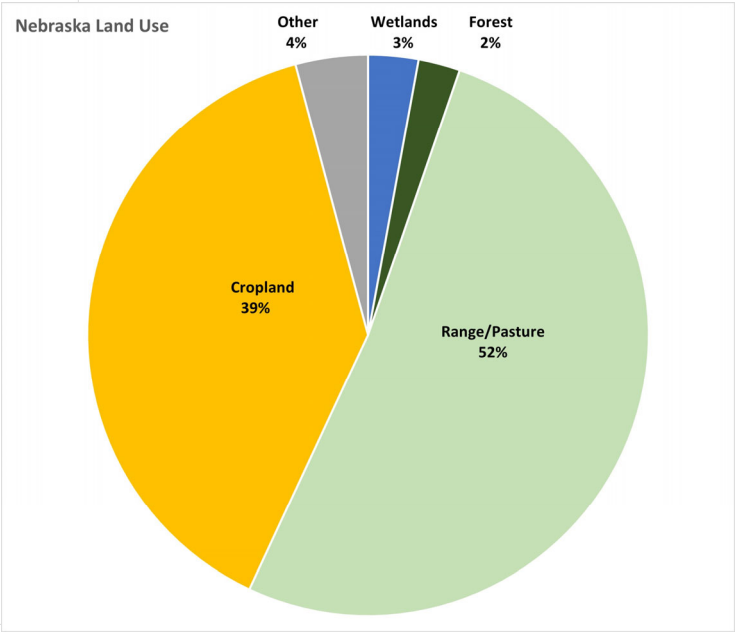


Figure 6. Nebraska Land Use



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 and NRD's largest economic sectors: service, government, and manufacturing. Tourism also plays a role in the economy.

USDA Natural Resources Conservation Service (NRCS)

The NRDs work closely with NRCS by providing personnel to assist with their activities and to help administer NRDs programs. NRCS provides technical assistance to landowners to help solve conservation problems while carrying out the NRD's programs.

Education

Important aspects 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.

Court Districts

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

Population

Figure 8 shows the municipal populations in the CPNRD. The 2020 census population data released determined that the NRD's total municipal population increased from 111,125 in 2010 to 119,775 in 2020. The rural population fluctuated with 13 of the communities seeing a decrease and 12 seeing slight increases. All three urban communities had increases. The State of Nebraska's population also increased from 1,826,341 to 1,961,504.

Modifications were made to align with the Census data released and the requirement that each subdistrict within the CPNRD must be substantially equal in population. With a total population of 144,855 people, each subdistrict population now averages 14,486. CPNRD's directors will remain in their previous subdistrict.

Communities in the CPNRD are designated as:

First Class Three cities with populations 5,000-100,000: Grand Island, Kearney, Lexington.

Second Class Nine cities with populations 800-5,000: Cozad, Gothenburg, Central City, Gibbon, Wood River, Shelton, Elm Creek, Cairo, Doniphan

Villages 16 villages with populations under 800: Alda, Overton, Duncan, Eustis, Clarks, Silver Creek, Chapman, Sumner, Riverdale, St. Libory, Amherst, Farnam, Hordville, Oconto, Miller, Eddyville

Figure 7. Municipal Population

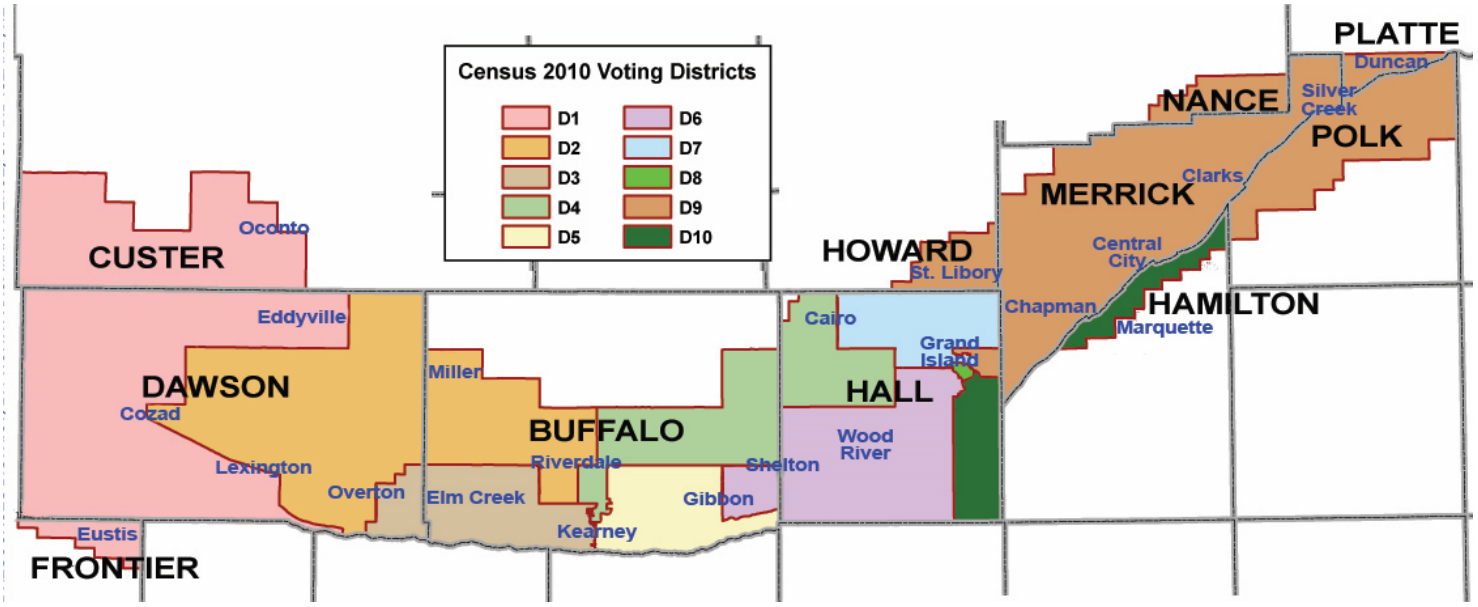
COMMUNITY	2010-2020 POPULATION + or -	2020	2010	2000
Grand Island	+4,611	53,131	48,520	42,940
Kearney	+3,056	34,293	30,787	27,431
Lexington	+118	10,348	10,230	10,011
Cozad	+11	3,988	3,977	4,163
Gothenburg	-96	3,478	3,574	3,619
Central City	+105	3,039	2,934	2,998
Gibbon	+45	1,878	1,833	1,759
Wood River	-153	1,172	1,325	1,204
Shelton	-25	1,034	1,059	1,140
Elm Creek	+78	979	901	894
Cairo	+37	822	785	790
Doniphan	-20	809	829	763
Alda	+5	647	642	652
Overton	+13	607	594	646
Duncan	+41	392	351	359
Eustis	-12	389	401	464
Clarks	-25	344	369	361
Silver Creek	-42	320	362	441
Chapman	-27	260	287	341
Sumner	+16	252	236	237
Riverdale	+65	247	182	213
St. Libory	-23	241	264	787
Amherst	-47	201	248	277
Farnum	+11	182	171	223
Hordville	-13	131	144	150
Oconto	+13	138	151	141
Miller	-7	129	136	156
Eddyville	-9	88	97	96
TOTAL	**+8,650**	**119,775**	**111,125**	**102,469**

Board of Directors

The Board of Directors is elected to protect and preserve the wide scope of natural resources within the district. CPNRD has 21 directors, each serving a four-year term. Two directors serve in each of the 10 sub-districts and one serves as the at-large member. Directors in the same subdistrict are elected in alternate election years.

Each director serves on two of the District's committees for water quality, water utilization, eastern projects, western projects, programs and variance/appeals. Occasionally sub-committees are formed for policy, building and other as-needed committees. See subdistrict map on following page.

In 2021, boundaries were changed to align with U.S. Census data. Below are the 2010 and 2020 subdistrict boundary Maps:



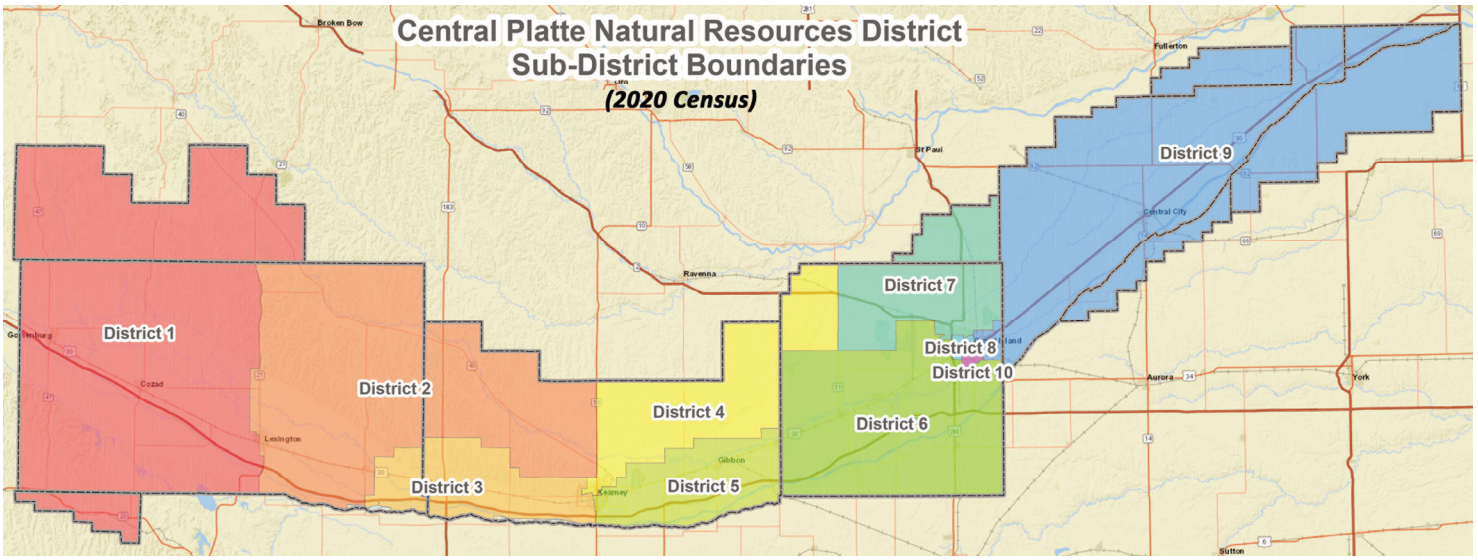


Figure 8. CPNRD Board of Directors (2021)

Subdistrict	Board Members
1	Brian Keiser, Jay Richeson
2	Dwayne Margritz, Tom Downey
3	Steve Sheen, Marvin Reichert
4	Lon Bohn, Ryan Kegley
5	Jim Bendfeldt, Deb VanMatre
6	Mick Reynolds, Jerry Milner
7	Ed Stoltenberg, Jerry Wiese
8	LeRoy Arends, Alicia Haussler
9	Ed Kyes, Doug Reeves
10	Barry Obermiller, Chuck Maser
At-Large	Keith Ostermeier

Figure 9. CPNRD Staff (2021)

Staff

General Manager: Lyndon Vogt
Assistant Manager: Jesse Mintken
Administrative Assistant: Kelly Cole
Communications Assistant: Brody Vorderstrasse
Cozad Ditch Manager: Michael Schmeeckle
Cozad Ditch Rider: Jake Laird
Easement Habitat Specialist: Krystal Church
Easement Habitat Specialist: Elison Wagner
GIS Coordinator: Angela Warner
GIS Image Analyst: Luke Zakrzewski
Hydrologist: Brandi Flyr
Information/Education Specialist: Marcia Lee
Precision Conservation Specialist: Morgan Wrich
Projects Assistant: Tom Backer
Range Management Specialist: David Carr
Resources Conservationist: Bill Hiatt
Resources Conservationist: Shane Max
Secretary/CPNRD: Deb Jarzynka
Secretary/NRCS-Central City: Vacant
Secretary/NRCS-Grand Island: Vacant
Secretary/NRCS-Lexington: Samantha Keith
Secretary/NRCS-Kearney: Shelly Lippincott
Secretary/Thirty Mile Irrigation District: Marci Ostergard
Thirty Mile Irrigation District Manager: Jim Harris
Thirty Mile Irrigation District Technician: Mike Ostergard
UNL/CPNRD Demo Project Coordinator: Dean Krull
Water Quality Programs Assistant: Tricia Dudley
Water Resources Specialist: Dan Clement
Water Resources Technician: Courtney Widup

Funding

The funding 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.

The Central Platte NRD's total operating budget for the 2021-2022 fiscal year was $24.5 million with the required property tax of $3.9 million; a decrease of $73,396.65 compared to the 2021 budget. Total valuations received from the District's 11 county assessors increased 1.667% to $17,947,588,662. With the levy set at 0.022196, a homeowner with property assessed at $100,000 will pay $22.20 for natural resources benefits.

Natural Resources Inventory

SOIL RESOURCES

The fertile soils and the adequate water of the Platte Valley of Nebraska are the foundation upon which the economy of the Central Platte area has been built. Soil is related to the earth much as the rind is related to an orange. Unlike the orange rind, however, the soil is not uniform in depth, color or texture. It is, nevertheless, the link between the rock core of the earth and all living things on its surface. All soil types consist of mineral matter, organic matter, water and air, although the proportions vary from soil to soil.

Every soil has a profile, or a succession of layers in a vertical section down into loose weathered rock. The nature of the profile has a lot to do with the growth of roots, storage of moisture, supplies of plant nutrients, and productivity of the soil:

- **A Horizon** Uppermost layer in the soil profile, often called the surface soil. It's the part of the soil in which life is most abundant in such forms as plant roots, bacteria, fungi and small animals. Therefore, it is the part or layer in which organic matter is most plentiful.
- **B Horizon** Immediately beneath the A horizon and is the often called the "subsoil." Lying between the A and C horizons, it contains properties of both. The B horizon generally is harder when dry than its neighbors and stickier when wet.
- **C Horizon** Deepest of the three major horizons. It consists of the upper part of the loose and partly decayed rock beneath the A and B horizons. The rock material in the C horizon is of the same kind as that which now forms the bulk of the soil above it, and is said to be the parent material of soils. It may have accumulated in place by the breakdown of hard rock, or it may have been moved to where it is now by water, wind or ice.

Soil scientists are able to use the type and arrangement of horizons to tell what had happened to that soil since it began to form. This history has meaning to the fertility, tilth and productivity of soils for plants useful to man-kind. Each soil's suitability for agricultural use can be determined and classified according to a nationally uniform system. The capability classification is the grouping of soils in a general way to show their suitability for most kinds of agricultural use. Arable soils are grouped together according to their potentialities and limitations for sustained production of the common cultivated crops. Non-arable soils (unsuitable for long-time sustained use for cultivated crops) are grouped according to their potentialities and limitations for the production of permanent vegetation such as grass or trees and according to their risks or soil damage if mismanaged.

The broadest category in the capability classification places all soils in eight capability classes. Risks of soil damage or limitations in use become progressively greater from Class I to Class VIII. The first four land capability classes designate "arable" soils that are capable of producing crops without deterioration over a long period if under proper treatment. They may also be used for pasture, range, forest and woodland. Soils in land capability classes V, VI and VII are not suited for crops. In Nebraska, class VIII soils include rock outcrops, marshes, canyons, bluffs, and riverwash land. For purposes of this inventory, only land used primarily for agricultural uses was considered. It is identified as "Inventory Acreage." Land generally used for non-agricultural uses was excluded.

The following lands are excluded:

- **Federal Non-Cropland:** Federally owned land, except cropland operated under lease or permit.
- **Urban and Built-Up:** Cities, towns and built-up areas more than 10 acres in size, industrial sites, railroad yards, cemeteries, airports, golf courses, parks, recreation areas, institutional sites, public administration areas and similar kinds of sites.
- **Small Water Areas:** Ponds, lakes or reservoirs more than two acres and less than 40 acres and rivers and streams that are less than 1/8 mile wide.

See Figure 10. Land Capability Land Classes and Figure 11. Land Use Comparison 2020 on Page 14.

Figure 10. Land Capability Land Classes

The eight capability land classes are defined as follows:

Class I

Soils have few limitations that restrict their use.

Class II

Soils have some limitations that reduce the choice of plants or require moderate conservation practices.

Class III

Soils have severe limitations that reduce the choice of plants, require special conservation practices or both.

Class IV

Soils have very severe limitations that reduce the choice of plants, require very careful management or both.

Class V

Soils have little or no erosion but have other limitations that are impractical to remove and limit their use largely to pasture, range, woodland or wildlife food or cover.

Class VI

Soils with severe limitations that make them generally unsuitable for cultivation and restrict their use largely to pasture, range, woodland or wildlife food and cover.

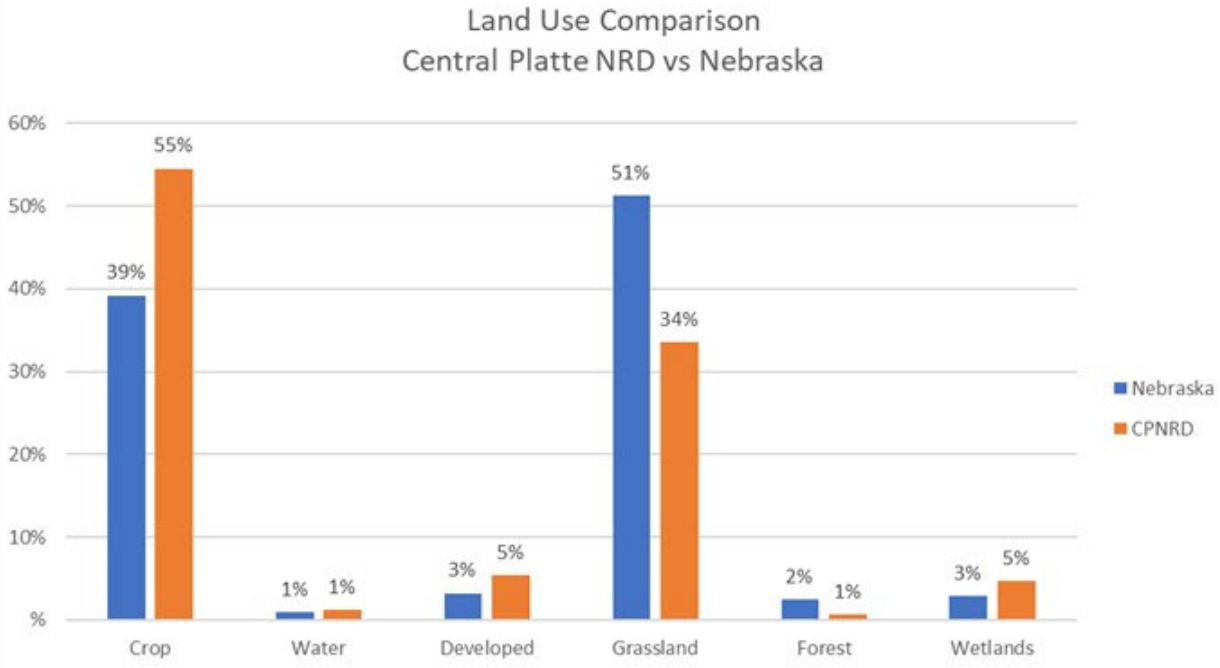
Class VII

Soils with very severe limitations that make them unsuitable for cultivation and restrict their use largely to grazing, woodland or wildlife habitat.

Class VIII

Soils and landforms with limitations that preclude their use for commercial plant production without major reclamation and restrict their use to recreation, wildlife, water supply or to aesthetic purposes.

Figure 11. Land Use Comparison 2020



Source: USDA NASS 2020 Cropland Data Layer Note: The Cropland Data Layer is compiled from remote sensing data and uses a generalized classification which may yield different results than more detailed land use inventories.

WATER RESOURCES INVENTORY

SURFACE WATER

Surface water in the Central Platte NRD is primarily in the form of streams. The Platte River is the major surface water feature in the District, with a number of other streams running parallel to the channel of the Platte before entering the river. None of the other streams are considered major sources of water since their flows are largely intermittent.

The largest of these streams is the Wood River: Custer, Dawson, Buffalo, Hall and Merrick counties

Other streams include:

Buffalo Creek: Custer, Dawson, Buffalo counties
Silver Creek: Merrick County
Clear Creek: Polk County
Prairie Creek: Hall and Merrick counties
Warm Slough: Hall and Merrick counties
Trouble Creek: Merrick County
Moores Creek: Hall and Merrick counties
French Creek: Dawson County
Spring Creek: Dawson County

There are also numerous small water impoundments. The largest impoundment in the District is Johnson Lake, which straddles the southern boundary of Dawson County and lies mainly in Gosper County in the Tri-Basin NRD. The Platte River is a major river in three states: Colorado: both branches originate, Wyoming: north branch flows into Nebraska, and Nebraska: the two branches meet near North Platte and flow together to empty into the Missouri River at Plattsmouth.

Groundwater Uses

Water rights uses on the Platte River including irrigation, power generation, and other uses have an effect on the flows within the Platte River. The CPNRD and the Nebraska Game and Parks Commission, have each been granted instream flow water rights to protect specified flow rates, times and river segments against future demands for Platte River water. *(See page 45 for details.)*

Drainage

In the relatively flat terrain of the Central Platte Valley, many surface water drainage problems in the District are solved by cooperation between individual landowners and adequate planning of land leveling, culverts, bridges and urban development. Solving one local drainage problem can create a new drainage problem in another area. All drainage plans consider the benefits and potential damages that may occur as a result of carrying out the plan. Major drainage problems are more frequently found in the eastern part of the district; specifically Merrick, Platte, and Nance counties that contain sizeable areas with surface drainage problems. In cases where the drainage problem exists over a large area, additional assistance may be necessary such as the effect on other land and federal mandates relating to wetlands. Maintenance of existing drainage systems is often sufficient to avoid new problems that may be even greater that existed prior to installing the system.

Irrigation

At the end of 2020, the NRD had a total of 1,028,886 irrigated acres of which 937,339 acres are groundwater only; 14,388 acres are surface water only and 77,159 acres are co-mingled use. The overall irrigated acres base increased 12,297 acres from 2010 to 2020. The crops being irrigated in the District include corn, soybeans, sorghum, potatoes, alfalfa, small grains and sunflowers.

Surface water quality problems vary in degree and type across the District. There are two primary types of water pollution in surface water and groundwater: *Point source pollution* is one that can be traced to a specific source, usually the result of a visible spill or a practice traced to a specific person or persons. Point source water pollution is under the primary jurisdiction of the Nebraska DEQ. *Non-point source pollution* is generally one that causes pollution over a period of time as the result of land use practices. The primary preventive measure available for non-point source pollution remains the control of land use and irrigation practices.

In rural areas depending on land capabilities, it may involve terraces, grassed waterways, proper grazing methods and/or control of irrigation applications and runoff flows.

In 1998, the 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 banks of perennial and intermittent streams or permanent bodies of water. A buffer strip traps chemicals before they reach the waterway to dissipate the chemical instead of polluting the stream.

Irrigation Run-Off/Erosion

Rules and regulations designed to control groundwater irrigation runoff have been in effect since 1977 to follow the Erosion and Sediment Control Act. Updates in 2017 included: sheet and rill erosion added, ephemeral gully erosion, soils updates, and changed governing authority. The plan allows NRDs to petition the District Court for a Cease and Desist Order and removed 90% cost-share previously required for NRDs to provide for erosion control practices. NRCS's new requirements for control of ephemeral gully (concentrated flow) erosion were added. If erosion is found on a producer's property, the producer is required to develop a plan to use conservation practices to help treat this type of erosion, by December 31, 2019, for conservation compliance and to remain eligible for USDA program benefits. Those practices include no-till, cover crops, terraces and waterways.

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 Demonstration Project Coordinator, Dean Krull, has been working with the NRD since 1984 to develop irrigation demonstration plots and has an office at the NRD headquarters. He coordinates demonstration days to educate producers on results of the demonstration plots and on best management practices. Krull also writes articles in the NRD's *In Perspective Newsletter* to educate CPNRD landowners.

GROUNDWATER

Groundwater is a major source of supply for all water uses within the District. The largest of these uses is irrigation. Although most of the irrigation in the District is from groundwater, surface water from the Platte River, via canals and storage reservoirs, does supplement groundwater for irrigation purposes in the western part of the District. CPNRD purchased the Six Mile Canal in 2010 and in 2014 partnered with three canal companies (Cozad Canal, Thirty Mile Irrigation District, Southside-Orchard Alfalfa Canal) in Dawson County to rehabilitate the canals. As a Platte Basin Habitat Enhancement/Coalition Program project, grants from NeDNR (40%) and the Nebraska Environmental Trust (20%) paid 60% of project costs. CPNRD shared the remaining 40% of project costs with the canal companies. The main benefits include: groundwater recharge to enhance surface water and groundwater supplies, protect water quality and help CPNRD move closer to a fully appropriated status. The rehabilitations also provide enhanced flows to the Platte River by diverting and retiming excess flows to the river; returning natural flow irrigation rights to the river; and help meet requirements of the PRRIP agreement and LB962 to return the Platte River to its 1997 level of use.

Drinking Water

Most of the drinking water used in the District is from groundwater. Grand Island and Kearney have established their groundwater wells in or near the Platte River to take advantage of the river's induced recharge. The supply and quality of groundwater are major concerns in the District. High nitrate content in the groundwater, as well as aquifer depletion, are addressed in the NRD's Groundwater Management Plan adopted by the District's directors in 1987. By reference, the Groundwater Management Plan is a part of this Master Plan. Groundwater drainage solutions usually involve an adequate surface water drain. By solving surface water problems, most groundwater drainage problems in the District would also be improved.

Chemigation Program

Irrigators that chemigate must comply with Nebraska's Chemigation Act and Regulations adopted by the Nebraska Department of Environment and Energy and CPNRD. All operators applying chemicals through a closed irrigation system must have the correct safety equipment, be properly trained and certified, and obtain a permit from the NRD before legally being allowed to chemigate. Certification is issued for four years after which renewals are required. In 2014, NRDs were given the authority to set fees for new, special, renewal and emergency permits. Emergency

permits must be approved within two working days and can't be issued on weekends/holidays. Permit holders and certified applicators are required to sign all applications. Approval (or denial) of the application is required within 45 days after the application is filed. Permits expire June 1 each year. Renewals can be obtained by making application to the NRD and paying the $10 fee on or before that date. Renewal permits can be issued without an inspection, however, the NRD is required to re-inspection systems in operation, on a spot-check basis.

Fees Application fee-$60. Special permits-$60. Annual renewal- $20. Emergency permit- $500. If staff is required to make a second trip to complete a chemigation inspection, a $50 fee is charged to the permit holder/ applicator. The fee is increased to $100 on the third trip.

In April 2009, the Board approved the following policy change due to the fact that chemigation applications have doubled in the last few years and it is becoming more difficult to give landowners the service that the NRD has provided in the past. To enable the staff to be more efficient, the board of directors have set the following requirements for re-inspections. If a system fails or an appointment is not kept, and the inspector has to make a return trip:

1. The inspector will immediately issue a Suspension Order & well will be tagged with a Do Not Chemigate tag.
2. When a second trip is required, the Chemigator will be charged an extra fee of $30 per system. If a third or more trip is required, the fee will be an additional $50 per system.
3. If the appointment is not kept or cancelled in a timely manner, the above fees also apply.

Decommissioned Well Program

The potential danger and damage abandoned wells may cause to groundwater supply is a concern. CPNRD informs landowners to locate, fill and seal wells, cisterns, cesspools, and similar cavities on their property. 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 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 decommissioning programs. Cost-share is available for old irrigation wells (60%), up to $500 on wells that pump 50 gpm or less, $750 for wells pumping over 50 gpm, and for hand-dug wells up to a $1,500. In 2013, CPNRD stopped providing cost-share for replacement wells. Licensed water well contractors/ licensed pump installation contractors are required to abandon the well and verify that the water well was decommissioned in accordance with state law, standards, rules and regulations.

FIGURE 12. Wells Decommissioned in the CPNRD

YEAR	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
# WELLS	93	123	147	190	145	133	126	87	59	58	69

Monitoring Wells

CPNRD has installed 116 active monitoring wells since 1993 that are used for both the Water Quality and Water Quantity programs. In 2021, 12 dedicated monitoring wells were added in Buffalo and southern Hall counties. The new wells will replace irrigation wells that are no longer accessible to measure. The wells may also be used to monitor nitrate in the groundwater. With up to 15 additional wells to be constructed in 2022, CPNRD will have monitoring in all of the counties in the District with the exception of Hamilton County.

In 2021, results from a three-year study conducted by UNL documented 27 deep vadose zone cores monitored in the 1990s to characterize nitrate, ammonia, and moisture content under different land use; as well as estimate stored nitrate-N and nitrate transport rates. The 660 wells sampled showed a 10 percent reduction of vadose zone

nitrate in the groundwater since the 1990s; however, there was a significant amount of nitrate-N ranging up to 8,800 pounds of nitrate-N per acre. Nitrate transport rates ranged from 0.9 to 2.5 feet/year.

Phase 2 areas measured higher than average groundwater nitrate-N. Both gravity and center pivot irrigated crop land were studied to compare changes in nitrate storage under 24 sites. Overall averages showed the vadose zone nitrate about 30% higher under gravity irrigated land. The study also found several cores with over 2,000 pounds per acre nitrate-N and significant concentrations of ammonia at depth in many locations. Further investigation of Phase 2 areas and locations with vadose nitrate >2,000 pounds/acre was recommended.

Improving Groundwater Data Collecting

The NRD uses several management tools to collect needed groundwater data including: Airborne Electromagnetic Survey, ArcGIS, Evapotranspiration Mapping, GeoCloud, Groundwater Evaluation Toolkit, LiDAR, NEBFLEX, and Magnetic Resonance Sounding.

Hydrologically Connected Water

The interrelationship of groundwater and surface water was recognized by state law in 1996 (LB 108). The law provides that an NRD and the Nebraska Department of Natural Resources may establish joint or separate action plans for the integrated management of hydrologically connected groundwater and surface water. As a result, the Central Platte NRD assists with the Cooperative Hydrology Study (COHYST). COHYST was developed with funding from NET, CPNRD, state/local agencies, water an environmental organizations. NET awarded $500,000 the first year and $450,000 the second/third years. COHYST improves understanding of the hydrological and geological conditions in the Basin and provides scientifically supportable databases, analyses, and detailed computer groundwater models to more accurately identify and quantify the relationship between the Platte River and adjacent groundwater resources. It provides information to develop a "new depletions" plan for flows in the central stretch of the Platte River, and assists Nebraska in analyzing proposed activities for the PRRIP. COHYST also provides the Platte Basin NRDs appropriate management data as a basis to develop policy and procedures related to groundwater and surface water. *(See page 40 COHYST.)*

WILDLIFE RESOURCES INVENTORY

An important wildlife resource area that has national and international significance, is found within CPNRD and is supported by the central Platte River. The Platte 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 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. A diverse assemblage of songbirds make significant use of riparian forests and grasslands across the District. Resident upland gamebirds provide area hunters with sporting opportunities. Abundant mammal, fish, reptile and amphibian species, typical of the northern Great Plains also inhabit 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 (principally cottonwood and willow.) Today, the area is a matrix of grassland remnants, cropland and expanded riparian forest. Human activity has significantly modified native vegetation and therefore wildlife habitat across the western United States and the District. While some of these affects have had positive results on wildlife resources, others have been detrimental. Native species of plants and animals have often been replaced by introduced species. The decline of some species across their range has prompted their federal designation as threatened and endangered. The District is known to contain eight such federally listed species.

Federally designated critical habitat for the whooping crane exists in the District. The decline of some species across their range has prompted their federal designation as threatened and endangered. The District is known to contain eight such federally listed species. Federally designated critical habitat for the whooping crane exists in the District. Some of these species have shown signs of recovery, for example, the bald eagle has recently been removed from listing. Others like the Eskimo curlew are likely on the brink of extinction.

Platte River 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 worked with groups from throughout the basin to build a framework for a long-term Program to satisfy Endangered Species Act (ESA) requirements for water users in the basin. The first PRRIP 13-year increment included the ongoing development of water projects planned to improve flows in the central Platte by an average of 130,000-150,000 AF annually. 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. *(See page 59 - Platte River Recovery Implementation Program).*

District programs that directly or indirectly benefit wildlife resources include the: Wildlife Habitat Improvement Projects (WHIP), Corners for Wildlife, buffer strip projects and tree programs. Public lands and lands managed by such organizations as The Nature Conservancy, the Platte River Whooping Crane Trust, the National Audubon Society, Nebraska Public Power District, and Central Nebraska Public Power and Irrigation District provide literally thousands of acres of habitat dedicated to the protection and conservation of District wildlife resources.

A series of instream flow water rights on portions of the Platte River have been sought and obtained by the NRD to protect minimum flows for fish and wildlife resources. Subsequent to the NRD's actions, the Nebraska Game and Parks Commission obtained additional instream flow rights on portions of the Platte.
(See page 45 - Instream Flows.)

The Master Plan 2021-2031

I. Soil Conservation & Erosion Control

II. Flood Prevention, Control and Channel Rectification

III. Drainage

IV. Groundwater, Surface Water and Water Supply

V. Water Quality, Pollution Control, Solid Waste Disposal, Sanitary Drainage

VI. Fish and Wildlife Habitat

VII. Forestry Management

VIII. Outdoor Recreation

IX. Range Management

X. Pollution Control and Solid Waste Disposal

XI. Information and Education

XII. Appendix

I. 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.

In 1986, the Nebraska Legislature adopted an Erosion and Sediment Control Act to establish a statewide program designed to reduce erosion to tolerable levels throughout the state. CPNRD adopted an Erosion and Sediment Control Plan in 1987, revised it in 1997, and again in 2017 to add sheet and rill erosion, ephemeral gully erosion, and soils updates. Governing authority was also changed. The plan allows NRDs to petition the District Court for a Cease and Desist Order and removed the 90% cost-share previously required for NRDs to provide for erosion control practices. The system works on a complaint basis. Once the NRD receives a complaint, the NRD staff meets with the landowner and if erosion is found on the property, a plan is developed to use conservation practices to help treat the erosion for conservation compliance and to remain eligible for USDA program benefits. The practices include no-till, cover crops, terraces and waterways. The landowner is required to implement at least one of the recommendations starting the project within six months and completing it within one year.

PROBLEMS/NEEDS

Soil Erosion

Soil erosion occurs in all parts of the NRD. Erosion causes damage to land suitable for vegetation, fish and other aquatic life, streams and lakes, and to buildings and roads. Sheet and rill erosion, as well as wind erosion, are the types more commonly occurring on cultivated lands, with small gully erosion occurring on some upland cultivated sites. Gully and channel degradation problems are more common on upland sites.

Streambank erosion is closely related to flood flows and channel conditions. It occurs along major streams and tributaries across the District at mild to moderate rates. Causes for erosion include changes in the natural runoff pattern that results in scouring and movement of soil and removal of vegetative cover; which reduces water infiltration and resistance to water and wind erosion. Farming practices also have an effect on the rate of erosion on a given field, and the practices of one landowner can affect another landowner's property.

The USDA NRCS is engaged in a national cooperative program of soil classification and mapping. All lands within the District have been classified and mapped. The NRCS is updating its soil classifications within the District. Suitability for various land uses can be determined from these maps, and the data obtained is being used as a basis for rural and urban planning. After the Food Security Act of 1985 (P.L. 99-198), highly erodible land and wetlands were determined by NRCS. The Act places specific requirements upon landowners and operators desiring to continue participation in various Federal programs.

Sheet, rill, small gully, and wind erosion require the application of land treatment measures and conservation management practices by individual landowners. Large gully and channel degradation problems usually require project-type action. Streambank erosion generally requires streambank stabilization measures by individual landowners. On the Platte River and its tributaries, under present federal regulation, landowners must use such measures as are prescribed by the U.S. Army Corps of Engineers under its Section 404 permit process. Urban erosion and sediment problems require measures similar in some respects to those required on agricultural lands. Land use planning and management practices are often effective tools in combating urban erosion.

Carbon Sequestration

Carbon dioxide is the most commonly produced greenhouse gas. Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide. It is one method of reducing the amount of carbon dioxide in the atmosphere with the goal of reducing global climate change. Carbon sequestration is the long-term removal, capture, or sequestration of carbon dioxide from the atmosphere to slow or reverse atmospheric pollution

and to mitigate or reverse climate change. Carbon dioxide is naturally captured from the atmosphere through biological, chemical, and physical processes. CPNRD recognizes that carbon sequestration programs may be beneficial to soil health in the District and the environment.

Practices that control soil erosion have been used for centuries, but have been applied to any great extent in this country only in the past 50 years. Established soil conservation practices for controlling the sediment movement, and thus reducing the impact associated with runoff from agricultural areas including: Mulch or minimum tillage, grade stabilization structures, terracing with contour farming, converting marginal land to permanent pasture or woodland, field windbreaks, good pasture and range management, crop rotation, irrigation water management.

COST-SHARE PROGRAMS

CPNRD is a sponsor and participant in cost-sharing programs to help landowners meet their requirements and responsibilities. The NRD, with the assistance of NRCS field offices, administers the Nebraska Soil and Water Conservation Program for the Nebraska Department of Natural Resources. The programs provide financial assistance to landowners to encourage conservation measures on privately owned land that will produce long-term benefits for the general public. The CPNRD Board reviews the practices that receive cost-share annually to determine any needed changes.

Nebraska Soil Carbon Project

In 2021, the Central Platte and Upper Big Blue NRDs began enrolling producers in the new Nebraska Soil Carbon Project. This project provides greater financial incentives to producers who utilize key conservation practices in central Nebraska. Farmers can adopt soil health practices--including cover crops, no-till, and diverse crop rotations that store carbon in the soil. The stored carbon is utilized by private companies to help reach their goals around sustainability. Depending on the practices implemented, producers earn up to $45 per acre each year.

The goal is to have about 100 producers install these soil health practices on 100,000 acres of farmland over the next five years. The expectation to enroll 20,000 acres in the first year across the two NRDs was successfully met, reaching over 23,000 acres with a new conservation practice in place.

The Nebraska Soil Carbon Project is a collaboration between the two NRDs, NRCS, The Nature Conservancy, Ecosystem Services Market Consortium, Cargill, Target, and McDonald's. The Nature Conservancy manages the new program and is investing $8 million for farmers to implement these practices over the next few years.

Increasing cropland soil carbon has multiple benefits for the producer and the environment including more stable yields, improved nutrient availability and water holding capacity. Private companies are looking for ways to decrease their carbon footprint and Nebraska's growers can provide these benefits by improving their farming operations as they implement soil health practices. Markets to link these soil carbon buyers and suppliers gives companies a way to meet part of their greenhouse gas reduction goals while supporting farmers who are implementing conservation practices.

The payments producers will receive through our carbon market pilot project are tied to the practices implemented on the acres, not the carbon outcomes, to reduce the amount of risk involved for producers. Colorado State University is providing scientific support through this project.

The project is estimated to store the equivalent of 150,000 metric tons of CO2 while enhancing Nebraska's soil and linking producers to new carbon payment opportunities. Beyond the financial incentives and soil health improvements, involved producers have the opportunity to share conservation stories with a larger audience via field days, media spots, and short videos relating to the project; attend training events with local and national leaders in soil health, agronomy and related topics. The producers receive reports on the new practice's soil carbon and water quality outcomes. Those that are interested in going deeper may also opt-in for a detailed report on the practice's financial return on investment.

Producers receive year-round assistance from the NRDs, NRCS, and The Nature Conservancy staff, who provide support for paperwork/application processes and soil health practice management. There is no gross income or acre enrollment cap for NRCS payments, but producers are encouraged to enroll a reasonable number of acres

given their operation size and soil health experience. More acres can be submitted for enrollment in subsequent years of the program. Payments are for new soil health acres only, however a measurable improvement of an existing practice could count (such as moving from strip till to no till) if it aligns with the NRCS's standards.

Precision Conservation Program

In 2021, CPNRD entered into an agreement with the Illinois Corn Growers Association to add a Precision Conservation Specialist to the NRD staff for the Precision Conservation Management (PCM) Program. The PCM is designed to help farmers understand and manage risks associated with adopting new conservation practices with the objective of helping farmers make sound financial decisions. It evaluates conservation practices on both their impact to the environment and their impact to family farmer profitability. PCM is looking to expand their reach into Nebraska with Frito Lay (PepsiCo) growers in the western area of the District. The program originated from the Illinois Corn Growers Association, making up the conservation arm of the entity. PCM is funded by the USDA Natural Resources Conservation Service – Regional Conservation Partnership Program. Along with applied economics, water quality outcomes and carbon sequestration values are generated and provided to the producers to determine best management practices for their operation.

SPECIFIC PLANNING

The NRD will continue to review its current programs, as well as programs available through other sources to determine their effectiveness against erosion. The NRD will also consider sponsoring new programs that would help to meet its goals for soil conservation and erosion control and continue to work with related agencies at the federal and state levels to assure that we strive toward our objectives.

OBJECTIVES

1. Establish adequate permanent cover on all Class VI and all Class VII land.
2. Establish approved cultural management practices, vegetative practices or structural measures, as needed on all lands to prevent wind and water erosion.
3. Safeguard the land for the continued production of food and fiber.
4. 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. 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. 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. Re-establish vegetative cover on those range and pasture sites classified as "poor" condition.

ALTERNATIVES

1. *Financial assistance program(s) for soil conservation practices.*
2. *Technical assistance programs to individuals, groups and units of government on planning and application of soil conservation methods and practices.*
3. *Information and education programs on soil conservation methods and practices.*
4. *Development of research programs on soil conservation methods and practices.*
5. *Land Use Regulations to conserve soil resources.*
6. *Provide grass seeding and other equipment for establishing permanent cover and other soil conservation practices*

II. Flood Prevention, Control & Channel Rectification

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 and 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 end 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 in the eastern part, 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 Board has adopted, as a general policy, the design and construction of flood control measures on a watershed basis.

The Flood of 2019 embodied Nebraska's Natural Resources Districts' purpose to Protect Lives, Protect Property, and Protect the Future. Over 40 flood risk reduction projects have been built throughout the CPNRD to prevent flood water from damaging homes, businesses, and land. As a result of these projects, the majority of the District from Gothenburg to Columbus was protected by the cyclone bomb storm that hit the state in March. In the western area of the District, the Buffalo Creek Watershed Structures protected Custer, Dawson, and Buffalo Counties. B-1 Reservoir, the largest of seven structures, was filled to capacity for the first time since it was built in 1983. B-1 held over 2,000 acre-feet of flood water. In 2006, the Kearney Northeast Project was completed and included channel improvements on the Wood River and detention cells that also helped protect the City of Kearney this year.

Two major projects protected the City of Grand Island. The Wood River Flood Control Project in southern Grand Island was completed in 2004. The left bank levee system is 7.9 miles long and located on the north side of the Wood River. It protected 15,514 acres of residential, commercial and industrial land uses; including 9,360 people and 3,919 buildings (3,655 residential). The right bank levee system is 4.7 miles long and located on the south side of the Wood River. It protected an additional 1,337 acres of land consisting of mostly farmland. The Upper Prairie/Silver/Moores Project held massive amounts of floodwater, protecting 23,000 acres south of Hwy 2 and east of Hwy 281 in Grand Island. The project includes four dry dam sites, one levee and detention cells that held 5,000 ac/ft of runoff; protecting 2,800 properties in the western and northern areas of Grand Island.

Projects in the eastern area of the District also worked as designed. The Warm Slough/Trouble Creek Project, completed in 1993, helped protect the entire watershed by reducing flooding caused by storm runoff into the Warm Slough, Dry Run, and Trouble creeks. CPNRD partners with local, state, and federal agencies to develop projects in areas that are prone to flooding issues.

PROBLEMS/NEEDS

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. In the eastern end of the District, channel rectification may be the only solution to the severe flooding problems. CPNRD also needs a continuing maintenance program to enable its projects to continue alleviating flood damages in the future.

SPECIFIC PLANNING

The CPNRD Board of Directors has adopted the design and construction of flood control measures on a watershed basis. Plans have been 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. Individual watershed planning is at various stages throughout the district, including monitoring and fact-finding, feasibility study, public proposal, budgeting, construction, completion

and maintenance. The District is also investigating a number of smaller structures, county road structures, etc. to alleviate flood damage. Individual project plans have been prepared and adopted by the NRD board as appropriate. Such plans may be obtained upon request during regular business hours at the NRD headquarters office in Grand Island, Nebraska, in accordance with state and federal open record laws. 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.

In 2008, FEMA awarded CPNRD a grant to develop a multi-jurisdictional All-Hazard Mitigation Plan; enabling communities to take action and reduce threats from natural disasters. Public input from officials and landowners were a key component of the process and regional meetings were held to obtain input in the initial stages. Potential hazards affecting the area, individual communities identified, critical facilities located, and mitigation actions and projects were listed. Projects considered are flood and drainage system improvements, backup generators for critical facilities, alert sirens, weather radios, tornado shelters/safe rooms, tree inventory, and programs to reduce electrical outages. Kirkham Michael Engineering developed the plan that became active in 2012. To be eligible for emergency funds, each county, community and schools are required to participate in the process. CPNRD sponsored the initial plan in 2010 and the 2017 update. In 2020, FEMA approved the NRD's application for funding to update the five-year plan.

SOLUTIONS

The Board of Directors adopted, as a general policy, the design and construction of flood control measures on a watershed basis. Plans have been 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.

Flood Planning Grants

In 2020, CPNRD was selected to receive three Watershed and Flood Prevention Operations Program (WFPO) grants from NRCS to identify what is needed to address flooding. The two-year grants pay 100% of costs to complete an Environmental Assessment (EA) for each watershed. Below are the three watershed project updates:

Spring and Buffalo Creek Watershed ($625,000) HDR Engineering was hired to develop the Environmental Assessment for Dawson County. The Plan-EA study area is approximately 266,870 acres, primarily agricultural, grass/pasture and row crops. The city of Lexington is located within the study area, and the communities of Cozad and Overton are immediately adjacent. An online public scoping meeting was held Oct-Nov 2020. Milestone meetings with NRCS/USACE are being held and the project is in the data collection phase. A possible split plan may be needed to accommodate the Village of Overton. Additional public open houses/updates and milestone meetings will be scheduled.

Lower Wood River Watershed ($725,000) JEO and EA Consultants were hired to develop the EA for portions of Buffalo, Hall and Merrick counties. A virtual public meeting was held in August 2020. Milestone meetings have been held with NRCS/USACE. Alternatives development, evaluation of potential projects, and stakeholder updates have taken place. Upcoming: 60% milestone meeting, public open house/update. The agency scoping meeting and second public meeting are tentatively scheduled for November 2021.

Elm and Turkey Creek Watershed ($742,500) JEO was hired to develop the EA for Dawson and Buffalo counties. The Project covers more than 160,000 acres of drainage including the entire Elm Creek Watershed to its confluence with Buffalo Creek south of the Village of Elm Creek and the entire Turkey Creek Watershed flowing north of the Village of Elm Creek, past Odessa, and through the City of Kearney. Milestone meetings with NRCS/USACE are being held with the project in the data collection phase. Public open houses and updates are scheduled for August 2021 and April 2022.

Land Rights

At this time, CPNRD has no land right needs. This may change in the future to address areas within the District that are at risk of flooding during a weather event or disaster. Sufficient information is not available at this time to determine financial needs.

OBJECTIVES

1. Establish management practices on cropland and grassland that would keep a minimum 2,000 lbs. per acre of vegetative cover on, or above, the ground surface at all times.
2. 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. 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 a public awareness and acceptance of the need for and the application of needed measures to reduce floodwater damage.
7. Carry out floodwater control practices at a satisfactory rate.

ALTERNATIVES

1. *Land use and treatment regulations to provide support for the establishment and maintenance of flood control practices and for the establishment of regulations for the removal of obstacles in floodways.*
2. *Purchase of larger sites needed to provide for floodwater control and for wildlife, recreation and other beneficial purposes.*
3. *Land use regulations.*
4. *Financial assistance programs.*
5. *PL 566 watershed programs.*
6. *Provide grass seeding equipment for establishing permanent cover.*
7. *Control of woody plants in channels.*
8. *Research programs on flood prevention methods and practices.*
9. *Additional legislative actions on flood plain zoning.*
10. *Technical assistance to individuals, groups and units of government on flood prevention and control methods and practices.*
11. *Information and education programs on flood plain management, flood control and reducing flood damage.*

III. Drainage

GOAL **To help provide wherever needed and feasible, the open and closed drainage systems to dispose of excess surface and subsurface waters from non-wetland areas.**

Surface Water Nebraska's Natural Resources Districts were developed along watershed boundaries. As the name implies, the Central Platte NRD's natural drainage within the district is toward the Platte River; which is itself a tributary of the Missouri River. The lands in the NRD experience a considerable problem from surface water drainage because of the flat terrain and deposits left by wind and water erosion. The drainage is further complicated by land leveling, county roads, state highways, acres of concrete in the urban areas and irrigation runoff. When natural waterways are blocked, drainage cannot occur. Another complication is the District's need to protect wetlands and its responsibility to do so under provisions of the recent Federal farm bills and the Emergency Wetlands Resources Act, which was adopted in 1986 by Congress to identify and protect wetlands.

Surface drainage problems are generally located in the eastern half of the District where the land tends to be flatter and where natural channels have reduced capacities as a result of timber and debris in the channel bottoms and siltation. In the west end, the problems are more localized to individual farm units although there are some major drainage problems along Spring Creek and Buffalo Creek in Dawson County. Urban drainage is a problem for many communities in the District largely as a result of inadequate channels in the area to carry the runoff waters and/or urban development that occurred before planning was in place.

Groundwater Groundwater drainage problems are also evident over the total length of the District. Groundwater levels raise during years when the rainfall is higher than normal, causing homeowners affected by the high water table to attempt the pumping of excessive water onto their lawns or to nearby ditches. As a result, much of the water removed from the aquifer eventually returns to it and the high water continues to be a problem. The Platte River also influences the groundwater table near the river, with most of the problems resulting north of the river channel. The entire District is susceptible to groundwater drainable problems, depending on the dry and wet year cycle. Hydrology studies are needed to further define the extent of the problem and to determine a solution. The majority of land affected by seepage problems from canals and laterals lies south of the Platte River in southwestern Dawson County.

SPECIFIC PLANNING

In July 2019, Olsson was selected to rewrite the NRD's Groundwater Management Plan (GMP) for $102,000. Olsson will incorporate new data and insight acquired since the approval of the plan in 1985. The original GMP was based on hydrogeologic, climate and socio-economic information available at the time. CPNRD has since acquired and developed significant data about the groundwater resources. Over the last 35 years, rules and regulations have also changed significantly and groundwater management goals have evolved. Olsson is evaluating current plan triggers, updated data sets and maps, and ran over 200 scenarios with the Cooperative Hydrology Study model (COHYST) the Groundwater Evaluation Toolkit (GET) to predict what may happen with future management options. Additional scenarios requested by CPNRD's Water Utilization Committee are being completed.

Surface Water In a relatively flat terrain of the Central Platte Valley, many surface water drainage problems in the District can be solved by cooperation between individual landowners and adequate planning of land leveling, culverts, bridges and urban development. Solving one local drainage problem can create a new drainage problem in another area. All drainage plans should consider the benefits and potential damages that may occur as a result of carrying out the plan. Major drainage problems are more frequently found in the eastern part of the district. Merrick, Platte and Nance counties contain sizeable areas with surface drainage problems. In cases where a drainage problem exists over a large area, additional assistance may be necessary, subject to other considerations; such as the effect on other land and federal mandates relating to wetlands. Maintenance of existing drainage systems is often sufficient to avoid problems that may be even greater than existed prior to installing the systems.

The Platte County Project was the first improvement project completed by the District. It provides drainage

improvements and minor flood control benefits to 1,300 acres of irrigated cropland in southwest Platte County. Central Platte NRD works with NRCS, U.S. Fish and Wildlife Service (FWS) and other federal agencies in identifying wetlands throughout the District for the purposes of the farm bills and the Federal Endangered Species Act.

Groundwater Groundwater drainage solutions usually involve an adequate surface water drain. By solving surface water problems, most groundwater drainage problems in the District are improved. The CPNRD's demonstration project determines the effectiveness of dewatering to reduce high groundwater tables in parts of the District. If the demonstration project shows that dewatering can be accomplished effectively without adversely affecting neighboring areas, the board will develop options for a program to dewater high water tables. CPNRD is participating in the Cooperative Hydrology Study to understand the relationship between surface water and groundwater. *(See COHYST on page 40)*

Policy and Implementation

NRCS is engaged in a national cooperative program of soil classification and mapping. All lands within the District have been classified and mapped. In addition, the NRCS is updating its classifications and maps. The NRCS is assisting the U.S. Fish and Wildlife Service in determining wetlands. Suitability for various land uses can be determined from these maps, and the data obtained is being used as a basis for rural and urban planning.

Drainage - Common Law and Statutory Law

Common law is precedent created by judges in the absence of a law created by the Legislature (statutory law). In Nebraska, common law and statutory law overlap. Neb. Rev. Stat. § 31-201 states that landowners may drain their land by constructing an open ditch or drain into a "natural watercourse"; defined as "any depression or draw two feet below the surrounding lands and having a continuous outlet to a stream of water, or river or brook." The word "natural" is not defined by statute. Courts have generally held a "natural" watercourse, is one formed by the forces of nature.

STATUATORY LAW

Landowner/Tenant Requirements

- Neb. Rev. Stat. § 31-224: Requires landowners/tenants to clean watercourses on their land of any obstacles that impede the flow of water. This cleaning must occur between March 1 and April 15 of each year.
- Neb. Rev. Stat. § 31-225: Requires landowners/tenants to maintain the bed elevation of any watercourse that is farmed.
- Neb. Rev. Stat. §§ 31-221 and 31-226 impose criminal and civil penalties on landowners/tenants who fail to comply.

County Requirements The county is responsible for enforcement but also has a duty to clear natural watercourses of obstructions. Neb. Rev. Stat. § 31-202.02 states that landowners may petition the county to take action to clear ditches and watercourses but the cost of doing so may be imposed on the petitioners.

COMMON LAW

The law determines the term "diffuse surface water" as sheet flow that has not yet flowed into a natural watercourse or natural drainageway. Landowners may protect their lands from diffuse surface water by constructing dikes, ditches, berms, or other structures to repel such water. This may be done even if doing so results in harm to a neighboring landowner. Courts have defined a natural drainageway to mean any ditch or swale formed by the forces of nature that allows water to drain into a running stream or river. This is slightly different than a natural watercourse. Landowners and tenants may not obstruct the flow of water once it is in a natural drainageway to the detriment of another landowner. Many cases depend on whether the water is diffuse surface water or whether it is in a natural drainageway.

SOLUTIONS

When there are several landowners involved, a drainage improvement project area can be designated by CPNRD if a majority of the landowners agree. In such a case, improvements are designed and built under the auspices of the NRD. The conservation and maintenance of the project can be assessed to the landowners. Drainage districts could be formed before the NRDs were created. While drainage districts were not required to be merged into

the NRDs, a few across the state have merged with their respective NRD. CPNRD has no active drainage districts. The NRD has established various objectives for meeting its Drainage responsibilities. Alternatives have also been developed to satisfy the objectives. (The listing of an item as an alternative does not imply that it will be used or even that it is desirable, only that it is an alternative presently or potentially available for consideration.)

CPNRD Drainage Improvement and Channel Rectification Projects

Amick Acres Improvement Area	Kearney West Clearing Project
Cairo Downtown Improvement Project	Lepin Ditch Flood Control Project
City of Gibbon Drainage Project	Odessa Area Flood Control Project
Doniphan Drainage Project	Moores Creek Flood Control Project
Dry Creek Clearing Project	Wood River Watershed

COST-SHARE PROGRAMS

The Nebraska Soil & Water Conservation Program (NSWCP) is administered by CPNRD for the Nebraska Department of Natural Resources. 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 from the Commission, the NRD acts on the application. Landowners whose applications are approved have five months to complete the work. Cost-share under this program is at a rate of 50% with three exceptions:

(1) Well Abandonment Program is cost-shared at 60%
(2) Phragmites Control is cost-shared at 75%
(3) Center Pivot Incentive Program provides a one-time, up to $7,500 payment to convert gravity irrigation to pivot irrigation.

CPNRD also works with Nebraska Game & Parks Commission to provide 100% cost-share for WILD Nebraska. Financial assistance is provided by CPNRD to private landowners through cost-share for installation of soil and water conservation practices, specifically established soil conservation practices for controlling sediment movement and reducing impacts associated with runoff from agricultural areas. CPNRD's cost-share programs:

60% Cost-Share Well Abandonment

50% Cost-Share Streambank Stabilization, Windbreaks and Weed Barrier, Flow Meters, Urban Forestry, Prescribed Burn and Burn Preparation, Grassland Conservation, Cover Crops

75% Cost-Share Phragmites Control

The Nebraska Soil and Water Conservation Fund was created in 1977 to provide financial assistance to private landowners for installation of soil and water conservation practices. The USDA NRCS determines the practices eligible for funding, establishes operating procedures, and allocates funds annually among the 23 NRDs. The local NRCS provides technical assistance needed in planning and installing the conservation measures, while Nebraska's NRDs administer the program at the local level.

50% Cost Share

* terrace systems, terrace underground outlets, water impoundment dams, grade stabilization structures
* diversions, grassed waterways, water and 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 in Central Platte NRD

The 2020 funding resulted in 54 contracts totaling $2,453,855 and conservation practices contracted on 10,118.4 acres. The availability of these funds are credited to the 2018 Farm Bill and the use of programs such as EQIP, RCPP and CSP.

- Water Conservation: $2,122,665; 41 contracts (6,422.5 acres)
- Grazing Lands: $101,537; 7 contracts (2,007 acres)
- Soil Health: $3,595; 1 contracts (151.1 acres)
- Forestry: $35,112; 1 contracts (58.5 acres)
- Animal Feeding Operation: $169,366; 1 contract (1395.2 acres)

2018 Farm Bill

The 2018 Farm Bill continues its strong support for conservation efforts of America's farmers and ranchers through reauthorization and expanded flexibility of NRCS conservation programs. NRCS offers financial and technical assistance through conservation practices, activities and enhancements to help agricultural producers make and maintain improvements on their land. Producers with active contracts under the 2014 Farm Bill were completed as scheduled. Conservation programs available for funding:

Environmental Quality Incentives Program (EQIP) provides financial and technical assistance to ag producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, increased soil health and reduced soil erosion and sedimentation, improved or created wildlife habitat, and mitigation against increasing weather volatility.

Conservation Stewardship Program (CSP) helps ag producers maintain and improve their existing conservation systems and adopt additional conservation activities to address priority resources concerns. Participants earn CSP payments for conservation performance; the higher performance the higher the payment.

Agricultural Management Assistance (AMA) helps ag producers manage financial risk through diversification, marketing or natural resource conservation practices. NRCS administers the conservation provisions while Agricultural Marketing Service and Risk Management Agency implement the production diversification and marketing provisions.

Agricultural Conservation Easement Program helps landowners, land trusts, and other entities protect, restore, and enhance wetlands, grasslands, and working farms and ranches through conservation easements.

Healthy Forests Reserve Program (HFRP) helps landowners restore, enhance and protect forestland resources on private/tribal lands through easements and financial assistance. Landowners promote the recovery of endangered or threatened species, improve plant and animal biodiversity and enhance carbon sequestration.

Regional Conservation Partnership Program (RCPP) promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners. NRCS provides assistance to producers through partnership agreements and RCPP conservation program contracts.

Erosion and Sediment Control Plan

In 1986, the Nebraska Legislature adopted an Erosion and Sediment Control Act to establish a statewide program designed to reduce erosion to tolerable levels throughout the state. CPNRD adopted an Erosion and Sediment Control Plan in April 1987 and revised it in 1997. Rules and regulations designed to control groundwater irrigation runoff have been in effect since 1977 to follow the Erosion and Sediment Control Act. Updates in 2017 added: sheet and rill erosion, ephemeral gully (concentrated flow) erosion, soils updates and changed governing authority. The plan allows NRDs to petition the District Court for a Cease and Desist Order and removed 90% cost -share previously required for NRDs to provide for erosion control practices. If erosion is found on a producer's property, the producer is required to develop a plan to use conservation practices to help treat this type of erosion for conservation compliance and to remain eligible for USDA program benefits. Those practices include no-till, cover crops, terraces and waterways. Erosion and Sediment Control Plan for the CPNRD is appended to and is included as part of this Master Plan.

OBJECTIVES

1. To design and install adequate primary floodways and drainage systems.
2. To design and install adequate outlet systems into the primary floodways or drainways.
3. To acquire coordination in the organization, planning and installation of secondary outlet systems.
4. To secure improved irrigation methods and systems.
5. To establish and maintain cover on the drainage works of improvement to prevent erosion and also enhance the aesthetic quality of the area.
6. Identified wetlands shall be maintained for wildlife habitat and other beneficial uses.

ALTERNATIVES

1. *Financial assistance programs.*
2. *Technical assistance programs to individuals, groups and units of government.*
3. *Provide specialized equipment for mulching and for seeding.*
4. *Land use regulations.*
5. *Development of research programs.*
6. *Information and education programs.*

IV. Groundwater, Surface Water and Water Supply

GOAL **To assure an adequate supply of water for feasible and beneficial uses through 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. The Platte originates in Colorado and enters Nebraska from two boundaries:

(1) the North Platte River starts in Colorado and meanders through Wyoming before it crosses the Nebraska state line west of Scottsbluff; (2) the South Platte comes east from the Colorado Rocky Mountains, through central to northeast Colorado, where it enters Nebraska on the south border of the Panhandle, southwest of Big Springs. The two branches come together near North Platte and flow as a single braided river easterly through Nebraska where it empties into the Missouri River, eventually flowing to the Mississippi and out to the Gulf of Mexico.

(2) Historically, a large portion of the water in the Platte originated as snow melt in Colorado and Wyoming. As development occurred in the states, water users were granted rights to the water for various purposes. Dams, reservoirs and other structures were constructed, which reduced the amount of water flowing into Nebraska. The amount of water flowing in the river through the District varies widely even within the same year; for example, flows of several thousand cubic feet per second (cfs) may fill the river during the spring but by summer the river could be dry between its banks and then recover to a flow of several hundred cfs by fall, before icing over in the winter.

Surface water, generally considered to be an unreliable source for domestic and municipal users, has been developed for irrigation in some parts of the District. However, most farmers rely on groundwater for their irrigation needs. Groundwater is abundantly available across the vast majority of the District. The 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. Where irrigation demand is heaviest, groundwater aquifer declines have been documented. During wet years, the aquifer recovers, but sustained drought periods, coupled with greater demand, can result in a lowered water table over time. CPNRD is involved in groundwater level observations, administering irrigation runoff regulations, groundwater quantity and quality management, groundwater modeling and development of a surface water flow model, all leading to a complete groundwater and surface water management program.

PROBLEMS

As development occurred in the Platte River states, water users were granted rights to the water for various purposes. Dams, reservoirs, transbasin diversions and other structures were constructed, which reduced the amount and changed the timing of water flowing into Nebraska. The amount of water flowing in the river through the District varies widely even within the same year; for example, flows of several thousand cfs (cubic feet per second) may fill the river during the spring but by summer the river could be dry between its banks and then recover to a flow of several hundred cfs by fall before icing over in the winter

The U.S. Endangered Species Act was adopted in 1973, and the Nebraska Legislature adopted the Nebraska Non-Game and Endangered Species Conservation Act in 1975. The two laws prompted public agencies and private groups to begin an assessment of the Platte (and other water sources) with regard to the river's suitability for providing habitat for endangered species. The NRDs and the Nebraska Game and Parks Commission received legislative authority in 1984 and 1985 to establish instream flow water rights for habitat purposes. The NRD obtained instream flow water rights in 1992 for portions of the river within the District's borders. Nebraska Game and Parks Commission obtained additional instream flow water rights in 1998. Water agreements have been reached among the Platte River states but these pacts did not eliminate all the controversies, particularly with regard to the availability of the Platte for providing habitat for endangered plant and animal species. Colorado, Nebraska, and Wyoming, together with the U.S. Department of Interior, are currently implementing a

plan, the Platte River Recovery Implementation Program, to cooperatively share the river for the benefit of those endangered species.

Domestic and Municipal

Besides snow melt, which usually arrives in the spring and early summer, the streams and rivers in the Central Platte Basin feed the Platte. These streams generally get their water from rain or snow as well as returns to the river from irrigators, municipalities or industrial users. Hydrology studies show that groundwater feeds the Platte in some instances, and at other places and times, the river contributes to the groundwater. The Cooperative Hydrology Study (COHYST) is a management tool that helps to determine the extent of connectiveness of groundwater and surface water in the Platte River Basin. Surface water is generally considered to be an unreliable source for domestic and municipal users. Some cities in the Platte Valley, including Grand Island and Kearney, are using water from the groundwater aquifer induced by the flow of the river.

Irrigation

Surface water has been developed for irrigation mostly in the western portion of the District; however, most farmers rely on groundwater for their irrigation needs. Fortunately, groundwater is abundantly available across the vast majority of the District. The water supply is under continuous monitoring throughout the District, and a groundwater supply management plan to address potential shortages has been adopted by the CPNRD Board of Directors and is in effect. While substantial water from both groundwater and surface water sources is available for irrigation purposes, there is a problem of balancing the supply with the demand on a sustained need basis. Where irrigation demand is the heaviest, groundwater aquifer declines have been documented. During wet years the aquifer recovers, but sustained drought periods, coupled with greater demand, can result in a lowered water table over time.

Within the last decade, portions of Sub-Area 9 (Buffalo/northern Dawson counties) faced severe declines that were predicted to cause a return to dryland farming by some landowners who currently depend on groundwater irrigation. This would have unfavorable implications for the individual landowners involved, and the large acreage endangered by such a prospect could have a very adverse effect on the District's economy as a whole. Recently, several years of above-average annual precipitation have caused the groundwater levels in the area to recover, postponing the perceived crisis.

NEEDS

Domestic and Municipal A reliable source of water for domestic and municipal users is essential. The District is fortunate to have an abundance of water. Prolonged droughts will produce greater demands on groundwater. A management program for groundwater supply would alleviate the problem through a phased program to implement water-saving controls.

Irrigation Development of irrigated lands is expected to continue within the District since there are additional acreages on which the water is available and the soils and slopes are suited to irrigation, including the use of pivot irrigation. It is also expected that some areas will also be developed where the soils or slopes are not suited to irrigation but on which water is available. Such development is not desirable. The groundwater supply is under continuous monitoring throughout the NRD and a groundwater supply management plan is in effect to address potential shortages. A hydrology study in progress at this writing will further delineate the conjunctive use effects, including irrigation, on surface water and groundwater supplies. *(See COHYST page 40)*

SOLUTIONS

The District has an active interest in balancing the needs of endangered and other species on the Platte River and its tributaries with the needs and rights of human users. CPNRD is monitoring and providing input for a multi-state and federal program being developed to enhance Platte River habitat for four target endangered and threatened species: whooping crane, piping plover, least tern and pallid sturgeon. The NRD is also actively participating with a group of public agencies, water users groups and environmental organizations to develop an accurate data base that will enable the multi-state and federal plan to be evaluated as it develops. Potential implementation of such a plan, as well as the administration of Platte River instream flow water rights, has created new water issues, resulting in NRD participation in studies, planning and regulation of river activities. *(See Platte River Recovery Implementation Plan - Page 59)*

CPNRD is also involved in groundwater level observations, administering irrigation runoff regulations, groundwater quantity and quality management, groundwater modeling and development of a surface water flow model, all leading to a complete groundwater and surface water management program. The NRD has adopted rules and regulations that are designed to control groundwater irrigation runoff. The rules and regulations have been in effect and enforced since January 1977 with amendments as needed.

SPECIFIC PLANNING

Groundwater Supply (Quantity) Management Controls

Groundwater is the District's chief source of drinking water and primary economic resource of the NRD since we depend on it for irrigation; which enables us to have a strong economy rooted in agriculture. If there were ever any doubt that we need to take care of this resource, it should have been dispelled by declining water tables in the late 1970s and early 1980s. Rainfall increased in the mid-1980s and 1990s, which caused water tables to rise, but historic records suggest complete groundwater recovery from the dry periods during the wet periods does not always occur. Careful management of the resource is necessary. Aquifer thickness varies from 25' to more than 300' across the district, so a drop of one foot has a more significant impact on some parts of the District than on others. Groundwater depths and thicknesses have been charted and used to help establish 24 groundwater supply management areas. Average saturation zone ranges from 459 feet in Custer County to 44 feet in Nance County.

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 ought to be mandated to slow the decline.

In 1987, the directors established the Groundwater Management Plan, with a phased program to implement such controls when they are needed. The maximum acceptable decline ranges from 10 feet in the eastern end of the District to 30 feet in portions of the western end of the district. If the water table falls to 50% of that maximum decline (5 and 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% & 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.

Changes to Rules & Regulations

In 2017, the two major changes were cease and desist enforcement procedures and removal of the 2 in 10 irrigation rule. In October 2018, the 180-day temporary stay implemented to update the Rules and Regulations for the fully and over-appropriated areas was lifted. During the stay, the acre transfer tool was updated and the new depletion numbers were implemented. Effective November 1, 2018: new language was added regarding wells and a timeline for staff to receive transfer applications was established for September 1 - March 1. The number of years transfers are not allowed within a GWMA where declines are more than the 25% allowable level was increased from two years to five years.

Ground Water Management Plan Rewrite

CPNRD is currently rewriting the Ground Water Management Plan. New data and insight acquired since the approval of the plan in 1985 will be incorporated. The original GMP was based on hydrogeologic, climate and socio-economic information available at the time. CPNRD has since acquired and developed significant data about the groundwater resources. Over the last 35 years, the rules and regulations have changed significantly and groundwater management goals have evolved. Current plan triggers are being evaluated and over 200 scenarios of updated data sets and maps are being run with the COHYST and Groundwater Evaluation Toolkit

(GET) to predict what may happen with future management options. Additional scenarios requested by CPNRD's Water Utilization Committee are being completed.

Groundwater Levels Groundwater levels vary over time based on precipitation amounts and irrigation use. The change in level is an average, based on the wells measured in each subdistrict and used to compare mean saturated thickness for Quaternary and Ogallala deposits. NRD staff measures between 450-500 wells each spring and fall to monitor groundwater levels as part of the Groundwater Quantity Management Program in conjunction with Conservation and Survey Division, University of Nebraska-Lincoln and U.S. Geological Survey. These measurements, taken in all 11 counties served by the NRD, monitor the District's groundwater levels. Rainfall amounts declined from 2000 through 2005, as the result of an extended drought and caused moderate changes in groundwater levels throughout the district.

Rainfall in 2008 and 2009 were above average over much of the district and have resulted in groundwater level raises. Those raises in parts of the district have offset the declines that occurred during the earlier drought. Level changes have been minimal in most areas in spite of an additional 250,000 acres of groundwater irrigation being developed between 1982-2004, the year the NRD and NeDNR placed a freeze on new irrigated acres and new wells. In the spring of 2009, all but two of the counties in the NRD had risen since spring of 2008. All subdistricts had changes in groundwater levels above the maximum acceptable decline range so the entire district remained in Phase I under the Groundwater Management Plan rules for quantity.

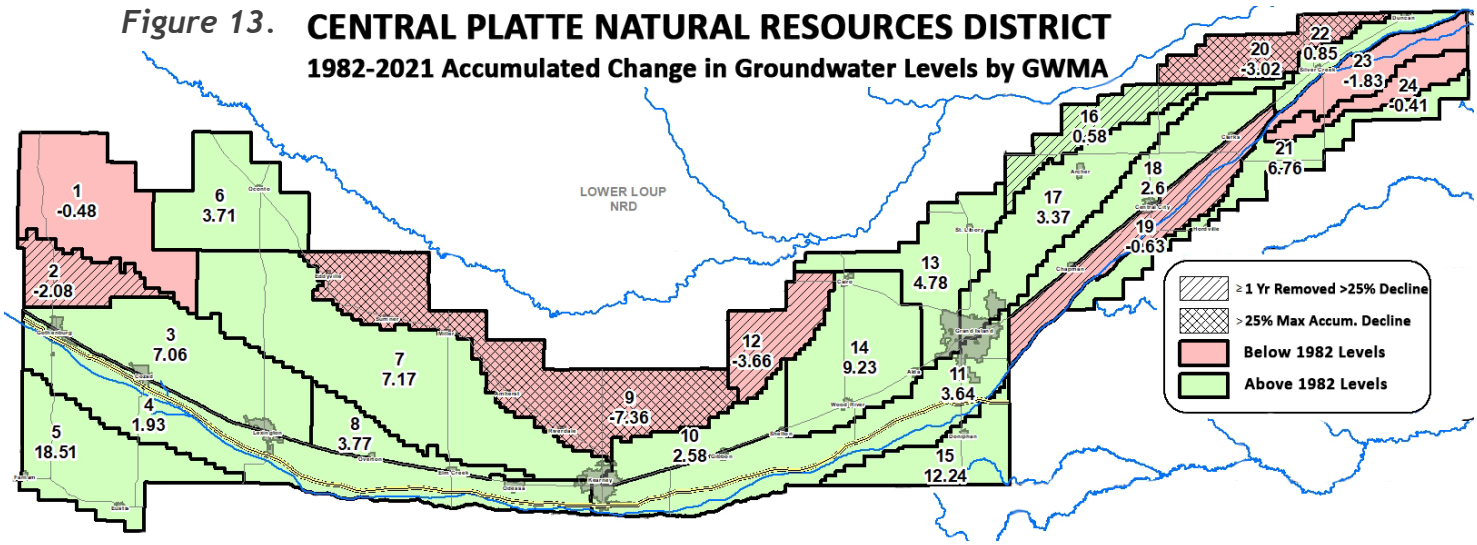
Sub-Area 9

In March 2019, two water programs conferences were held in Amherst and Kearney to address groundwater decline concerns in Sub-Area 9 (Buffalo/northern Dawson counties) where groundwater levels were down an average of 12.39' since 1982 and have continually declined since 2001. Open discussion sessions provided landowners and producers the opportunity to visit about their concerns and to give thoughts on management of the aquifer. The NRD staff stated that it would be preferable that landowners reach the goal to stabilize groundwater decline in the area on their own; however, if groundwater levels continue to drop over the next few years regulations would need to be implemented. The 300 landowners who had certified acres in the decline area were personally invited along with the public.

Groundwater Levels Spring 1982 – Spring 2021

CPNRD staff measured 381 wells in the spring of 2021. The 2021 static groundwater levels were down slightly district-wide compared to 2020 groundwater levels; however, no areas required management changes. Eight of the GWMAs are below the 1982 groundwater levels and subject to the 25 percent decline regulation that does not allow transfers of irrigated acres into the areas or supplemental wells.

Figure 13. **CENTRAL PLATTE NATURAL RESOURCES DISTRICT**
1982-2021 Accumulated Change in Groundwater Levels by GWMA



IRRIGATION MANAGEMENT

Suspension on Drilling New Wells and Expansion of Irrigated Acres

In 2003, the Board imposed a temporary suspension of drilling new wells within parts of the District (the length of the District and 6-8 miles either side of the Platte River). The temporary suspension allowed the board and the State of Nebraska to look over the conflicts between groundwater and surface water to determine if a problem exists and the extent by developing a study of the district's surface and groundwater supplies. In 2004, the Nebraska Department of Natural Resources (NeDNR) indicated that the Platte River Basin was fully appropriated and that the area upstream from Elm Creek was over-appropriated. Wells not subject to the suspension included wells that pump less than 50 gallons per minute, replacement wells, dewatering wells pumping less than 90 days and test hole wells. The suspension allowed CPNRD to grant variances if it was determined that construction of a new well was necessary to alleviate an emergency situation involving the 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 the 450 in attendance, 237 responded to opinion surveys handed out with 166 of those who responded very opposed.

In 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 necessary after the Nebraska Department of Natural Resources (NeDNR) designated the entire District as fully appropriated. The Plan was amended in 2006, 2007, 2008, 2009, and is now titled *Rules and Regulations for Groundwater Use in Fully and Over Appropriated Areas.* The 2009 amendments included:

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 Rules and Regulations of the District.

Transfers for Class VI Lands The land on which the groundwater is transferred for irrigation must have a grass cover. The existing topography on the land in which the groundwater is transferred for irrigation must remain as it is without draining, dredging, filling, leveling, shaping, or land clearing (including tree stump removal).

Municipal Variances/Offsets Each year a municipality shall be responsible for reporting to the District monthly groundwater pumping volumes and when available monthly wastewater discharge volumes. In addition, each year the municipality shall be responsible for reporting to the District, and offsetting to the river, any new or expanded single commercial or industrial consumptive use served by the municipal water system consuming over twenty-five (25) million gallons per year.

Three situations influenced the passing of the suspension. The first was the drought cycle that Nebraska was in, which exemplified the need to assess the water budget. Two other influences were the introduction of LB962 following a recommendation by the Water Policy Task Force; and unknown future requirements of the Platte River Recovery Implementation Program. Nebraska was required to offset any new depletions after July 1997 as part of the Program. If the State doesn't pick up their obligation, the NRDs or water users would be required to offset depletions from post-1997 wells by giving up part of their irrigated acres.

Certification of Irrigated Acres

The crops irrigated in the District include corn, soybeans, sorghum, potatoes, alfalfa, small grains and sunflowers. All irrigated acres have been certified in the District, including all variances and water bank transactions. All irrigated acres are certified, including variances and water bank transactions. In 2006, CPNRD began certifying irrigated acres by mailing out packets to landowners in Custer, Dawson and Frontier counties. Landowners were provided aerial maps and the number of acres that CPNRD had on record as irrigated taken from infrared imagery. If a landowner disagreed with the number of acres provided, they were required to show proof of their claims by obtaining records from their local FSA office including an aerial photo and a printout of irrigated land. NRD staff took appointments on location. Most changes made were less than 10 acres while 1/3 of the fields determined as irrigated needed no changes at all. The deadline to certify irrigated acres was set for December 31, 2014. At the

end of 2020, the NRD had a total of 1,028,886 irrigated acres of which 937,339 acres are groundwater only; 14,388 acres are surface water only and 77,159 acres are co-mingled use. The overall irrigated acres base increased 12,297 acres from 2010 to 2020.

Figure 14. Certified Irrigated Acres (2020)

All irrigated acres are certified, including variances and water bank transactions. In 2006, CPNRD began certifying irrigated acres by mailing out packets with aerial maps and the number of acres that CPNRD had on record as irrigated taken from infrared imagery for each landowner. If a landowner disagreed with the number of acres provided, they were required to show proof of their claims by obtaining records from their local FSA office including an aerial photo and a printout of irrigated land. NRD staff took appointments on location. The deadline to certify irrigated acres was set for December 31, 2014.

Groundwater Only	Surface Water Only	Co-Mingled Acres	Total Irrigated Acres
937,339	14,388	77,159	1,028,886
The overall irrigated acres base increased 12,297 acres from 2010 to 2020.			

Irrigation Violations

47 landowners or producers irrigated land that wasn't certified or approved for irrigation through a transfer in 2020. Two irrigation violations are not in compliance with the Groundwater Management Rules and Regulations and may require further action. There were no repeat offenders.

Transfers of Irrigated Acres

Landowners may request a change in the location of certified irrigated acres (transfer) provided that the same amount of water that would be depleted from the river over a 50-year period from consumptive use of ground water withdrawals are retired from use (offset); and the offset occurs at the same time, rate, and location as the depletion identified by the COHYST model. The location of the offset is considered the same as the depletion if the offset is west of the depletion, no more than 1 mile east of north/south line drawn along eastern edge of area causing the new depletion, or within the same basin of influence. Offsets must be a minimum of 1 acre and any excess water would accrue to the benefit of streamflow.

For calendar year 2020, CPNRD allowed 54 transfers. The certified acre total for 2020 involved in these transfers to new irrigated lands was 566 acres. The total number of certified acres used to offset the new uses was 530 acres, with 228 groundwater acres retired. Each transfer resulted in no net increase in stream depletions when computed using the CIR offset calculator developed from COHYST.

Transfer Website

In 2007, CPNRD launched the first irrigation certification website in the state, developed by GIS Workshop. The website allows public access to scanned documents to show the number of irrigated acres for landowners in the District, infrared imagery taken by CPNRD, and all registered wells. Users may search for specific parcels of land by using the clickable map interface or by searching the site by landowner/tenant name, legal description, or field ID number. The site allows landowners to view and print aerial photos of land development and improvements since 2003. The website was overhauled again in 2011 and 2015 to add new search options, access drawing tools to create proposed transfer maps, and access to print maps. The public and staff sites are linked and updated simultaneously. Website address: **cpnrd.gisworkshop.com.**

Interbasin Transfer Application A-19594

In July 2018, the board filed a formal objection to NeDNR concerning an interbasin transfer application submitted by CNPPID to divert water from the Platte River to the Republican River. In 2020, NeDNR dismissed the interbasin transfer request. NeDNR found that CNPPID cannot be a valid applicant or an appropriator under the application because neither CNPPID nor any of its customers will be making beneficial use of the water for compact compliance purposes in the Republican River Basin. The application was refiled in November 2020.

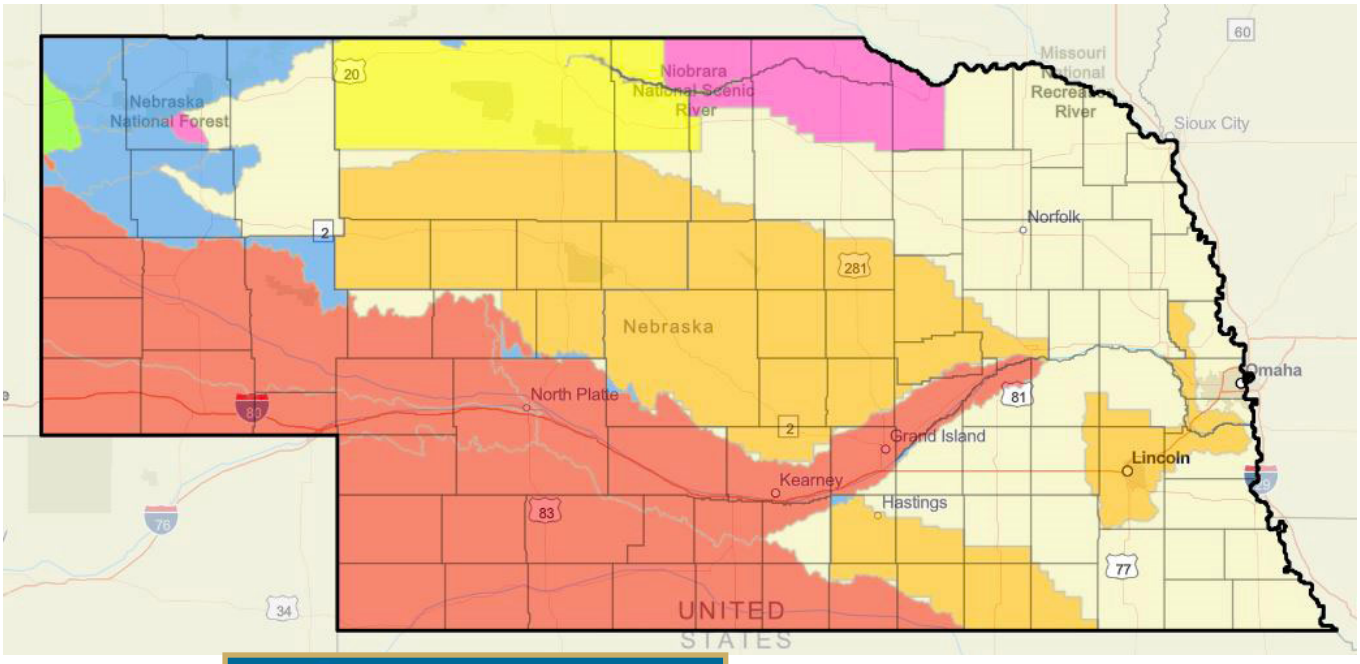
QUANTITY MANAGEMENT PLANS

Water Policy and Funding Task Forces

In 2002, LB 1003 established the Water Policy Task Force to address management and use of Nebraska's surface water and groundwater. Two CPNRD representatives were appointed: Ron Bishop, to represent the NRDs; and Dick Mercer, to represent 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 supplies.

The Legislature adopted LB962 allowing the state and the 23 NRDs to be proactive in anticipating and/or preventing conflicts between groundwater and surface water users. In 2004, NeDNR declared all or portions of 9 NRDs "fully appropriated." The Platte River Basin, above the Kearney Canal Diversion, North Platte River Basin, and South Platte River Basin were designated as over-appropriated. 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. LB 517 created the Water Funding Task Force that included 16 members of the Nebraska Natural Resources Commission, 11 citizens appointed by Gov. Heineman, six state senators, and director of the NeDNR. CPNRD board members Dick Mercer and Mick Reynolds served as Task Force members.

FIGURE 15. Statewide Irrigation Regulations



INTEGRATED MANAGEMENT PLANS

Basin-Wide Plan

CPNRD participated in the development of the basin-wide plan for the Platte Basin. In 2010, NeDNR held an annual review of the basin IMPs. The revised basin IMP became effective in 2012 to set objectives to incrementally reduce the difference between current and fully appropriated levels of development within the basin. Although goals are being met, the original plan required the same parties to develop a second increment within 10 years after the adoption of the first increment basin-wide plan. From 2013-2019, Twin Platte and Tri-Basin NRDs purchased up to 1,500/2,000 AF of water annually from CPNRD to provide flows back to the Platte River from the Dawson County canals. Remaining flows were sold to the Platte River Recovery Implementation Program.

In July 2019, CPNRD approved the second increment Basin-Wide Plan for Joint Integrated Water Resources Management of OA Portions of the Platte River Basin, developed by the Platte Basin NRDs (North Platte, South Platte, Central Platte, Twin Platte, Tri-Basin and NeDNR. The geographic area of the Plan is the extent of the Nebraska portion of the Platte River surface water basin beginning at the Nebraska-Wyoming State line and ending at the Kearney Canal Diversion, at Elm Creek. The Plan includes: 1) introduction; 2) planning process; 3) activities of the first increment; 4) goals, objectives and action items; 5) monitoring. The plan does not include controls. Information sessions/public hearings were held on both the IMP and Basin-Wide plans on July 15, 2019, with testimony submitted by CNPPID and NPPD. Both plans were effective on September 11, 2019.

Central Platte NRD/Nebraska Department of Natural Resources

In 2006, NeDNR started making annual determinations of basins not previously designated as fully appropriated (FA) or over-appropriated (OA) to see if they had become fully appropriated. CPNRD was designated as OA from Elm Creek west and the rest of the District was designated as FA. NRD directors, staff and NeDNR worked with stakeholders to develop an Integrated Management Plan. CPNRD and NeDNR began working on the individual Integrated Management Plan (IMP) in 2005 by meeting with Stakeholders to educate them on requirements set by NeDNR and the issues to be considered in developing the Plan; including surface and groundwater interests such as irrigators, city utilities, power districts, economic development and banking representatives. The draft plan was finished in 2006 and was originally to be in place within 3-5 years, however, an extension was approved to complete the Plan in 2009 to allow NRDs to wait for the Basin-Wide plans to be completed. In May 2009, the IMP was approved and the NRD's Rules & Regulations were revised to correlate with requirements in the IMP.

In 2019, the second increment IMP was approved by the CPNRD board with the existing groundwater controls:

1) groundwater moratorium
2) certification of groundwater uses
3) groundwater variances
4) groundwater transfers
5) municipal and industrial accounting

NeDNR will continue the existing surface water controls:

1) maintaining the moratorium on new surface water appropriations and on expanded surface water uses
2) transfers of appropriations are subject to statutory criteria and NeDNR rules
3) continuation of surface water administration and monitoring of use of surface water
4) no additional requirements of surface water appropriators to use additional conservation measures
5) no other reasonable restrictions on surface water use.

Drought Mitigation

In February 2018, JEO Consulting Group was hired to develop a Drought Management Plan. The objectives are to identify District vulnerabilities, create a methodology for monitoring drought conditions, and identify processes to respond to and manage the impacts of future drought events. This project will assist CPNRD in water resources management and lead to a more sustainable and stable water supply for all users across the district. The NRD received a Water Sustainability Fund grant from the Nebraska Natural Resources Commission to develop the plan. A Drought Tournament was held in July 2019 for the drought mitigation planning. The NRD is currently working on the Extreme Event Reporter (GIS-based tools).

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. Department 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 of Nebraska Environmental Trust (NET) grants, the NRD and a coalition of state and local agencies, water and environmental organizations have developed 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 groundwater and surface water, and helps analyze other programs in Nebraska.

A $450,000 grant was authorized by the NET for the first year of the study. NET also gave approval to a second-year grant of $450,000 and a third-year grant of $400,000. In total, the Trust awarded $500,000 for the first year and $450,000 for the second and third-year intents. The groundwater models were completed in 2004 and peer 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. CPNRD's hydrologist is on the Technical Committee. Members and other partners provide additional money and in-kind service for the study. COHYST developed computer databases that quantified existing groundwater use, river data, and aquifer data in the Platte River Basin that are used to develop regional computer models to provide a better understanding of the groundwater flow system, the inter-relationships between groundwater and 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, 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/lateral leakage and recharge from lakes and reservoirs. The models also help predict how water supply or conservation projects proposed as part of the PRRIP affects ground water levels and river flows.

COHYST flow models are used in support of regulatory and management decisions, so they must be defensible in both scientific and legal arenas. Careful, detailed data collection help technicians define complex flow systems accurately. COHYST is also an important tool as NRDs revise groundwater management plans, develop integrated management plans, analyze groundwater quantity problems and undertake other projects that may affect groundwater use or recharge. The databases and models are also useful for other individuals and agencies throughout the state. Final groundwater models will include various geologic layers within the Platte River Basin and will indicate groundwater pumping depletions to the River. COHYST groundwater models were used to estimate changes in stream flow as a result of new irrigated acres between 1997 and 2005. The 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 Figure 16.*

FIGURE 16. COHYST Reach Changes 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

Estimates are used in the Basin Plan as targets for stream flow depletions needed to be offset to get back to 1997 level of development. Phase I work completed a overall water budget for the new COHYST

area. Phase II developed water budget analysis tools to manage ground and surface water resources in the Platte Basin. Phase III developed sub-regional models for focused water management areas. Sponsors: CNPPID; CPNRD, TPNRD, TBNRD; NGPC, NPPD.

In 2012, the Sponsors Group updated land use acres from 2006-2010 with Riverside from Colorado. Basic acreage data sets were updated to look at future depletions. The new data sets were extensive including 27 land types and uses; and previous land use sets put together in the 1950s. In 2013, Model calibration was completed on Watershed Model (CROPSIM), Surface Water Model (STELLA) and Groundwater Model (MODFLOW) were integrated to simulate the hydrologic cycle. The simulation compares water budget fluxes to data-driven calibration targets. The models are used for percentage depletion maps, conjunctive water management and to determine real effects of operating the irrigation canals. In 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. Minor changes made:

Watershed Model 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 Match evapotranspiration cells to expected locations, adjusted elevations, routed seepage to new discharge point, use groundwater model outputs for Lake McConaughy seepage.

2016 Work Plan Completed Graphical User Interface (GUI), final model improvements, recalibrating and project oversight. Watershed model reconstructed to use actual monthly data from pumping and recharge records added. Surface water model (STELLA) mimics actual farming practices including diversions, return flows and water releases. Groundwater model modified representation of evapotranspiration. Integrated model calibrated through a three-step process using results from the watershed model and available measured data to construct stand alone versions of the groundwater and surface water models; adjusted models to match historical flows and water levels; and modified the watershed model to address problems identified in both models.

2017 Work Plan CPNRD's water quality database was used to replicate 2002 dry river conditions and the Conservation Study developed for the Platte Basin IMP was used to input no-till and other conservation activities compared conditions back to the 1950s was utilized. Olsson reported that the Hydrogeologic Evaluation and Sub-regional Groundwater Modeling results showed excess flows from the Dawson County canals were returned to the Platte River more quickly than anticipated. The subregional model covers 3% of the COHYST area allowing for a more detailed and complex evaluation of how water moves through the river and aquifer system. Several sub-regional models are being conducted in Nebraska.

Temporary Stay In May 2018, a 180-day temporary stay on new wells and new irrigated acres allowed staff to update the acre-transfer tool by implementing the new depletion numbers determined by COHYST for the Quantity Management Program. During the spring of 2020, CPNRD partnered with NRCS to complete a survey of tillage practices and crop types. NRD staff visually inspected and recorded data for approximately 500 fields in multiple counties. Tillage practices were identified based upon criteria set by the NRCS. Tillage and crop type data is necessary to update various input parameters in the COHYST watershed model.

Water Banking Program

CPNRD's Water Banking Policy was approved in 2007 defining the process of how a water bank works. Through the water banking program, the NRD acquires water rights from landowners. For every acre-foot (AF) of water that impacts the river that the NRD can acquire, there's that much less regulation and cutback CPNRD 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 water bank (donated by Jim Bendfeldt).

In 2012, the board increased the rate to pay for water rights up to $8,000/AF of depletion to the river. Water rights purchased are deposited into the NRD's Water Bank. The COHYST model has been useful in determining the AF of depletions CPNRD needs to reduce to bring the Platte River back to 1997 levels. After reaching the 1997 level, the OA area west of Elm Creek will need additional water added to the Platte in order to bring it back to a FA status. The current best estimate of post-1997 depletions to the Platte River due to changes in groundwater irrigated acres within the entire District between 1997-2005 based on 2008 COHYST Report on stream depletion:

FIGURE 17. Post-1997 Depletions to Platte River

YEAR	DEPLETION VOLUME (AF)	YEAR	DEPLETION VOLUME (AF)
2019	14,000	**2025**	14,600
2020	14,100	**2026**	14,700
2021	14,200	**2027**	14,800
2022	14,300	**2028**	14,900
2023	14,400	**2029**	15,000
2024	14,500		

Over-Appropriated Area Retirements

In 2015, CPNRD acquired one perpetual conservation easement on water rights in Dawson County with estimated accretion to the Platte River from groundwater retirements using the latest COHYST offset calculator at 61.46 AF. By the close of 2020, the CPNRD Water Bank had a balance of 2,122 AF of groundwater rights available for offset across the District and 2,500 AF of surface water rights available for offset in the over-appropriated area.

Rehabilitation of Surface Water Canals

The NRD partnered with four canal companies in Dawson County with agreements to buy one canal and rehabilitate three canals. As a Platte Basin Habitat Enhancement/Coalition Program project, grants from NeDNR (40%) and the Nebraska Environmental Trust (20%) paid 60% of project costs. CPNRD shared the remaining 40% of project costs with the canal companies. The main benefits include: groundwater recharge to enhance surface water and ground water supplies, protect water quality and help CPNRD move closer to a fully appropriated status. The rehabilitations also provide enhanced flows to the Platte River by diverting and retiming excess flows to the river; returning natural flow irrigation rights to the river; and help meet requirements of the PRRIP agreement and LB962 to return the Platte River to its 1997 level of use.

Excess Flows

Excess Platte River flows were diverted by Cozad Canal, Thirty Mile Canal, and South Side Irrigation canals in 2011, 2013, 2014, 2015, 2016, 2017, 2018, 2019. Total diverted by the three canals was 89,590 AF and the computed recharge was 40,512 AF. In 2020, 2,950 AF (net diversion) of water was diverted for recharge through the canals. 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 groundwater 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 NeDNR and temporary transfer permits for returning surface water to the river for in stream use have been approved.

30-Year Acreage Reserve Program

In January 2021, a section was added to CPNRD's Ground Water Management Program Rules and Regulations titled Section B-Rule 8: 30-Year Acreage Reserve Program-Participation Eligibility and Rules. The 30-Year Acreage Reserve Program will provide a long-term solution in protecting surface water rights. Irrigation districts will sign up for the conservation program and surface water users will have the option to opt-in or opt-out of the program annually. A public hearing was held with minor amendments entered into record at the hearing. The Program was developed to ensure that supplies in the Platte Basin are optimized and managed efficiently with maximum benefits and to meet water management obligations for the Basin-Wide Plan for Joint Integrated Water Resources Management of Over-Appropriated Portions of the Platte River Basin, NRD's Integrated Management Plan, and Nebraska's New Depletion Plan for the Platte River Recovery Implementation Program. The 30-Year Acreage Program took effect on March 4, 2021.

Surface Water Exchange Pilot Program

In September 2018, NeDNR approved the transfer of 14,251 AF of water to the Environmental Account. The transfer is part of CPNRD's pilot surface water exchange agreement with the CNPPID. During the 2018 irrigation

season, the NRD agreed not to deliver surface water to 25,491 acres from Cozad, Thirty Mile and Orchard Alfalfa canals in exchange for CNPPID crediting the Environmental Account with the resulting additional storage water in Lake McConaughy. In August 2019, the recharge agreement changed the way CPNRD is paid for groundwater recharge via seepage through the canals in the non-irrigation season. The total amount diverted is measured by the NRD using automated measuring and recording gates and adjusted; by subtracting any deliveries or releases made and recorded by the irrigation district. The non-irrigation season begins when the canals stop releasing water for irrigation and end when the canals begin releasing water for irrigation as determined by CPNRD. In 2020, the unused storage water transferred to the Environmental Account totaled 14,073 AF.

Purchase for Groundwater Recharge

In March 2018, the NRD purchased 157.4 acres of groundwater irrigated land located 6 miles southeast of Cozad along Hwy 21 and 1/2 mile south of the Platte River for $915,000. The purchase gives several options to earn Platte River credits by providing recharge through the retirement of irrigated acres, transferring water from the South Side Irrigation District canal, and directly discharging flows into the river from an adjacent property.

In August 2019, JEO was selected to evaluate management alternatives for property purchased in Dawson County in the amount of $109,620. The 157-acre property was purchased in April 2018 with the intention of retiring the pivot and gaining 107 AF. The property is being rented and farmed while JEO researches options to provide recharge to the Platte River; including the potential retirement of irrigated acres, transferring water from South Side Irrigation District canal and directly discharging flows into the river from an adjacent property. As of 2021, the draft report was being reviewed. These potential flows back to the river would help CPNRD meet the requirements of CPNRD's Integrated Management Plan, Basin-Wide IMP and Nebraska's New Depletions Plan.

Groundwater Exchange Program

In 2016, CPNRD launched a Groundwater Exchange (GE) pilot program. The concept of the GE was established to allow producers to buy or sell water on a temporary leasing basis for the upcoming irrigation season. Certified groundwater use on irrigated acres such as pivot corners, irregularly-shaped fields or full sections were sold. Buyers purchased water to improve or add to their currently certified groundwater use or to increase streamflow. The GE was the first to allow temporary leasing of groundwater. CPNRD's Rules and Regulations regarding transfers of groundwater irrigated acres were built into the computer program. For purposes of the GE, a 'water right' is the certified groundwater use on irrigated acres. Bids were based on consumptive use and streamflow depletion to the Platte River. Pre-approved buyers and sellers went online from March 21-25 to place asking price to temporarily lease water or place bids to buy water for the 2016 growing season. Staff verified water rights to be sold or bought and provided buyers and sellers an ID number to be used during the bidding process.

The first transactions were approved on April 1, 2016. Sellers placed 30 locations online for leasing, with 6 buyers placing bids: 3 for irrigation and 3 for streamflow rights. The GE matched the three irrigation bids with sellers in the eastern area of the District. In June 2016, the board approved a $105,000 contract with National Economic Research Associates (NERA) and the NeDNR to design/manage a second Exchange that included the Loup Basin influence. NeDNR and CPNRD shared 50% of the cost. The second year had 25 sellers and 5 buyers submitting bids. Half of the sellers received bids that matched with a buyer. Bids made for transactions along the Platte River west of Elm Creek ranged from $8.14 to $94.21/AF; while bids east of Elm Creek ranged from $30.12 to $99.88/AF. Bids within the Loup Basin influence of the District ranged from $48.84 to $121.07/AF.

CNPPID Conjunctive Management Offer

A joint Middle Platte Basin Water Resources subcommittee developed a surface water model and public opinion survey to understand the public's attitude and perceptions about water usage in Nebraska. In 2011, Central Platte and Twin Platte NRDs hired a consultant to conduct a survey from Lake McConaughy to Chapman with the overall goal to provide water to all water users. In 2012, a special joint board meeting was held with both NRD boards who voted unanimously to approve an offer to 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. Since 75% of users in CNPPID's system had irrigation wells used during drought conditions, the proposal would've allowed landowners to rely totally on groundwater and use surface water for recharge. CNPPID's board took the proposal under advisement. In 2013, findings of the pre-feasibility study were presented at NARD's annual conference. The additional modeling analysis used the OPSTUDY to address concerns identified by

CNPPID and showed the project would provide beneficial flows for water management. It also addressed how groundwater recharge protects water supplies/water quality by increasing hydroelectric power generation on NPPD and CNPPID systems in central Nebraska and that CNPPID would see recreational benefits for Lake McConaughy and other lakes in the system. The next step is to work with CNPPID to address an in-depth study of the concept and continue working towards solutions for all water users in Nebraska.

Conjunctive Water Management Study

The Platte River Conjunctive Water Management Study is an ongoing project studying surface and groundwater management options for the Dawson County canals with the goal of ensuring that supplies in the Platte Basin are optimized and managed efficiently with maximum benefits in a manner consistent with State and local policies. Studies and analysis for irrigation canal projects are conducted with COHYST modeling tool components: rainfall, pumping, surface water applied, total ET, recharge, runoff and acreage. CPNRD provides technical assistance in evaluation of conjunctive management scenarios for portions of Dawson and Buffalo counties in the central Platte Valley. A conjunctive water resource management plan is being developed to optimize availability of water to groundwater and surface water users who are within both the boundaries of the NRD and the area within which NPPD delivers natural flow and storage water for surface water irrigation systems. The NeDNR, CPNRD and NPPD have met with the consultants to review the management scenarios results.

Instream Flow Water Rights

CPNRD has instream flow water rights on the Platte River to protect and enhance wildlife. Instream flow water rights do not create flows nor guarantee that the stream will not run dry. But, the flows specified by the instream flow water rights must be met before any future project could take water from the Platte. The flows specified by these water rights are a factor in providing either bird habitat on the Platte, specifically for whooping cranes, sandhill cranes, interior least terns and piping plovers, or habitat for food sources consumed by the birds. Based on extensive scientific studies, they are the minimum flows necessary to provide habitat. The total instream flow protected by the NRD is over 543,000 acre/feet (AF) of water. The protected portion of Platte extends from a hydropower return (J-2) near Lexington to Columbus, depending on the need. Under State of Nebraska Statutes Section 46-2,112, the NRD is required to have the instream flow water rights reviewed every 15 years. The rights were approved in 1992, however, unsuccessful appeals weren't completed until 1994. CPNRD successfully complied with the NeDNR's 15-year review requirement in 2009.

With the passage of LB 1106 (1984) and LB 102 (1985), it became possible for the first time in Nebraska to obtain a water right for instream flows. As defined in the Nebraska Statutes, an instream appropriation means "the undiverted application of the waters of a natural stream...for recreation or fish and wildlife purposes." Such an option is limited to the Nebraska Game and Parks Commission (NGPC) or a Natural Resources District. In order to be granted an instream appropriation, the NGPC or an NRD must file an application for a permit to appropriate water for instream flows with the Nebraska Department of Natural Resources (NeDNR).

Conservation Programs

The NRCS is also helping CPNRD find ways to conserve water. Two NRCS programs partnered with the Water Bank Program in 2008. EQIP (Environmental Quality Incentives Program) and CREP (Conservation Reserve Enhancement Program). These programs are offering upfront incentives to operators to make permanent retirement of their irrigation rights. In 2009, a CPNRD EQIP Elm Creek Special Initiative was developed for the permanent conversion of irrigated land to non-irrigated land, with an emphasis upstream of Elm Creek, NE. The ranking criteria is based on COHYST and on predicted depletions to the Platte River. Incentive payment rate was $200/acre x 3 years for a total of $600/acre. CPNRD issued a payment in addition to the EQIP incentive payment, based on the difference between irrigated and non-irrigated value of the land times the percent of consumptive use of water that will show up as a depletion to the Platte River within 50 years. A perpetual conservation easement is obtained for the land enrolled in the Water Bank Program and EQIP. NRCS Regional Conservation Partnership Program Grants (RCPP) also provides funding to CPNRD landowners through the following programs:

Ogallala Aquifer Initiative Provides financial assistance for farmers to convert irrigated land to non-irrigated on a permanent or temporary basis and improve irrigation systems to increase efficiency/management technologies. GOAL: Address surface and groundwater quality and quantity concerns to reduce impacts to the Platte River and local groundwater supply.

PARTNERS: CPNRD, Nebraska Department of Natural Resources, Nebraska Association of Resources Districts
FUNDING: CPNRD producers received $3,243,254 since 2011

Ogallala Aquifer and Platte River Recovery Provides cost-share to producers to apply efficient irrigation techniques, install conservation practices and convert irrigated acres to non-irrigated farm land. One-year extensions were approved in 2019 and 2020.
GOAL: Address stream flows to meet endangered species habitat goals through May 2021.
PARTNERS: CPNRD, Twin Platte NRD, Natural Resources Conservation Service
FUNDING: CPNRD producers received $1.7 million since 2015

Precision Conservation Management Program (PCM)
In May 2021, directors approved with the Illinois Corn Growers Association to add a Precision Conservation Specialist to the CPNRD staff.
GOAL: Help farmers understand and manage risks associated with adopting new conservation practices to make sound financial decisions. PCM is looking to expand their reach into Nebraska with Frito Lay (PepsiCo) growers in the western area of the District. Applied economics, water quality outcomes and carbon sequestration values are generated for producers.
PARTNERS: CPNRD, Illinois Corn Growers Association. PCM has 30 contributing partners, including NRCS, NASA Harvest, National Fish and Wildlife Foundation, Ecosystem Services Market Consortium, Soil Health Partnership, Field to Market® and The Nature Conservancy.
FUNDING: $400,000 RCPP grant for staff cost to be reimbursed by partners.

Soil Health Grant
The Nature Conservancy received a $4.4 million Resilient Futures for Nebraska Soils grant to enroll 100 producers to install soil health practices on 100,000 acres of farmland over 5 years starting in May 2021.
GOAL: Provide farmers in the Central Platte and Upper Big Blue NRDs with technical and financial assistance to adopt cover crops, no-till and diverse crop rotations that store carbon in the soil. The stored carbon can be utilized by private companies to help reach their goals around sustainability.
PARTNERS: CPNRD, Upper Big Blue NRD, Natural Resources Conservation Service, The Nature Conservancy, Ecosystem Services Market Consortium, Cargill, Target and McDonald's.
FUNDING: $4.4 million RCPP grant and $8 million contribution from The Nature Conservancy. Depending on the practices implemented, producers will earn up to $45/acre each year.

Water Well Permits

Permits from the NRD are required before water wells are drilled. In 1986, state law was created to require the District to have a permit program for new wells that are drilled or existing wells that are modified in control or management areas. CPNRD began issuing permits in July 1988; which 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 feet of any registered irrigation well. Districts are allowed to increase the spacing requirements between wells in management areas. 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-foot spacing in Phase III, a 1,500' spacing in Phase IV and an 1,800' spacing in Phase V.

Following a change in the state law, NRDs are now given authority to provide a permit and define what a replacement well is. The NRD does require a permit to drill replacement wells. 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. The permit fee is $50 and expires one year from the date of approval. In 2020, there were 55 well permits issued: 11 Buffalo, 1 Custer, 11 Dawson, 0 Frontier, 14 Hall, 1 Hamilton, 3 Howard, 7 Merrick, 2 Nance, 1 Platte, 4 Polk.

Irrigation Well Registration

Staff verifies and corrects well registrations within the District. Under Neb Rev Stat. §46-254, 263 and 266; wells

that aren't properly registered are "illegal wells" and considered a Class 4 criminal misdemeanor violation. The penalty is a $100-$500 fine/conviction. Another consequence is a court order to discontinue pumping. Often wells are part of property inventory when ownership changes hands and it becomes the new property owner's responsibility to verify the registration. NeDNR charges $110 to register each well. There is no charge from CPNRD or the state to correct locations or change ownership information. In 2021, the Nebraska Department of Environment and Energy recently launched the Nebraska Groundwater Quality Clearinghouse website with over 1.6 million sample results from 33,000 irrigation well locations taken by the NRDs. Key features of the map are well locations, nitrate measurements, along with 281 minerals and chemicals whose well compositions were analyzed. The map also showcases aquifer locations, topographic regions and bedrock geology. Farmers can check the composition of existing groundwater for chemical content to see how much fertilizer they will need and gauge which locations have land suitable for raising livestock. Website: **clearinghouse.nebraska.gov**

DATA COLLECTION

Airborne Electromagnetic (AEM) Survey - 2018 AquaGeo Frameworks conducted the AEM survey providing CPNRD with improved water table and geological data to determine where: additional wells may be drilled, va-dose zone/recharge monitoring are needed and water table boundaries. AEMs are conducted by helicopter and cover large areas quickly with minimal impacts to local activities and the environment. 3-D maps produced by integrating airborne geophysics with other information provide tools for locating local features of the aquifer system important to water managers. Maps are combined with water table elevation maps to provide geometry of the aquifer including locations of most saturated thickness, heterogeneity of aquifer materials, recharge zones, lithologic barriers to groundwater flow and connections to the surface water system.

AquaGeo did three flights per day at 100-150' above ground. Data was collected every 100' compared to test-holes that provide data every six miles. The maps indicate where preferential flow paths may exist to understand base flow to streams and interpret water quality samples in relation to the various stresses in the system. Data is used to site wells on focused-recharge areas, facility construction and areas of interest for impact to the aquifer and predictive analysis of management scenarios for groundwater models. Total project cost was $966,000.

ArcGIS CPNRD staff uses ArcGIS Solutions Platform to collect, analyze, and manage data collected in the field. Progress maps are used for nitrate sampling, chemigation, and static water levels.

Evapotranspiration Map (ET) An agreement with UNL was extended for $64,127 and $20,000 to fund a graduate student. Evapotranspiration research uses Mapping ET with high resolution and internalized calibration (METRIC) algorithms and Earth Engine ET Flux (EEFlux). The project quantified ET by processing Landsat 7/8 images for 2015 and combined them with all processed years for usable products for planning, managing, and regulating ground-water resources in CPNRD.

GeoCloud Database The 2020 GeoCloud Interlocal Cooperative Agreement continues through 2022. The annual project collects airborne geomagnetic imagery with the intention to correlate that data with sub-surface geology and hydrogeology. Joint effort from 2016-2020 with Lewis and Clark, Lower Elkhorn, Lower Platte North, Lower Platte South, Nemaha, Papio-Missouri River, Lower Loup, Upper Elkhorn and Twin Platte NRDs; USGS, Aqua Geo Frameworks, and University of Nebraska's Conservation and Survey Division. The project received $247,437.60 from Nebraska Natural Resources Commission.

Groundwater Evaluation Toolkit (GET) In 2017, Olsson Associates was hired for $98,500 to develop a Groundwa-ter Evaluation Toolkit (GET) for 'real-time' tracking of water recharged to the aquifer. The Platte River Implemen-tation Program funded half of the cost. The model tracks flows on a cell-by-cell basis to provide specific monthly accounting of water returned back to the Platte River. GET enabled staff to run scenarios to track water flows back to the river and provides access to the subregional models for Thirty Mile, Southside and Cozad canals.

LiDAR In July 2012, CPNRD began participating in LiDAR (Light Detection and Ranging) to provide district-wide coverage of topographic elevation developed from aerial radar detection. The NRD's cost was $40,000 for Custer County, providing necessary data for several projects and programs. Data was collected November 2012 to March 2013, with results available for use in August 2013. Other NRDs and partners involved in the agreement to collect statewide data: Lower Platte North, Twin Platte, Lower Loup, North Platte and Middle Niobrara NRDs; NeDNR, NDEE and NRCS.

Magnetic Resonance Sounding The NET supported a three-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.

NEBFLUX In 2017, an agreement was extended with UNL for the Nebraska Water and Energy Flux Measurement, Modeling and Research Network (NEBFLUX). The Project measures actual ET rates of various vegetation surfaces by utilizing advanced techniques to measure surface energy fluxes, microclimatic variables, plant physiological parameters, soil water content, surface characteristics, and interactions for various vegetation surfaces. CPNRD began funding the project in 2007 to seek scientific-based research for water management programs. Information collected is used for the Groundwater Management Program; which is based on crop water use and consumptive use. The project was extended through June 2020.

OBJECTIVES

1. Establish irrigation management practices and techniques on irrigated lands in order to properly conserve and efficiently utilize the water.
2. 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. Help secure any water supply project that is shown to be feasible, beneficial and desirable.
4. Develop plans and programs that will strive for a balance between water use and water availability.
5. Develop plans and programs that will strive for a balance between the rights of all individuals utilizing the ground water aquifer.
6. Work toward balancing the needs of wildlife with the needs of people in utilization of the water resources in the District.
7. Balance the needs of endangered and other species on the Platte River and its tributaries with the needs and rights of human users.

ALTERNATIVES

1. *Financial assistance programs to assist individuals, groups and units of government on irrigation management and proper water utilization techniques and practices.*
2. *Development of research programs on proper irrigation management techniques and practices.*
3. *Information and education programs on proper irrigation management techniques and practices.*
4. *Groundwater regulations to conserve and manage groundwater resources.*
5. *Sponsorship of water supply programs.*
6. *Technical assistance to individuals, groups, and units of government in programs affecting water supply, management, utilization, conservation and development of groundwater and surface water.*

V. Water Quality, Pollution Control, Solid Waste Disposal and Sanitary Drainage

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

PROBLEMS

Air Quality Air quality across the District is excellent. Air quality complaints are rarely received by the District and are handled by local health departments, Nebraska Department of Environment and Energy (NDEE) the U.S. Environmental Protection Agency, or a combination of the agencies. Complaints sometimes develop when farm operators 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 CPNRD, and most plants make an effort to comply with industry and government regulations that prevent major problems. Alfalfa mills in the District emit odor and matter to the air when operating, but pollution control devices have been installed in recent years that greatly reduce emissions. During certain times of the year when dry weather, strong winds and open fields are all present, the air quality is poor due to blowing dust.

Land Soil erosion is a form of land pollution and the District has separate planning to solve erosion and sediment control problems. Improper disposal of solid waste, petroleum products, chemicals and other waste products cause land pollution and contribute to water quality concerns. Besides erosion, the largest single land pollution problem in the District is solid waste disposal. The Nebraska Legislature adopted LB 1257 in 1992 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 landfills and dumps did not meet the Act's regulatory requirements and needed to be improved or relocated in order to meet those standards.

Surface Water Surface water quality problems vary in degree and type across the District. Counties were required to file a solid waste disposal plan in 1994. A 25 percent waste reduction goal for July 1, 1996 was required. A 40% waste reduction goal was set for July 1, 1999 and the 50 percent goal by July 2002. The two primary types of water pollution problems for surface water and groundwater are: *Point Source* - a problem that can be traced to a specific source and is the result of a visible spill or discharge (a practice traced to a specific person or persons). Point source water pollution is under the primary jurisdiction of NDEE. And *Non-point source* - a problem that causes pollution over a period of time as the result of land use practices.

Groundwater Pollution The chief sources 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 as well as other chemical concentrations. In the western area, concentrations of sulfate are not uncommon. High iron and magnesium levels, along with high total dissolved solids in many areas have the potential for problems in the 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 chemicals 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). Better management of water, effluent systems, livestock feeding systems and commercial fertilizers are the keys to reduction of nitrate in groundwater.

NEEDS

The Board's primary focus is on water quality issues. Pollution control, solid waste disposal and sanitary drainage have been addressed by CPNRD's board of directors. Federal and state governments have taken most the responsibility for these issues. Additionally, municipalities and county government are mandated by state law to

share the responsibility. The biggest role for natural resources districts is the area of non-point source ground-water pollution, but Nebraska legislation gives some responsibilities to the districts for all forms of pollution.

Air Quality While some lowering of the air quality does occur from dust, smoke, industrial and other causes, the general quality of the air remains excellent and should be preserved.

Land To help the counties meet their goals in their solid waste disposal plans goals, state law has banned disposal of yard waste into landfills from April 1 to November 20 of each year. Lead-acid batteries, waste oil, waste tires (except for those processed in a manner established by NDEE) and household appliances are also banned from disposal into landfills. In 1996, the landfill ban was extended to all unregulated hazardous waste. Waste tires in any form were banned in 1998. Indiscriminate dumping of trash and litter occurs across the District and it may increase as a result of the various landfill bans, but the problem is expected to continue to be less serious than in more populous areas.

Surface Water Point source water pollution in the District is under the primary jurisdiction of the Nebraska Department of Environment and Energy. The primary preventive measure available for non-point source pollution remains the control of land use practices. In rural areas, depending on land capabilities, it may involve terraces, grassed waterways, proper grazing methods and/or control of irrigation runoff flows.

Groundwater Chemical concentrations in groundwater can be reduced or prevented, either by not allowing the chemical to become sufficiently prevalent to cause a problem or by stopping the chemical from leaching into the groundwater. Better management of water, effluent systems, livestock feeding systems and commercial fertilizers are the keys to reduction of nitrate in groundwater. In 1987, CPNRD adopted a nitrogen management program in response to increasing high concentrations in large areas of the District of nitrate-nitrogen in the groundwater and vadose zones .

85% of Nebraskans get their water from groundwater. A public health study is currently underway in Nebraska to look at cancer rates by watershed, rather than county or city. Nebraska has the seventh highest age-adjusted pediatric cancer incidence rate in the country and the highest in the Midwest, according to CDC data from 2003 to 2014. Researchers at the University of Nebraska-Lincoln and UNMC are involved in two studies probing the relationship between agrichemicals including nitrate and atrazine and public health outcomes such as birth defects and cancer. A third study involves collecting and testing water samples from hundreds of private drinking wells. CPNRD will monitor the results and consider implementing additional management practices and public health outreach.

SOLUTIONS

Air Quality Complaints regarding odors from feedlots and other livestock operations are increasing. CPNRD's regulatory role in livestock waste management will ultimately be determined by the Legislature, but the District is currently providing technical expertise to those concerned to defuse controversy over the citing of livestock facilities. Tree planting is encouraged by the NRD to reduce air quality problems resulting from blowing dust.

Land CPNRD will continue to play a minor role in the area of solid waste management, providing technical information and expertise for disposal studies and work within a multi-government framework to meet regional needs. Further, the NRD will work in urban areas to study and implement suitable programs and plans for recycling waste products and to educate urban and rural residents about the merits of such programs and plans.

Surface Water The 1998 Legislature established the Nebraska Buffer Strip Program to use filter strips to reduce the amount of chemicals that run off farm fields into the streams around the state. A buffer strip traps chemicals before they reach the waterway. As a result, the chemical dissipates instead of polluting the stream. Cost-share assistance is provided by the state through the NRD to landowners who replace cropland with buffer strips along the banks of perennial and intermittent streams or permanent bodies of water. The money for the cost-share is derived from a registration fee on pesticides collected by the state.

Groundwater While all forms of pollution are concerns of the NRD, the problem of high nitrates will remain the highest priority for the District during this planning period. This problem was present when the District was formed in 1972, and the directors have come to realize that the high nitrates developed over a long period of

time and will not likely be reduced in a short period of time. The board encouraged that research done by and on behalf of the District and the extensive cooperation among farm operators, fertilizer dealers, manufactures and other shave resulted in a credible program that is well accepted by nearly all who must live by its regulations and which has already resulted in a decline in the average nitrate-nitrogen concentration in the high nitrate areas of the District. Further, the board realizes how much work remains and the years that must pass before the problem is solved. Through a strong program of groundwater quality management, the District will continue to work with farmers, agricultural business, operators and the general public to further reduce high nitrates in groundwater. CPNRD has established various objectives for meeting its Pollution Control, Solid Waste Disposal and Sanitary Drainage responsibilities. Alternatives have also been developed to satisfy the objectives.

The NRD's information and education program persuades farmers and landowners to use best management practices to reduce the leaching of nitrate-nitrogen from their fields; and also establishes minimal requirements for compliance with its rules and regulations for the program's various phases. Compliance with the District's management program has had a beneficial effect on levels of nitrate-nitrogen concentration in the groundwater but it is expected to take many years before the nitrogen content in groundwater in the Phase II and III areas can be reduced to acceptable levels.

SPECIFIC PLANNING

The District has completed a baseline water quality study, research to determine the effects of Platte River water on groundwater quality, the effects of septic tanks on groundwater quality, the effects of reuse pits on groundwater quality and determination of the sources of nitrate-nitrogen pollution on groundwater in the District. The Board of Directors determined that nitrogen fertilizer was the main, but not the only, contributor to groundwater quality problems. As a result, the Board adopted the Groundwater Quality Management Plan. As necessary, programs will be initiated or updated to strengthen the NRD's efforts in the areas of water quality, pollution control and solid waste disposal.

Groundwater Quality Management Program

CPNRD's Groundwater Quality Management Program is having a beneficial impact on the nitrate levels in groundwater. The program is 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.

At the end of the first crop year under the program, the level dropped by 0.3 ppm and continued to drop through the 1993 crop year. Adverse weather conditions resulted in increases during the 1994 and 1995 crop years, but, a lowering of the nitrate rate occurred again after the 1996 and 1997 crop years. Small increases occurred again in 1999 through 2002. Average nitrate levels dropped to 14.83 ppm in 2010 and to 13.0 ppm in 2020. High groundwater nitrates in some areas of the valley were first identified in 1961. Nitrates can be particularly harmful to infants under six months of age. Excessively high nitrates can lead to methemoglobinemia, a condition that is commonly known as "blue baby syndrome" and are also a potential hazard to livestock.

Commercial nitrogen fertilizer is the primary cause for high nitrates in groundwater in the Central Platte Valley. Public hearings and numerous meetings with farmers, crop consultants and fertilizer industry representatives were conducted to determine how best to implement solutions. As a result, the NRD adopted necessary rules, regulations, boundaries, and controls for the first quality management program to be included in the Ground Water Management Plan that became effective in August 1987.

When the Program started, Nitrate levels had increased 0.5 ppm per year to 19.24 ppm. Nitrate levels have been lowered through long-term management efforts by the NRD and landowners implementing efficient practices. The plan uses a phased approach, with lesser restrictions in areas not high in nitrates and additional regulations applied 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. (*See Figure 18- Rules and Regulations on page 52.)*

In 2016, parts of southern Hall and northern Hamilton counties, south of the Platte River, were transferred from a Phase I to a Phase II Groundwater Management Area due to increasing nitrate levels. In 2017, changes combined and updated the Rules and Regulations for all the District's groundwater management programs into the *Ground Water Management Plan Rules and Regulations: General Provisions and Procedures for Enforcement*. Two major changes included cease and desist enforcement procedures and removal of the 2-in-10 irrigation rule.

The Program's goal is to lower average nitrate levels district-wide. 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. A vadose zone is the area between the root zone and the water table. Although levels have decreased, the board realizes how much work remains and the years that must pass before the problem is solved. The Program has been updated from time to time, was reauthorized in 1995, and further amended in August 1998. In 2003, the trigger levels in each Phase Area were lowered to: **Phase I: 0-7.5 ppm Phase II: 7.6-15.0 ppm Phase III: 15.1+ ppm Phase IV:** Implemented to manage areas where nitrate levels are not declining at an acceptable rate as determined by the Board of Directors. The determination is made by reviewing the running five-year average of a well or set of wells, the severity of the level, and the anticipated time required to reach a level of 10 ppm. Another significant change was dividing the Nitrogen Management Form into two parts, one due before planting on March 1 and the final report due Dec. 31 after harvest. This change gives the producer the opportunity to see the District's recommendations before planting time. In 2015, GIS Workshop developed an online system to allow producers to fill out their annual Groundwater Management forms online. Using their User ID, producers 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 administrative time for staff to manually enter the 6,000-7,000 forms submitted each year. Meetings were held across the District with producers to demonstrate how to use the new online form. The site was updated in 2018 to improve usability for staff and producers, and to provide a better format to inform producers on recommended Nitrogen applications.

Violations

Violation notices were sent out to 53 operators by certified mail for not submitting the required reports for the 2019 crop year in the Phase II and III areas of the Water Quality Management Program. Five producers were in violation after the irrigation season began with three producers turned over to legal counsel for violating the cease and desist order. As of July 2021, 6 producers remained out of compliance.

Groundwater Management Plan Rewrite

In July 2019, Olsson was selected to rewrite the NRD's Groundwater Management Plan (GWMP) for $102,000. Olsson will incorporate new data and insight acquired since the approval of the plan in 1985. The original GWMP was based on hydrogeologic, climate and socio-economic information available at the time. CPNRD has since acquired and developed significant data about the groundwater resources. Over the last 35 years, the rules and regulations have also changed significantly and groundwater management goals have evolved. Olsson is evaluating current plan triggers, updated data sets and maps, and ran over 200 scenarios with the Cooperative Hydrology Study model (COHYST) the Groundwater Evaluation Toolkit (GET) to predict what may happen with future management options. Additional scenarios are being completed.

RESEARCH

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. In addition, many of the tools needed by the farmers to establish best management practices, including fertilizer calibration meters, irrigation well hour meters, surge valves, vertical dam manifolds, irrigation flow meters and reuse pits, are encouraged through the District's cost share programs. As farmers began using the new tools, word of mouth spread the story of their effectiveness.

Figure 18.

Central Platte Natural Resources District

Rules and Regulations

Commodity crop growers must adhere to the following regulations

Phase I - between 0 & 7.5 ppm; Phase II - between 7.6 & 15 ppm; Phase III - 15.1 ppm or higher

Phase IV - Areas where nitrate levels are not declining at an acceptable rate

Because NRDs do not have the authority to regulate surface water, surface water irrigators are not required to take water samples or monitor water applications

	Phase I	Phase II	Phase III	Phase IV
1. Fall applications of N fertilizer **on sandy soils** are prohibited.	X	X	X	X
2. Fall N applications **on heavy soils** are permitted after November 1.	X			
3. Application of commercial nitrogen fertilizer is prohibited on all soils until after March 1st.		X	X	X
4. Commercial nitrogen fertilizer can be applied on sandy soils **after March 1**.	X	X		
5. Farm operators using nitrogen fertilizer **must be certified**. Certification good for 4 years.		X	X	X
6. (a)Spring application of commercial nitrogen fertilizer will **require** a split application [pre-plant/pre-emergent, or pre-emergent/post-emergent) with less than 50% applied as pre-emergent. If more than 50% is applied as pre-emergent, the operator is required to furnish certification from the dealer than an inhibitor was used at the recommended rate. (b) Up to 80 pounds total of pre-plantand/pre-emergent nitrogen can be applied as pre-emergent without an inhibitor.			X	X
7. 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
8. 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
9. 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 Unversity 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
10. 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
11. 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
12. 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
13. The **expected yield** to be **set by the District** (last 5 year average of regulated crop + 5%)				X
14. Nitrogen applications must not exceed District Recommendations with a copy of a fertilizer receipt attached to the annual report.				X
15. NRD Staff work with individuals on best management practices				X
16. Operators must **monitor groundwater applications** to allow for the better management of fertilizer applications and control leaching of nitrates.		X	X	X
17. 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

As new technology developed to help the farmers practice better management, the District's board has modified its cost-share program to accommodate the 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 the reduction of fertilizer inputs. Research indicated that most farmers did not know how much water they were using during irrigation, so the Board decided to make the practice of monitoring well outputs mandatory in Phase II and Phase III. and controlled release Nitrogen products, and cover crops in seed corn. Extension and demonstration efforts in areas of irrigation management have also been a part of the project. Field days and articles educate producers on results of the demonstrations and on best management practices.

Additional Testing

In 2016, an agreement with UNL was approved for $80,000 to revisit 27 vadose zone core sites originally collected in the 1990s, and to determine where additional cores may best characterize nitrate storage and estimated transport rates to the water table. Core samples were collected for vadose zone nitrate including areas previously sampled. The 2017 report showed locations of the first eight core samples collected with comparison of nitrate profiles to previous time periods and estimation of nitrate transport rates at each location. The 27 sites collected between 1990-1996 were digitized and used to compare profiles to determine how fast nitrate is moving and whether changing land use management has resulted in reduced loading of nitrate in the vadose zone. All of the sites are used for agriculture production. Eight of the sample results indicate lower Nitrogen fertilizer applied, reduced irrigation water, and changing land use practices at the surface may be lowering the nitrate concentrations in the vadose zone. Periodic reports are provided by UNL.

Central Platte Demonstration Projects

The Nitrogen and Irrigation Management Demonstration Project, implemented in 1984, is one of the longest-existing demonstration projects in Nebraska and possibly the nation. Other state and national projects have been modeled from this educational project. The Project was initiated following the Hall County Water Quality Special Project to show that new practices that impede nitrogen fertilizer from leaching into the aquifer are successful. Farmers with varying soils and conditions are recruited to work with UNL and CPNRD to use best management practices to demonstrate that nitrates can be managed efficiently and effectively while maintaining crop yields. The Platte Valley Project included areas where nitrate-N concentrations were in excess of 40 ppm; due to a combination of coarse-textured soil, shallow groundwater, intense irrigation and over-application of fertilizer.

Over 400 demonstration sites have been located on producers' cornfields where randomized levels of Nitrogen were applied in increments of 50 pounds above and 50 pounds below the calculated recommendation based on the UNL algorithm. Research on field length, producer applied/producer harvested plots, were instrumental in the adoption of practices by producers. The project emphasis changed over the years as new technology become available to the ag sector and cost-share programs are modified to accommodate better management practices. Initially, emphasis was given to reducing fertilizer input by counting contribution from residual sources; however, the leaching problem has two components: fertilizer and water. Reducing water applied produces less leaching than just reduction of fertilizer inputs. Monitoring water usage is mandatory in Phases II and III, since research indicated that most farmers didn't know the amount of water used during irrigation. The newest technologies used include ET gages, watermark sensors to schedule irrigation, soil moisture capacitance probes, polymer material, slow and controlled release Nitrogen products, and cover crops in seed corn.

Cover Crops

Producers are working with UNL Extension/CPNRD to research effects of cover crops on soil health. Annual field days are held to show crop mixes planted on different dates and to compare aboveground biomass with below ground; as well as best mixes for grazing. 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. In 2017, CPNRD/LLNRD hired EA Engineering to conduct a four-year study to determine impacts on groundwater due to cover crop management. The Lower Loup Basin and Central Platte River Basin have diverse soil type and cropping practices that affect both water quantity and quality. The study is researching the general influence of cover crops on soil moisture, groundwater recharge and Nitrogen movement in the soil between the South Loup and Wood rivers with groundwater declines and

includes both irrigated and dryland cropped fields and spans multiple years. Landowner ID, mobilization and installation of equipment was completed 2017. In 2019, an additional MOU was approved with LLNRD for a three-year study in Sub-Area 9 to determine the amount of water required to grow cover crops.

Crop Irrigation and Demand Network

Started in 2013, the Crop Irrigation and Demand Network receives data collected by telemetry to provide a vast amount of real-time data by monitoring different types of irrigation systems. CPNRD is able to view water usage and soil moisture from fields where producers installed telemetry equipment. Participants may check their GPM used, inches applied per day and throughout the season, and soil moisture readings. The amount of water pumped and precipitation are measured to provide data to develop irrigation efficiencies by equipment type, soil water holding capacities and crop type. The program was initiated by CPNRD in 2013 with $60,000 budgeted for the project and expanded by a $750,000 NeDNR grant in 2014. There are 77 sites across the District: 11 sites in 2013, 30 sites in 2014; and 36 sites in 2015. The project's goal was There are currently 52 pivots, 18 gravity and seven sites. Water pumped, system pressure, and rainfall are monitored at all locations, with soil moisture monitored at 30 locations. Partners include NeDNR, Nebraska Extension, Seim Ag Technology and McCrometer.

Testing Agriculture Performance Solutions (TAPS)

CPNRD began funding the TAPS program in the amount of $1,000 annually since 2018. TAP's teams work together to find solutions through innovation, entrepreneurialism, technology, improved techniques and cutting-edge methodologies for farms to maintain profitability, sustainability, and productivity. Dean Krull, UNL/CPNRD demo project coordinator, is participating in the 2020 farm management competition.

WATER QUALITY PROGRAMS

Decommissioned Well Program

The potential danger and damage abandoned wells may cause to groundwater supply is a concern. Landowners are informed on how to locate, fill and seal wells, cisterns, cesspools and similar cavities on their property. 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 ground water 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 abandoned wells be properly sealed. The NRDs, State of Nebraska and NRCS provide well owners with financial and technical assistance to get the job done right through well decommissioning programs. Cost-share is available for old irrigation wells (60%), up to $500 on wells that pump 50 gpm or less, $750 for wells pumping over 50 gpm, and for hand-dug wells up to a $1,500. In 2013, CPNRD stopped providing cost-share for replacement wells. Licensed water well contractors/ licensed pump installation contractors are required to abandon the well and verify that the water well was decommissioned in accordance with state law, standards, rules and regulations.

Irrigation Run-Off/Erosion

Rules and regulations designed to control groundwater irrigation runoff have been in effect since 1977 to follow the Erosion & Sediment Control Act. Updates in 2017 included: sheet and rill erosion added, ephemeral gully erosion, soils updates, and changed governing authority. The plan allows NRDs to petition the District Court for a Cease and Desist Order and removed 90 percent cost-share previously required for NRDs to provide for erosion control practices. NRCS's new requirements for control of ephemeral gully (concentrated flow) erosion were added. If erosion is found on a producer's property, the producer is required to develop a plan to use conservation practices to help treat this type of erosion for conservation compliance and to remain eligible for USDA program benefits. Those practices include no-till, cover crops, terraces and waterways.

Buffer Strips

In 1998, the Nebraska Buffer Strip Program was established to use filter strips to reduce the amount of chemicals that run off farm fields into the streams around the state. Cost-share is available to replace cropland with grass buffer strips along banks of perennial/intermittent streams or permanent bodies of water. CPNRD administers cost-share funds for the Buffer Strip Program provided by the Nebraska Department of Agriculture.

Chemigation Program
Irrigators that chemigate must comply with Nebraska's Chemigation Act Regulations adopted by the Nebraska Department of Environment and Energy (NDEE) and CPNRD. All operators applying chemicals through a closed irrigation system must have the correct safety equipment, be properly trained and certified, and obtain a permit from the NRD before legally being allowed to chemigate.

Certification is issued for four years after which renewals are required. In 2014, NRDs were given the authority to set fees for new, special, renewal and emergency permits. Emergency permits must be approved within two working days and can't be issued on weekends/holidays. Permit holders and certified applicators are required to sign all applications.

Fees
Application Fee is $60, special permit $60, annual renewal $20, emergency permit- $500. A $50 fee is charged to the permit holder/applicator for staff's second trip to complete a chemigation inspection. This fee is increased to $100 on the third trip.

FIGURE 19. 2021 Chemigation Report

Applications	New	Renewal	Emergency	Total
Approved	172	2,126	0	2,302
Fees	$10,320	$42,520	0	$52,840

Initial & Routine Inspections
871

Metering Program
A well metering program was adopted, and later revised, that determined how much water is being used. Wells in Phase II and Phase III must be metered/measured by the NRD. The NRD developed a "Splash" program to provide one-on-one education for the producer who voluntarily participates. The producer received weekly irrigation assistance on one field and a complete evaluation of the irrigation system. In return, the producer was expected to share the experience with other producers and consider improved irrigation techniques. The Splash Program was discontinued. To supplement these education and cost-share funding portions of the program, which are voluntary and thus could be ignored to the detriment of the success of the program, CPNRD adopted rules and regulations to assure that certain minimum changes would occur. Rules and regulations have been amended since the Splash program was implemented. *See chart on page 52*

The District will continue to work with farmers, agriculture business operators, and the general public to further reduce high nitrates in groundwater. Nebraska Legislation gives some responsibilities to the districts for all forms of pollution. While all forms of pollution are concerns of the Central Platte, the problem of high nitrates will remain the highest priority for the District during this planning period.

Objectives

1. Reduce groundwater nitrate levels in areas that exceed 10 ppm - the amount allowed by the state and the federal government.
2. Maintain groundwater nitrate levels at or below the permitted levels in areas less than 10 ppm.
3. Monitor groundwater quality for other contaminates along with nitrates.
4. Develop necessary groundwater quality management program(s) if other non-point source contaminants show signs of approaching or exceeding maximum safe levels.

Alternatives

1. *Information and education programs on pollution control.*
2. *Sediment and erosion control regulations.*
3. *Technical assistance programs to individuals, groups and units of governments.*
4. *Financial assistance programs pollution control and practices.*
5. *Development of research programs on pollution control and water quality.*
6. *Provide grass seeding and other specialized equipment for establishing permanent cover and other pollution control practices.*
7. *Minimum or protected flows.*
8. *Non-point source pollution control regulations for surface water and groundwater.*
9. *Point source pollution controls for surface water and groundwater.*
10. *Sanitary landfill regulations for all refuse sites.*

VI. Fish and Wildlife Habitat

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

The Central Platte NRD encompasses an important wildlife resource area. The central Platte River region supports wildlife resources referred to by some as having national and International significance. Residents of the NRD and 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 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 the spring migration. Diverse assemblages of songbirds make significant use of riparian forests and grasslands across the District. Resident upland gamebirds provide area hunters with many sporting opportunities. Abundant mammal, fish, reptile and amphibian species, typical of the northern Great Plains, also inhabit 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 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. Native species of plants and animals have been replaced by introduced species.

The District contains several federally listed endangered and threatened species including the whooping crane, least tern, piping plover, American burying beetle and the western prairie fringed orchid. Areas that have been designated as critical habitat by the U.S. Fish and Wildlife Service 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. CPNRD has worked with the Nebraska Public Power District, Central Nebraska Public Power and Irrigation District and the Nebraska Game and Parks Commission on a demonstration project to enhance and maintain wet meadows along the Platte. With a grant from the Nebraska Environmental Trust, 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 and enhance wildlife resources.

Farmers and ranchers are encouraged to establish native wildlife habitat, carefully plan 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 and enhancements considered in the planning for District projects. Cost-share is provided for practical application of effective habit; which reflects Central Platte NRD's commitment to protecting wildlife resources.

PROBLEMS

Most landowners in the NRD take pride in their efforts to live in harmony with nature and share their land with wildlife while at the same time developing this area as one of the leading agricultural production regions in the

world. Most of the influence of Nebraska's environment by humans has occurred in more recent times, generally over the past 150 years. Native Americans, who lived in the area in relatively small numbers before that time, had little impact on the wildlife. Settlement of the region by pioneers from eastern United States and Europe resulted in much of the original prairie being plowed and converted to cropland. In eastern counties, little range-land remains. Often, native grasses have been replaced by introduced species. New farming practices and increased use of irrigation in the past 60 years have led to increased acreages of cropland, not only in the Valley but also extending to the rolling hills area. Irrigation now supplies the moisture necessary to produce improved yields of grass, hay, row crops and other vegetation every year. Because much of the land is farmed, many species of wildlife are now supported with a supply of food and shelter every year. That closely ties some species, such as pheasants, quail, rabbits, squirrels and waterfowl, to cropland.

At the same time, large populations of wildlife species can reduce crop yields or pasture capacities. For example, deer utilize agricultural crops and residues as a substantial part of their diets. Deer are attracted to corn fields, wheat fields and alfalfa, and they may cause damage considered to be excessive by farmers and ranchers. Crop damage, especially to corn fields, has become a major problem for fields adjacent to the Platte River with the large increase in deer population. Developed areas tend to reduce wildlife habitat for game and many non-game species, although squirrels, cottontail rabbits and some songbirds may actually increase in an urban environment due to the trees and shrubs providing suitable cover. As human populations and the demand for agricultural products increase, more and more pressure is exerted on the land that is available for wildlife habitat.

Ducks Unlimited, Pheasants Forever and the Isaac Walton League have made significant contributions to habitat improvement. Organizations such as the Audubon Society and The Nature Conservancy have used private donations to develop wildlife habitat areas. The Platte River Whooping Crane Trust was established to improve habitat in the Central Platte region as mitigation for damages to the Platte River resulting from the Grayrocks Dam construction in Wyoming. Federal regulations in recent years have also had an influence on the response for wildlife habitat needs, particularly in the areas of endangered species and wetland protection. The U.S. FWS administers the Endangered Species Act. Among federally listed species that can be found in the NRD (mostly in or near the Platte River), are "endangered" whooping crane and interior least tern and "threatened" piping plover, and western prairie fringed orchid.

NEEDS

Residents of the NRD enjoy the natural resources and environment within the District. The coexistence of man with wildlife can be achieved with little disruption to the natural balance of nature with proper planning and management. Farmers and ranchers need to be encouraged to establish trees or shrubs for wildlife habitat among other purposes, to carefully plan any conversion of rangeland or other virgin lands to agriculture and to return land with marginal or negative production capabilities to habitat. Because every species relies on water in one form or another to survive, surface water and wetlands should be maintained whenever possible and enhancements are considered in the planning for District projects. Wet meadows along the Platte River are an important habitat resource to a diversity of wildlife including migratory birds and other species. Methods to protect existing wetlands and create new wet meadows need to be studied and implemented when warranted.

Flows on the Platte River are essential for many species that rely on the river, are often erratic, flooding in the springtime and nonexistent a few weeks later in the summer. Certain flows that are present need protection on behalf of the wildlife from future human uses that could add to the stress on such species. Wildlife have become an attraction for tourists and local residents, and the means of enabling people to enjoy nature without disturbing the habitat also needs to be developed.

SOLUTIONS

Landowners need to be informed about farming and irrigation practices that enable wildlife to live in harmony with the human population of the NRD. Farmers can be encouraged to use those practices that help them to produce improved yields of grass, hay, row crops and other vegetation every year as well as provide supply good and shelter to many wildlife species. Farmers can also be encouraged to use appropriate management practices to minimize the damage to yields or pasture capabilities caused by large populations of wildlife species. Residents of developed nonfarm areas can be educated to minimize or replace habitat loss for game and many

non-game species. Ducks Unlimited, Pheasants Forever and Isaac Walton League have made significant contributions to habitat improvement. Organizations such as the Audubon Society and The Nature Conservancy have developed wildlife habitat areas. The NRD has also enabled new habitat lands to be created through the Wildlife Habitat Enhancement Program, in conjunction with the Nebraska Game and Parks Commission, and the Pivot Comers Incentive Program through the Nebraska Environmental Trust and Pheasants Forever.

In response to the Federal requirement that endangered and threatened species be protected, the governors of Colorado, Wyoming, Nebraska, and the U.S. Department of Interior (parent agency of the Fish and Wildlife Service), signed onto a Platte River Recovery Implementation Program) on July 1, 1997, that developed and implemented a plan for the recovery of endangered and threatened wildlife species, along the Central Platte River.

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 worked with groups from throughout the basin to build a framework for a long-term Program to satisfy Endangered Species Act (ESA) requirements for water users in the basin. The first PRRIP increment included the ongoing development of water projects planned to improve flows in the central Platte by an average of 130,000-150,000 AF annually. 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. Research and monitoring on the Platte showed the FWS's target flows to be ineffective in accomplishing the set objectives. The states and federal governments face challenges to protect the species using the Platte River and their habitats while providing certainty for water users who face ESA requirements. CPNRD board and staff are actively involved in the Governance Committee (GC), Land Advisory and Water Advisory committees. The Land Advisory Committee includes a member/alternate from CPNRD, member/alternate from Tri-Basin NRD and a joint member/alternate.

The USFWS plays a major role in enforcing the ESA with legislation for federal funding passed by Congress in 2008. In 2013, the Governance Committee (GC) and CNPPID (Central) independently agreed to develop J2 Regulating Reservoirs for $13M for five years. In 2015, CNPPID and its engineering contractor, RJH Consultants, Inc provided the GC with a progress report on the Project which detailed significant increases in cost from the original estimate of $63-$170M, not including land acquisition so alternatives were evaluated. 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 AF annually) for $1.5M. In 2016, the GC stopped the project to explore other water projects involving groundwater recharge, smaller scale storage projects, water acquisition and transfer opportunities. The first Increment of the Program expired in 2019. While first-increment milestones were exceeded for land and adaptive management components, water goals were more expensive to achieve. Initial discussions included prioritizing resolution of channel choke point issues, habitat acquisitions and opportunities to support pallid sturgeon use of the lower Platte River. An Amendment to the Water Use Lease Agreement with CPNRD modified the price paid for surface water diverted for recharge at $43/AF, raised payment for transferred surface water $43-$150/AF, and reduced the increase in annual costs 7% to 3% to bring the value of water CPNRD sells to the Program to levels with those paid to other contributors. The original Agreement was signed in 2013 with amended values effective on January 1, 2017.

Second Increment

The basin states governors, house representatives and senators supported the second increment. On December 21, 2019, President Trump signed two spending packages that included the PRRIP Extension Act to extend the Program until December 2032. The Program's long-term objective for land is to acquire land interests, restore where appropriate, and maintain and manage approximately 29,000 acres of suitable habitat along the central Platte River between Lexington and Chapman. In March 2020, the GC discussed the Upper Platte Basin Robust Review results and Second Increment planning. Nebraska is in full compliance with its New Depletions Plan and is achieving Milestone 9 of the extension document. Future Robust Reviews are planned for 2023 and 2027. Water service agreements with CPNRD, NPPD and CNPPID were approved in similar term and payment rates for recharge water. CPNRD's agreement for groundwater recharge runs through the end of 2024 and starts with a 2020 price of $32.87/AF of water and increases 3% per year with a cap of 5,000 AF.

STATE/BASIN COALITIONS

Nebraska Habitat Conservation Coalition (NHCC)

The U.S. Fish and Wildlife Service (FWS) proposed designation of critical habitat for the Great Plains piping plover population in 2001 in Nebraska, North Dakota, South Dakota, Minnesota and Montana. Critical habitat was formally designated by the FWS in 2002. The Coalition, comprised of 23 members/8 partners, was formed in response to the federal designation of critical habitat for the piping plover in Nebraska. The critical habitat designation gave the FWS an 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." 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 in 2005, requiring the FWS to redo economic analysis and critical habitat designation in Nebraska. NHCC plans to stay closely involved in the redesignation of critical habitat as ordered by the District Court. In 2019, FWS announced a proposal to downlist the American Burying Beetle from endangered to threatened; and the Interior Least Tern from the ESA due to recovery.

Federally threatened and endangered species within 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. A new rule was proposed by the FWS in 2014 regarding critical habitat designated in association with the ESA. Of concern was that proposed rulemakings would significantly change the agencies approach to critical habitat designation and lead to over-regulation. The NHCC Executive Committee and Legal Advisory Committee submitted comments in opposition of the proposed rule.

NHCC Timeline of Activities

1985 - Piping Plover (PIPL) listed as Threatened under ESA

1996 - USFWS petitioned by the Defenders of Wildlife to designate PIPL critical habitat

2001 - USFWS proposes critical habitat for the Northern Great Plains (NGP) population of PIPL: NHCC formed

2002 - Critical habitat formally designated in 5 states (NE, ND, SD, MN, MT) PIPL critical habitat in Nebraska includes 454,400 acres (excluding the Missouri River), 440 miles of Nebraska rivers (including portions of the lower Niobrara, Loup, and central and lower Platte Rivers), plus 120 miles of the Missouri River.

2005 - NHCC motion before U.S. District Court of Nebraska for Summary Judgement; U.S. District Court issues Order vacating designation of PIPL critical habitat in Nebraska, orders FWS to redesignate critical habitat.

2006 - FWS appeal Court Order/NHCC files cross-appeal; U.S. 8th Circuit Court of Appeals issues order of dismissal

2014 - NHCC files comments on USFWS proposed policy and regulatory changes to critical habitat designations

2016 - NHCC files comments of USFWS Draft Revised Recovery Plan for the NGP PIPL

Platte Basin Habitat Enhancement Project

CPNRD and co-sponsors North Platte, South Platte, Tri-Basin, Twin Platte NRDs; NeDNR and NGPC received a Nebraska Environmental Trust (NET) grant for the Platte Basin Habitat Enhancement Project for $3 million. Remaining funds included $6 million from the NRDs and $6 million from the NeDNR for a total of $15 million. The projects and activities funded by the PBHEP resulted in enhanced Platte River stream flows, reduced consumptive uses of water, recharged groundwater, and supported wildlife. Projects included Cozad Canal and Thirty-Mile Canal Rehabilitation conjunctive management projects, 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 Groundwater Recharge Demonstration projects. The Platte Basin Habitat Enhancement Project concluded its activities in 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 and CPNRD. 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.

Phragmites Control

CPNRD began participating in the Platte Valley Phragmites Project in 2009; budgeting $621,000 from 2009-2020. 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 east to Columbus in the Platte and Central Valley Weed Management Areas (WMAs). In May 2018, The Nature Conservancy reported on the WMA's joint effort, which consists of 16 counties in south central Nebraska along the Platte River, including 315 miles of river channels and 11,000 acres within the main channels. Since the project began, nearly 26,000 acres have been treated for invasive Phragmites within CPNRD. Phragmites were reduced 86% and purple loosestrife reduced 70% through continued maintenance. In addition to applying herbicide, disking/shredding are used for biomass removal and have proven effective with minimal reinfestation. Flow conveyance has improved and wildlife habitat has increased. Sponsors include the Nebraska Environmental Trust, Platte River Recovery Implementation Program, Nebraska Department of Agriculture, Twin Platte NRD, Tri-Basin NRD, Nebraska Public Power District, and Central Nebraska Public Power and Irrigation District. In August 2020, CPNRD agreed to invest $500,000 over three years in an endowment to fund the annual cost of maintaining water conveyance in the Platte River. Since 2009, the PVWMA has treated approximately 26,000 acres of invasive plant species within flowing channels of the Platte River in Dawson, Buffalo, Hall, Merrick, Hamilton and Polk counties within the NRD.

Instream Flow Rights

Central Platte NRD holds 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 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 NDWR (now NeDNR). 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 flows specified by the instream flow water rights must be met before any future project could take water from the Platte. CPNRD's application came after extensive study by the NRD in response to concerns about low flows, 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. CPNRD held a public hearing in March 1989 on proposed instream flow rates, timing, segments and uses for a proposed water right. While considerable testimony applauded CPNRD for seeking the instream flow water right, there was a division of opinion about the flow rates, dates and river segments proposed. 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 NeDNR. Because of insufficient detailed data available to make a determination of water and habitat needs for selection and nesting by the least tern and 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, 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 NeDNR conducted a hearing on the six applications from July 1-September 25, 1991. Eighteen 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. NeDNR 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 of the applications with flows for the bald eagle were denied.

APPLICATIONS GRANTED

- Flow of 500 cfs from January 1-June 23 and from August 23 - December 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 August 22 for the same purpose.
- 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 October 12-November 10.
- Flow of 1,100 cfs from Grand Island to Chapman during the period of April 1-14 to maintain staging and 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 NeDNR 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.

Nebraska Game & Parks Commission Appropriation

The 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 CPNRD. One of the applications was approved and the two others 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. Flows granted for the 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. 51 local governmental subdivisions and water users organizations joined the Cooperative.

In 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. NDWR (now NeDNR) 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 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 basis for the reach of the river between Johnson Power Plant near Lexington and Loup Power Canal return near Columbus. The reach of the water right was shortened to stretch between the Kearney Canal diversion dam near Elm Creek and the Loup Power Canal return; and provided for the appropriation to be in effect only in June, July and August.

Because CPNRD already has a water right for 600 cfs, NeDWR provided for varying rates between 200-500 cfs during the three-month period. In the NRD's water right, a maintenance flow of 500 cfs is protected to benefit the fish community from the J-2 return near Lexington to the Loup Power return from January 1-June 23.

CPNRD's water rights protect a rate of 600 cfs from June 24- August 22, then returns the rate to 500 cfs from August 23-December 31. Varying flows are protected in different reaches of the Platte with 500-600 cfs protected above the Kearney Canal diversion dam. 1,000 cfs is protected between the dam and Columbus from June 1-July 31; and 800-900 cfs, depending on the measuring station from August 1-31.

2nd Application: Between the Loup Power Canal return and confluence of Platte and 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. NeDNR approved a maximum rate of 3,100 cfs in January; 3,700 cfs in February- July and October-December; 3,500 cfs in August and 3,200 cfs in September.

Maintain Whooping Crane Roost Habitat Application: The water right sought for 2,400 cfs from April 1-May 10 and for 2,000 cfs from October 1-November 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.

Land Rights At this time, CPNRD has no land right needs. This may change in the future to address acquisition of conservation easements to meet CPNRD/NeDNR's Integrated Management Plan requirements to offset post-1997 depletions. Sufficient information is not available at this time to determine financial needs.

SPECIFIC PLANNING

Continuation of the Wildlife Habitat Improvement Program is dependent on funding of the program by the Nebraska Game and Parks Commission. Funding will also be the key to continuation of the "Comers for Wildlife" program, in which incentives are provided to landowners for converting irrigation pivot comers from cropland to wildlife habitat. The Nebraska Department of Natural Resources will administer the instream flow water rights on the Platte River that were obtained by NRD and the Nebraska Game and Parks Commission to protect minimum flows in the river for fish and wildlife purposes.

The NRD will continue to evaluate participation in wildlife habitat studies as needed and will continue to evaluate proposals concerning use of the Platte River and its environs for the potential effects on the District, its residents and its economy, and to respond as appropriate. The addition of a staff biologist in Fiscal 1998 is testimony to the importance the CPNRD places on wildlife resources and related issues. The implementation of the Platte River Recovery Implementation Program and any future endangered species programs highlight the significance of regional wildlife issues and their potential impact on Platte River communities. Continued study and the practical application of effective habitat enhancement reflect the NRD's commitment to protecting wildlife resources. The staff biologist will also support planning, permitting and environmental assessment activities relating to existing and proposed District projects.

The NRD participates with the NGPC in the WILD Nebraska Program and with Pheasans Forever in the Corners for Wildlife Program, which offers cash incentives for farmers to convert eligible pivot corners from cropland to wildlife habitat areas. NGPC merged the Wildlife Habitat Improvement Program (WHIP), Wildlife Shelterbelt Program (WSP), Wetland Initiative Program (WIP), and Roadside Seeding Program (RSP) to create one program called WILD Nebraska. Practices are now grouped by habitat type: wetlands, grasslands and woodlands. Grants from the Nebraska Environmental Trust and Pheasants Forever continue to provide funds statewide through the Corners for Wildlife Program.

The practical application of effective habitat enhancement efforts (such as the Wet Meadow Project) reflect the District's commitment to protecting wildlife resources. The NRD supports planning, permitting and environmental assessment activities relating to existing and proposed District projects. In the future, the NRD plans to encourage new signups in the WILD Nebraska Program. The strategic plan articulates key issues associated with the goal and the three objectives and then provides strategies to address those issues. WILD Nebraska brings to fruition many of those strategies by providing tools for landowners and partners to resolve habitat limitations and seize opportunities that exist on natural landscapes and in the policy arena. Annual applications for grant money from the NET by Pheasants Forever are anticipated to continue the "Corners for Wildlife" program statewide. Under the program, which had a successful start in 1994 as a pilot project in the NRD, incentives are provided to landowners for converting irrigation pivot corners from cropland to wildlife habitat. NeDNR administers instream

flow water rights on the Platte River obtained by the NRD and NGPC to protect minimum flows in the river for fish and wildlife purposes.

The District will continue participation in endangered and threatened programs including the Platte River Recovery Implementation Plan, the Nebraska Habitat Conservation Coalition and the Platte Basin Habitat Enhancement Program. Additional opportunities will also be explored as needed.

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.

Alternatives

1. *Develop fish and wildlife habitat areas.*
2. *Financial assistance programs to preserve, enhance or develop fish and wildlife habitat areas on private land.*
3. *Technical assistance programs to individuals, groups and units of government.*
4. *Land use regulations requiring the preservation of critical habitat areas.*
5. *Information and education programs on fish and wildlife habitat.*
6. *Minimum or protected flow for fish and wildlife*
7. *Implementation of a policy of non-participation in projects that will substantially reduce fish and wildlife habitat.*
8. *Discourage uneeded mowing and spraying of roadsides when such mowing and spraying would be harmful to wildlife.*
9. *Secure necessary expertise to develop fish and wildlife programs and to review environmental effects of other District projects.*

VII. Forestry Management

GOAL: **To develop and manage trees and 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.**

PROBLEMS

Other than isolated trees or wooded areas along rivers and streams, most of the land area 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/field windbreaks; livestock shelterbelts and wildlife planting. The NRD has provided landowners with a complete tree planting service since the District was established, including purchase, distribution and planting. About 60,000 trees per year are planted by landowners in the District. The NRD reached a milestone when the aggregate sale of trees by Central Platte exceeded three million trees in 2006.

Although the Nebraska Conservation Tree Program provides large numbers of seedling trees for planting, there are barriers to survival that must be overcome including a semiarid climate. In some parts of the District trees are being planted to serve as living snow fences to protect roads in the District. Many such plantings occur on hilltops where the availability of a ready water supply is poor, resulting in decreased survival that has sometimes required a frequent replanting of new trees to do the job. Weed control is another problem that must be faced. Seedling trees have to compete with weeds for the sunlight and moisture that is necessary for survival. The NRD's Weed Barrier Program provides a fabric that improves moisture retention, protects against weeds and is used throughout the District.

NEEDS

Forest resources are valued higher for environmental benefits than for commercial purposes, including wildlife habitat, conservation, watershed protection, recreation uses and scenic values. Among the commercial uses that are expected to be prevalent are Christmas tree farms, orchards and nut production.

SOLUTIONS

In more recent years, tree disease, damage from winds, development and other factors have reduced the number of trees in the cities and towns of the NRD. Many communities have tried to replace the lost trees, but lack sufficient financial resources for an extensive tree-planting effort. 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. The value of trees in the conservation of natural resources needs is re-emphasized to the landowner of today. Inclusion of trees as part of the conservation plan of individual landowners will continue and be encouraged. 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.

Forest resources are valued higher for environmental benefits than for commercial purposes; which include wildlife habitat, conservation, watershed protection, energy efficiency, 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. In 2020, the Emerald Ash Borer was found within the District in Kearney in an Ash tree located near Pioneer Park. Trees located within 15 miles of Kearney should be treated with insecticide. More information is available at: nfs.unl.edu/nebraska-eab.

CONSERVATION TREE PROGRAM

The Conservation Tree Program is a complete tree planting service started in 1972 to purchase, distribute and plant conservation seedlings from the state forest in Halsey, NE. Staff selects the seedlings to be purchased from Halsey annually, alternative sources of tree stock are added to meet customer needs and diversity. In 2012, small -acre packages were designed for Eastern Nebraska, Western Nebraska, Flowering and Wildlife by Bessey Nursery for landowners who don't want to plant 25 of the same type of seedling. The small-acre packages have 50 seedlings (5 species with 10 of each).

Weed Barrier

CPNRD has been offering fabric mulch weed barrier to protect seedling trees from competing with weeds for sunlight and moisture. Landowners are encouraged to prepare planting sites before planting seedlings and to properly maintain them after planting. A 10% early ordering incentive is offered for trees, weed barrier and the planting service.

Cost-Share

50% cost-share is available to landowners for trees, weed barrier, and tree services with orders of 200+ trees. $10,000 is budgeted for 2022. The Nebraska Forest Restoration Partnership received new funding through the Regional Conservation Partnership Program (RCPP). CPNRD will utilize the funds to provide 75% cost-share for windbreak establishment, renovation, and weed barrier installation on orders of 200 or more trees.

Urban Forestry

The NRD's Urban Forestry Program provides monetary incentive for community groups to plant and maintain more trees in parks, on school lands and on other public property. $5,000 is budgeted for the program.

Objectives

1. Reinforcement of understocked windbreaks and tree lots through interplanting with high value species.
2. Woodland improvement by thinning to achieve proper spacing.
3. Develop more optimum growing conditions through livestock exclusion.
4. Provide adequate wind and snow protection for farmsteads, feedlots, roads and fields through windbreak planting.
5. Provide benefits to wildlife, aesthetics, recreation and forestry

Alternatives

1. *Information and education programs on tree planting and forestry management.*
2. *Technical Assistance programs to individuals, groups and units of government.*
3. *Financial assistance programs on tree planting and forestry management.*
4. *Provide the necessary equipment to carry out tree planting in an efficient manner.*

FIGURE 20. Tree/Weed Barrier Sales

YEAR	TREES	WEED BARRIER (in miles)
2021	30,825	6.46
2020	20,475	2.03
2019	29,775	7.84
2018	41,225	8.42
2017	35,350	9.94
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	**3,811,293 Since 1973**	**599.86 Since 1991**

VIII. Outdoor Recreation

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

The possibilities for developing outdoor recreation resources in the District are limited only by imagination and the willingness of the people to support a vigorous program. Development of parks and 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 necessary.

PROBLEMS

The demand is high for water-based recreation activities in the District. While small watershed reservoirs developed under the Federal government's PL566 (Public Law 566) offer an excellent opportunity to provide recreation, these sites are often on private property, necessitating agreements that provide access by the public while at the same time providing protection for the landowner. At this writing, no projects have been built or are anticipated. Development of parks and 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 necessary. The Nebraska Game and Parks Commission, counties and municipalities have statutory authority to own, maintain and create parks, and a coordination of planning efforts is necessary to avoid duplications and to develop quality facilities.

NEEDS

The possibilities for developing outdoor recreation resources in the District is limited only by imagination and the willingness of the people to support a program. With the presence of a rich history along the Central Platte Valley associated with settlement of the early West, there is a good potential for development of historic and archeological sites in the District. A potential for non-urban activities lies in the development of water-based recreation and developing historic sites to portray the era of western expansion and settlement.

A task force of various governmental and private agency representatives was brought together by the NRD in 1993 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 and Trails Project to be completed in phases. 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. Use of the Platte River for recreational purposes occurs now; but recreation is limited by inaccessibility and restrictions that protect endangered and threatened wildlife species.

Water harnessed under flood control projects and other multipurpose reservoirs can serve recreation needs. Such was the case when the B-1 Reservoir northwest of Lexington was constructed in the 1980s for flood control purposes with a secondary purpose of providing groundwater recharge. A parking area and access area were constructed by Central Platte NRD. Also, in cooperation with the Nebraska Game and Parks Commission, 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 NRD Board responded to the petition by agreeing to stop storing water annually in B-1, at least temporarily. The NRD currently fills B-1 every other year.

Coordination and cooperation with the Nebraska Game and Parks Department are necessary for efficient planning, management and utilization of parks and recreation facilities, especially those that serve the populations of two or more NRDs. 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. 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. 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. Water harnessed under flood control projects and other multipurpose reservoirs can and does serve recreation needs.

SPECIFIC PLANNING

The NRD will continue to review its current programs to determine their effectiveness against erosion and will consider sponsoring new programs that would help to meet its goals for soil conservation and erosion control. The District will continue to work with related agencies at the federal and state levels to assure that we strive toward our objectives. In addition, local governments can apply for assistance through other programs, such as land treatment, flood control and water quality. The NRD will continue to work with various governmental entities on the Central Platte Historic, Scenic & Trails Project, as well as other proposed hike and bike trails. The project, initiated to get people off roads and bridges during the crane viewing season, includes plans for parking areas, access to the river for canoeists, scenic roads, viewing decks and turnouts, historic trail designations and proposed recreational trails. Full implementation of the plan will depend on the availability of financial resources, availability of sites and acceptance (use) by the public.

SOLUTIONS

Other governmental entities in the NRD generally provide parks and similar areas for the public, but frequently lack sufficient funds for adding to or renovating their parks facilities. The NRD's Urban Forestry Program was adopted to provide financial assistance (cost-share) to communities for the development or improvement of their parks, nature areas, campgrounds and other outdoor recreation facilities.

Projects initiated by Central Platte for other purposes besides recreation are evaluated to determine if recreation components can be included effectively, both to improve the recreation opportunities of the area and to be cost-effective. For instance, a hike and bike trail might be considered for a floodway project. CPNRD has established various objectives for meeting its Recreation responsibilities and alternatives have also been developed to satisfy the objectives.

TRAILS

Kearney Area Trail System - 2005

CPNRD approved funds to support a 13-mile trail system for the Kearney Area Trail System. The initial 2009 construction timeframe was delayed due to a fire that burned a bridge over the Platte River. CPNRD used original funds agreed upon to provide assistance to rebuild the bridge. In 2014, a new bridge was built, the 1.7 mile trail was paved and repairs were made to the main channel bridge.
COST: CPNRD funded $60,000 in 2007 for Phase IV and $50,000 in 2008 for Phase V.
PARTNERS: Nebraska Department of Roads, Kearney Recreation Department, NGPC, CPNRD

Wood River Flood Control Project Trail

A hike and bike trail was established by the city of Grand Island on the Wood River Flood Control Project's levee system, providing an additional two miles to Grand Island's trail system. The western portion of the trail is complete with future plans extending the length of the entire project. PARTNERS: City of Grand Island, CPNRD

Central City/Marquette Trail - 2016

In 2006, a request for the NRD to enter into a Joint Action Agency to develop a plan for a Central City/Marquette Hike & Bike Trail was brought to the board. 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, CPNRD provided $5,000 in funding to the Platte PEER Group to complete the final mile of the trail. COST: $5,000

Johnson Lake Trail - 2018

From 2018-2020, CPNRD funded seeding and reseeding 10,000 square feet of the new Johnson Lake Trail . The area starts at the gazebo and extends south to Pelican Bay Drive. COST: $600

PROJECTS

B-1 Reservoir - 1983

B-1 is the largest of seven flood control structures in Buffalo Creek Watershed. Construction included a supply canal, 1.6 miles of power line relocation and 1/2 mile of county road improvements. In addition to flood control, the project was expanded to include recreation and groundwater recharge. Recreation includes seasonal primitive fishing, kayaking and wildlife viewing.

Crane Viewing Sites - 1994

In 1993, a task force of various governmental and 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 and Trails Project to be completed in phases. Approval was granted in 1994 by the Nebraska Department of Transportation 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. The viewing decks provide a safe and bird-friendly way to view cranes and waterfowl. Because safety was the original purpose of the task force, a top priority for Phase I was given to getting people off of the county roads and bridges during the crane viewing season.

Alda Crane Viewing Site

Alda Crane Viewing Site is two miles south of the I-80 Exit 305 with three additional roadside turnouts located south and east of the Alda interchange on Platte River Drive, at the intersection of Elm Island Road and Lowell Road. The site was designated as a "green site" by the Groundwater Foundation in 2010. Kiosks at the viewing decks were updated in the spring of 2015 and the fall of 2021. CPNRD is working with a team of interns from JEO on a no-cost project to design a plan to move forward to rehab the site. A request for quotes and/or grant submission is expected in 2021.

Richard Plautz Crane Viewing Site

Located 1.5 miles south of 1-80 Exit 285 near Gibbon. The site has two elevated wooden viewing decks, 1,650' trail and parking lot. In 2016, the Audubon at Lillian Rowe Sanctuary was created a new viewing pull-out just south of the south channel on the west side of 43rd Road near Gibbon for a better crane viewing location, and to remedy safety issues by providing more parking space to reduce the number of cars parking on rural roads. In 2020, the NRD received two grants to assist with rehabilitation of the Plautz Crane Viewing Site. Morten Construction, LLC from Kearney, NE was selected to construct the concrete trail, parking lot, streambank stabilization and riprap placement. The project is scheduled for completion by December 2021. COST: $315,000 estimate; CPNRD's share $16,000

Grants Received

Recreational Trails Program (RTP) $259,500.00 from the RTP administered by the Nebraska Game and Parks Commission, CPNRD is required to contribute a 20% matching share. CPNRD will remove the nearly 1,660 LF deteriorated asphalt nature trail and replace it with an 8' wide, 6" thick concrete trail and pave the 1,033 square yard gravel parking lot with 8" thick concrete.

Nebraska Environmental Trust $50,000 from NET to be used exclusively for repairs on the streambank near the viewing decks. The NRD will remove two large trees, install 2,700 LF of erosion control silt fencing, install 803 ton of quartzite riprap on the southeast side of Lowell Road bridge and 0.6 acres of seeding and mulching once the new nature trail has been reconstructed.

Crane Meadows Stabilization - 2001
Funding was provided to Crane Meadows Nature Center for bank stabilization erosion control for 200 feet of bank stabilization; 10,000 square feet of wetland restoration and reseeding; and erosion control of an island. COST: $2,600

Great Platte River Archway Stabilization - 2002
Funding provided to Great Platte River Road Archway Monument for a streambank stabilization project west of the Archway in Kearney. The North Channel of the Platte River and Turkey Creek eroded to within five feet of a local sandpit. The Corps of Engineers surveyed the erosion and provided an Emergency 404 permit to CPNRD. COST: $13,500, City of Kearney provided 25% of the cost.

Urban Conservation Program - 2017
Central Platte NRD has two cost-share programs to assist cities, villages and counties with establishment and/or improvement of public recreational areas and trails, lake dredging, and acquisition of land or land rights for recreational purposes. Cost-share rate is 50% of eligible project costs up to a maximum of $40,000 for each Program.

Projects approved in 2018: City of Grand Island- $30,000 picnic shelters at Sterling Park $30,000; City of Kearney- $17,965 Whitewater Park design of stream drop structures, bank stabilization, hike-bike trail connections, observation area and ramp. In 2019: City of Gothenburg-$10,000 bank stabilization at Lake Helen.

Objectives

1. Incorporate, wherever feasible and desirable, park and/or recreation features into other District programs.
2. 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.

Alternatives

1. *Technical assistance to individuals, groups and units of government.*
2. *Minimum or protected flow.*
3. *Implementation of a policy on non-participation in projects that will substantially reduce park or recreational facilities or potentials.*
4. *Implementation of a policy of participation in properly developing recreational potential on project lands.*

IX. Range Management

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

PROBLEMS

Rangeland makes up approximately 36.5% of the NRD's land area and is an important aspect of the District's land use. Most of the rangeland is unsuitable for using as cropland, usually due to sandy soils or steep slopes. 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, in turn, results in deep ravines and gullies being cut into the slopes. The advent of pivot irrigation has encouraged many landowners to plow rangeland that otherwise would have been left as range. In some cases, improved conservation practices can make this land productive.

Rangeland can become unproductive if it is not properly managed. Overgrazing can cause severe damage by its effects on individual plants and the effects on the plant communities themselves. Rangeland concerns include the influx of Eastern Red Cedar trees and the encroachment of weeds that diminish the natural water supply for desirable vegetation in the western and central parts of the District. Land that isn't 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.

NEEDS

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, which can be diminished by maintaining a grass cover. Management of rangeland needs to be encouraged. Of the rangeland needing improvement, a vast majority could be adequately treated just by using better management techniques to eliminate overgrazing. Planned grazing, pasture rotation, and prescribed burning are encouraged in many instances. 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.

SOLUTIONS

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, reseeding or inter-seeding will be necessary, after which grazing must be deferred for one to three years before the grasses are established sufficiently to be grazed lightly again. Cost-share to encourage better management of rangeland is made available through the NRD from the Nebraska Soil and Water Conservation Program. In some cases, control of woody plants, both conifers and broadleaf, is required. 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 being encouraged to eliminate undesirable vegetation, such as leafy spurge and other noxious weeds.

Of the rangeland needing improvement, a majority could be treated by using better management techniques to eliminate overgrazing. Planned grazing, prescribed burns, and pasture rotation are encouraged. Cost-share to encourage these better management practices are available through CPNRD programs and NRCS's Nebraska Soil and Water Conservation Program (NSWCP).

Prescribed Fire Program

The NRD implemented the Prescribed Fire Program in 2004 and developed a cost share program to help land-owners treat their rangelands with the implementation of burns. Since the inception of the program, the NRD

Fire Crew along with the Central Platte Rangeland Alliance have conducted 287 burns for a total of 49,180 acres. CPNRD works in conjunction with The Nature Conservancy, NRCS, U.S. Fish and Wildlife Service and Prescribed Burn Task Force.

Prescribed fire can be a valuable tool in the maintenance and improvement of native grasslands. When prescribed fire is used along with appropriate grazing practices, the result is increased economic output and wildlife benefit. CPNRD implemented the Program in 2004 with a cost-share program to help landowners treat their rangelands with the implementation of burns. The purpose of a prescribed burn is to control the undesirable vegetation, to prepare sites for harvesting, planting or seeding, to control plant disease, to reduce wildfire hazards, to improve wildlife habitat, to improve plant production quantity and/or quality, to remove slash and debris, to enhance seed and seedling production, to facilitate distribution of grazing and browsing animals, and to restore and maintain ecological sites.

SPECIFIC PLANNING

NRD Cost-Share Program

CPNRD's Prescribed Fire Cost-Share Program reimburses landowners at a rate of 50% of actual costs incurred while implementing a prescribed fire by a contractor and up to a maximum of $2,500/cooperator/lifetime. If the CPNRD burn crew does the burn, cost-share is not used because of the lower cost. Landowner cost is $10 per acre for the first 40 acres, $5/acre for anything over 40 acres. CPNRD's set minimum charge is $300 per burn. Landowners have applied for burns on up to 6,000 acres. The 2021 budget includes $41,000 for grazing deferment and $50,000 for burn preparation. In 2020, Scholl Fire & Fuels was hired to implement 10 -17 burns in the spring. The contract was extended to allow the burns to be conducted in the fall or into the spring of 2020 due to COVID-19 restrictions.

Grazing Deferment Cost-Share Program

The Grazing Deferment cost-share program was initiated in 2013 to provide an incentive for landowners to defer grazing in a pasture for one growing season so that a prescribed burn can be successfully applied in the following year to reduce invasive Eastern Red Cedar. The cost-share was increased in July 2021 from $15 per acre to $30 per acre with a maximum of $30,000 per landowner.

In 2015, the NRD was awarded a three-year grant from the Nebraska Environmental Trust to reduce invasive Eastern Red Cedar trees and improve rangeland. The focus was in Dawson County; however, other pastures within the District were included in the project as well. Two cost-share programs were developed to administer the funding. The Grassland Conservation Program was initiated to pay participants to prepare fire breaks and clear cedar trees in preparation for a prescribed burn; and the Grazing Deferment Program provided $15/ac to defer grazing on a pasture for one year to allow a prescribed burn to be successfully applied the following year.

The fire contractor cut an estimated 299,585 cedar trees to implement the landscape-style burn. The crew worked on landowner burns from Dawson to Merrick counties, preparing 257,978 lineal feet for firebreak and mechanically cutting 3,691 acres of cedars. The project improved habitat and preserved native grass species including the tallgrass prairie in Dawson, Lincoln and Custer counties. As part of the grant funding, CPNRD staff also visited six high schools and conducted a demonstration burn at Gothenburg High School to discuss the benefits of prescribed fire. Grant funding included $775,735 from Nebraska Environmental Trust and $2.2M in matching funds from the Natural Resources Conservation Service, Nebraska Game and Parks Commission, and the Nebraska Forest Service.

Grant Accomplishment Overview:

* 3-year Burn Goal: 12,000 acres
* Burn Total: 20,661 acres plus 2,555 acres burned by CPNRD.
* Total firebreak prepared: 257,978 lineal feet
* Total Mechanical Cedar reduction: 3,690.6 acres
* 300,000 cedar trees removed from landscape
* Funded 6 new sprayers, a water trailer, UTV/40 gallon fire unit
* The sprayers add 2,390 gallons of water capacity to the fireline

Training Program

CPNRD hosts training events and outreach for landowners, other NRDs, agencies, firefighters and fire marshals. By providing training and assistance, CPNRD is helping to prevent costly accidents while enhancing grasslands **for**

economic return and habitat. Within the District, there are many fields in poor condition needing a burn, and the NRD helps to facilitate that project safely and professionally. Staff has conducted 40 training events training over 600 students. Other successes: managed $1.5 million prescribed fire grant projects, assisted with the formation of Landowner Prescribed Burn Associations, assisted Fire Learning Network to train firefighters from around the world, and created inroads in Nebraska for liability insurance coverage for prescribed burning.

Native Prairie Outreach Project

Since 2008, CPNRD has been coordinating the Native Prairie Outreach Project at Husker Harvest days, distributing native prairie seed packets and education materials to approximately 1,500 people annually. Nearly 800 packets of seed totaling 11 acres worth of restored prairie are handed out annually totaling (10) 55 gallon garbage cans. Information on native plants and patch-burn grazing systems is also provided. Partnering NRDs contribute to purchase high diversity seed mix from the Prairie Plains Resource Institute. The mix contains hand-harvested forbs and tall grass species.

In 2019, CPNRD developed a website to track the success of the project. Landowners document their plot by adding a location and photo of their plot. A QR code for landowners to scan with their phone was also developed to take them to the website. The NRDs are planning to continue the project in the future. Website: https://arcg.is/1Ca1iP

Landowners will continue to be 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 and Water Conservation Program (NSWCP) 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.

The NSWCP Fund provides cost share to landowners in the District for planned grazing systems, one of the practices that has beneficial effects on rangeland. The District encourages landowner management practices through the NRCS to improve and, where required, to re-establish range areas. Such practices will have to be completed by individual landowners. Although the NRDs are not responsible for weed control, the District will continue to work with those units of government that are responsible under state law and with private agricultural groups to develop effective controls that will improve rangeland and cropland. When the NSWCP fund is depleted, the NRD provides cost-share for windbreak installation and abandonment of decommissioned wells.

Objectives

1. To establish adequate permanent cover on all Class VI and VII Land.
2. To establish approved cultural management practices, vegetative practices or practices or structural improvements.

Alternatives

1. *Information and education programs on range management techniques and practices.*
2. *Financial assistance programs on seeding, range management and practices.*

X. Pollution Control and Solid Waste Disposal

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

PROBLEMS

Pollution control, solid waste disposal and sanitary drainage have all been addressed by the board of directors. The NRD's primary focus is on water quality and water quantity issues. Federal and state governments have taken most of the responsibility for pollution control, solid waste disposal and sanitary drainage. 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, but Nebraska legislation gives some responsibilities to the districts for all forms of pollution.

Air Quality Air quality across the District is excellent. Complaints received by the District are generally handled by local health departments, the Nebraska Department of Environment and Energy (NDEE) or U.S. Environmental Protection Agency (EPA). Complaints sometimes develop when farm operators cause smoke by burning residue in their fields. Other common complaints involve odors from feedlots that 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. CPNRD encourages tree planting to reduce this problem. Besides erosion, the largest single land pollution problem in the District is solid waste disposal. 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. The NRD will work in urban areas to study and implement suitable programs for recycling waste products and to educate urban and rural residents about the merits of such programs and plans.

Land Improper disposal of solid waste, petroleum products, chemicals and other waste products may cause land pollution and contribute also to water quality concerns. Soil erosion is a form of land pollution and the NRD has separate planning to solve erosion and sediment control problems. The Nebraska Legislature adopted LB1257 in 1992 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 such dumps and landfills did not meet the Act's regulatory requirements and needed to be improved or relocated in order to meet those standards. Counties were required to file a solid waste disposal plan in 1994 including a 25% waste reduction goal for July 1, 1996 was required; and a 40% waste reduction goal was set for July 1, 1999. The goal was 50% for July 1, 2002.

NEEDS

Air Quality While some lowering of the air quality does occur from dust, smoke, industrial and other causes, the general quality of the air remains excellent and should be preserved.

Land The Act banned disposal of yard waste into landfills from April 1 -November 30 of each year. Lead-acid batteries, waste oil, waste tires and household appliances are also banned from disposal into landfills. In 1996, the landfill ban was extended to all unregulated hazardous waste. Waste tires in any form were banned as of July 1, 1998. Indiscriminate dumping of trash and litter occurs across the District and it may increase as a result of the various landfill bans, but the problem is expected to continue to be less serious than in more populous areas.

SOLUTIONS

Air Quality Complaints regarding odors from feedlots and other livestock operations are increasing. Tree planting is encouraged to reduce air quality problems resulting from blowing dust.

Land 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.

SPECIFIC PLANNING

While all forms of pollution are of concern, the problem of high nitrates will remain the highest priority for the District during this planning period. 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. The NRD will strive to meet the established objectives for pollution control and solid waste disposal by continuing to monitor the quality of natural resources and will initiate or update current programs as necessary.

Objectives

1. Establish irrigation water management techniques on all irrigated land to properly conserve and efficiently utilize soil, water and fertility.
2. Protect and preserve the quality of ground and surface waters that presently meet acceptable standards as adopted by the U.S. Public Health Service and Nebraska Department of Environment and Energy.
3. 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. Establish adequate permanent cover on all Class VI and 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. Establish approved 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. Establish erosion control measures as needed, on all industrial development sites, residential development sites, road construction sites and other non-agricultural sites; in order to reduce erosion and sedimentation in surface waters.

Alternatives

1. *Information and education programs on pollution control.*
2. *Sediment and erosion control regulations.*
3. *Financial assistance programs on pollution control and practices.*
4. *Technical assistance programs to individuals, groups and units of government.*
5. *Development of research programs on pollution control and water quality.*
6. *Provide grass seeding and other specialized equipment for establishing permanent cover and other pollution control practices.*
7. *Minimum of protected flows.*
8. *Non-point source pollution control regulations for surface water and groundwater.*
9. *Point source pollution control regulations for surface water and groundwater.*

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.**

PROBLEMS

The logistics of offering information and education is a challenge in a District that stretches some 175 miles from west to east and serves a population of over 114,000 people. The challenge is multiplied when the subject matter is as complex as "natural resources" and when the bulk of the population erroneously believes that it lacks sufficient background in the science of soil and water to understand more than just basic information about natural resources. While we can determine how many people have access to the messages we provide and how many times they receive a message, there are no good, solid measurements of the successful transmission of information and education to the target audiences. Other problems include a brisk turnover in news media personnel and among teachers resulting in a need to repeat information to help the level of understanding for such persons who are newly involved with natural resources issues.

NEEDS

The Nebraska Legislature gave the NRDs a regulatory role which requires NRDs to keep the public informed about its programs and requirements. With a District that stretches 175 miles from west to east and serves a population of 144,855 people; the logistics of offering information and education are key objectives of the NRD. The board of directors depends on the public to be informed as it is their responsibility to respond to issues that the public is focused on, recognize constituents' priorities and provide factual information on natural resources issues.

SOLUTIONS

Information and education are key to meeting the objectives of the NRD. Adults are an important audience in the District's education effort. A formal program of required education for the Ground Water Quality Management Program is in effect for farm operators in high nitrate areas of the NRD. Time permitting, NRD staff members are also available to address civic organizations and other groups, if requested. CPNRD has long recognized the role of information and education for maximizing the effectiveness of the programs and projects. Re-evaluations in the early 1990s of the District's information and education program resulted in identifying four priorities:

1. Build on the success of the NRD s information and education program rather than replace it.

2. Redesign and update the publications and other media used to take the Districts message to the public.

3. Establish a strong, effective program to work in traditional education settings.

4. Improve relationships between the District and the news media and schools.

INFORMATION PROGRAMS

Adult education informs the public about groundwater utilization, groundwater quality including high nitrate areas in the District, flood control, soil health, forestry, native prairies, grasslands, invasive plant species, wildlife habitat, endangered species, pollinator habitat, rules and regulations, management plans, research studies and other topics as they arise.

Publications

In 2014, CPNRD began inserting the *In Perspective Newsletter* in the District's 12 local newspapers and continued mailing 1,300 copies and emailing 230 to landowners who have requested the newsletter and/or living out-of-state. Previously, the newsletter was mailed to 6,500 people including landowners in Phase II/III GWMAs, public officials and other agencies. Brochures are available for all NRD programs. Displays providing information about programs are provided in the NRD lobby and at local conferences, agricultural trade shows, etc.

Identity

In 2008, NARD adopted the *Protecting Lives, Protecting Property, Protecting the Future* slogan used by the NRDs in

public outreach efforts. In 2015, CPNRD helped fund an hour-long video- *Keeping Nebraska Local: A Unique Approach to Resource Management,* produced by NETV featuring Nebraska's NRDs. CPNRD director Mick Reynolds narrated the Program. In 2016, CPNRD designed a new logo and in 2017, Red Thread developed a branding video for CPNRD that is used for outreach and educational events. In 2019, Mayhew Signs installed an 8' double-sided aluminum outdoor sign with the NRD's logo and slogan. Love Signs printed and installed an interior foam 3-D map of the District in the NRD board room.

Social Media

In 2015, the NRD's website at **cpnrd.org** was overhauled and social media efforts were expanded by utilizing Facebook and Twitter. An Instagram account was added in 2020. Provident Promotions of Hastings was selected to rebuild the website, the new site launched on March 1, 2021.

Media Relations

Press releases to local radio stations, television, magazines and social media posts are used to provide timely information to the media. CPNRD also participates in radio talk shows with KRVN and KRGI radio stations. Advertising is purchased for radio, television and web pre-rolls on the District's programs and events. In 2020, advertising on Telemundo television was initiated to inform the Spanish-speaking population about CPNRD.

Outreach/Events

CPNRD participates in community projects and events including: Husker Harvest Days, NARD's Foundation and Wellness programs, Nebraska State Fair, Summer Orientation About Rivers, Earth Day events, community and civic meetings and other opportunities as they arise. An annual Water Programs Update is held to inform the public on the NRD's water programs and projects. The conference location is rotated throughout the District. Producers who attend are not required to take the Water Quality Program's Nitrogen Management test.

Conservation Awards

Nominations are submitted for the annual NARD and/or Master Conservationist Awards. In 2013, Great Western Bank approached CPNRD to partner in recognizing landowners who use best conservation practices. Awards were given for cropland, grassland and community efforts. The board discontinued the awards in 2017 when Great Western Bank decided not to continue sponsoring the awards ceremony.

EDUCATION PROGRAMS

CPNRD provides several avenues of natural resources education for educators and students. The *Natural Resources Link Newsletter* is sent to all schools within the District to promote activities available through the Project Wild, Project Wet, Project Learning Tree and Aquatic Wild curriculums. The NRD's information/education specialist is certified in these curriculums and provides activities and presentations to classrooms as requested each month. In 2019, funds were added to the budget to allow for an increase in presentations and materials for K-12 classrooms in the District.

Nebraska Children's Groundwater Festival

The NRD began coordinating the Nebraska Children's Ground-water Festival in 2004 for 4th-5th grade students at the Central Community College and College Park in Grand Island as requested by the Groundwater Foundation. CPNRD is the main sponsor, providing $10,000 annually with donations from businesses and individuals allow schools to attend at no cost. Between 800 -1,000 students attend annually and 300 presenters and volunteers help with the event. In 2019, CPNRD received the Grand Island Izaak Walton League of America Award and the national IWLA Roll Call award for outstanding contributions to the conservation of our nation's natural resources through the Nebraska Children's Groundwater Festival. In 2019, the committee decided to invite only 5th-grade students to align with Nebraska State Standards. In 2020, the Festival was canceled due to COVID-19 restrictions. The 2021 Festival was held virtually from April 1 - June 1. Participation included 44 teachers from 30 schools totaling 1,250 students. Over 30,000 students have attended the festival in-person.

Arbor Day

In 1992, CPNRD began providing seedlings to area schools to celebrate Arbor Day, ordering up to 1,000 seedlings from Halsey to deliver to area schools for Arbor Day. Presentations are provided when requested.

Outdoor Classroom Program

CPNRD began funding outdoor classrooms for schools, outdoor learning areas for communities, and mini-school grants in 2001. The NRD has provided funding for 22 outdoor learning areas since 2001. In 2021, the application was changed to state that the outdoor classroom site must be located on public property.

Outdoor Learning Area

CPNRD staff are members of the Grand Island Groundwater Guardian Team. The Guardians received over $47,500 in grant monies to implement an Outdoor Learning Area (OLA) to promote rain gardens, native prairie, a bioswale, and Buffalo grass on the Nebraska State Fairgrounds. The groundbreaking ceremony was held in 2011 and an unveiling of the first phase of the project was held on August 31, 2012. CPNRD is instrumental in providing updates and maintenance to the site. In 2018, a life-size Bald Eagle's nest, wildlife track stepping stones and tree displays were added and the Buffalo Grass was also reseeded. In 2019, tree rings and leaf/seed examples were added to the tree display. A pollinator path was added to the native prairie area and fencing was purchased to reduce damage from rabbits. In 2021, the gazebo was refinished by Izaak Walton League, plants were transported from the City of Grand Island's welcome sign, the sprinkler system was updated and new signs were installed. The Outdoor Learning Area is open year-round to the public.

College Scholarships

In 2007, CPNRD started providing scholarships for high school students to further natural resources education, funding 10 students at $1,000 per year. In 2014, the program name was changed to CPNRD-Ron Bishop Memorial College Scholarship to honor former manager Ron Bishop. In 2018-2019, the Program was changed to provide five $1,000 scholarships to junior and senior college students only.

High School Contests

Land and Range Judging CPNRD co-hosts the South Central Land Evaluation contest and the Area 4 Range Judging contest with the Natural Resources Conservation Service. CPNRD's staff is responsible for school registration, scoring, coordination and training volunteers, assisting in field activities, meals and award distribution. NRCS finds and prepares site locations and conducts field activities. UNL Extension also partners by providing staff from the county offices.

Envirothon The central region Envirothon is co-hosted with Lower Loup NRD and the state Envirothon location is rotated each year. In 2021, the international NCF-Envirothon was hosted virtually by Nebraska's NRDs with 41 teams competing from the United States, Canada and China. Nebraska last hosted the national contest in 1996.The NARD Foundation provided cash prizes to the top ten placing teams.

SPECIFIC PLANNING

The information and education program will continue to be improved and expanded during this planning period. Water quality programs, flood control projects and Platte River issues will generally receive the highest priority. CPNRD will play a role in developing information and education programs through the various associations and organizations to which the District belongs and will continue to support the educational efforts of other environmental programs that offer a similar message and evaluate a marketing program in an effort to improve the ability of citizens to identify and respond to natural resources issues.

Objectives

1. Establish and implement an agenda for informing and educating the general public in the entire District about the District's duties, responsibilities and objectives.
2. Establish and implement an agenda for informing and educating those people with direct interests in the District, specific projects and programs about such projects and programs.
3. Work with representatives of 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 through an information 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.

Alternatives

1. *Financial assistance programs for educators.*
2. *Technical assistance programs for educators, groups, and individuals who are communicating the natural resources issues.*
3. *Research assistance to news media, students and other interested groups and individuals.*
4. *Information and education programs.*

XII. Budget

Fiscal-Year Budgets are adopted by the CPNRD Board of Directors in accordance with state statutes.

Local property taxes provide 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.

Figure 21. 2011 and 2021 Fiscal Year Budgets

GENERAL & SINKING FUNDS	FISCAL 2011	FISCAL 2022
Cash, Investments & Co. Treasurer	$5,947,771.21	$12,771,569.30
Revenue	$5,936,637.45	$7,829,190.93
Total Balances on Hand & Revenue	$11,884,408.66	$20,600,760.23
General Fund Requirements	$13,202,003.69	$23,195,755.51
County Treasurer Commission	$30,352.20	$39,441.81
Sinking Fund Requirements	$3,275,072.20	$1,349,185.60
Total Requirements-Both Funds	$16,598,002.57	$24,584,382.92
Property Tax Required		
General Fund	$3,140,571.74	$3,983,622.69
Sinking Fund	$1,573,022.17	-0-
Total Both Funds	$4,713,593.91	$3,983,622.69

Fiscal 2010/2011 Levy	General Fund	0.03338	Both Funds
	Sinking Fund	0.01672	0.0501
Fiscal 2021/2022 Levy	General Fund	0.022196	Both Funds
	Sinking Fund	0.00000	0.022196

XIII. Appendix

The Central Platte NRD has developed a number of plans for specific purposes. Such plans are the result of very careful study and application of appropriate procedures of hearing and public participation. Some plans have been developed by the Board of Directors within the specific guidelines of the law; others have been developed by outside public agencies and private consulting firms. The plans are developed in accordance with applicable laws and procedures, including public hearings when necessary.

Each construction project has a specific plan. Usually, each plan is preceded by a feasibility study with a final design being made after the project has been authorized for construction. All current plans of the District are kept on file at the Central Platte NRD headquarters office in Grand Island, and each is available under the rules established by the District to conform with open records provisions of state law.

Specific planning, previously adopted by the Central Platte NRD Board of Directors, is hereby adopted by reference as part of this 2021-2031 Comprehensive Resources Master Plan.

Figure 22. Plans Included in this Document by Reference

1. Central Platte Natural Resources District Bylaws
2. Central Platte Natural Resources District Long Range Implementation Plan
3. Central Platte Natural Resources District Groundwater Management Plan
4. Central Platte Natural Resources District Erosion and Sediment Control Plan
5. All construction plans of the Central Platte Natural Resources District
6. Central Platte Natural Resources District's Integrated Management Plan (IMP)

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