

AUGUST 2017

CENTRAL PLATTE NRD APPENDIX
CENTRAL PLATTE NRD MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

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PLAN OVERVIEW

This plan is an update to the Central Platte Natural Resources District (CPNRD) Multi-Hazard Mitigation Plan (HMP) approved in 2012. The plan update was developed in compliance with the requirements of the Disaster Mitigation Act of 2000 (DMA 2000).

Hazard mitigation planning is a process in which hazards are identified and profiled, people and facilities at risk are identified and assessed for threats and potential vulnerabilities, and strategies and mitigation measures are identified. The goal of the process is to reduce risk and vulnerability, to lessen impacts to life, the economy, and infrastructure. Hazard mitigation planning increases the ability of communities to effectively function in the face of natural and manmade disasters.

The potential for disaster losses and the probability of occurrence of natural and manmade hazards present a significant concern for the communities participating in this plan update. The driving motivation behind this hazard mitigation plan update is to reduce vulnerability and the likelihood of impacts to the health, safety, and welfare of all citizens in the planning area. To this end, the Regional Planning Team reviewed, updated, and approved goals and objectives, which helped guide the process of identifying both broad-based and community-specific mitigation strategies and projects. These projects and strategies will, if implemented, reduce vulnerability and help build stronger, more resilient communities. The goals and objectives for this plan update are as follows:

Goal 1: Protect Public Health and Safety from Natural Hazard Events

Objective 1.1: Provide Adequate Public Safe Rooms and Post-Disaster Storm Shelters

Objective 1.2: Improve/Provide Adequate Backup and Emergency Generators

Objective 1.3: Improve Warning Systems

Objective 1.4: Improve Emergency Communication Systems

Objective 1.5: Improve Electrical Service

Objective 1.6: Develop Emergency Snow/Evacuation Routes

Objective 1.7: Study/Improve Drinking Water Supply

Objective 1.8: Reduce Water Demand/Improve Drought Education

Objective 1.9: Improve Response to Hazardous Materials (Hazmat) Incidents

Objective 1.10: Improve Flood/Dam Failure Warning System

Goal 2: Protect Existing and New Properties from Natural Hazard Events

Objective 2.1: Reduce Bottleneck/Flow Restrictions

Objective 2.2: Reduce Wildfire Damage

Objective 2.3: Reduce Stormwater Damage

Objective 2.4: Develop/Update Floodplain Information

Objective 2.5: Reduce Damages in Floodplain

Objective 2.6: Facility Flood Proofing

Objective 2.7: Reduce Tree Damage & Damage from Trees

Objective 2.8: Evaluate Stream Channelization/Bank Stabilization

Objective 2.9: Improve Construction Standards and Building Survivability

Objective 2.10: Evaluate and Improve Berm, Floodwall and/or Levee

Goal 3: Increase Public Awareness and Education about Natural Hazard Events

Objective 3.1: Community Education and Awareness

Objective 3.2: Increase Soil and Water Conservation

PLAN ORGANIZATION

This HMP is comprised of three primary components:

- The regional overview, analysis, and plan documentation
- Seven participant appendices (one for each of the five participating counties plus one for the Central Platte NRD and one for communities participating outside of the five participating counties)
- An appendix of procedural documentation and resolutions of adoption

This participant appendix includes the participant section for the Central Platte NRD. Additional information regarding the planning process, demographics and asset inventory, regional risk assessment and methodology, mitigation strategy, and plan implementation and maintenance can be found in the regional portion of the plan.

PARTICIPANT SECTION
FOR THE
CENTRAL PLATTE
NATURAL RESOURCES DISTRICT

Central Platte NRD
Multi-Jurisdictional Hazard Mitigation Plan

August 2017

PARTICIPATION

LOCAL PLANNING TEAM

Table CPN.1 provides the list of participating members that comprised the CPNRD local planning team. Members of the planning team attended Round 1 and Round 2 meetings, and provided important information including, but not limited to: confirming demographic information, ongoing projects, critical facilities, future development trends, hazard history and impacts, identifying hazards of greatest concern, and prioritization of mitigation actions that address the hazards at risk to the NRD.

Table CPN.1: CPNRD Local Planning Team

Name	Title	Department / Organization
Lyndon Vogt	General Manager	Central Platte NRD
Jesse Mintken	Assistant General Manager	Central Platte NRD

LOCATION AND GEOGRAPHY

The CPNRD is located in south-central Nebraska, straddling the Platte River encompassing 2,136,304 acres. It is comprised of all or parts of eleven counties: Buffalo, Custer, Dawson, Frontier, Hall, Hamilton, Howard, Merrick, Nance, Platte, and Polk Counties. Major waterways in the area include 205 miles of the Platte River, 49.9 miles of the North Channel, and 173 miles of the Wood River.

The district includes the broad Platte River valley lowlands, loess hills, dissected plains, and sandhills. In the western section, 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 is 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 a habitat for wildlife.

CLIMATE

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 throughout the District. Summers are generally hot and winters can be severely cold, although the temperature and precipitation vary greatly from year to year.

For the CPNRD, the average high temperature for the month of July is 85.6°F. The average low temperature for the month of January is 11.8°F. On average, the planning area receives 30.64 inches of rainfall and 31.2 inches of snowfall per year. The following table compares these climate indicators with those of the entire state. Climate data are helpful in determining if certain events are higher or lower than normal. For example, if the high temperatures in the month of July are running well into the 90s, then this indicates extreme heat events, which could impact vulnerable populations.

Table CPN.2: Climate Data for the NRD

Age	Planning Area	State of Nebraska
July High Temp	85.6°F	88.0°F
January Low Temp	11.8°F	12.0°F
Annual Rainfall	30.64 inches	30.3 inches
Annual Snowfall	31.2 inches	25.9 inches

Source: NCDC Climate Data Online, 1981-2010 Climate Normals

*Precipitation includes all rain and melted snow and ice.

TRANSPORTATION

The CPNRD’s major transportation corridors include Interstate 80 and U.S. Highways 30, 34, 81, 183, and 281. The major railroads which travel through the NRD include the Burlington-Northern Santa Fe Railway, Union Pacific Railroad, and Nebraska Central Railroad Company. There are several airports across the area including Grand Island Central Regional Airport, Kearney Regional Airport, Jim Kelly Field, and Quinn Field. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors, as well as areas more at risk to transportation incidents.

DEMOGRAPHICS

It is estimated that the CPNRD serves a population of about 145,000 people throughout eleven counties. However, the NRD does not collect information on age, or other demographics of their population, nor does the U.S. Census Bureau recognize the NRD. As a result, there is no additional population data for the NRD as a whole. For information regarding population data, please refer to the specific jurisdiction Participant Section or to *Section Three: Demographics and Asset Inventory*.

NRD PROJECTS AND PARTNERSHIPS

OUTDOOR RECREATION

The CPNRD facilitated a Task Force in 1993 to organize and develop the Central Platte Historic, Scenic & Trails Project, which is aimed to get people off roads and bridges during the Sandhill Crane viewing season. It includes plans for parking areas, access to the river for canoeists, scenic roads, viewing decks and turnouts, historic trail designations and proposed recreational trails. Phase 1 of the project has been completed, which included three roadside turnout areas between Doniphan and Shelton on the road along the south side of the Platte River. Additionally, there are two viewing decks along the Platte River located near Gibbon and the other near Alda. According to the CPNRD’s Master Plan, the NRD will continue to work with various governmental entities to complete the project. Full implementation of the plan will depend on the availability of financial resources, availability of sites and acceptance of use by the public.

FLOOD CONTROL PROJECTS

With 27 communities across the CPNRD with varying degrees of flood control issues and challenges, the NRD has worked with many of them on flood control projects ranging from dams to levees to clearing of creeks and streams. CPNRD works with landowners and other agencies to minimize damages that cause flooding. The goal is to use each acre within its capacity and to treat each acre according to its needs as set forth in the technical guidelines adopted by the NRD. The NRD has developed over 30 flood control structures. The plans for these structures have been designed to provide for orderly development of flood control and other related resource activities in watersheds, with each watershed plan encompassing a number of individual project plans in the total watershed development.

ICE JAMS

The CPNRD has an Interlocal Agreement with the Tri-Basin NRD and the Counties of Phelps, Buffalo, Merrick, Polk, and Hamilton to deal with ice jams in the Middle Platte River. If an ice jam begins to form, the NRD would be the first entity to start the process by calling FEMA and NEMA. The agreement between the seven partners includes the deposit of \$37,000 in emergency funds to use in the case of an ice jam.

RE-OPERATION OF CANALS AND WATER BACK TO THE PLATTE RIVER

CPNRD has been proactive in creating new ways to increase irrigation efficiency, protect water supplies, and increase flows to the river in Dawson County by working with the canal companies in the area. The Canal Rehab Project is the first conjunctive water management project in the CPNRD. 2015 marked the first year that all three of CPNRD's irrigation canal rehabilitations in Dawson County have been in full operation. The Cozad Ditch, Thirty Mile Irrigation District, and Southside Irrigation District produced needed returns back to the Platte River from both excess flows and natural flow diversions, as they were designed to do. The flowing table shows the total returns achieved in 2015.

Table CPN.3: Water Back to the Platte River for 2015

Type of Return	Cozad	Thirty Mile	Southside	Totals (ac-ft)
Return of Surface Water to Platte	9,159.3	5,543.4	1,623.7	16,326.4
Return in 2015	204	796	221	1,221
Recharge Over Time	9,363.3	6,339	1,844.7	17,547

In total, the canals have recharged 8,000 acre-feet (ac-ft) of which 1,100 ac-ft were returned back to the Platte River this year. The remaining 6,900 ac-ft will return through groundwater over time. There are currently 24,000 ac-ft signed up for surface water natural flow rights to convert their consumptive use back to the Platte River, which resulted in 17,100 ac-ft of additional Platte River flows. In total, 18,200 ac-ft from both excess flows and natural flow diversions were put back into the Platte River during the irrigation season.

CPNRD'S WATER BANKING PROGRAM

The canal rehabs were developed as a result of the NRD's Water Banking Program, which began in January 2007 to try to reduce the need to regulate irrigators within the District. As part of the program, the NRD purchases water rights as a solution to balance water that is being used with water that is available. Two major programs required the NRD to find a solution: the Platte River Recovery Implementation Program and Legislative Bill 962.

CPNRD's water bank is the first to be implemented in Nebraska. Through the water bank program, the NRD acquires water rights from landowners. Every acre-foot of water that the NRD acquires impacts the river, thus reducing regulation and imposed cutbacks. The NRD has spent \$4.6 million to purchase water rights to return the over-appropriated area back to a fully appropriated status, resulting in 3,000 ac-ft of water returned to the Platte River.

FUTURE DEVELOPMENT TRENDS

Several flood control projects are planned for the next few years or are nearing completion in the CPNRD. The Upper Prairie Silver Moores Flood Control Project is a multi-phase project that began in 2005, and when completed, will provide the following benefits: protect northwestern Grand Island from Prairie and Silver Creek flooding; reduce future flooding damages to crops, properties, and other infrastructures; and eliminate an estimated \$130 million in damages during a 100-year event (or 1% annual chance event). The project includes the construction of dry dams, detention cells, and a levee. The four dry dams are completed and the detention cells are scheduled to be completed in early 2018. The mile-long levee is scheduled to begin later this year. Once construction of the project is completed, potential FEMA map revisions will be submitted for approval. The entire project is expected to be completed in 2019 with an overall estimated cost of \$30 million. Co-sponsors on the project include the CPNRD, Nebraska Department of Natural Resources, Natural Resources Development Fund, City of Grand Island, Hall County, and Merrick County.

The Odessa Area Flood Control Project consists of improvements to approximately two miles of existing roadside and filled drainage ditches, replacement of culverts, and supplementing existing culverts.

PARCEL IMPROVEMENTS AND VALUATIONS

Please refer to the individual Participant Sections for information regarding parcel improvements, valuation, and discussions for specific jurisdictions across the planning area.

CRITICAL INFRASTRUCTURE/KEY RESOURCES

CHEMICAL STORAGE FIXED SITES

Chemical sites are located throughout the NRD. Complete lists of chemical storage sites in each jurisdiction may be found in their community profiles.

HISTORIC SITES

The locations of historic sites in each jurisdiction, per the National Register of Historic Places for Nebraska, can be found in their respective participant sections.

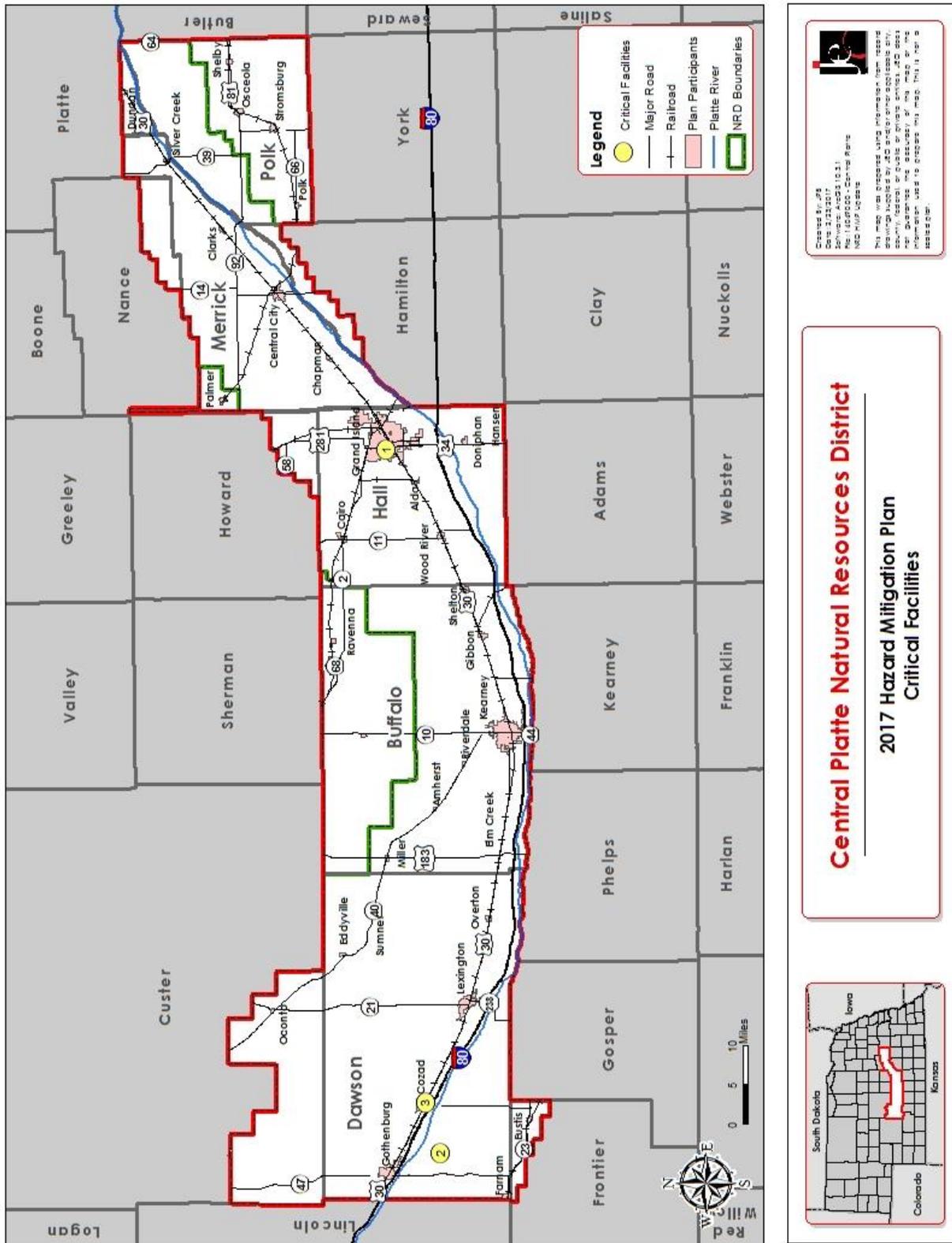
CRITICAL FACILITIES

Each participating jurisdiction identified critical facilities vital for disaster response and essential for returning the jurisdiction’s functions to normal during and after a disaster. Critical facilities were identified during the original planning process and updated by the local planning team as a part of this plan update. The following table and figure provide a summary of the critical facilities for the district.

Table CPN.4: List of Critical Facilities

CF #	Name	Address	Red Cross Shelter (Y/N)	Generator (Y/N)	Located in 1% Floodplain (Y/N)
1	CPNRD Offices/Shop	215 Kaufman Avenue, Grand Island	N	N	N
2	30-Mile Irrigation District Office	75885 Road 414, Cozad	N	N	N
3	Cozad Ditch Shop/Office	105 E Highway 30, Cozad	N	N	N

Figure CPN.2: Critical Facilities



HISTORICAL OCCURRENCES

For the complete discussion on historical occurrences, please refer to *Section 4: Risk Assessment*.

NRD HAZARD PRIORITIZATION

The following provides community-specific information, reported in CPNRD's Risk Assessment Summary, relevant to each hazard. Only hazards identified either as a concern to the NRD by the local planning team or based on the occurrence and risk of the hazard to the NRD are discussed in detail below.

Earthquake

Custer County experienced an earthquake about 6 years ago. The earthquake resulted in some concerns related to NRD-owned dams in the region, especially since one structure historically had problems with cracks developing in the earthen dam. In response to the event, the NRD hired an engineering firm to assist in the assessment of these structures and development of a plan to address identified deficiencies. The result of this process was the development of a protocol regarding how flood risk reduction structures will be addressed following any future earthquake events.

Flooding

The NRD owns and/or sponsors several flood risk reduction structures. As such, there is concern related to the ongoing maintenance of these structures and some deficiencies/needed improvements to assist with the functionality of these structures. In addition, the NRD identified concerns related to ice jams that can result in flooding events during the winter and/or spring melt. In the past, Merrick, Dawson and Buffalo Counties have all experienced some level of flooding resulting from ice jams.

Other impediments have intensified the potential for flooding such as the growth of invasive species in the local waterways. Phragmites are an invasive species of large perennial grasses that grow in wetlands and intensify the compounding of water in areas that have historically not retained water. In recent years, the NRD has applied for and been awarded Riparian Vegetation Management grants through the State of Nebraska to address this problem, but there has been limited success in eliminating the problem. With the grasses being perennial, they return season after season, and unless all areas with the invasive species are addressed, the best that can be hoped for is to manage the most intensive infestations and to prioritize which areas are treated. This is a multi-jurisdictional issue affecting all NRDs along waterways. The state would benefit from the development of an annual fund to assist in managing this situation.

The NRD now owns a 50% share of the 30-Mile Irrigation district which maintains water distribution channels that provide irrigation waters to agricultural producers. The NRD is the management authority associated with this irrigation district, and while they are not part of the ownership structure for the Southside Irrigation District, they are in a long-term agreement to manage the system. These structures help provide water for agriculture during periods of drought, and are vulnerable to impacts during flooding events as canals can be washed out and damaged.

Levee Failure

Levee failure may cause loss of life and injuries as well as damages to property, the environment, and the economy. There is one levee system located in the CPNRD, and it is located in Grand Island (Table CPN.5 and Figure CPN.3). There have been no reports of levee failure in the CPNRD or with the levee system. An Emergency Preparedness Plan (EPP) for the levee is being developed in coordination with the City of Grand Island and County Emergency Management. The EPP will include stakeholder roles and responsibilities, a risk awareness communication plan, an evacuation plan, and an activation process.

Table CPN.5: Hall Levees

Name	Sponsor	City	River	Length (miles)	Type of Protection	Protected Area (sq miles)	Approximate Level of Protection
Wood River FPP	Central Platte NRD	Grand Island	Wood River	12.3	Urban	25 – 49	50 - 99 Year Flood

Source: Nebraska State Mitigation Plan

The following map provides the location of leveed areas for the Wood River Levee System. Shaded areas indicate land areas that are protected by the levee and are therefore vulnerable if the levee were to fail. An estimated 9,480 people and 3,964 buildings reside within the leveed areas.

Tornadoes

While there has not been a recent event, the NRD is concerned about their recreational areas and the vulnerability of these areas to tornadic events during camping season. Specifically, the NRD is concerned with the lack of protection available to people in these recreational areas. The NRD might consider an installation of safe rooms at recreation areas in the future as improvements and/or upgrades are implemented. There are, however, no current plans or financial resources dedicated to address this issue.

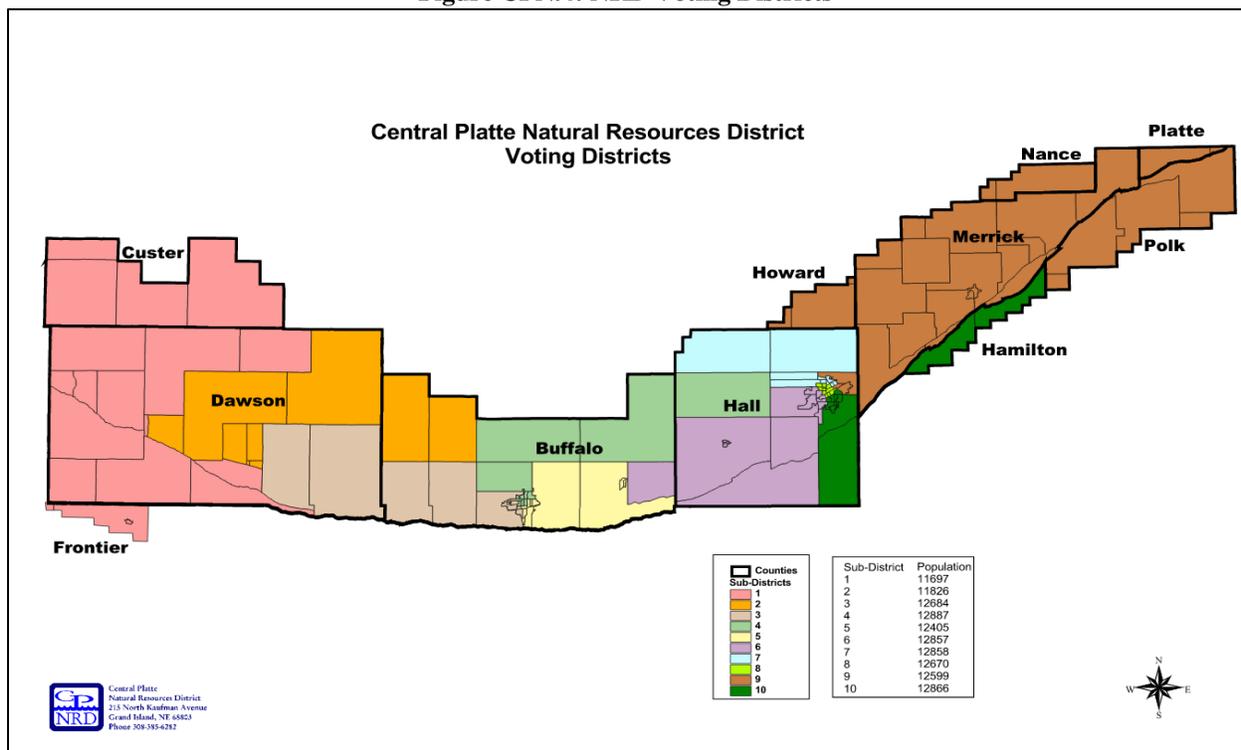
Wildfire

The NRD is not responsible for fighting wildfires, but can assist in the reduction of fuel loads by encouraging land owners to utilize best management practices. There is an area near Kearney where the population of red cedar trees presents a serious concern. In the past, the NRD has assisted in land management and hazard mitigation through several avenues, including: the removal of red cedar, a non-native tree species that intensifies fire frequency and intensity; a cost share programs to encourage landowners to decrease grazing on agricultural lands; and collaboration in controlled burns to assist in fuel load management.

GOVERNANCE

The CPNRD is governed locally by a group of 21 elected Board of Directors and entrusted with a broad range of responsibilities to protect and enhance Nebraska’s many natural resources. The NRD serves both incorporated and unincorporated areas within their jurisdiction, and has the capability to financially and administratively assist villages, cities, and counties with mitigation actions, most commonly flood control and drainage improvements. The following may be able to help implement mitigation projects:

Figure CPN.4: NRD Voting Districts



Source: CPNRD website: <http://cpnrd.org/district-map/>

- General Manager
- Administrative Director
- Projects Assistant
- Secretary
- Range Management Specialist
- Water Resources Specialist
- Programs Coordinator
- Biologist
- Thirty Mile Canal Manager
- Cozad Ditch Company Canal Manager
- Information/Education Specialist
- Resources Conservationist
- Projects Manager
- Data and Compliance Officer
- Thirty Mile Irrigation Technician
- GIS Coordinator
- GIS Image Analyst
- Hydrologist

CAPABILITY ASSESSMENT

The NRD does have the authority to levy taxes for specific purposes and to issue general obligation bonds to finance certain projects. The NRD also regularly engages in public education and information programs related to hazard mitigation in the area, and routinely works with other counties, cities, and villages within their jurisdictional boundaries.

Table CPN.6: Overall Jurisdictional Capability

Overall Capability	Limited/Moderate/High
Does the CPNRD have the financial resources needed to implement mitigation projects?	High
Does the CPNRD have the staff/expertise to implement projects?	High
Is there district support to implement projects?	High
Does the CPNRD staff have time to devote to hazard mitigation?	High

PLAN INTEGRATION

The NRD has developed multiple plans in the past, which have influenced its mitigation priorities. These include the following:

- Master Plan 2011
- Long Range Implementation Plan: For Fiscal Years 2014-2019
- Integrated Management Plan 2009
- Basin-Wide Plan for Joint Integrated Water Resources Management of Overappropriated Portions of the Platte River Basin, Nebraska 2009

The purpose of the NRD is to protect and enhance the state’s natural resources through programs and projects, which align closely with hazard mitigation. Several of the NRD’s projects were discussed earlier under the *NRD Projects and Partnerships* section.

The Master Plan outlines an action plan for the NRD through 2021. Goals are identified with each of the NRD’s consolidated areas of responsibilities, listed below:

- Soil Conservation and Erosion Control
 - 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
- Flood Prevention, Control, and Channel Rectification
 - To control floodwaters and/or to provide open floodways that will keep floodwater damages to an acceptable minimum
 - The HMP is mentioned in this section and outlines the planning process; it also lists some of the projects considered for the 2012 HMP
- Drainage
 - To help provide where needed and feasible, the open and closed drainage systems to dispose of excess surface and subsurface water from non-wetland areas
- Groundwater, Surface Water, and Water Supply
 - 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
- Water Quality, Pollution Control, Solid Waste Disposal, and Sanitary Drainage
 - To protect and enhance the quality of groundwater and surface water within the District
- Fish and Wildlife Habitat
 - The conservation and enhancement of fish and wildlife resources for the benefit of the people
- Forestry Management
 - 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

- Outdoor Recreation
 - To meet the parks and recreation needs of the District
- Range Management
 - To have rangelands in the District in a “high good” or “low excellent” condition
- Pollution Control and Solid Waste Disposal
 - To protect and enhance the quality of land, air, surface water and groundwater within the District
- Information and Education
 - Help the public develop a connection with natural resources conservation and management through accurate knowledge and understanding of the District’s objectives

The Long Range Implementation Plan summarizes the planned district activities and includes projections of financial, manpower, and land right needs of the District for the next five years, as well as a specific needs assessment upon which the NRD’s long range implement plan is reviewed and updated.

The Integrated Management Plan’s, in cooperation with the Nebraska Department of Natural Resources, aim is to achieve and/or maintain a balance between water uses and water supplies so that the economic viability, social and environmental health, safety, and welfare can be achieved and maintained for both the short and long term. Goals include:

1. To secure any future water supply projects that are shown to be feasible, beneficial and desirable.
2. To provide for a total consumption of water that does not exceed a fully appropriated status.
3. To maintain the District’s water resources for present and future generations while promoting programs that allow economic growth.
4. To provide, for present and future generations, an adequate supply of quality water for feasible and beneficial uses.
5. To minimize and/or resolve conflicts between water users.
6. To ensure that the plan complies with law and interstate agreements, and to meet basin-wide goals.

The Basin-Wide Plan is a cooperative effort by several NRDs located in the over appropriated Platte River Basin, including: North Platte NRD; South Platte NRD; Twin Platte NRD; Tri-Basin NRD; and Central Platte NRD. The goals of the plan aim to achieve and sustain a fully appropriated condition and to prevent reductions in the flow of a river or stream that would cause noncompliance with an interstate compact or decree. Also, the goal is to work cooperatively to identify and investigate disputes between ground water users and surface water appropriators, and if appropriate, implement management solutions to address such issues.

Currently, the CPNRD is developing an Emergency Preparedness Plan (EPP) for the Wood River Levee System. The CPNRD will incorporate portions of the HMP into the EPP. Specifically, the EPP will define roles and responsibilities of the CPNRD and community partners involved in levee-related mitigation responsibilities. In addition, the EPP will include a Risk Awareness Communication Plan that will be consistent with the ongoing public engagement outlined in the HMP.

MITIGATION STRATEGY

Ongoing and New Mitigation Actions

	Reduce Bottleneck/Flow Restrictions
Description	Evaluate restrictions and measures to prevent or reduce flood damage; implement appropriate nonstructural or structural methods on an emergency or permanent basis (monitoring or warning systems, ice jam dusting, excavation or blasting, reshaping channel, tree and debris removal, acquire property and/or construct additional channels or other flow improvements)
Hazard(s) Addressed	Flooding
Estimated Cost	\$5,000
Funding	General funds
Status	Ongoing.
Timeline	Ongoing
Priority	Medium
Lead Agency	CPNRD

	Improve Flood and Stormwater Detention/Retention Capacity
Description	Evaluate current stormwater and flood water capacity; implement measures to improve flood water and stormwater capacity
Hazard(s) Addressed	Flooding
Estimated Cost	\$25,000-\$100,000+
Funding	General funds, grants
Status	Not yet started.
Timeline	3-5 years
Priority	Medium
Lead Agency	CPNRD

	Evaluate Stream Channelization/Bank Stabilization
Description	Evaluate current stream bed and bank stabilization needs; implement stream bed and bank stabilization improvements including grade control structures, rock rip rap, vegetative cover, etc.
Hazard(s) Addressed	Flooding
Estimated Cost	Varies
Funding	General funds, grants
Status	Not yet started.
Timeline	3-5 years
Priority	Medium
Lead Agency	CPNRD

	Reduce Water Demand/Improve Drought Education
Description	Conduct water use study to evaluate/implement methods to conserve water/reduce consumption; evaluate/implement water use restriction ordinance; identify/evaluate current/additional potable water sources; develop or obtain drought education materials to conduct multi-faceted public education and awareness program
Hazard(s) Addressed	All Hazards
Estimated Cost	Varies
Funding	General funds
Status	Ongoing.
Timeline	Ongoing
Priority	Medium
Lead Agency	CPNRD

Develop an Emergency Preparedness Plan	
Description	Develop an Emergency Preparedness Plan (EPP) for the Levee System in coordination with County Emergency Management and the NRD.: the plan should include stakeholder roles and responsibilities, a risk communication plan, emergency activation levels, activation process, evacuation plan, and training and exercise plan
Hazard(s) Addressed	Levee Failure
Estimated Cost	\$10,000
Funding	General funds
Status	Early planning stages.
Timeline	1 year
Priority	High
Lead Agency	CPNRD, Hall County EMA, City of Grand Island

Headgates for Water Diversion and Flood Control	
Description	Install automated headgates for water diversion and flood control: at this time, the NRD struggles to access gates during periods of high water – this project would require new gates to be installed as it is not possible to automate the current gates
Hazard(s) Addressed	Flooding, Drought
Estimated Cost	Unknown
Funding	General funds, grants
Status	Not yet started.
Timeline	3-5 years
Priority	High
Lead Agency	CPNRD

Bladder Gates	
Description	Install bladder gates to facilitate diversion of water to headgates
Hazard(s) Addressed	Flooding, Drought
Estimated Cost	\$2-\$3 million
Funding	CPNRD, grants
Status	Not yet started.
Timeline	3-5 years
Priority	High
Lead Agency	CPNRD

Upgrade Irrigation Channels	
Description	Upgrade irrigation channels to reduce damages during flood events: this may include lining canals and/or increasing storage reservoirs to ensure water availability during critical management periods
Hazard(s) Addressed	Flooding
Estimated Cost	Unknown
Funding	General funds, grants
Status	Not yet started.
Timeline	3-5 years
Priority	Medium
Lead Agency	CPNRD

Develop a Drought Management Plan	
Description	Work with relevant stakeholders to develop a drought management plan; identify water monitoring protocols; outline drought responses; identify opportunities to reduce water consumption; establish the jurisdictional management procedures
Hazard(s) Addressed	Drought
Estimated Cost	\$50,000+
Funding	General funds
Status	Not yet started.
Timeline	3-5 years
Priority	Medium
Lead Agency	CPNRD

Eliminate Invasive Weeds	
Description	Elimination of invasive weeds from waterways in the District; work within the NRD and with neighboring NRDs to eliminate phragmites from the Platte River and other waterways in the region
Hazard(s) Addressed	Flooding
Estimated Cost	\$7 million
Funding	General funds, Riparian Vegetation Management grants
Status	Ongoing. The NRD has had limited success in eliminating phragmites, but the grasses are perennial and need constant management.
Timeline	Ongoing
Priority	High
Lead Agency	CPNRD

Remove Non-Native Species	
Description	Support property owners in removing non-native species that intensify wildfire vulnerability, specifically, remove red cedar trees
Hazard(s) Addressed	Grass/Wildfire
Estimated Cost	\$200,000
Funding	General funds, Nebraska Forest Service funds
Status	Not yet started.
Timeline	3-5 years
Priority	Medium
Lead Agency	CPNRD, Nebraska Forest Service

Rehabilitate Flood Control Structures	
Description	Rehabilitate flood control structures (i.e. dams) to assist in the retiming of water releases and to increase water storage capacity within the district: this will help ease flooding concerns, ensure water availability improvements for periods of drought, assist with the protection of vulnerable species, and assist with aquifer recharge
Hazard(s) Addressed	Flooding, Drought
Estimated Cost	\$25,000 - \$200,000 depending on structure
Funding	General funds
Status	Not yet started.
Timeline	3-5 years
Priority	Medium
Lead Agency	CPNRD

Dredge Dams	
Description	Dredge dams to restore the structures to their previous capacity, increase water retention abilities and improving water availability during periods of drought: this would also enable structures to better store water during periods with high precipitation
Hazard(s) Addressed	Flooding, Drought
Estimated Cost	\$25,000 - \$50,000
Funding	General funds
Status	Not yet started.
Timeline	3-5 years
Priority	Medium
Lead Agency	CPNRD

Improve/Provide Adequate Backup and Emergency Generators	
Description	Identify and evaluate current backup and emergency generators; obtain additional generators based on identification and evaluation; provide portable or stationary source of backup power to redundant power supplies, municipal wells, lift stations and other critical facilities and shelters
Hazard(s) Addressed	High Winds, Severe Winter Storms, Severe Thunderstorms, Flooding
Estimated Cost	\$3,500+
Funding	General funds, HMGP, PDM
Status	A generator is needed for the Wood River Levee site.
Timeline	5 years
Priority	Low
Lead Agency	CPNRD