Central Platte Natural Resources District

Master Plan 2011

Adopted by the Board of Directors,
Central Platte Natural Resources District,
on March 24, 2011,
in accordance with Nebraska Law (Section 2-3276)

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Introduction

The natural resources of Nebraska are important factors in the history, present and future of our state, affecting the economic, social and physical development of the state. Indian nations first populated the state, and their recognition of the potential of the land and water resources. This was demonstrated by their reliance on these resources is sharp in contrast to the view of the early white explorers who dismissed the area as "The Great American Desert." As settlers made their way across Nebraska on several overland trails, including the Oregon and Mormon trails, they saw the potential of the land and water. Striving to develop these resources to their potential, these Nebraskans learned to cooperate on soil, water and wildlife management issues, developing plans to conserve the resources and to be wise stewards so that future generations might also benefit from these resources.

History of Nebraska's NRDs

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 usually asked to provide solutions to specific problems. The Legislature usually responded by creating a special-purpose governmental unit that could resolve an issue, but often without sufficient authority or funding to provide effective long-term solutions instead of just stopgap measures. By the late 1960s, Nebraska had over 500 such special purpose districts including: irrigation districts, drainage districts, soil conservation districts, watershed districts, rural water districts, watershed improvement boards, reclamation districts, sanitary improvement districts and sanitary drainage districts. In addition, state agencies were empowered to deal with some natural resources issues.

The solution was for the state to create 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. The designated Mid-Platte East NRD covered portions of the Platte Valley that were being served by four watershed districts and several Soil and Water Conservation Districts in an 11-county area.

One of the first acts by the district's board of directors was to change the NRD's name to Central Platte Natural Resources District. Grand Island was selected by the first board as the headquarters city of the NRD. Ron Bishop, general manager of the watershed district, became the first and only general manager to serve the NRD since it's creation.

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 ground-water and surface water.
7. Pollution control.
8. Solid waste disposal/sanitary damage.
9. Drainage improvement and channel rectification.
10. Development and management of fish and wildlife habitat.
11. Development and management of recreational and park facilities.
12. Forestry and range management.

The NRD also works closely with the NRCS. The Natural Resources Conservation Service provides technical assistance to landowners to help solve conservation problems while carrying out the NRD's programs. The NRD assists with this effort by providing personnel to NRCS to assist with their activities and to help administer the NRD's programs.

Master Plan Required by State

All NRDs have filed a Comprehensive Resources Plan (master plan) in accordance with state statutes (Section 2-3276). The same section also requires the NRD to update its master plan "as often as deemed necessary by the district, but in no event less often than once each ten years." Section 2-3280 of the state statutes requires 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 five-year Long Range Implementation Plans and under Section 2-3278 to "prepare and adopt any individual project plans as it deems necessary to carry out projects approved by the district."

Planning Format

Prior to filing its original master plan in 1979, the Central Platte NRD board of directors determined that a Comprehensive Plan for land, water and related resources should be developed to provide a broad framework for the efficient and orderly development and management of those resources. The board then determined that the Comprehensive Plan would provide the framework and outline for the Long Range Implementation Plan; this determination was affirmed by the 1989 Master Plan update.

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.

The board has chosen to develop its plans, facilities, works and programs for implementing the 12 specific authorities required by state law in an integrated manner, consolidating the 12 authorities into nine planning and action categories. This consolidation has enabled the District to avoid 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 1 below.)**

Figure 1. Central Platte NRD's Consolidated Areas of Responsibility

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.

Figure 2. Central Platte NRD's Board of Directors (as of January 2011)

Sub-District	Board Members
1	Brian Keiser, Jay Richeson
2	Dwayne Margritz, Bill Vasey
3	Steve Sheen, Marvin Reichert
4	Mike Dobesh, Bob Schanou
5	Jim Bendfeldt, James Shiers
6	Mick Reynolds, Scott Woodman
7	Ed Stoltenberg, Jerry Wiese
8	LeRoy Arends, Alicia Haussler
9	Ed Kyes, Ladd Reeves
10	Barry Obermiller, Charles Maser
At-Large	Dick Mercer, Kearney

Chairman– Barry Obermiller
Vice-Chair– Ed Kyes
Secretary– Jim Bendfeldt
Treasurer– Jerry Wiese
NARD Delegate– Bill Vasey
Eastern Projects Chair– Mick Reynolds
Programs Chair- Bob Schanou
Variance/Appeals Chair-Jim Bendfeldt
Western Projects Chair– Dick Mercer
Water Resources Chair- Scott Woodman

Figure 3. Central Platte NRD's Staff (as of January 2011)

Ron Bishop, General Manager
Tom Backer, Projects Assistant
Matt Bohnenkamp, Water Resources Assistant
Jon Michael Bosley, Geographic Specialist
David Carr, Range Management Specialist
Dan Clement, Water Resources Specialist
Kelly Cole, Programs Coordinator
Mark Czaplewski, Biologist
Deb Jarzynka, Secretary/Receptionist
Marcia Lee, Information & Education Specialist
Dianne Miller, Administrative Director
Jesse Mintken, Resources Technician
Milt Moravek, Assistant Manager/Projects Director
Sandy Noecker, Data & Compliance Officer
Angela Warner, GIS Specialist
Duane Woodward, Hydrologist

Staff in NRCS Field Offices:
Grand Island: Carmen Glines Kearney: Shelly Lippincott
Central City: Sara Carlson
Lexington: Samantha Keith, Kevin Gill

District Description

Location

Central Platte NRD lies in the south central part of Nebraska, straddling the Platte River encompassing 2,136,304 acres. The district extends for about 175 miles from the Lincoln-Dawson county line on the west, near Gothenburg, to Hwy 81 on the east, near Columbus. In 2001, 38 square miles of Frontier County (originally 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. The entire district is within the Third Congressional District. It is bordered by the Lower Loup, Lower Platte North, Upper Big Blue, Little Blue, Tri-Basin, Middle Republican and Twin Platte NRDs.

Counties: There are 11 counties that have land included in the district. All of Dawson and parts of Frontier, Custer, Buffalo, Howard, Hall, Nance, Merrick, Hamilton, Platte, Polk. **(See Figure 4 below.)**
Nebraska Legislative Districts: Districts 22, 23, 33, 34, 35, 36, 37, 41, 43.
Department of Roads: parts of the NRD lie within 4 of the 8 Field Districts- 3, 4, 6,7
Public Service Commission: parts of the NRD lie within 3 of the state's 5 Districts- 3, 4, 5
Nebraska Game & Parks Commission: parts of the NRD are within 4 of the state's 7 Districts-3, 4, 5, 6

Figure 4. Counties in Central Platte NRD

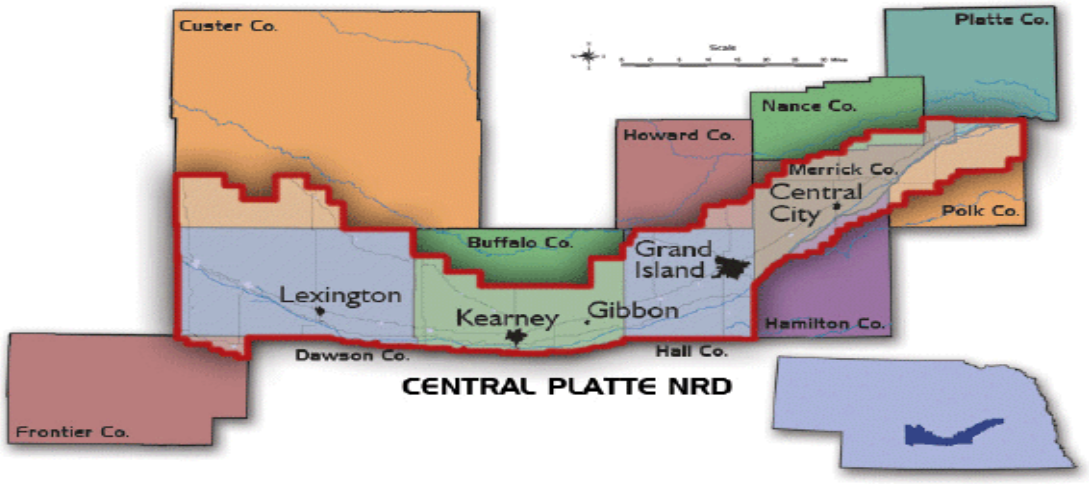
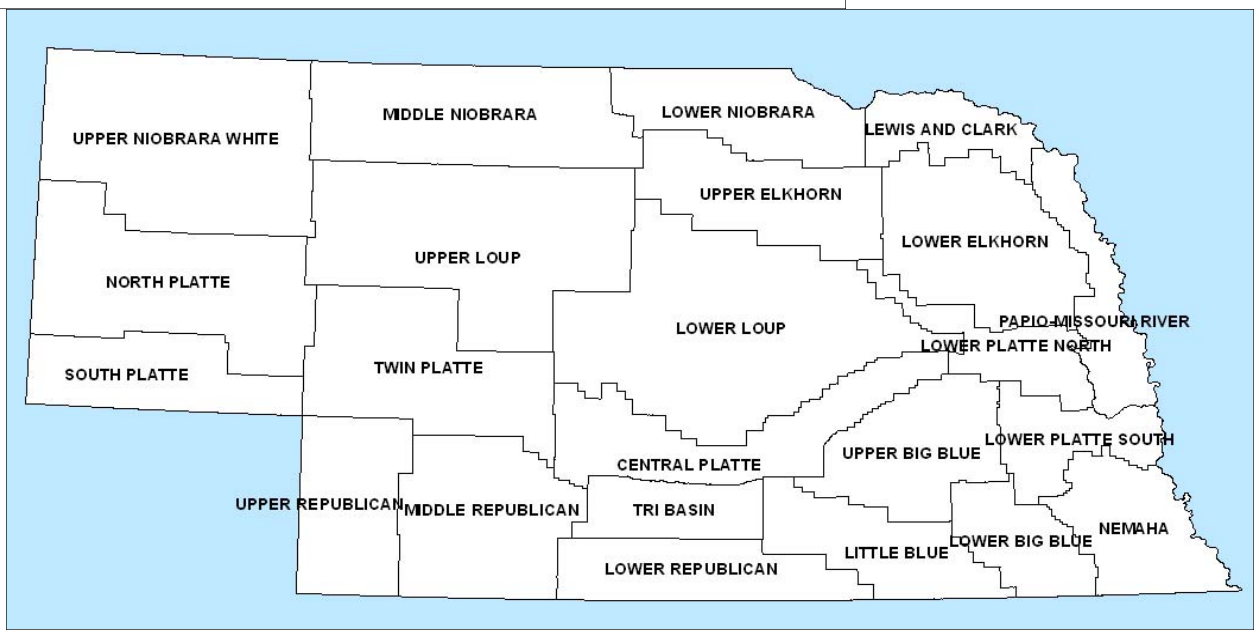


Figure 5. Nebraska's 23 Natural Resources Districts



Topography

The district 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.

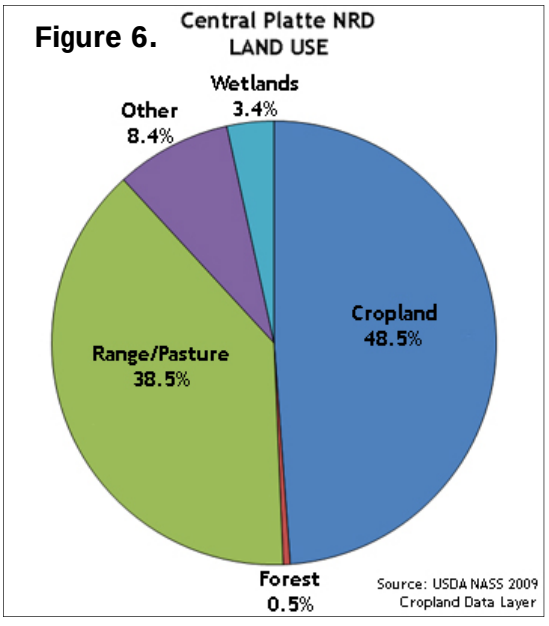
Climate

Central Platte NRD is in two of the state's eight climatic divisions (central and east central), and is bordered directly by five of the remaining six. Thus, the NRD shares all of the state's climatic characterizations: temperature extremes and frequent, often violent, changes in the weather. Tornadoes, thunderstorms, blizzards and hailstorms occur occasionally. Summers are generally hot and winters can be severely cold, although the 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.

Land Use

The District's land use includes cropland, pasture and rangeland, some woodland and other minor cover, urban/ residential development, streams and other water, and transportation. Much of the cropland (estimated at 90% by NRCS) is irrigated row crop. 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 the NRD uses groundwater, which, in the western part of the District comes from the Ogallala Aquifer and in the eastern part of the District comes from Pleistocene (Wisconsin) sands and gravel. Groundwater is also the major source of drinking water in the District.

The total valuation of the NRD, as calculated for property tax purposes, for property tax purposes, is $4,753,834.43 for Fiscal 2010.



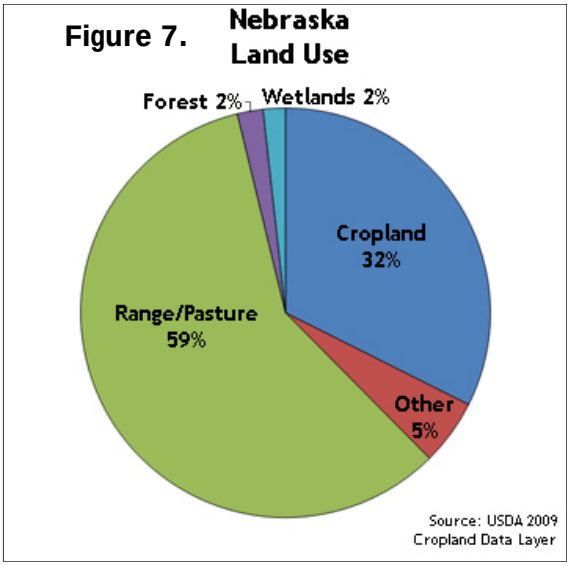


Figure 8. Municipal Population
(2010 Census)

	2010	2000
Grand Island	48,520	42,940
Kearney	30,787	27,431
Lexington	10,230	10,011
Cozad	3,977	4,163
Gothenburg	3,574	3,619
Central City	2,934	2,998
Gibbon	1,833	1,759
Wood River	1,325	1,204
Shelton	1,059	1,140
Elm Creek	901	894
Doniphan	829	763
Cairo	785	790
Overton	594	646
Alda	642	652
Eustis	401	464
Silver Creek	362	441
Duncan	351	359
Clarks	369	361
Chapman	287	341
Amherst	248	277
Sumner	236	237
Riverdale	182	213
Farnum	171	223
Hordville	144	150
Oconto	151	141
Miller	136	156
Eddyville	97	96
TOTAL	111,125	102,469

Population

At the time of this printing, the 2010 census population information was just released and showed that growth occurred. The NRD population has not been computed; however growth is expected due to the overall population growth. The NRD grew from 114,191 in 1999 to 125,349 in 2000. The rural population is expected to stay generally the same, with the urban population expected to increase. The state of Nebraska has a population of 1,826,341; which is a growth rate of 6.7% from the 2000 census population of 1,711,263.

Figure 8 shows the municipal populations in the Central Platte NRD, according to 2010 census data from the U.S. Census Bureau. Nearly all of the municipalities listed saw a slight increase in population. Grand Island had the largest increase of nearly 6,000 people. The NRD is now charged with the task of determining if District boundary changes are necessary since the ten subdistricts are drawn according to population.

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

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

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

Agriculture: Largest industry within the NRD, as well as the entire state. Major crops grown include corn, soybeans, alfalfa and wild hay. Livestock raising is prominent featuring cattle, hog and turkey operations along with some dairy and sheep. Livestock feeding operations are scattered throughout the District.

Many of the NRD's industries are related in a major way to agriculture, which is important in generating income for the state's (and NRD's) largest economic sectors: service, government and manufacturing. Tourism also plays a role in the NRD's economy.

Education: Important aspect for the population of the NRD including two community college areas, three educational service units (ESU 7, 9, 10). Branches of the Universities and Central Community Colleges exist at Kearney and Grand Island. Off-campus centers for the community college are located in many communities within the NRD.

Court Districts: Four county court judicial districts and four district court judicial districts serve portions of the NRD.

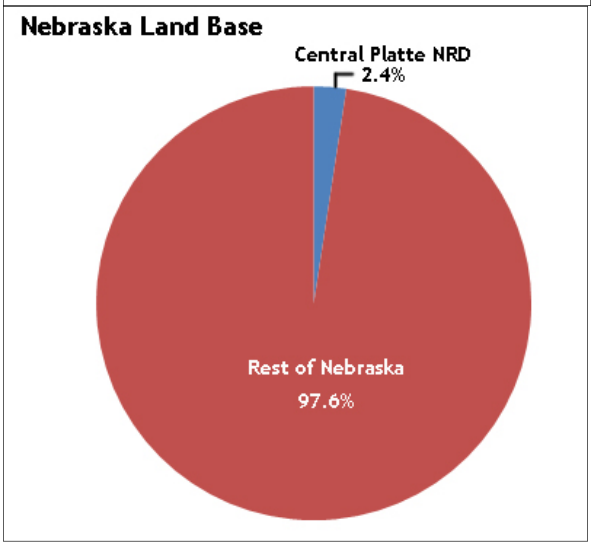
Natural Resources Inventory

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.

Figure 9. Nebraska Land Base



The A horizon, which is the uppermost layer in the soil profile, often is called the surface soil. It is 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.

Immediately beneath the A horizon is the B horizon. It is 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.

The C horizon is the 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 mankind. 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 (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 one-eighth mile wide.

See the eight capability land classes on the following page...

Figure 10. Land Capability Land Classes

The eight capability land classes are briefly 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.

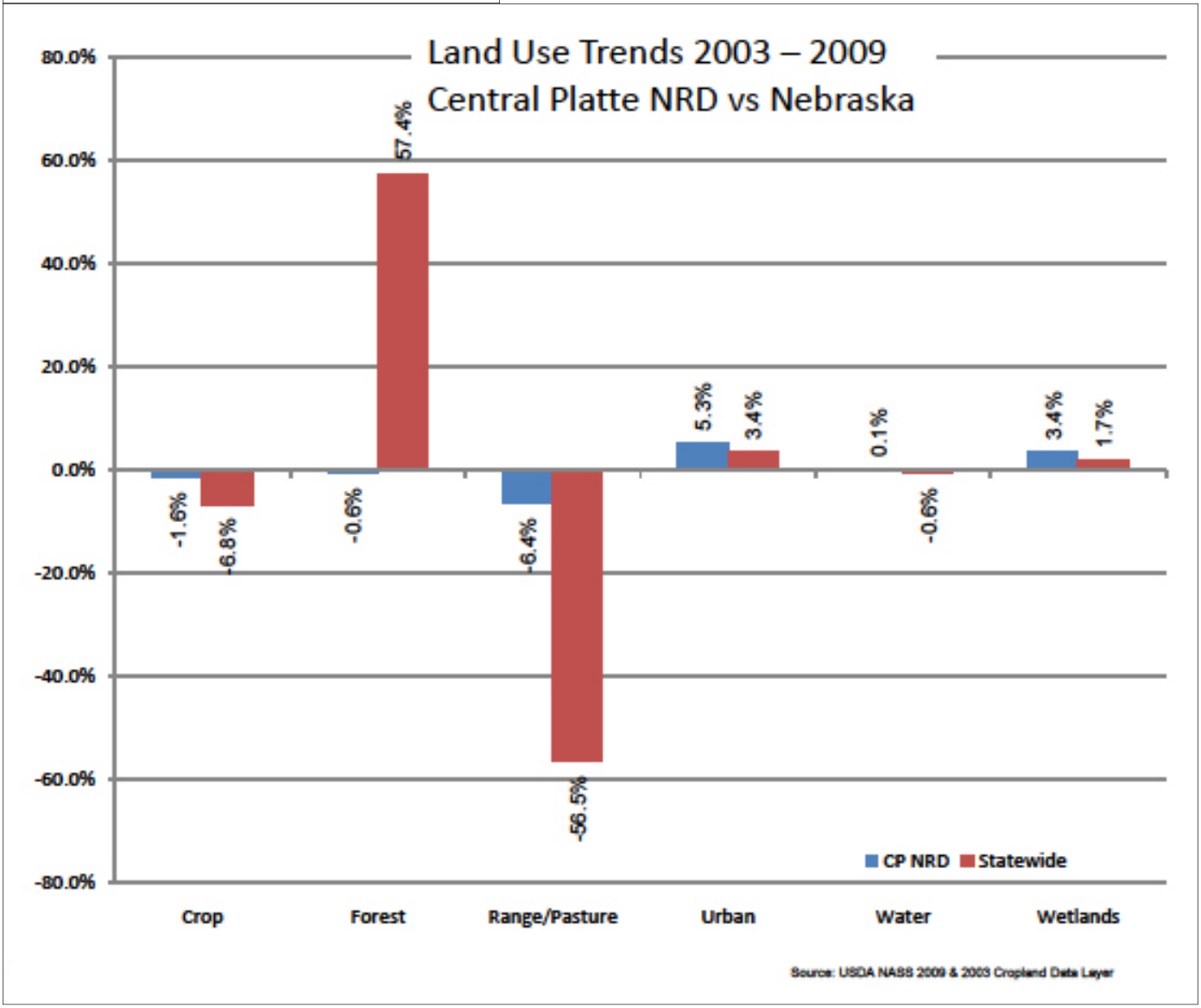
Class VIII—Soils and landforms with limitations that preclude their use for commercial plant production without major reclamation and restrict their use to recreation, wildlife, water supply or to aesthetic purposes.

Figure 11. Conservation Needs of Croplands

NEEDS	NON-IRRIGATED CROPLAND	IRRIGATED CROPLAND	TOTAL CROPLAND
ACRES OF LAND USE	195,482	970,252	1,165,733

Source: Nebraska Dept. of Revenue 2009 Taxable Acres
Based on the percent of each county within the Central Platte NRD

Figure 12. Land Use Trends 2003-2009



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 these other streams can be considered major sources of water since their flows are largely intermittent and flows are not considered adequate for any use. The largest of these streams is the Wood River (Custer, Dawson, Buffalo, Hall and Merrick counties). Other streams include Buffalo Creek (Custer, Dawson and 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) and Spring Creek (Dawson County). There are also numerous water impoundments, but most are very small, The largest impoundment in the District is Johnson Lake, which straddles the southern boundary of Dawson County and lies mainly in Gosper County (Tri-Basin NRD). The Platte River is a major river in three states: Colorado-where both branches originate, Wyoming-through which the north branch flows into Nebraska, and Nebraska-where the two branches meet near North Platte and flow together to empty into the Missouri River at Plattsmouth.

Water Rights- Water rights uses on the Platte River includeirrigation, power generation, and other uses (most of which are upstream from the NRD) have an effect on the flows within the Platte River. The Central Platte NRD and, separately, the Nebraska Game and Parks Commission have been granted instream flow water rights to protect specified flow rates at specified times on specified river segments against future demands for Platte River water. **(See page 55-56 for more information.)**

Drainage- In the 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 the 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 new problems that may be even greater that existed prior to installing the system.

The NRD currently has two drainage projects completed. Both are project improvement areas. The Platte County Project was the first such project completed by the District and it provides drainage improvements and minor flood control benefits to 1,300 acres of irrigated cropland in southwest Platte County. The other project is the Amick Acres Project in south central Hall county, just to the west of Doniphan. It diverts flood and drainage water away from the Amick Acres Subdivision and it involves about one mile of channel, utilizing part of a county road ditch. Maintenance on each project will be performed as necessary, with the cost assessed to benefitting landowners. Other potential sites for drainage projects continue to be monitored and considered.

Wildlife Habitat- Central Platte NRD has participated with the NRCS, U.S. Fish and Wildlife Service and other federal agencies in identifying wetlands throughout the District for the purposes of the farm bills and the Federal Endangered Species Act. One of the programs, which is a a part of this proposal is the Platte River Recovery Implementation Program (PRRIP.) The first PRRIP increment, planned to last 13 years, includes completion of water projects expected to improve flows in the central Platte by an average of 130,000-150,000 acre-feet annually. A second Program element is the protection and maintenance of 10,000 acres of habitat during the first increment, ultimately working toward a 29,000-acre goal. **See Page 58** for information on the PRRIP, which is being implemented for the recovery of threatened and endangered species (whooping crane, piping plover, interior least tern and the pallid sturgeon, which exists in the lower Platte but is potentially affected by upstream uses).

Irrigation- The NRD has 1,013,215 irrigated acres on record, in which 94,205 are able to be irrigated by surface water. 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 problems (these types are the same for surface water and groundwater):

Point source problem is one that can be traced to a specific source. It's 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 problem 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 the banks of perennial and intermittent streams or permanent bodies of water. A buffer strip traps chemicals before they reach the waterway. As a result, the chemical dissipates instead of polluting the stream.

In 2005, the NRD received an irrigation run-off complaint in which the Western Projects Committee decided to keep open throughout the 2005 irrigation season to see if the situation improved. The landowners worked with the NRCS to remedy the problem. The District adopted rules and regulations designed to control groundwater irrigation runoff that have been in effect since January 1977. Periodic review during the planning period covered by this document will be made to assure that the intent of the statutes is carried out.

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. **(See page 51 for more information.)**

Groundwater Groundwater is a major source of supply for all water uses within the District. The largest of these uses is irrigation, with about 29,907 active wells in the Central Platte NRD registered by the Nebraska Department of Natural Resources. 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. The NRD purchased the Six Mile Canal in December 2010.

Drinking Water- Most of the drinking water used in the District is from groundwater, directly or indirectly (for example, 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 Central Platte NRD 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- This program assists irrigators that chemigate to comply with Nebraska's Chemigation Act and Regulations adopted by the Nebraska Department of Environmental Control and the NRD. The Chemigation Act requires that any farmer who applies chemicals through a closed irrigation system shall have specified safety equipment, that the operator shall be properly trained and certified and that a permit must first be obtained from the appropriate natural resources district before chemigating. All chemigation applicators must be certified. Whether or not the permit holder is certified, the person who actually applies chemicals through an irrigation system must be certified; which consists of attending a course of instruction offered through the University of Nebraska Cooperative Extension Service and passing a written exam. The certification is good for four years, after which renewals are required. By state law, a chemigation permit must be obtained before any person can legally chemigate.

The fee for a new permit is $30. The NRD reviews completed applications and conducts an inspection of the system. 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.

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 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- No one knows for sure how many abandoned wells exist in the District, but the potential danger and the damage they can cause to the groundwater supply is a concern. Recognizing dangers posed by improperly abandoned wells, the NRD has for several years urged landowners to locate, fill and seal wells, cisterns, cesspools and other similar cavities on their property, but the problem persisted. The most dramatic danger caused by improper well abandonment is a hole into which children, animals or equipment might fall. A more likely danger, though, is the creation of a path through which contamination of the groundwater might occur. Abandoned wells that have not been properly filled and sealed can act as a direct conduit for

pollutants to the water supply beneath the earth's surface. State law requires that abandoned wells be properly sealed, and the law prescribes the correct procedures. However, the state has not had the resources to ensure that the job is being done or that it is being done properly. Thus, many wells were not sealed, and some that were sealed were not done so properly and have become dangerous.

NRDs, State of Nebraska and NRCS are responding to this threat by providing well owners with financial and technical assistance to get the job done right through well decommissioning programs. Cost share is 60% up to a $750 maximum for any old well with some exclusions and wells plugged prior to cost share approval are not eligible for payment. A licensed water well contractor or licensed pump installation contractor is required to abandon the well and verify that the water well was decommissioned in accordance with state law, standards, rules and regulations. Claims for payment are not accepted more than five months from the date the application is approved. There are no extensions. The NRD and the DNR both budget at least $15,000.00 for the program.

Figure 13. Wells Decommissioned in the CPNRD (Fiscal Year)

YEAR	2010	2009	2008	2007	2006	2005	2004	2003
# WELLS	93	135	87	113	113	105	137	184

Improving Groundwater Data Collecting- The Nebraska Environmental Trust is supporting a three-year project that uses a Magnetic Resonance Sounding (MRS) to gather information on ground water without drilling holes. MRS is a quick, non-invasive surface geophysical technique that directly measures groundwater; which will be used in place of test holes and aquifer pump tests that are sparse, time-consuming and expensive. Use of MRS parameters will improve the accuracy of groundwater models and enable water resource managers to make more informed decisions.

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 Department of Water 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 is currently aiding in the development of a study called the Cooperative Hydrology Study (COHYST) which provides information about the interrelationships between surface water and groundwater that exist. The study will determine potential conflicts that may result that could impact current groundwater or surface water management plans and potential integrated management plans. **(See page 41** for more information on COHYST.)

Wildlife Resources Inventory

An important wildlife resource area, referred to by some as having national and international significance, is found within the boundaries of the Central Platte NRD 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. 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. **(See page 52 for more information.)**

In an effort to address regional endangered species issues in a cooperative fashion, the federal government, along with the Platte Basin states of Nebraska, Colorado and Wyoming; signed the Platte River Recovery Implementation Program to build a framework for a long-term program that will satisfy Endangered Species Act requirements for water users in the basin. **(See page 58 for more information.)**

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 56 for more information.)**

The Master Plan 2011-2021

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 and 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. The NRD adopted an Erosion and Sediment Control Plan in 1987 and revised it in 1997. The system works on a complaint basis. Once there is a complaint, the NRD will meet with the landowner to determine if an agreement can be reached on solving the problem. The NRD will make recommendations on what can be done to stop the erosion. The landowner will then be required to perform at least one of the recommendations, starting the project within six months. Once the work starts, the co-operator has one year to complete it.

The law states that there must be 90% cost-sharing available to the landowner who is in violation before the owner can be required to install the improvements. The same law sets aside 5% of the Nebraska Soil and Water Conservation Fund Program monies to be used to cost-share with landowners who are in violation. The Erosion and Sediment Control Plan is included as part of the NRD's Master Plan. The NRD doesn't receive a lot of these complaints.

Problems: Soil erosion occurs in all parts of the Central Platte NRD. Erosion causes damage to land suitable for vegetation, to fish and other aquatic life, to 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, which almost always results in scouring and movement of soil, and removal of vegetative cover during land clearing, 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.

NRCS (Natural resources Conservation Service) is engaged in a national cooperative program of soil classification and mapping, and all lands within the District have been classified and mapped. The NRCS is updating its soil classifications in 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 was determined by NRCS. The NRCS also assists the U.S. Fish and Wildlife Service in determining wetlands in order to meet the "Swampbuster" provisions of the Act. The Act places specific requirements upon landowners and operators desiring to continue participation in various Federal programs. Highly erodible land was determined by NRCS in 1990 and producers desiring to meet the criteria of the Act received assistance from the NRCS in conservation planning. These plans were required to be implemented by 1995 under the Act.

Needs: Sheet, rill and small gully erosion, as well as 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.

Solutions: The NRD has established various objectives and alternatives for meeting its Soil Conservation and Erosion Control responsibilities. (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.)

Objectives

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

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

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.

Conservation Techniques: Practices that control soil erosion have been in use 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 the following:

1. **Practice of mulch or minimum tillage.**
2. **Grade stabilization structures.**
3. **Terracing with contour farming**
4. **Converting marginal land to permanent pasture or woodland.**
5. **Field Windbreaks.**
6. **Good pasture and range management**
7. **Crop Rotation**
8. **Irrigation water management**

Cost Share Programs: The NRD is a sponsor and participant in cost-sharing programs to help landowners meet their requirements and responsibilities. The District, with the assistance of NRCS field offices, administers the Nebraska Soil and Water Conservation Program; which is administered by the NRD 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.

II. Flood Prevention, Control and Channel Rectification

Much of the area of the NRD has long been plagued by floods. On the average, there's a flood every year in some area of the District, with major floods occurring every six to eight years. The land area within the District is unusual in the fact that most of the tributaries of the Platte River run almost parallel to the Platte itself. Consequently, the tributaries span many miles of the flat terrace or bottom lands adjacent to the Platte before emptying into the river.

In the central and western 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 Wood River has approximately 173 miles of channel meandering through the fertile Platte River Valley. There are numerous flood control structure sites in its upper reaches. However, in the flood of June 1967 on the Wood River, most of the rain contributing to the flooding in the Grand Island area fell east of Kearney where there are few flood control structures sites. Although flood control structures are, or could be, of great benefit to this area, total protection cannot be achieved without some form of channel rectification. The Board has adopted, as a general policy, the design and construction of flood control measures on a watershed basis.

The NRD has developed over 30 flood control structures. 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. The NRD has plans or works, in various stages of development, for flood control in numerous watersheds. (See projects in this subsection.) Plans for individual projects that are subject to state and/or federal regulations or require financing from state and/or federal sources are on file with the appropriate agencies as well as with the NRD. CPNRD also has a continuing maintenance program on the snagging and clearing projects to reduce flood damages in the District.

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

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 east end of the District, channel rectification may be the only solution to the severe flooding problems there. Central Platte NRD also needs a continuing maintenance program to enable its projects to continue alleviating flood damages in the District.

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.

The NRD has plans or works, in various stages of development, for flood control in eight watersheds: Buffalo Creek, Silver Creek (Hall County), Clear Creek, Upper Prairie Creek, Prairie Creek, Elm Creek, North Bend, Spring Creek, Moores Creek and Wood River. More specific information about these projects is provided in the subsections that follow the listing of objectives.

The Central Platte NRD has established various objectives for meeting its Flood Prevention, Control and Channel Rectification 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.

Objectives

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

Specific Planning: The Central Platte NRD Board of Directors has 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. 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.

Central Platte NRD also has a continuing maintenance program on the snagging and clearing projects to reduce flood damages in the District.

Hazardous Mitigation Plan- At the time of this publication, JEO engineering firm has applied for a Hazardous Mitigation Plan for FEMA. JEO sent the application to FEMA for 75% cost share to develop the study. Many communities in the NRD expressed interest in pursuing the study since the potential FEMA funds available would enable communities to take action and reduce threats from natural disasters. In September 2008, the NRD was awarded the Federal Emergency Management Agency grant to develop the multi-jurisdictional All-Hazard Mitigation Plan. Public input from officials and people living in the area is a key component of the hazard mitigation planning process. Regional meetings were held in February to obtain input on the hazard mitigation plan in the initial stages. Potential hazards affecting the area and individual communities were identified, critical facilities located, and potential mitigation actions or projects were listed.

Among the many projects being considered to protect people and property are flood and drainage system improvements, purchasing backup generators for critical facilities, evaluating/replacing alert sirens, purchasing weather radios, constructing public tornado shelters and safe rooms, tree inventory and maintenance programs to reduce electrical outages. Kirkham Michael Engineering of Lincoln, Nebraska, was hired to assist in the development of the plan. Meetings have been scheduled in August 2009 to obtain additional input about the draft plan and to further evaluate and prioritize hazard mitigation actions/projects.

Projects Completed

1. Kearney East Drainage Project Landowners east of Kearney sent a petition to the NRD in 1998 requesting assistance with high groundwater levels due to poor surface drainage. The project area extends from Cherry Road to Hwy 10C Link and consists of 10 miles in length and less than one mile wide.

Olsson Associates presented a design to the NRD including aerial photography and mapping of the area that would improve the drainage system within the designated watershed area and determine the viability of lowering groundwater by means other than surface drainage. The design was presented to local landowners in 2001. In March of 2001, the board voted to cease future involvement with the project due to lack of individual interest, cost, and a letter sent to the NRD from the Nebraska Game & Parks Commission stating a number of oppositions to the project. Petitioners were notified.

2. Snagging & Clearing Projects

Oconto- In February 2001, the board approved emergency snagging and clearing of a drainage channel on the northern edge of Oconto, located between Hwy 21 and Hwy 40 that was hit by a tornado in 2000. The project was completed in March 2001.

Platte River- In May 2000, 60 bridge pilings were removed on the North and South channels of the Platte River east of Hwy 281 at a cost to the NRD of $6,000.

3. Warm Slough/Trouble Creek Flood Control Project Due to a history of flood damage to agricultural and urban property within Central City, a project was proposed for reducing flooding along those streams; caused by storm runoff into the Warm Slough, Dry Run and Trouble creeks. That project would have included construction near Grand Island in order to take care of storm runoff from the city, as well as channel clearing and renovation from Grand Island to Central City. A study determined that portions of the project were not economically feasible. A revision was made that subsequently dropped the infeasible portions from the plans. Partial funding was provided by the state through the Nebraska Natural Resources Development Fund.

Cosponsors, with varying shares of the local matching portion, were CPNRD, Merrick & Hall counties, and cities of Grand Island & Central City. Construction was completed in 1993 and maintenance responsibilities were turned over to Merrick County and Central City. In 2002, the NRD performed snagging and clearing of the Lower Warm Slough from Grand Island to Central City with an initial cost of $110,000. Additional funds in the amount of $23,000 was transferred to complete the project since the construction company was required to truck the dirt away due to close proximity of wetlands in the area. From June 1-8, 2008, Central City received over six inches of rainfall, which exceeded a 100-year event. The June rains exceeded a 100-year storm and the project handled the water exactly as it was built to and the project has improved drainage of the entire watershed.

4. Prairie-Silver Flood Control Project A flooding problem was studied by the NRD in central Hall County, west of the city of Grand Island. The District determined that the problem was caused by two short stretches of Prairie Creek and Silver Creek that produced channel overflow after large storm events. A project was developed to correct the problem by cleaning out the channels and constructing training levees to prevent the overflow. Construction was completed on the project in 1986. Construction and land leveling in the area disturbed natural drainage flows along the Prairie/Silver Creek, northwest of Grand Island. In February 2000, a design proposed by the Natural Resources Conservation Service was approved by the board to install a uniform drain and add culverts for a two-mile stretch. The total cost was $22,000 of which the NRD provided $17,500.

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

6. Lepin Ditch Flood Control Project Landowners petitioned the NRD board in 1993 to solve a problem caused by excess storm runoff that was overloading the "old north channel" of the Platte River north of I-80 in southwest Hall County. A study by the Nebraska Department of Roads and CPNRD determined that the problem resulted when I-80 was constructed and an attempt was made to redirect runoff from the Lepin Ditch to another crossing site under the Interstate. A further determination was that a culvert should be placed in the vicinity of the natural channel to allow runoff to flow under the Interstate instead of pooling in that area before draining to the crossing provided. A joint project was developed at a total cost of about $700,000, partners included the NRD, Nebraska Department of Roads and Hall County. Easements were obtained from the area landowners for construction and maintenance of the ditch. Hall County provided site preparation and ditch excavation and provides maintenance since the project is complete. The NRD contributed about $120,000 to pay for the project, which was completed in 1995. The Dept. of Roads provided cost-share money for the culvert under I-80. Hall County provides necessary maintenance for the project.

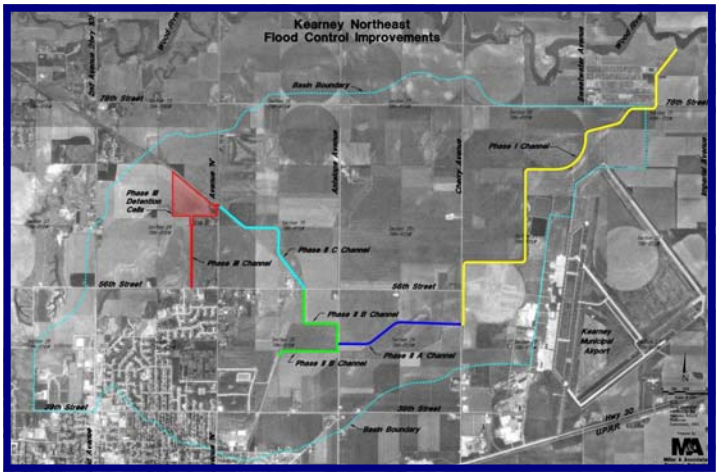
7. Cairo Downtown Improvement Project In November 2007, the NRD approved $50,000 in flood control funds to aid in the construction of adding a 48" drainage outlet for the Project to divert excess water along the Hwy 11 Corridor. The previous drainage system couldn't handle a one-year rainfall event,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

Projects Under Maintenance

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

2. Kearney West Clearing Project In the fall of 1999, landowners west of Kearney requested a clearing project to assist them with flooding problems along Turkey Creek, which is also known as the Platte River North Channel. About 2 1/2 miles was cleared after the request. In 2000, an additional mile was cleared and snagged. Snagging & clearing was also performed on the North channel in 2001 at a cost of $8,650. In 2002, the NRD was notified that the North Channel of the Platte River/Turkey Creek had eroded to within 5 feet of a local sandpit. The U.S. Corps of Engineers surveyed the problem and provided an Emergency 404 permit to the NRD to stabilize the bank. The City of Kearney provided 25% of the cost (approximately $18,500) and the NRD provided $13,500.

3. Kearney Northeast Flood Control Project



A cooperative effort involving the City of Kearney, Buffalo County and CPNRD, was Initiated in March 1990 due to the expansion of the city of Kearney. The expansion toward the northeast has resulted in increased flooding on an unnamed tributary of the Wood River resulting mainly from storm runoff. To help study the problem, the NRD obtained aerial photography and participated in survey work needed for topographic mapping of the affected area. After the mapping was completed during the summer of 1991, the NRCS agreed to conduct a feasibility study to determine what options were available. In 1995, Miller and Associates was hired to develop a plan for the watershed; which included channel improvements, drop structures, road crossings and a detention cell. Co-sponsors agreed on a plan to share the costs of the project and to do the construction in phases so taxpayers would not have a large one-time impact. To stop a serious erosion problem at the point where water had been entering the Wood River, a drop structure was constructed in 1996 at the cost of $240,000 by the NRD. As part of it's bridge replacement program, the County also built a road structure used by the project. The project was completed in three phases:

Phase I: Existing channel was widened starting at the drop structure and meandered westerly and south to a point near 56th Street on Eaton Road.

Phase III: (Completed before Phase II) In 2000, properties were bought and construction was completed on the detention cells and channel improvements. The detention cells are located about 1/2 mile north of "N" Ave & 56th Street in Kearney. Construction included 300,000 yards of excavation with a 50 acre/feet storage design for a 100-year storm and a 50 ac/ft storage design for a 25-year storm on the other cell. In 2003, the board approved a contract change to complete channel improvements south of the detention cells and to control erosion. 800,000 cubic yards of soil was excavated to create the new channel for the project. Storage capacity is 200-300 acre-feet. **Phase II:** This was the last phase to be completed and primarily consisted of channel improvements from the Phase I channel south to about 39th Street, then westward to Antelope Road. Phase II to Phase III, from 56th Street to Ave N was completed in the spring of 2006. The total cost was $3.4 million.

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

5. Dry Creek Clearing Project Debris from a wind storm or tornado fell into the Dry Creek channel northeast of Cairo in 1997, prompting a request from landowners for a clearing project. The NRD Board authorized a clearing project. The cost of the project completed in the winter of 1998, was approximately $11,500. Area landowners petitioned the NRD to complete about 21,000 feet of additional clearing. The project was completed in the winter of 1999-2000 at a cost of about $42,000. Maintenance is performed by the NRD as needed.

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

7. Wood River Watershed Snagging and clearing was completed from the mouth of the stream to Gibbon in 1972. In 2002, one mile was cleared at the cost of $20,000. Annual maintenance for the Wood River Clearing Project is approximately $10,000.

8. Wood River Flood Control Project

After 30 years of planning, the Wood River Flood Control Project was put to the test on May 11, 2005, and recognized as an event that exemplified the importance of flood control projects within the District. The 300 foot-wide channel of the diversion project provided flood control protection for 1,500 homes and businesses. A total of 7.21 inches of rain fell between May 11th -May 12th, more than any one-day of rainfall during the 1967 Flood. (In 1967, 10 inches of rain fell over nine days from June 7-15, with the most falling on June 13 at 3.2 inches.) The project was put to the test again in June 2008, when the area received six inches of rain from June 1-8.

After the extensive damage in Grand Island caused by the Wood River and Warm Slough in 1967, the area is now protected by the Wood River Flood Control Project. The U.S. Army Corps of Engineers participated in studies in the early stages of the Project. After new rules for such projects were adopted in the 1980s, the Corps reviewed its findings and conducted reconnaissance studies to determine whether a project was possible after the criteria changed; which indicated highly feasible floodway projects using several different routes. Following public hearings in 1989, the Corps narrowed the choices and began a study to determine with more accuracy the actual feasibility of a route to carry excess water from the Wood River and Warm Slough into the Platte River.

The NRD, the City of Grand Island, and Hall and Merrick counties agreed to cosponsor the study and were required to provide 50% of the feasibility study cost. NRD-42.5%, City of Grand Island-35%, Hall & Merrick counties-11.25%. A request to the Nebraska Natural Resources Commission to share the cost of the local amount was approved and each local entity was reimbursed at a rate of 60% after it was built. Appropriation and a construction-start authorizations were obtained from Congress in Fiscal 1996. The Corps revision of plans and increased projected cost required new Congressional reauthorization which was accomplished in 1999.

In March 2000, the board gave approval to begin construction on the project. In 2002, the contract with the Corps was increased by $1 million due to miscalculations regarding the amount of topsoil needed for the project. 180,000 yards of soil was added with cosponsors paying $95,000 of the increase. A total of 500 acres were involved in land acquisition for the project, which was constructed from two miles west of Hwy 281 to the Hwy 34 bridge along the Platte River. Five bridges were constructed. A reappraisal of the Hall County Park resulted in an agreement with the Hall County Board and compensation for damages to the RV park. In March 2002, final bid letting for the remaining construction took place and approval was given by the board to proceed with the remaining 11 tracks of land needed for the project.

Benefits of the project include flood control for flood zones in the Grand Island, rural Hall & Merrick counties and groundwater quality improvement. Close to 7,000 acres of land have been taken out of the flood zones. In October 2004, the Federal Emergency Management Agency revised its floodplain maps taking away the need for flood insurance in southern Grand Island. Landowners had been paying $317,000 to protect $56 million worth of property prior to the revision of the floodplain maps. Full funding of the Federal share enabled construction to be completed on schedule. The NRD borrowed funds in the amount of $1.1 million at an interest rate of 6.5%, to meet the needs of project construction over a two to three-year period.

All monies have been reimbursed to the NRD by the State of Nebraska through a cost share grant & the other local sponsors. The entire project was completed and dedicated in May 2004. Total cost of the project was about $15 million in the following amounts: $7,148,000- U.S. Army Corps of Engineers $4.million– Nebraska Department of Natural Resources $1.4 million- Central Platte NRD, $1.2 million-City of Grand Island $352,000- Hall County $200,000-Merrick County. The NRD is responsible for maintenance of the project with costs split between the cosponsors.

9. Platte County Project

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

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

B-1: The largest structure was completed in 1983 along with the supply canal, 1.6 miles of power line relocation, and 1/2 mile of county road improvement. In addition to flood control, the purpose of the project was expanded to include recreation and groundwater recharge. Cracks were identified in the B-1 structure in the fall of 1983. Repair consisted of installing a chimney drain system on the back side of the structure. Repair was completed in 1985. In 1987, the reservoir was opened for day fishing. In 1995, a petition from numerous landowners in Dawson county requested that the NRD discontinue filling the reservoir because they were concerned that the reservoir was contributing to high water tables in Dawson County. Hydrological studies conducted by the NRD showed that the B-1 reservoir made no significant contribution to the high water tables and that projected groundwater declines had not materialized due to continued strong annual rainfall amounts. However, the request to stop filling the reservoir was granted effective January 1, 1996. By shutting off water supplied by the NPPD canal, the natural runoff flow which is insufficient to support a fishery, is virtually the only source for the reservoir. In May 2009, the board voted to start filling the B-1 Reservoir in Lexington every other year starting in spring of 2010. The NRD is required to fill the reservoir once every five years to keep the NRD's water right.

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

11. Silver Creek Watershed Silver Creek Watershed, located in Merrick County, encompasses approximately 90,000 acres. A feasibility study was completed in 1979 for a project to provide flood relief in the watershed. The project was completed in four parts and consisted of mainly channel improvement.

Phase 1A: involved the lower 4.1 miles of Silver Creek **1B:** included 1 mile of Silver Creek and 15 miles of the Clarks drain. **Phase 2:** continued upstream on Silver Creek for 6 miles. **Phase 3:** was the next 10 miles upstream. **Phase 4:** was not completed until the fall of 1987 due to wet weather in the 1985 & 1986 construction seasons. The 11-mile stretch upstream from Hwy 14 north of Central City to Silver Creek's headwaters west of Chapman. The Board approved extension of the project in Merrick County at a cost of $7,500 in February 2000 due to additional flooding. There is no further construction anticipated on the watershed. Maintenance costs are approximately $20,000 annually.

12. Moores Creek Flood Control Project In the early 1980s, the NRD and others recognized the need in Hall and Merrick counties for flood control on Moores Creek and authorized a feasibility study. Project sponsors included the NRD, City of Grand Island, Merrick County and Hall County. The feasibility study was submitted to the Nebraska Natural Resources Commission in January 1984. The Commission subsequently approved the Moores Creek Project and agreed to cost share at a 65% rate. A three-phase construction plan was developed.

Phase I: Channel improvements from the mouth near Archer upstream to the Hall-Merrick county line. Completed in 1990.

Phase II: 3 detention/retention and wildlife habitat enhancement cells improved the Moores Creek channel from the Hall-Merrick county line upstream to Grand Island.

Phase III: Waterways and bridges constructed to enable storm runoff from the Capital Heights area, northwest of Grand Island, to drain into the improved Moores Creek channel. Project was completed in 1995. Annual maintenance performed as needed with an approximate cost of $20,000.

13. Lower Spring Creek Flood Control In response to landowner requests, planning for a snagging and clearing project on Lower Spring Creek in Dawson County was completed in 1994. Construction was completed in February 1995 on approximately 18 miles of Spring Creek. Annual maintenance is performed by the District as needed. In January 2001, the board approved snagging and clearing of an additional 5,000 feet of Spring Creek at a cost of $6,275.

Projects Under Planning

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

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

Construction is to be phased over a 10-year period, starting with construction of the off-channel lowland sites in Silver Creek and stepping through the rest of the facilities depending on their contribution to flood control. The study shows that a 100-year flood would inundate 23,000 acres of lands south of Hwy 2, producing crop damages of $3 million a 10-year flood would cause $1.6 million in crop damages. In addition, the flood waters would collect along Hwy 2 resulting in large quantities of water flowing east into developed areas northwest & west Grand Island.

The results of the study proved true on May 11, 2005 when Central Nebraska was hit with a flood. The city of Grand Island sustained an estimated $3-5 million in damages and Hall County sustained a total of $12-15 million. There were 2,769 homes and businesses damaged in the area that would receive flood relief from the project. The project will also include acquisition of or easements to 1,800 acres (mostly dryland crops or pasture), excavation of 3,500 acre-ft of off-channel storage in lowland areas, construction of four upland floodwater detention dams and outlet works and installation or replacement of a few roadway culverts under Hwy 2 and other county roads. About 500 acres of irrigated cropland will need to be acquired for purposes of constructing flood detention cells at strategic locations. The design phase began in 2005 and construction began in September 2006. Phase I will be completed in the summer of 2017.

2. Prairie Creek Watershed Project Flooding issues along Prairie Creek prompted landowners to request drainage help along Prairie Creek. Twenty landowners in Central City and Archer lost up to 80 percent of their crops in 2005 when the area was inundated with six inches of rain in two days. Olsson Associates (OA), discussed a study done 20 years ago on Prairie Creek and explained the complications of receiving funding for the project. Milt Moravek, assistant manager, discussed the Upper Prairie/Silver/Moores Project and how that project would eventually help the landowners along Prairie Creek. In December 2008, the board approved a study to be conducted by OA for the watershed. The new study will utilize the 1986 study by reviewing existing conditions of the bridges and channel of Prairie Creek and comparing those studies from the mouth of Prairie Creek and the Platte River to Hwy 281. The 1986 hydraulic model will also be redeveloped and compared.

OA will do an analysis of flood flows and evaluate additional alternatives to reduce the flooding along the Prairie Creek Channel. Since funding was nearly exhausted for the 2009 fiscal year, the board approved that half of the $56,350 study be conducted right away and half be conducted after July 1, 2009. OA will report to the board on the completion of the first half to see if the project is a possibility. Funding will be requested from counties and cities in the watershed.

3. Kearney West Drainage Project Landowners west of Kearney compiled a petition in 1999 stating concerns that high groundwater levels were causing poor surface drainage on the north channel of the Platte River, which includes the community of Odessa, NE. Clearing and sediment removal of a portion of Turkey Creek was completed to serve as an example of flood relief to landowners in the area. A feasibility study for the village of Odessa is underway on a tributary of Turkey Creek to determine how to alleviate water problems. The NRD's share will not exceed $15,000 and the NRD has reserved the right to withdraw from the contract if there is a lack of interest among property owners.

5. Kearney West Drainage Project Landowners west of Kearney compiled a petition in 1999 stating concerns that high groundwater levels were causing poor surface drainage on the north channel of the Platte River, which includes the community of Odessa, NE. Clearing and sediment removal of a portion of Turkey Creek was completed to serve as an example of flood relief to landowners in the area. A feasibility study for the village of Odessa is underway on a tributary of Turkey Creek to determine how to alleviate water problems. The NRD's share will not exceed $15,000 and the NRD has reserved the right to withdraw from the contract if there is a lack of interest among property owners.

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. The NRD adopted an Erosion and Sediment Control Plan in 1987 and revised it in 1997. The system works on a complaint basis. Once there is a complaint, the NRD will meet with the landowner to determine if an agreement can be reached on solving the problem. The NRD will make recommendations on what can be done to stop the erosion. The landowner will then be required to perform at least one of the recommendations, starting the project within six months. Once the work starts, the co-operator has one year to complete it.

The law states that there must be 90% cost-sharing available to the landowner who is in violation before the owner can be required to install the improvements. The same law sets aside 5% of the Nebraska Soil and Water Conservation Fund Program monies to be used to cost-share with landowners who are in violation. The Erosion and Sediment Control Plan is included as part of the NRD's Master Plan. The NRD doesn't receive a lot of these complaints. A recent example of a complaint was filed in 2005. The NRD sent a violation order due to a sediment erosion complaint, which required the landowner to follow a Conservation Plan developed by NRCS to control the situation by installing grassed waterways on his property and on the adjacent property. No other action has been taken by the Board on sediment erosion since 2005.

6. Elm Creek/ Turkey Creek Watershed A feasibility study was conducted for $125,000 and submitted to the Nebraska Resources Development Fund to request cost share on the project. The Board of Directors voted to proceed with a community meeting regarding the feasibility study for the Elm Creek Watershed Flood Control Project. The Plan, developed by Olsson Associates, consists of a 975-acre flood control and re-regulating reservoir located northwest of the Village of Elm Creek, and two dry flood control structures located on Turkey Creek. The reservoir would provide both traditional flood reduction benefits to the Village of Elm Creek, as well as non-traditional environmental benefits including recreation.

The Turkey Creek structures would reduce current peak flows to downstream areas. Together, the flood control structures would provide flood protection to the Village of Elm Creek and downstream cropland. The preliminary cost estimate of the project is $22.8 million. The District met with 130 landowners in June 2006, to get feedback from the community. In order to gather scientific data about the leaching possibilities, the board approved a study with OA to perform a geotechnical investigation/seepage analysis of the area. The study involved the drilling of approximately 30 test borings at the reservoir site and adjacent lands to determine if leaching would raise adjacent water tables to a level that would create problems for either cropland or basements. OA developed a preliminary design feasibility study and the NRD has applied for Resources Development Funds.

At the May 2009 board meeting, directors approved the following action: Ron Bishop to work with Jerry Kenny, executive director of the Platte River Recovery Implementation Program, on a Memorandum of Understanding that will detail financing on studies to be conducted for the proposed project; and an expansion of study with OA to determine delivery canal capacity, discharge capacity, groundwater impacts and sizing options for water storage.

7. Odessa Area Flood Control Project Miller and Associates of Kearney were selected to complete the final design of the Odessa Area Flood Control Project in September of 2008. As part of the final design, the engineering firm will develop reliable system concepts, innovative, practical and cost-sensitive design ideas with realistic implementation alternatives for up to $15,000. The Project is located to the east and south of Odessa, Nebraska, which is approximately nine miles west of Kearney on Hwy 30. The project boundaries include the Odessa Road to the west, 24th Road to the North and Sartoria Road to the east. The projects consists of improvements to approximately two miles of existing roadside and field drainage ditches, replacement of culverts and supplementing existing culverts.

8. City of Wood River Flood Control In July 2008, directors discussed flood control issues in the town of Wood River near the by-pass. The board voted in favor of adding $10,000 to the 2009 Fiscal Budget to allow for a study on flooding in the future.

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.

Problems:

Surface Water Nebraska's natural resources districts were developed chiefly along watershed boundaries. As the name Central Platte NRD implies, 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.

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. Additional problems in the west end of the District are caused by

Needs: Surface Water 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 Virtually 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.

Solutions: When there are several landowners involved, a drainage improvement project area can be designated by the NRD 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 ultimate result of drainage problems is a dispute among neighbors. Nebraska law provides for county boards to resolve such disputes, and often the court system is called upon to establish the solution. The Natural Resources Conservation Service often provides technical assistance in determining the causes and potential solutions to drainage problems. Occasionally, the Central Platte NRD staff has also been asked to intervene but no formal authority exists for the NRD to require actions that would improve drainage situations, so the parties make the ultimate decision whether or not to implement solutions.

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.)

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.*

Specific Planning:

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 the 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 new problems that may be even greater than existed prior to installing the systems. Central Platte NRD currently has two drainage projects completed. Both are project improvement areas.

The Platte County Project was the first such 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. The other project is the Amick Acres Project in south central Hall County, just to the west of Doniphan. It diverts flood and drainage water away from the Amick Acres Subdivision. It involves about one mile of channel, utilizing part of a county road ditch. Maintenance on each project will be performed as necessary, with the cost assessed to benefiting landowners. Other potential sites for drainage projects continue to be monitored and considered.

Central Platte NRD has participated with the 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. The FWS proposes that 181,750 acres of wetlands across Nebraska be protected for endangered species, including about 25,000 acres in the in the Central Platte NRD, mostly along the Platte River.

Groundwater Groundwater drainage solutions usually involve an adequate surface water drain. By solving surface water problems, most groundwater drainage problems in the District would be improved. The NRD is participating in a demonstration project to determine 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. The NRD is participating in the Cooperative Hydrology Study to understand the relationship

Policy and Implementation: The NRCS (Natural Resources Conservation Service) 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.

FSA (Food Security Act): This data is also necessary for carrying out the goals and objectives of the Food Security Act of 1985 (P.L. 99-198) that places specific requirements upon landowners and operators desiring to continue participation in various Federal programs. Highly erodible land has been determined by the NRCS, and producers desiring to meet the criteria of the Act are receiving assistance from the NRCS in conservation planning. Such planning was completed by 1990, in accordance with the terms of the Act. Implementation of the plans developed by the farmer with NRCS assistance was required by 1995, under the Act.

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. The NRD adopted adopted an Erosion and Sediment Control Plan in April 1987 and revised it in 1997.

The system works on a complaint basis. Once there is a complaint, the NRD will meet with the landowner to determine if an agreement can be reached on solving the problem. The NRD will make recommendations on what can be done to stop the erosion. The landowner will then be required to perform at least one of the recommendations, starting the project within six months. Once the work starts, the cooperator has one year to complete it. The law states that there must be 90% cost-sharing available to the landowner who is in violation before the owner can be required to install the improvements. The same law sets aside 5% of the Soil and Water Conservation Fund Program monies to be used to costshare with landowners who are in violation. The Erosion and Sediment Control Plan for the Central Platte NRD is appended to and is included as part of this Master Plan.

Figure 14. WIND EROSION EST. - CENTRAL PLATTE NRD
Tons/Acre/Yr., % of Area of Extent
(Source: 1997 NRI)

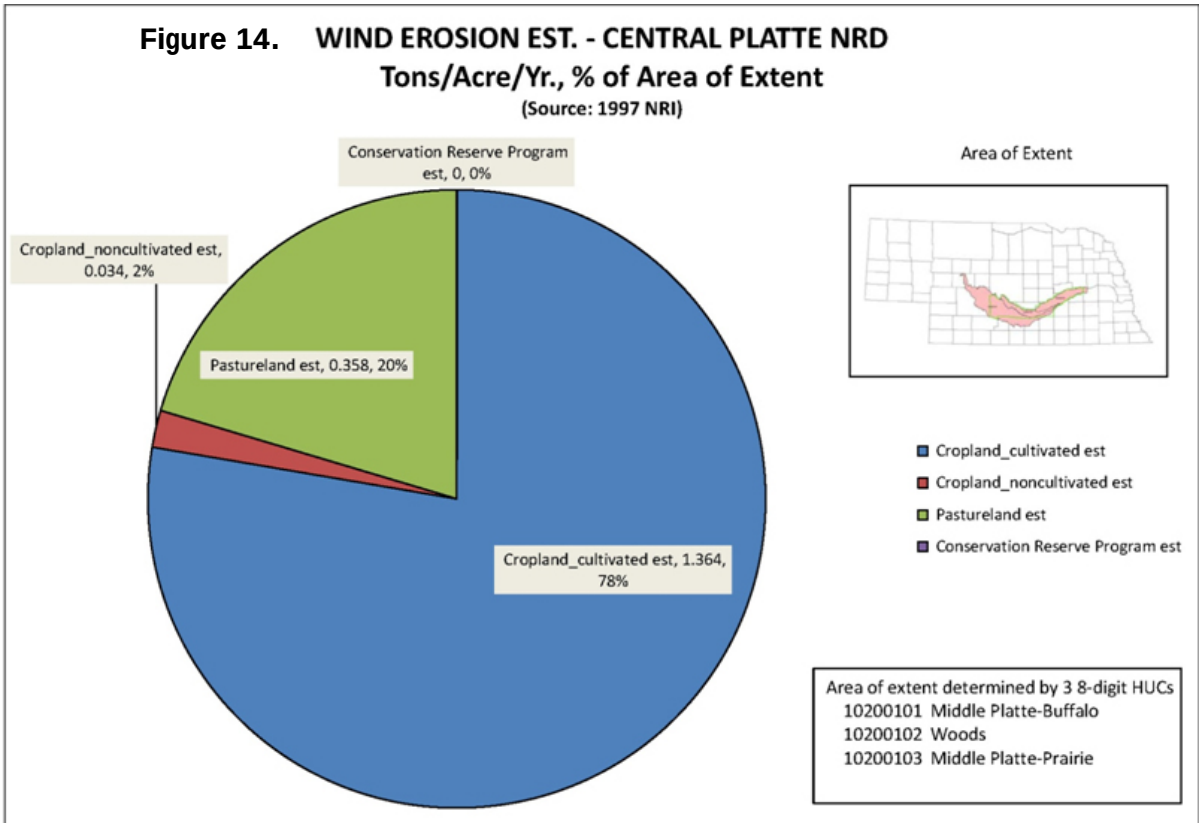


Figure 15. SHEET AND RILL EROSION - CENTRAL PLATTE NRD
Tons/Acre/Yr., % of Area of Extent
(Source: 1997 NRI)

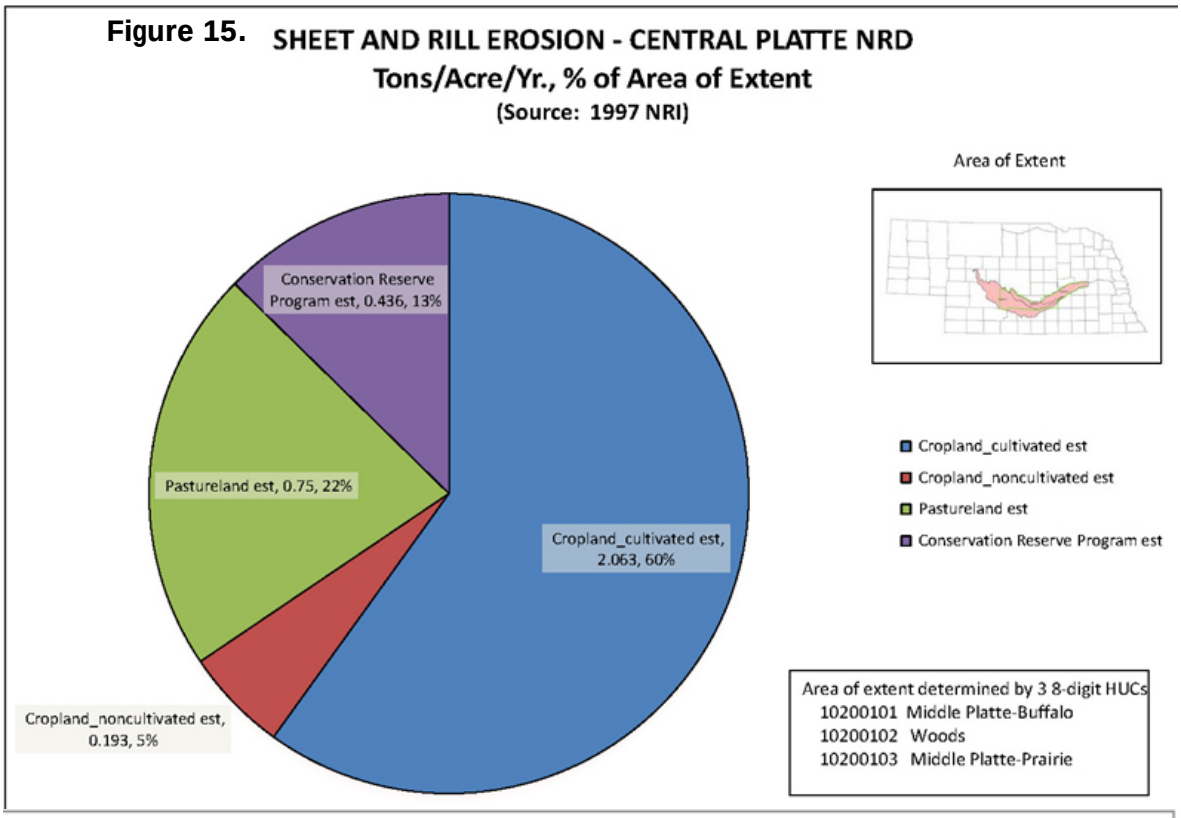
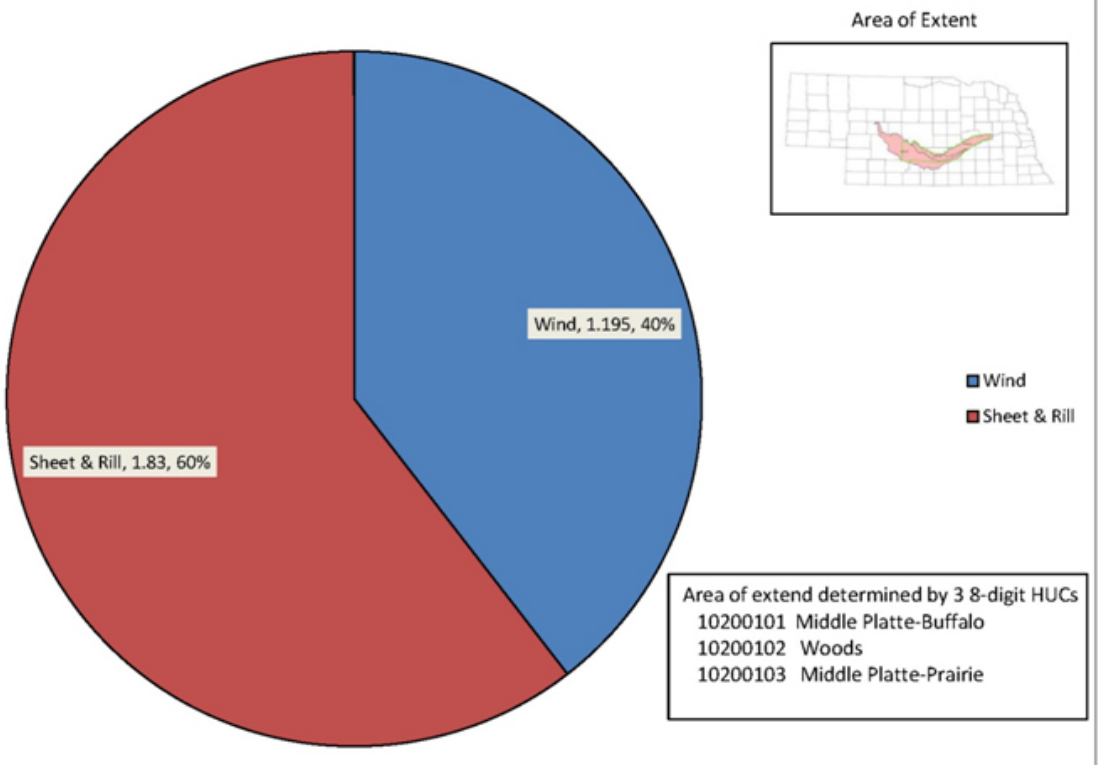


Figure 16. TOTAL EROSION-CENTRAL PLATTE AREA EXTENT
Tons/Acre/Yr., % of Area of Extent
Source: 1997 NRI



Cost Share Programs The Nebraska Soil & Water Conservation Program (NSWCP) is administered by the NRD 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 then have five months to complete the work. Cost share under this program is at a rate of 50%. Practices eligible for cost share are listed below.

Practices are funded at 50% with two exceptions. (1) the Well Abandonment Program is cost shared at 60% and (2) the Center Pivot Incentive Program provides a one-time, up to $7,500 payment to convert gravity irrigation to pivot irrigation. The NRD budgets for approximately 14 applicants to receive the Center Pivot Incentive payment each year and also works with the Nebraska Game & Parks Commission to provide 100% cost share for the WILD Nebraska Program.

Nebraska Soil & Water Conservation Program

50% Cost Share:

* terrace systems, terrace underground outlets, water impoundment dams, grade stabilization structures

* diversions, grassed waterways, water & sediment control basins, dugouts for livestock water

* pasture planting/range seeding, critical area planting, planned grazing systems

* windbreaks/renovation, drip systems, weed barrier, brush management, streambank stabilization

* repair of practices, irrigation tailwater recovery pits, underground return pipe from reuse pits

- **Irrigation Water 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 and data readers.

Central Platte NRD Cost Share Programs

75% Cost Share Phragmites Control

60% Cost Share Well Abandonment

50% Cost Share Streambank Stabilization, Windbreaks & Weed Barrier, Flow Meters, Urban Forestry Program, Prescribed Burn Program

WILD Nebraska Program: CPNRD provides annual payments, NGPC provides grass payments

Center Pivot Incentive Program: up to $7,500 Payment through Central Platte NRD

Buffer Strip Program: Nebraska Department of Agriculture

Corners for Wildlife: Pheasants Forever

IV. Groundwater, Surface Water and Water Supply

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

Being in the Platte River Watershed, the District's primary surface water feature is the Platte River. 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.

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 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.

The District 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 c.f.s. (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 c.f.s. 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.

NRD's and the Nebraska Game and Parks Commission received legislative authority in 1984 and 1985 to establish instream flow water rights for habitat purposes. Central Platte NRD obtained instream flow water rights in 1992 for portions of the river within the District's borders. Nebraska Game and Parks 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 of 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 the 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. According to some hydrology studies, 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 underway 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 Central Platte NRD Board of Directors and is in effect. While substantial water, from both groundwater and surface water sources, is generally 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 Buffalo and Hall 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 in essential and the District is fortunate to have an abundance of water. Prolonged droughts will produce greater demands on groundwater. A management program for groundwater supply (quantity) 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 because 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 to address potential shortages is in effect. 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 41.)**

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. Central Platte NRD is monitoring and providing input for a multi-0state 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 on page 58.)**

The NRD 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.

Central Platte 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. The District plans to continue enforcing these regulations. Periodic review during the planning period covered by this document will be made to assure that the intent of the statutes is carried out.

Objectives

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

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.

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, in turn, 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 the historic record suggests 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 feet to more than 300 feet across the district, so a drop of one foot has a more significant impact on some parts of the District than on others. Groundwater depths and thicknesses have been charted and used to help establish 24 groundwater supply management areas.

Besides the aquifer conditions, the soils and topographic characteristics are similar in each management area. The 1982 groundwater levels were established as the standard for the management plan since rainfall and recharge were above average several years since 1982. The maximum acceptable decline for each of the management areas was calculated, establishing a margin of safety in each area. It was determined that as an area's average ground-water level declined through that margin of safety, certain controls ought to be mandated to slow the decline.

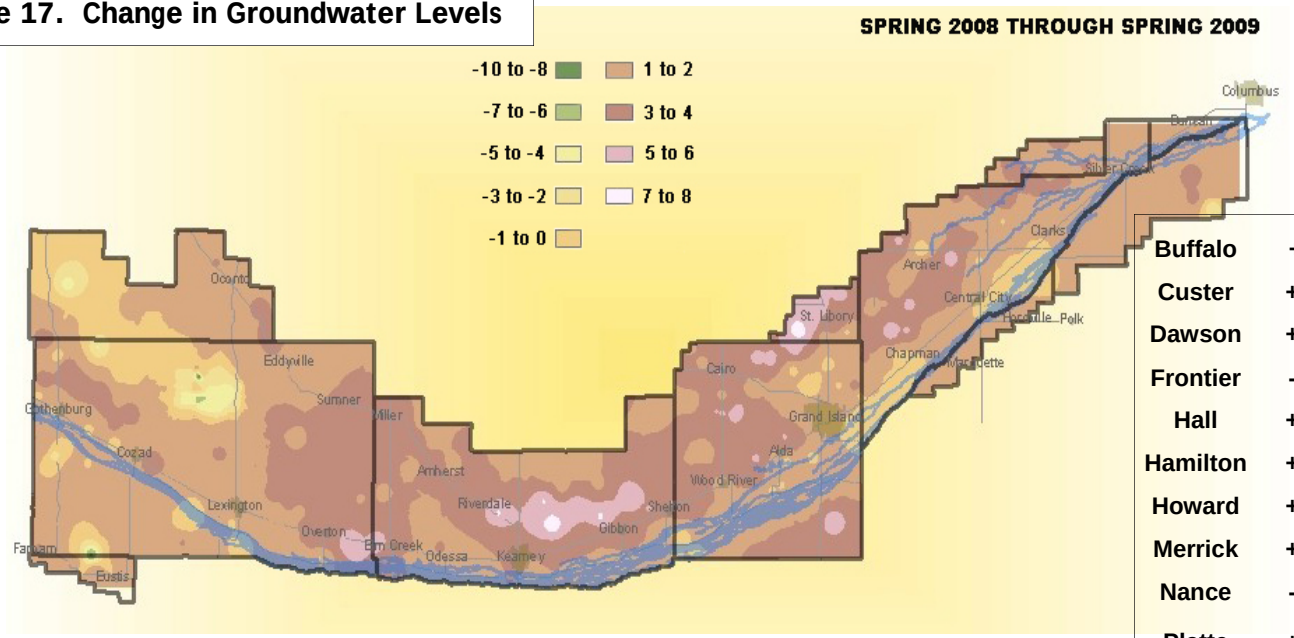
In 1987, the directors established the Groundwater Management Plan, with a phased program to implement such controls when they are needed. The maximum acceptable decline ranges from 10 feet in the eastern end of the District to 30 feet in portions of the western end of the district. If the water table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

Groundwater Levels The NRD staff measures approximately 600 wells twice a year, in conjunction with the Conservation and Survey Division, University of Nebraska-Lincoln, and the US 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 have caused moderate changes in groundwater levels throughout the district. Rainfall in 2008 and 2009 have been 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. The groundwater levels in 1982 have been used by the district as the benchmark year to compare groundwater level changes. This was established as part of the 1987 Groundwater Management Plan. That plan established 24 sub-districts across the NRD for monitoring groundwater level changes. The change in level is an average based on the wells measured in each sub-district. In the spring of 2009, all but two of the counties in the NRD had risen since Spring of 2008. All sub-districts continue to have changes in groundwater levels above the maximum acceptable decline range so the district remains in Phase I under the Groundwater Management Plan rules for quantity. **(See map on following page.)**

Suspension on Drilling New Wells and Expansion of Irrigated Acres In February of 2006, the entire District was placed in a suspension area when the Board adopted the *Rules and Regulations For Closing the Management Area to the Issuance of New Well Permits, Preventing the Expansion of Irrigated Acres and Increased or Expanded Uses of Groundwater for Other Beneficial Purposes.* These rules were adopted after the Department of Natural Resources (DNR) designated the entire District as fully appropriated.

Three situations influenced the passing of the suspension. The first is the drought cycle that the state of Nebraska was in, which really exemplified the need to "take stock" of the water budget. The other two situations were LB962 introduced following a recommendation by the Water Policy Task Force, and unknown future requirements following the implementation of the Platte River Recovery Implementation Program. The State is to mitigate or offset any new depletions after July 1997 as part of the

Figure 17. Change in Groundwater Levels



Buffalo	+173
Custer	+0.13
Dawson	+0.50
Frontier	-0.22
Hall	+1.41
Hamilton	+0.37
Howard	+1.20
Merrick	+1.07
Nance	-3.23
Platte	+0.40
Polk	-0.91

Program. If the State doesn't pick up their obligation, the responsibility will likely fall back to NRDs or water users who would be required to offset depletions from post-1997 wells by giving up part of their irrigated acres. The NRD is currently purchasing water rights through a water banking program to reduce that possibility. (**See Water Banking Program on Page 42.)**

Many believe that if nothing is done, existing surface water users and/or groundwater users will increasingly be faced with less and less water supply. Wells not subject to the suspension include those wells that pump less than 50 gallons per minute, replacement wells, dewatering wells pumping less than 90 days, and test hole wells. The board may grant variances if it determines that construction of a new well is 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, only 237 responded to opinion surveys handed out at the hearings. 166 of those who responded were very opposed. The Plan has been amended since 2003 by the board of directors in June 2006, November 2006, April 2007, December 2007, June 2008, and most recently July 2009. The most recent Plan adopted in July 2009 contain changes to the way municipalities report to the NRD, what qualifies as irrigated land after January 1, 2010, and specific requirements on the land where water has been transferred for irrigation.

Amendments include changes to or addition of the following rules:
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).

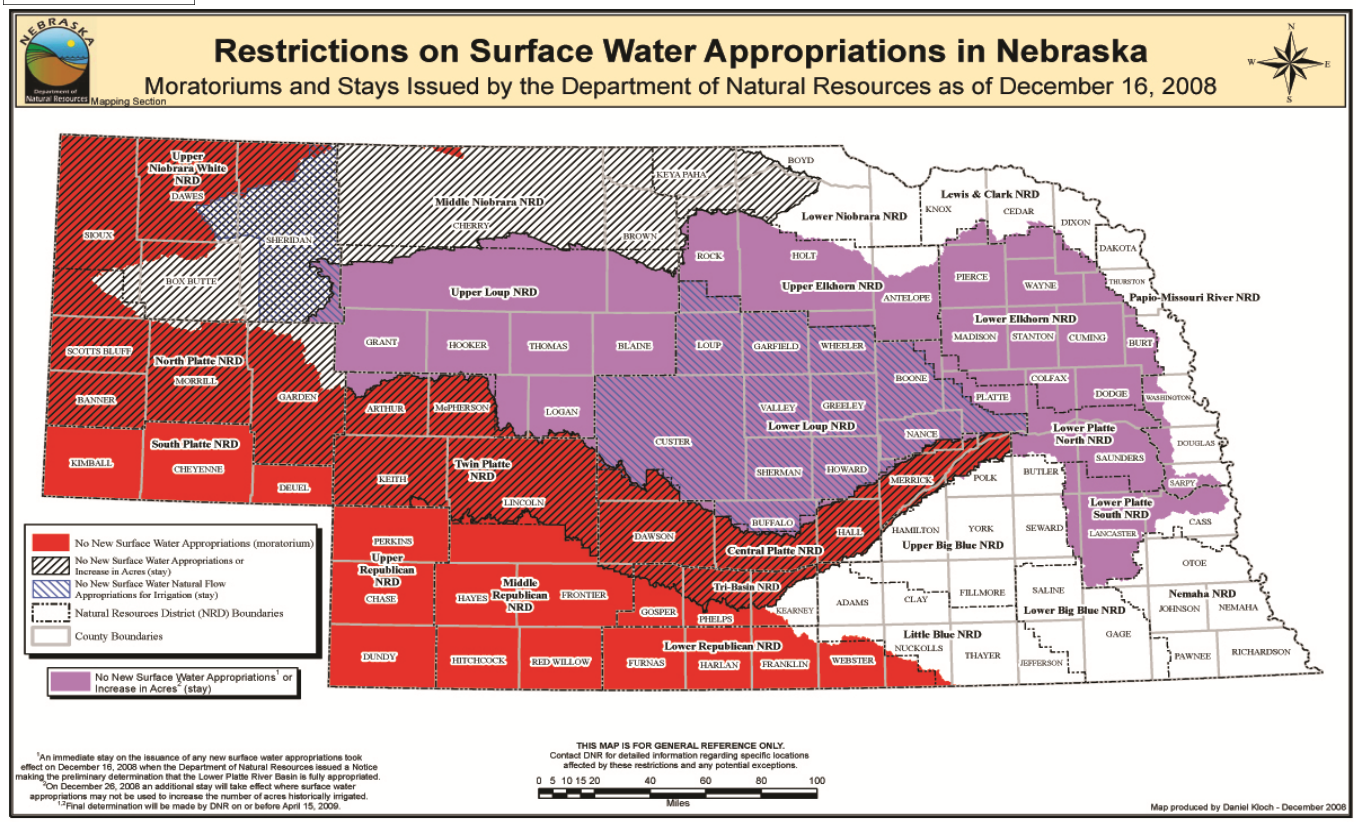
Municipal Variances/Offsets: Each year a municipality shall be responsible for reporting to the District monthly groundwater pumping volumes and when available monthly wastewater discharge volumes. In addition, each year the municipality shall be responsible for reporting to the District, and offsetting 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. The original suspension was imposed in November 2003, when the Board imposed a temporary suspension of drilling new wells within parts of the District. The area included in the temporary suspension runs 185 miles (length of the district from Gothenburg to Columbus) and six-eight miles either side of the Platte River. The temporary suspension was put in place to allow the board and the State of Nebraska to look over the conflicts between groundwater and surface water to determine if a problem exists and how bad it might be by developing a study of the district's surface and groundwater supplies. In 2004, the DNR indicated that the Platte River Basin was fully appropriated and over-appropriated upstream from Elm Creek. The current drought also aggravated water problems, especially between surface water and groundwater.

A basin is determined to be fully appropriated if further development were to occur, the balance between water use and water supplies could not be sustained. An over-appropriated basin is one where the extent of development is not sustainable over the long term, or that the already permitted uses are in excess of what can be supported by the water supply over the long term. As a result of the designations, DNR placed the following stays on new uses of surface and groundwater: immediate stay on any new natural-flow, storage, or storage-use appropriations in the whole of the over-appropriated basins, and a stay on new water well construction permits in all of the geographic area within which surface water and groundwater are hydrologically connected.

Stays are also imposed on the construction of certain new water wells unless such construction has commenced prior to the effective date of that stay or a still valid construction permit for such water well has been previously obtained from an NRD; and on the use of an existing water well to increase the number of acres historically irrigated. DNR has also placed stays on any increase, through use of an existing surface water right, of the number of acres historically irrigated.

All additional stays became effective in September 2004, and will remain in effect until: terminated pursuant to LB 962; an Integrated Management Plan is adopted and implemented; DNR has completed a re-evaluation of the basins and determines that the affected basins are not over-appropriated, or; the stays expire pursuant to the provisions of LB 962. In January 2006, the DNR started making annual determinations of basins not previously designated as fully appropriated or over-appropriated to see if they have since become fully appropriated. The NRD was designated as over-appropriated from Elm Creek west and the rest of the District was designated as fully appropriated. The NRD directors, staff and DNR worked with Stakeholders to develop an Integrated Management Plan for the NRD. Central Platte also participated in the development of a basin-wide plan for the Platte Basin. **(See Integrated Management Plans below.)**

Figure 18.



Integrated Management Plans The NRD and the DNR began working on an Integrated Management Plan for the Central Platte NRD in 2005. The NRD began meeting with Stakeholders in 2005 to begin educating them on the requirements set by DNR and the issues that would need to be considered in developing the Plan. The Stakeholders members include both surface and groundwater interests such as irrigators, city utilities, power districts, economic development and banking representatives. In June 2006, the group finished a draft plan including one goal and 11 objectives. Originally the Plan was to be in place within 3-5 years, however, an extension to complete the Plan set the deadline for September of 2009 to allow District's to wait for the basin-wide plans to be completed. The Platte River Basin-Wide Plan was approved by the NRD in January 2009. The NRD's final draft of the IMP was approved in May of 2009, with public hearings held in July 2009 in Lexington and Grand Island. Both the basin-wide and CPNRD's IMPs were officially adopted at the July 23, 2009 board of directors meeting.

In connection with the IMPs, the NRD also revised the Rules and Regulations to correlate with the requirements in the IMP. Public hearings were held the same days as the IMPs and approved at the July 23rd board meeting.

Cooperative Hydrology Study (COHYST) When former Nebraska Gov. Ben Nelson and the governors of Wyoming and Colorado signed the Platte River Recovery Implementation Program (PRRIP) in 1997 with the U.S. Dept. of Interior, questions arose about its potential impacts on activities along the Platte. It became apparent that data wasn't available to use in evaluating proposals. With the help 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 & 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. Duane Woodward, Central Platte NRD hydrologist, is a senior member of 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. The databases 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 computer models enable researchers to represent real-world features such as rivers, streams, groundwater aquifers, groundwater pumping, or canals as a set of mathematical equations, which reproduce observed water levels and stream flows. The models are used as tools to predict how changes to or "stresses" on the groundwater system may impact flows in the Platte River. Stresses are additions and subtractions of water from the groundwater system, including pumping from wells, evapotranspiration by vegetation, aquifer storage and recovery, flow to drains, groundwater recharge from precipitation, deep percolation from irrigation, enhanced recharge due to certain land uses, recharge from canal and lateral leakage, and recharge from lakes and reservoirs. The models also help predict how water supply or 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

FIGURE 19. 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

These estimates are being used in the Platte River Basin plan as targets for stream flow depletions that need to be offset to get back to 1997 level of development. COHYST's current annual budget is around $350,000. These funds support the senior hydrologist and Sponsor staff to update database and develop new version of the groundwater models.

COHYST Sponsors: Central Nebraska Public Power & Irrigation District; Central Platte NRD, Little Blue NRD, North Platte NRD, South Platte NRD, Tri-Basin NRD, Twin Platte NRD, Upper Big Blue NRD; Nebraska Department of Natural Resources, Nebraska Game & Parks Commission, Nebraska Public Power District

COHYST Partners: Cities of: Grand Island, North Platte, Scottsbluff; Nebraska Audubon Society, Nebraska Farm Bureau, Nebraska Water Resources Association, Nebraska Water Users, Platte River Whooping Crane Trust

Water Policy Task Force In 2002, LB 1003 established the Task Force to address the management and use of Nebraska's surface and groundwater. Central Platte NRD has 2 members appointed as representatives- Ron Bishop, general manager-representing the NRDs; and Dick Mercer, director-representing the Middle Platte Basin. The Task Force presented its report to the Governor in December 2003, recommending that basic components of existing surface and groundwater law be left in place; but that Nebraska adopt a stronger, more proactive approach to the integrated management of surface water and hydrologically connected groundwater.

Key goals were to address potential problems between groundwater and surface water users before conflicts arise and to manage the water resources of the State to sustain a balance between hydrologically connected water uses and water supplies. The Nebraska Legislature then adopted LB962 which makes the state and the 23 NRDs more proactive in anticipating and/or preventing conflicts between groundwater and surface water users. In July 2004, the Department of Natural Resources (DNR) declared that all or portions of 9 NRDs were considered "fully appropriated." In addition, the Platte River Basin, above the Kearney Canal Diversion, the North Platte River Basin and the South Platte River Basin were designated as over-appropriated.

Conjunctive Management Study This Platte River study is creating tools to better manage ground and surface water in the Central Platte Valley by collecting and evaluating data to develop a hydrologic budget. Some of the components included in the budget are rainfall, pumping, surface water applied, total evapotranspiration, recharge, runoff and acreage. Developing plans to manage the hydrologic budget will result in better utilization of both resources. After developing management plans, an implementation phase will be needed.

Water Banking Program In January of 2007, the board of directors approved the first water bank transaction in the district by approving a variance request and the deposit of 2.4 acre-feet per year into the District's water bank. Jim Bendfeldt, director in Sub-District 5, made the donation of the offset water. The Water Banking Policy was approved by the board in 2007, which defines the process of a how a water bank works. Directors approved the policy to diminish the chance of having to regulate irrigators. Through the water banking program, the NRD acquires water rights from landowners. For every acre-foot of water that impacts the river that the NRD can acquire, there's that much less regulation and cutback that the NRD would have to impose.

As of this printing, the NRD has purchased 1,282.15 acre-feet of water and another 200 acre-feet are in planning to be purchased from landowners who have expressed interest. As of July 2009, CPNRD has spent $2.9 million in purchasing the water rights to get the over-appropriated area back to a fully appropriated status. The COHYST model has been useful in determining the amount of acre-feet needed to bring the Platte River back to 1997 levels. As of now, it looks like the NRD will need to reduce river depletions by 2,400 acre-feet to bring the over-appropriated area of the Platte River back to 1997 levels and about 3,400 acre-feet in total.

Instream Flow Water Rights The Central Platte NRD 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 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 September 1994. The NRD successfully complied with the DNR'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 (DNR). **(See history of instream flow rights and applications granted on Page 56.)**

Conservation Programs The NRCS is helping the NRD 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 is $200/acre x 3 years for a total of $600/acre. CPNRD issues 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.

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, such as those created when the District adopted its Groundwater Management Plan. The NRD 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 can increase the spacing requirements between wells in management areas, and the NRD's plan calls for a 900-foot 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-foot spacing in Phase IV and an 1,800-foot 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. Applications for the permits to drill wells in the District can be obtained from the NRD office. The permit fee is $50 and expires one year from the date of approval.

Certification of Irrigated Acres All irrigated acres have been certified in the District, including all variances and water bank transactions. Of the 1,013,215 irrigated acres on record, 94,205 acres are able to be irrigated by surface water. The crops being irrigated in the District include corn, soybeans, sorghum, potatoes, alfalfa, small grains and sunflowers. In April 2006, the NRD began the process of certifying irrigated acres by mailing out packets to landowners who live in northern Custer, Dawson and Frontier counties. To be sure the accounting of irrigated acres was accurate, landowners were provided with aerial maps and the number of acres the NRD had on record as irrigated-taken from infrared imagery. If the landowner disagreed with the number of acres provided, they were required to show the NRD proof of their claims by obtaining records from their local FSA office. The NRD required documentation from the FSA that included an aerial photo and a printout of their irrigated land.

After receiving this information, the landowner made an appointment with the NRD staff on location. Most of the changes made were less than 10 acres while about 1/3 of the fields that the NRD determined as irrigated needed no changes at all. In January 2007, directors approved the launching of the first irrigation certification website in the state. The website was developed by GIS Workshop of Lincoln, allowing the public access to: scanned documents that show proof of the number of irrigated acres for all landowners in the District, infrared imagery taken by the NRD, and all registered wells. Users may search information for specific parcels of land by using the clickable map interface or by searching the site by landowner or tenant name, legal description or field ID number. The site also allows landowners to view and print aerial photos taken by the District to show how their land has developed since 2003 and view any improvements that have been made. The NRD's cost was $14,500 to build the website and $4,600 per year to update and maintain it.

Website address is: cpnrd.gisworkshop.com.

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

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: Across the District, air quality is excellent. Air quality complaints are rarely received by the District and are handled by local health departments, the Nebraska Department of Environmental Quality, 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 the District, 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 the combination of 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. There are two primary types of water pollution problems (these types are the same for surface water and groundwater):

1. Point source—A point source problem is one that can be traced to a specific source. It is usually 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 the Nebraska DEQ.
2. A non-point source — A non-point source problem in generally one that causes pollution over a period of time as the result of land use practices.

Counties were required to file a solid waste disposal plan in 1994. A 25% waste reduction goal for July 1, 1996 was required. A 40% waste reduction goal was set for July 1, 1999 and the 50% goal by July 2002.

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. Other chemical concentrations are a potential source of groundwater pollution within the District. In the western portion of the District, concentrations of sulfate are not uncommon.

High iron and magnesium levels, along with high total dissolved solids in many areas, have the potential for considerable problems in municipal supplies, particularly in areas where large quantities of water are used for industrial purposes. Some chemical concentrations in the groundwater can be stabilized, either by preventing the chemical from becoming sufficiently prevalent to cause a problem or by preventing the chemical from leaching into the groundwater.

The NRD's nitrogen management program was adopted in response to increasing high concentrations in large areas of nitrate-nitrogen in the groundwater and vadose zones (areas between the root zone and the top of the water table). Better management of water, effluent systems, livestock feeding systems and commercial fertilizers are the keys to reduction of nitrate in groundwater.

Needs:

Pollution control, solid waste disposal and sanitary drainage have all been addressed by the NRD's board of directors. The Board's primary focus is on water quality issues. 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 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: 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 DEQ) 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 Environmental Quality. 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 the 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, the NRD 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 (areas between the root zone and the top of the water table). The District has established a program of information and education to persuade farmers and landowners to use best management practices to reduce the leaching of nitrate-nitrogen from their fields. The program 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 already 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.

Solutions:

Air Quality: Complaints regarding odors from feedlots and other livestock operations are increasing. The NRD'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: The NRD will continue to play a minor role in the area of solid waste management, providing technical information and expertise for disposal studies and workwithin 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 for reducing 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 Central Platte 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 wo 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.

The Central Platte NRD 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.

Objectives

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

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.*

Specific Planning: The NRD will continue to monitor the quality of natural resources throughout the entire District. 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 chief, but not the only, contributor to groundwater quality problems. As a result, the Board adopted the Groundwater Quality Management Plan.

Additional studies, including the Cooperative Hydrology Study (COHYST) is underway **(see page 41.)** These studies will add to the knowledge on which the plan is based. The NRD will reevaluate its Groundwater Quality Management Program to consider if amendments are necessary as a result of additional knowledge or to meet statutory requirements adopted by the Legislature in the more than 22 years that the program has been in effect. 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 The NRD's Groundwater Quality Management Program, which has been in effect for 23 years, 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 1999-2002. As of 2010, average nitrate levels had dropped to 14.83 ppm **(see page 49 for chart)**

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." High nitrates also are a potential hazard to livestock. Scientific studies have shown that commercial nitrogen fertilizer is the primary cause (though not the only cause) in the Central Platte Valley for high nitrates in groundwater. Many of those affected by the high nitrates in the drinking water are farmers and their families. Numerous meetings with farmers, crop consultants, fertilizer industry representatives and others were conducted in an effort to determine how best to implement solutions that were suggested by the research. Hearings, to obtain public input, were also conducted. As a result of the meetings, hearings and research, the Board of Directors adopted the necessary rules, regulations, boundaries and controls for the first quality management program, which was included in the comprehensive Groundwater Management Plan adopted by the NRD in July 1987 and became effective in August 1987.

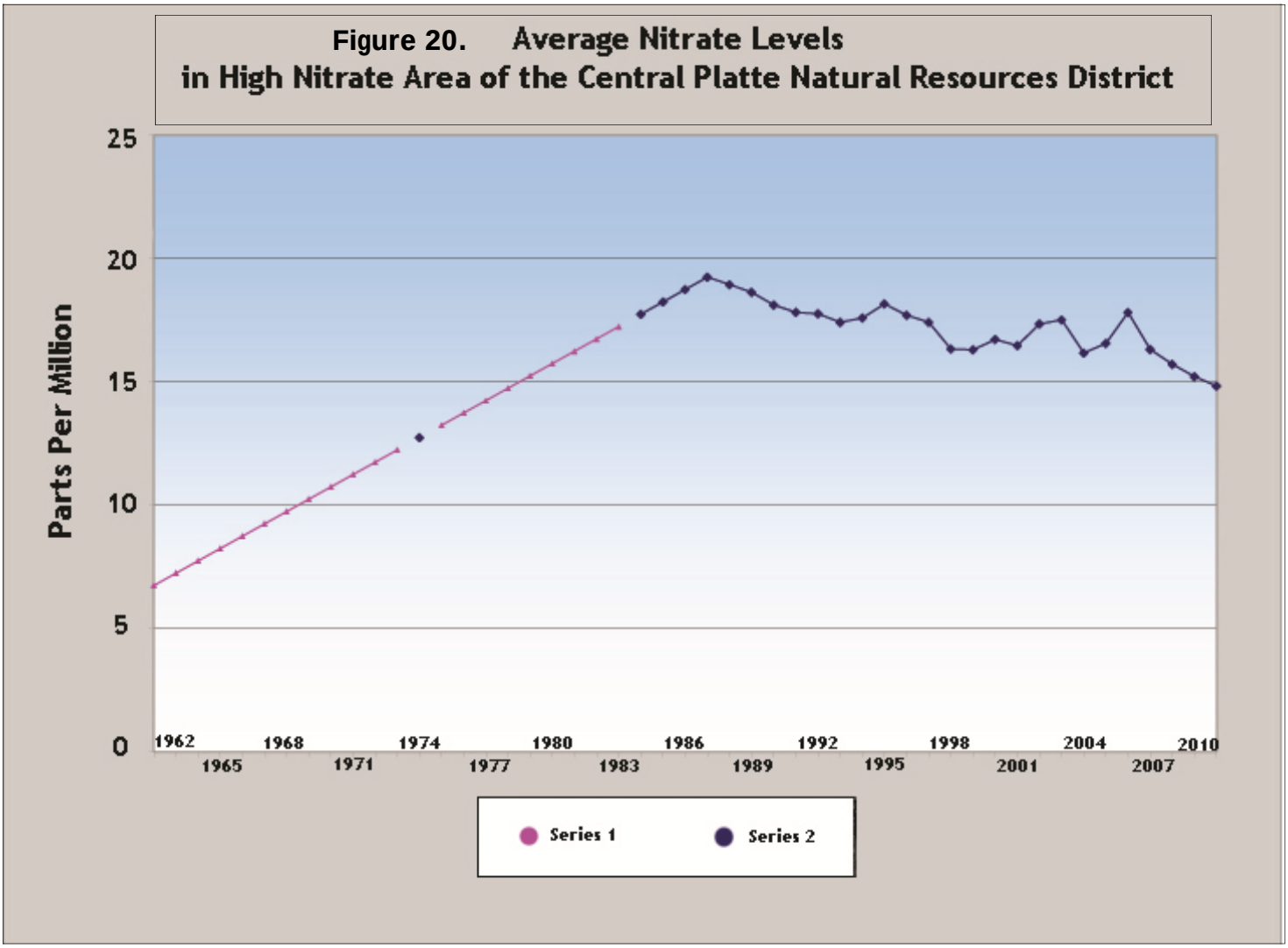
The Program's goal is to lower average nitrate levels district-wide. The plan uses a phased approach, with lesser restrictions in areas that are not high in nitrates and additional regulations applying to areas with higher nitrate concentrations in the groundwater. Because the phases are by area, individual 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. Series 2 (shown on the graph on the following page) was the start-up of the management plan. Although levels have decreased, the board realizes how much work remains and the years that must pass before the problem is solved. The Groundwater Management Quality Program has been updated from time to time and was reauthorized in 1995 and further amended in August 1998. The most recent changes were made in July 2003 to address the high and stagnant levels of nitrates within the NRD. 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 will be made by reviewing the running 5-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.

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. There are 21,002 irrigation wells registered in the District with nearly 1,000 producers participate in the Groundwater Quality Management Program.

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.



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.

Figure 21. *Central Platte Natural Resources District's Groundwater Quality Management Requirements*

Corn, sorghum and potato growers must adhere to the following regulations.

Rules & Regulations

Regulations listed below apply in the Phase area marked with an **X**

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
Fall applications of N fertilizer **on sandy soils** are prohibited.	X	X	X	X
Fall N applications **on heavy soils** are permitted after November 1.	X			
Application of commercial nitrogen fertilizer is **prohibited on all soils** until after March 1st.		X	X	X
Commercial nitrogen fertilizer can be applied on sandy soils until **after March 1**.	X	X		
Spring application of commercial nitrogen fertilizer will **require** split application [pre-plant/pre-emergent & sidedress (post-emergent)] or the use of an approved inhibitor on corn and sorghum. Up to 80 pounds of pre-plant/pre-emergent nitrogen can be applied without an inhibitor. **Operators who pre-plant/pre-emergent apply are required** to furnish **certification** from dealer than **inhibitor** was used at the recommended rate.			X	X
A **report** must be submitted **each crop year** to Central Platte NRD. The first half must be submitted by **March 1**. The report must list the expected yields, acres, crop, water & soil tests, credits for past legume crop & manure or sludge, and the District's recommended nitrogen application rate. **Laboratory reports for soil & water analysis MUST be attached**. After harvest, a form will be provided to the producer to complete the annual report. The report will list actual yields, fertilizer applied as pre-emergent or sidedress, and irrigation water applied. This form will be due by **December 31**.		X	X	X
An annual **deep soils analysis** for residual nitrogen (NO3-N) on each field or 80 acre tract growing corn, sorghum or potatoes, whichever is smaller, with the analysis to be conducted by a laboratory participating in the Unversity of Nebraska Soil Testing Program. A composite sample tested must consist of a mixture from no less than one 3-foot probe every 5 acres. **The report from the lab must be attached to the annual report**.		X	X	X
A **groundwater analysis** for nitrogen (NO3-N) content on each field growing corn, grain sorghum or potatoes must be made **annually. The report from the lab must be attached to the annual report.**		X	X	X
If **manure or sludge** is used, a **credit** for the nitrogen in the manure or sludge must be **used in the calculation** for the nitrogen recommendation. A laboratory analysis must be conducted for each source of manure or sludge & attached to the report form.		X	X	X
A **credit for previous year's crop** if the previous year was in beans, alfalfa, etc., must be used in the calculation for the nitrogen recommendation on corn and sorghum.		X	X	X
The **expected yield** to be **set by the District** (last 5 year average of regulated crop + 5%)				X
Nitrogen applications must not exceed District Recommendations with a copy of a fertilizer receipt attached to the annual report.				X
NRD Staff work with individuals on best management practices				X
Farm operators using nitrogen fertilizer **must be certified**.		X	X	X
Operators must **monitor groundwater applications** to allow for the better management of fertilizer applications and control leaching of nitrates.		X	X	X
Phase II, III & 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

Metering Program A well metering program was adopted, and later revised, that could determine how much water is being used. Wells in Phase II and Phase III must be metered/measured by the NRD. After the Phase deadline is past, flow meters are required on wells that have not been measured. To facilitate increased water management, the District developed its "Splash" program to provide one-on-one education for the producer who voluntarily participates. The producer received weekly irrigation assistance on one field & 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. 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, the NRD adopted rules and regulations to assure that certain minimum changes would occur. The rules and regulations have been amended since the Splash program was implemented. A summary of the program's current rules and regulations are shown in a chart on the previous page.

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

The Platte Valley Project includes parts of 11 counties in the in the central Platte Valley which includes the entire District. Within these boundaries there are areas with groundwater nitrate-N concentrations in excess of 40 ppm, which are among the highest in Nebraska. Due to a combination of coarse-textured soil, shallow groundwater, intense irrigation and over application of nitrogen on acres in corn production; nitrate contamination exists in a large portion of the NRD. With areas of the NRD exceeding the 10 ppm set by the EPA, the NRD was required to develop a Groundwater Management Plan to address groundwater quality. In 1988, Nebraska requirements forced the NRD to develop regulations involving nitrogen application. This plan has addressed the contamination problem using a Phase system based on the average nitrate-N found within the NRD.

Over 350 demonstration sites have been located on producers' cornfields in the project area. Randomized replicated levels of nitrogen application have been placed on most of these locations, usually in increments of 50 pounds above and 50 lbs. below the calculated nitrogen recommendation-based on the University of Nebraska's algorithm. These plot locations have provided a point of focus for over 290 field days and winter meetings. Results from these field length, producer applied, and producer harvested plots have been instrumental in the adoption of water quality practices by the producers of the NRD. Producer survey results taken in 1997 showed that 54% of the producers responding tested irrigation water for nitrate-N, 34% used a nitrification inhibitor and 70% attended a tour or meeting on best management practices to protect water quality.

Project emphasis has changed over the years of it's existence. As new technologies become available to the agricultural sector, evaluation and demonstration of these technologies are usually incorporated within the activities of the project. Some examples of these technologies include use of ET Gage and watermark sensors for scheduling irrigation, use of heat sensing devices for scheduling irrigation events, application of a polymer material to an irrigated field to evaluate its effects on leaching of nitrate-nitrogen, evaluation and demonstration of slow-release or controlled release nitrogen fertilizer products.

VI. Fish and Wildlife Habitat

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

The 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 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 is known to contain several federally listed endangered and threatened species including the whooping crane, least tern, piping plover, the American burying beetle and the western prairie fringed orchid. Areas that have been designated as critical habitat by the U.S. 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. The NRD 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 need to be encouraged to establish more native wildlife habitat, to carefully plan any conversion of rangeland or other native vegetation types to agriculture and to return land with marginal or poor production capabilities to habitat. Surface water, natural wetlands and wet meadows should be maintained whenever possible and enhancements to these resources should be considered in the planning for District projects. The NRD's prescribed burn program, education programs and activities further support and enhance wildlife resources.

Problems: Most landowners in the Central Platte 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. Farmers proudly proclaim themselves as "environmentalists," and point to increasing populations of deer, wild turkeys and other species during the past few years as evidence of their success in improving the habitat for wildlife. Likewise, non-farmers give special attention to preserving and protecting wildlife habitat. Historically, the plant and animal life able to flourish here were those species that could survive the harsh seasonal changes, natural fires, droughts and floods that have prevailed in the region.

Whether naturally or in an environment influenced by the presence of humans, change can provide benefits and detrimental effects for wildlife and for humans, often at the same time.

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 rangeland 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 nongame 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: Nebraska is promoted as the "Good Life" state, and residents of the NRD especially enjoy the natural resources and environment within the NRD. The coexistence of man with wildlife can be achieved with little disruption to the natural balance of nature with 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 should be 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 will 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 the 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 and Nebraska, as well as the U.S. Department of Interior (which is the 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 NRD has a big stake in Platte River activities because of the Platte River Recovery Implementation Program (PRRIP.) The Program was developed from the MOA (Memorandum of Understanding) among the three states that were facing stiff challenges to protect threatened and endangered species using the Platte River, and their habitats, chiefly in Nebraska. After years of negotiations, the states and U.S. Department of the Interior signed the Recovery Implementation Program to improve and conserve habitat for four threatened/endangered species: whooping crane, piping plover, least tern and pallid sturgeon.

The first PRRIP increment, planned to last 13 years, includes completion of water projects expected to improve flows in the central Platte by an average of 130,000-150,000 acre-feet annually. A second Program element is the protection and maintenance of 10,000 acres of habitat during the first increment, ultimately working toward a 29,000-acre goal. The specifics of subsequent increments will be planned as more information is developed. Through an adaptive management process, the Program goals may be modified as appropriate.

If all phases of the Recovery Implementation Program are implemented, it will enable the states to satisfy Endangered Species Act requirements for the Platte Watershed in Colorado, Nebraska and Wyoming. The U.S. Department of Interior, through its Fish and Wildlife Service, has the major responsibility to enforce the Act. The first priority for the Program was the development of a Platte River Environment Impact Statement that reviewed the Program's impacts and a range of alternatives that will make up an implementation agreement which each of the Program's parties approved. The study was conducted by the Governance Committee, which is made up of representatives from the federal government, states, water users and environment organizations. The Governance Committee is assisted by four committees: Technical, Land, Water Management and Outreach.

Central Platte NRD has also supported its responsibility toward wildlife by seeking and obtaining instream flow water rights on the Platte River for the benefit of wildlife habitat. When additional instream flow water rights on the Platte River were sought by the Nebraska Game and Parks Commission, the NRD worked with a coalition of water users to balance wildlife habitat needs with human needs. The NRD has established various objectives for meeting its FWS responsibilities.

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.

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 Central Platte NRD 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.

Programs The NRD participates with the NGPC in the WILD Nebraska Program and with Pheasants Forever in the *Corners for Wildlife* Program, which offers cash incentives for farmers to convert eligible pivot irrigations 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.

DNR administers the 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.

CPNRD Instream Flow The Central Platte NRD has instream flow water rights on the Platte River to protect and enhance wildlife. The State of Nebraska approved the 15-year review requirement in 2009.

HISTORY: A series of instream flow water rights on portions of the Platte River to protect minimum flows in the river for fish and wildlife purposes was approved on July 2, 1992, by the director of the DWR (now DNR) based on applications by the NRD. The flows specified by the instream flow water rights are a factor in providing bird habitat on the Platte as well as habitat for food sources consumed by those birds. The rights have no effect on levels in upstream storage reservoirs such as Lake McConaughy nor do they take water away from existing irrigators. Other water rights already existing on the river are senior to the rights; but the flows specified by the instream flow water rights must be met before any future project could take water from the Platte. The NRD's application came after extensive study by the NRD in response to concerns about low flows in the Platte, especially during dry summer periods, which are dangerous to the fish and wildlife that depend on the river. The study indicated that the instream flow water rights wouldn't solve the existing low flow problems, but could be effective in preventing some additional low flow periods by assuring that minimum flows are met before future projects could withdraw water from the Platte.

A public hearing was held by the NRD in March 1989 on proposed instream flow rates, timing, segments and uses for a proposed water right. While there was considerable testimony applauding the NRD for seeking the instream flow water right, there was a division of opinion about the flow rates, dates and river segments proposed. The Board studied testimony that was presented, then waited for other studies to be completed and met with interested parties to arrive at the series of flow regimes on which the application is based. The NGPC rejected the NRD's offer to join in making its application to the DWR. Because of insufficient detailed data available to make a determination of water and habitat needs for selection and nesting by the least tern/piping plover and stopover by ducks/geese, the Board didn't make its applications for water rights for those purposes. The District filed six applications on July 25, 1990, for Platte River instream flow water rights to benefit wildlife.

Together, the applications sought to protect flows varying from 500 to 1,500 cfs at specified time periods in certain reaches of the river, generally extending from near Lexington to near Columbus. These 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 DWR conducted a hearing on the 6 applications from July 1-Sept. 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. The DWR (now Department of Natural Resources) issued a ruling on July 2, 1992, that three of the water right applications be granted outright and a fourth be modified from the NRD's request. Two applications with flows for the bald eagle were denied.

APPLICATIONS GRANTED TO CPNRD

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

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

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

Game and Parks Appropriation The Nebraska Game and Parks Commission (NGPC) submitted five applications on November 30, 1993 seeking instream flow water rights for particular time periods with corresponding flow quantities for specified reaches of the river and for specified fish and wildlife. Some of the applications sought flow quantities during times and at locations that coincided with the instream flow water rights granted to the NRD. One of the applications was approved and two other applications modified for maintenance of fish communities. Another application to maintain whooping crane roost habitat was modified, and the application for flows to maintain wet meadows along the river was denied. Under Nebraska law, surface water rights are given priority on a seniority basis. Thus, the flows granted for NGPC are junior to and in addition to CPNRD's instream flow water rights. The river must have flows that exceed the total of all senior water rights before a junior water right can be obtained by a potential developer. Objectors to the NGPC application formed the Nebraska Water Conservation Cooperative to provide opposition jointly in order to save time and money. Eventually, 51 local governmental subdivisions and water users organizations joined the Cooperative.

July 1996- NGPC reduced its flow requests for several applications, but the Cooperative continued opposition. The Department of Water Resources (now Department of Natural Resources) opened a hearing on the applications on September 25, 1996. The hearing concluded on April 8, 1997. After the hearing, retroactive changes in state law applying to instream flow water rights were adopted by the Nebraska Legislature and both parties were allowed to submit briefs and additional exhibits in reaction to the newly amended statutes.

The DWR examined the briefs, the transcribed testimony that is nearly 7,700 pages in length, and the 200-plus exhibits that are part of the hearing record, and issued his order on June 26, 1998; denying the application for a water right to maintain flows to manipulate the water table underlying nearby wet meadows. The DWR said NGPC failed to satisfactorily show a river-aquifer linkage and that he agreed with the opponents' claim that, as a matter of law, an instream flow for wet meadows is not permitted by state statute.

Listed below are NGPC applications to maintain fish communities:

1st (of 3) NGPC application- for instream flow was sought 1,000 cfs on a year-round basis for the reach of the river between Johnson Power Plant near Lexington & 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 the NRD already has a water right for 600 cfs, DWR 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 will be protected to benefit the fish community from the J-2 return near Lexington to the Loup Power return from Jan. 1-June 23. NRD's water rights protect a rate of 600 cfs from June 24-Aug. 22, then returns the rate to 500 cfs during the rest of the year. Thus, varying flows will be protected in different reaches of the Platte with 500-600 cfs protected above the Kearney Canal diversion dam; 1,000 cfs protected between the dam and Columbus from June 1-July 31; and 800-900 cfs, depending on the measuring station, from August 1-August 31.

2nd application- reach between Loup Power Canal return and confluence of Platte/Elkhorn rivers near Waterloo by appropriating 1,800 cfs on a year-round basis. DWR approved the application.

3rd application- NGPC sought water right for 3,700 cfs on year-round basis between confluence of the Platte/Elkhorn rivers and confluence of Platte/Missouri rivers near Plattsmouth. DWR approved a maximum rate of 3,100 cfs in January; 3,700 cfs in February through July and October through December; 3,500 cfs in August and 3,200 cfs in September.

The application to maintain whooping crane roost habitat during spring and fall migration seasons was modified. The water right sought for 2,400 cfs from April 1-May 10 and for 2,000 cfs from Oct. 1-Nov. 10, on the stretch of the Platte from the J-2 return to Grand Island, was shortened to the portion of the river affected to the stretch between the Kearney Canal diversion dam and Hwy 281 bridge south of Grand Island. Order provides a flow of 50 cfs for April 1-14, increasing it to 1,350 cfs from May 4-10. Fall rate in the shorter stretch of 1,350 cfs for only the Oct. 1-11 time period.

Platte River Recovery Implementation Program The NRD has a big stake in the Program attempting to improve and conserve habitat for three threatened and endangered species on the central Platte (the whooping crane, piping plover and least tern) and the endangered pallid sturgeon on the lower Platte. The Program was developed as the states and federal governments face stiff challenges to protect threatened and endangered species using the Platte River and their habitats. The signatories to the Program hope to equitably provide greater certainty for water users facing ESA requirements. The U.S. Fish and Wildlife Service (FWS) plays a major role in enforcing the ESA. Authorization legislation for federal funding was passed by Congress in 2008 and associated appropriations will be addressed in an ongoing process. District board members, management, and staff are actively involved in Program Governance and Advisory committees. **(See history of Program on page 58.)**

Platte Basin Habitat Enhancement Program The Central Platte NRD, working with co-sponsors including four other NRDs and two state agencies, will receive $3,000,000 from the Nebraska Environmental Trust for the Platte Basin Habitat Enhancement Project (PBHEP) in 2009-2012. The Project will enable the Nebraska Department of Natural Resources, the Nebraska Game and Parks Commission and the five Platte Basin Natural Resources Districts (NRDs) to help implement portions of the Nebraska Natural Legacy Project in the Platte River Basin from Colorado and Wyoming state lines to Columbus, Nebraska.

The Legacy Program has designated the expansion of grassland habitats along the length of the North Platte River, the South Platte River and the Platte River as a priority in its state conservation strategy. The PBHEP will purchase irrigation water rights on a willing seller basis and convert the land irrigated by the right to either native habitat or a dryland farming operation. This will enhance the availability of native grasslands and instream flows for fish and wildlife and increase the resilience and sustainability of both agricultural and native habitats in the Platte Basin ecosystem. By enhancing native habitats in the Platte Basin, this project will increase the sustainability of both our native and agricultural ecosystems, provide additional hunting and recreational opportunities, and diversify the income base of people in the Platte Basin and the whole State of Nebraska.

Piping Plover Critical Habitat in Nebraska The piping plover, a small shorebird that nests in the Northern Great Plains, Great Lakes and along the Atlantic Coast was designated as a threatened species under the ESA in 1985. The FWS proposed the designation of critical habitat for the Great Plains population in 2001 in five states: Nebraska, North Dakota, South Dakota, Minnesota and Montana.

Critical habitat was formally designated by the FWS in 2002. In Nebraska, critical habitat was designated along 440 miles of the Platte, Loup, Niobrara Rivers and 120 miles of the Missouri River adjacent to Nebraska. In response to this designation, the Nebraska Habitat Conservation Coalition (NHCC) was formed in 2001.

The NRD joined the NHCC in November 2001. The Coalition, comprised of 24 members and eight partners from across the state, was formed in response to the federal designation of critical habitat for the piping plover in Nebraska. The designation of critical habitat gives the FWS an additional instrument to evaluate activity that could impact the Platte River or it's flow, which puts groundwater pumping at a greater risk of being construed as a "take" by the FWS. Section 9 of the ESA makes it unlawful to adversely modify critical habitat 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.

On February 14, 2003, the NHCC filed a lawsuit in Federal District Court in Nebraska. The lawsuit stated that the FWS used inadequate science in their designation of critical habitat, the designation provided questionable benefits to the species, that there were legal inadequacies in the designation process and the FWS failed to assess the economic impact of the designation. The NHCC won its case in District Court against the FWS in October 2005. The judge ordered the FWS to redo their economic analysis and re-do their critical habitat designation in Nebraska. NHCC plans to stay closely involved in re-designation of critical habitat as ordered by the District Court.

Current Threatened and Endangered Species in the Central Platte NRD:

American burying beetle, whooping crane, Eskimo curlew, piping plover, interior least tern and western prairie fringed orchid.

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. A plastic mulch, weed barrier, improves moisture retention and serves as a weed barrier 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 of these 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.

Objectives

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

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.

Specific Planning: Sales have been steady over the last few years. In 2010, tree sales were down from 2009, with 57,175 trees sold in 2010 compared to 68,703 trees in 2009. Cost share incentives for tree planting and maintenance is provided for communities as well as the rural area. Anticipation is that the tree planting program during the planning period will continue at a level of approximately 50,000 trees distributed and planted each year.

Information and education campaigns, including the use of paid advertising/promotional items are used. Alternative sources of tree stock are being added to meet customer needs and provide diversity for the program. Weed barrier sales were down at 16.41 miles compared to 19.71 miles in 2009. See chart on the following page that shows the number of trees sold and the miles of fabric sold since 2000. The weed barrier (conservation mulch) program is expected to maintain around 20 miles annually during the planning period. The District will continue to evaluate the programs to assure that the NRD meets its customers' needs and make any necessary changes.

The NRD will continue to provide landowners with a complete tree planting service including purchase, distribution and planting. The District will also work with foresters to ensure that its customers receive high quality seedlings. The weed barrier program will continue. The District will also promote the urban forestry program to communities for cost share on planting windbreaks. Advertising changes may be considered as an attempt to increase sales.

Figure 22. Trees and Weed Barrier Sales

YEAR	TREES	WEED BARRIER (in miles)
2010	57,175	16.41
2009	68,703	19.71
2008	57,225	26.24
2007	44,950	13.35
2006	61,125	27.23
2005	80,775	37.97
2004	70,775	30.97
2003	77,975	38
2002	86,675	37
2001	58,600	18.70
2000	60,050	23.53

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 water-oriented 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. However, at this writing, no projects have been built or are anticipated under the PL566 program due to a lack of funding from Congress. 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 vigorous and aggressive 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. The Audubon Society provided land for a roadside turnout near Shelton. Use of the Platte River for recreational purposes occurs now, but it is restricted by accessibility and use of the river by endangered and protected wildlife species. Water harnessed under flood control projects and other multipurpose reservoirs can and does serve recreation needs.

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 Parks Program of the Central Platte NRD 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 (including sporting) 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. The Central Platte NRD has established various objectives for meeting its Recreation and Parks 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.)

Objectives

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

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.

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 & 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.

The District will continue to assist cities, counties and other governmental entities with flood control projects, some of which may develop into recreational areas.

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

IX. Range Management

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

Problems: Rangeland makes up approximately 32.5% of the NRD's land area. Thus, it is an important aspect of the District's land use. Most of the rangeland is unsuitable for using as cropland, 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. However, there is a danger that some presently good rangeland could be harmed by the installation of center pivot irrigation systems.

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. Concern has grown in recent years because of an influx of trees on pasture land. These trees, mostly cedars, diminish the natural water supply for desirable vegetation in the immediate area of the tree. Another major concern is the encroachment of weeds that can choke out desirable vegetation. Drought years also produce concerns for range managers. Often, the landowner must construct a well to provide a dependable water source for livestock.

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.

Prescribed Fire Program The NRD implemented the Prescribed Fire Program in 2004 and developed a cost share program to help landowners treat their rangelands with the implementation of burns. Since the inception of the program, the NRD Fire Crew has conducted 118 burns for a total of 8,283 acres. The NRD works in conjunction with The Nature Conservancy, NRCS, U.S. Fish and Wildlife Service and the Prescribed Burn Task Force. In addition, the NRD participates in the Nebraska Prescribed Fire Council, a group whose purpose is to promote the safe legal use of prescribed fire as an effective natural resource management tool.

Prescribed fire can be a valuable tool in the maintenance and improvement of native grasslands. Rangeland areas devoid of fire occurrence are often sites of problems involving invasive species. These invasive species such as Eastern Red Cedar can take away natural grassland acres that is necessary for grazing as well as for wildlife. In addition, rangelands that are always grazed in the fall or winter with no spring treatment may become areas dominated by native and non-native cool season grasses and invasive weeds. These areas offer a reduced food value to livestock and are of reduced value to native wildlife. When prescribed fire is used along with appropriate grazing practices, the result is increased economic output and wildlife benefit.

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.

Specific Planning: The only management programs that the NRD has budgeted specifically for range management are the Prescribed Fire Program and the District's cost-share program. The cost-share programs encourage landowners to adopt suitable land management practices through the NRCS and, where required, to reestablish range areas. In some cases, if the range is not too severely damaged, eliminating the overgrazing may restore the vegetation in a few years. Landowners need to monitor their pastures on a regular basis.

In other cases, reseeding or inter-seeding will be necessary. Plants should be introduced that have a deep root system to survive grazing and droughts. Reseeded lands must be deferred for one to three years before the grasses are established sufficiently to be grazed lightly again. A portion of the rangeland needing improvement will require some extensive measures.

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 bum is often recommended to remove the unwanted trees and shrubs. Landowners are being encouraged to eliminate undesirable vegetation, such as leafy spurge and noxious weeds.

Landowners are encouraged to review their rangeland needs with the NRCS, which has a variety of tools available to help manage rangeland in a cost-effective way. The Nebraska Soil 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 (if the funds are still available.)

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: Generally, air quality across the District is excellent. Complaints are sometimes received by the District, but they are generally handled by local health departments, the Nebraska Department of Environmental Quality (DEQ) or the US 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. These conditions are generally of short duration and can usually be settled on a local basis. Industrial air pollution is limited in its extent since there are no metropolitan-size industrial cities in the District, and most plants make an effort to comply with industry and government regulations that prevent major problems. During certain times of the year, when the combination of dry weather, strong winds and open fields are all present, the air quality is poor due to blowing dust. Tree planting is encouraged by the NRD to reduce this problem. Besides erosion, the largest single land pollution problem in the District is solid waste disposal. The NRD 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 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 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.

To help meet those goals, the Act banned disposal of yard waste into landfills from April 1 through November 30 of each year. Lead-acid batteries, waste oil, waste tires and household appliances are also banned from disposal into landfills. In September 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. The NRD will continue to monitor the quality of natural resources throughout the entire District. 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.

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: 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 Apr. 1 to Nov. 30 of each year. Lead-acid batteries, waster oil, waste tires (except for those process in a manner established by the NDEQ [Nebraska Department of Environmental Quality]) 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.

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

Land: The NRD will continue to play a minor role in the area of solid waste management, providing technical information and expertise for disposal studies and working 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.

Objectives

1. *To establish irrigation water management techniques on all irrigated land to properly conserve and efficiently utilize soil, water and fertility.*
2. *To protect and preserve the quality of ground and surface waters that presently meet acceptable standards as adopted by the US Public Health Service and the Nebraska Department of Environmental Control.*
3. *To improve the quality of groundwater and surface water not presently meeting the standard to such a level as to at least meet water quality criteria contained in the standards.*
4. *To establish adequate permanent cover on all Class VI 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. *To establish approved cultural management practices, vegetative practices and structural measures, as needed, on all land to prevent wind and water erosion, in order to reduce erosion and sedimentation in surface waters.*
6. *To establish erosion control measures as needed, on all industrial development sites, residential development sites, road construction sites 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.
10. Sanitary landfill regulations for all refuse sites.

Specific Planning: The NRD will continue to monitor the quality of natural resources throughout the entire District. 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. The Central Platte NRD will strive to meet the established objectives for pollution control and solid waste disposal.

XI. Information & 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.

Because the Natural Resources District is a unit of local government, the board of directors depends on the public to be informed about the projects and programs of their NRD. Also, the Nebraska Legislature has given the NRDs a larger regulatory role, providing the NRDs with an increased need to keep the public informed about its programs and requirements. With a District that stretches some 175 miles from west to east and serves a population of over 114,000 people, the logistics of offering information and education is a challenge. Throughout this document, information and education are key objectives of the NRD. An immediate priority is to make landowners and operators, other citizens and taxpayers understand complicated natural resources issues.

It's the District's responsibility to respond to issues that the public is focused on, recognizing constituents' priorities and expectations, and to provide factual information relating to the issues. At the same time, the District must provide constituents with the necessary understanding of the effects of those issues on the NRD's objectives and responsibilities.

Adults are an important audience in the District's education efforts. The main focus of adult education is water issues, both groundwater quality and quantity. High nitrate areas of the NRD and the proposed Integrated Management Plans being developed for water quantity within the District and the Platte Basin are examples of issues the public needs to be informed about. Efforts are made to provide materials for educational programs to all age levels, including schools and other organizations on natural resources issues. Staff members address civic organizations and other groups when requested if time permits.

Needs: Because the NRD is a unit of local government, the Board of Directors depends on the public to be informed about the projects and programs in order that the public can participate in the governmental process. Also, the Nebraska Legislature has given the NRDs a larger regulatory role, providing the NRD with an increased need to keep the public informed about its programs and requirements. An immediate priority is to make the public aware of their NRD, its projects, programs and services. Sometimes, for a variety of reasons, the general public does indeed get excited about a natural resources issue that has not been addressed by the Board or that has not been given a high priority. When this occurs, it is the District's responsibility to respond to the issue, recognizing the priorities and expectations of its constituents. At the same time, the District must provide constituents with accurate information relating to the issue to promote understanding of the effects of those issues on the District's objectives and responsibilities.

Efforts need to be made to provide materials and educational programs to the schools, civic clubs and various other organizations that might be interested in natural resources issues. This should be accomplished at all age levels. To gain maximum advantage from limited financial and personnel resources, emphasis needs to be given to educational efforts aimed at teachers, counselors and others who would share their knowledge and understanding with the peers and with students.

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 regarding the Groundwater 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. Central Platte

NRD 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.

The District has pursued an active program of information through the public media, as well as publication of the required Master Plan and Long Range Implementation Plans, brochures, newsletters and other materials. News releases regarding the projects, programs and planning of the NRD are provided to broadcast and print media. NRD staff members also are available for news media interviews on natural resources issues.

Use of Project Wild, Project Wet and Project Learning Tree materials in the classrooms is encouraged. High school youth can learn more about their environment by participating in the Envirothon, Land Judging and Range Judging competitions that the NRD hosts. Central Platte NRD provides ten $1,000 scholarships to qualified graduate and undergraduate students who are majoring in a natural resources career.

The District is the coordinator and main sponsor of the Nebraska Children's Groundwater Festival; which is conducted in Grand Island each May as an education experience for 1,000 4th-5th grade students from across the state. Also, the District contributes to the SOAR (Summer Orientation About Rivers) Program offered by the Prairie Plains Institute, which gives upper elementary school students a "hands-on" educational experience with the Platte River. The NRD also distributes 1,000 seedlings to area schools for Arbor Day education.

By request from teachers and school administrators, NRD staff members address students on more specific topics relating to natural resources. Central Platte NRD has established various objectives and alternatives for meeting its Information and Education responsibilities.

Objectives

1. *To 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. *To 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. *To 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. *To assist in developing curricula for use in educating elementary, secondary and post-secondary students about natural resources, conservation and environmental issues.*
5. *To assist in training teachers and leaders of educational organizations to maximize the use of the curricula that have been developed.*
6. *To 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.

Specific Planning: The information and education program will continue to be improved and expanded during this planning period. Additional brochures will be developed for all programs of the District and for those projects requiring greater visibility and current brochures will be updated as necessary. Water quality programs, flood control projects and Platte River issues will generally receive the highest priority. Central Platte NRD will play a role in developing information and education programs through the various associations and organizations to which the District belongs, thereby getting higher quality materials and programs by sharing costs with others who have similar goals. The NRD 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.

Information: Brochures are available for all NRD programs and are available to the public. The NRD also displays other organizations' information regarding natural resources. The NRD's website at www.cpnrd.org is updated weekly, providing up-to-date information on all programs and projects. Publication of the "In Perspective" bi-monthly newsletter is sent to over 5,500 landowners, state agencies, pubic officials and cooperating organizations. Displays providing information about NRD programs are also provided to local conferences and workshops when requested. In 2008, the Nebraska Association of Resources Districts adopted a new message that is being used by the NRDs in publications— 'Protecting Lives, Protecting Property, Protecting the Future.'

Education: The District provides avenues of natural resources education for both educators and students. Funds are budgeted to provide scholarships for educators to attend workshops and conferences offered through the universities. In 2007, the NRD began providing scholarships for high school students to further their natural resources education at a college of choice. The NRD also budgets funds for outdoor classrooms. Staff helps coordinate competitions for high school students through the regional and state Envirothon, land judging and range judging competitions. In 2005, the programs coordinator and the information/education specialist began coordinating the annual Nebraska Children's Groundwater Festival held for 4th-5th grade students at the Central Community College and College Park in Grand Island. The festival is now in it's 23rd year.

Educational Materials: Educational materials are provided to instructors through: Project Wild, Project Wet, Project Learning Tree, Outdoor Classrooms, Arbor Day and other requests made by educators for natural resources education.

Media Relations: News releases, print advertising, radio advertising and the NRD's website all provide information to the public through the media. News releases are sent to all newspapers and radio stations in the District at least twice a month. This typically includes 15 radio stations, three television stations and 27 newspapers. The media is contacted through email, fax, mail and occasional telephone correspondence. CPNRD also participates in a radio talk show (along with other NRDs) for KRVN radio station.

Co-Sponsored Events: The NRD participates with the following: Grand Island Groundwater Guardian Program, Hall County Area Clean Community System, Husker Harvest Days, SOAR-Summer Orientation About Rivers, NARD Auxiliary National Association of Resources Districts, NRCS Extension Programs and Prescribed Burn Schools.

XII. 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 2011 Master Plan (see chart below.)

Figure 23. 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)