



FEBRUARY 2016

PAPIO-MISSOURI RIVER NRD
APPENDIX
PAPIO-MISSOURI RIVER NRD MULTI-JURISDICTIONAL
HAZARD MITIGATION PLAN

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CONTENTS

PLAN OVERVIEW1
PAPIO-MISSOURI RIVER.....3

PLAN OVERVIEW

This plan is an update to the Papio-Missouri River Natural Resources District (P-MRNRD) Multi-Hazard Mitigation Plan (HMP) approved in 2011. 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, in order 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 the update of this hazard mitigation plan 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 and participating jurisdictions reviewed, updated, and approved goals and objectives which helped guide the process of identifying both broad-based and community specific mitigation strategies and projects that will, if implemented, reduce their vulnerability and help build stronger, more resilient communities. The goals and objectives for this plan update are as follows:

Goal 1: Protect the Health and Safety of the Public

Objective 1.1: Continued compliance with National Flood Insurance Program (NFIP) for participating communities; join NFIP if not currently participating

Objective 1.2: Construct safe rooms in schools, public buildings, and in select locations, at public outdoor venues

Objective 1.3: Update or obtain additional outdoor warning sirens, as needed, in the project area

Objective 1.4: Develop additional emergency notification methods to alert the public of potential hazards

Objective 1.5: Provide educational opportunities for the public to promote preparedness in the project area

Objective 1.6: Reduce flooding of developed residential and commercial areas

Goal 2: Reduce or Prevent Future Damage to Critical Facilities, Critical Infrastructure, and Maintain Their Operation after a Hazard

Objective 2.1: Protect power lines throughout the NRD by burying them or reinforcing them

Objective 2.2: Obtain generators and other backup power systems required to keep critical facilities, critical infrastructure, and emergency operations running after a hazard event

Objective 2.3: Evaluate and identify infrastructure systems that require improvements in order to reduce or prevent damage from hazards

Objective 2.4: Protect all existing public infrastructure from flooding

Goal 3: Reduce or Prevent Future Damage to Existing Properties and Natural Resources

Objective 3.1: Enforce regulations and building codes promoting wise development and construction that reduces the potential for damage to existing or future structures and property

Objective 3.2: Protect existing streambanks and beds from erosion/downcutting

Objective 3.3: Perform studies to determine locations of concern and evaluate projects to mitigate against the damage caused by hazards

Objective 3.4: Develop projects to reduce or prevent damage to public structures

Objective 3.5: Improve local drainage and stabilize creeks where necessary

Objective 3.6: Improve protection procedures for structures throughout the planning area to reduce damage from hazard events

Objective 3.7: Implement a mitigation plan for tree trimming and tree removal

Objective 3.8: Improve and protect area roads and drainage structures against hazards

Objective 3.9: Maintain and improve surface water quality

Goal 4: Promote Efficient Use of Public Funds

Objective 4.1: Maximize funding opportunities through grant money and other outside sources

Objective 4.2: Prioritize projects based on greatest risk

Objective 4.3: Encourage individual property owners to develop independent measures to protect their property and not rely on public funding

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 six participating counties plus one for the Papio-Missouri River NRD)
- An appendix of procedural documentation and resolutions of participation and adoption

This participant appendix includes the participant section for the Papio-Missouri River NRD and includes specific information for the 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

PAPIO-MISSOURI RIVER
NATURAL RESOURCES DISTRICT

Papio-Missouri River NRD
Multi-Jurisdictional Hazard Mitigation Plan

February 2016

INTRODUCTION

The 2016 Papio-Missouri River Natural Resources District (P-MRNRD) Multi-Jurisdictional Hazard Mitigation Plan (HMP) is an update to the plan that was adopted by the P-MRNRD in August 2011. This HMP includes two primary sections: the Regional Hazard Mitigation Plan and the Participant (i.e. NRD, County, Municipal, and School District) Sections. Participant Sections include similar information that’s also provided in the Regional section, but rather is specific information for the P-MRNRD, including the following elements:

- Participation
- Location/Geography
- Climate
- Transportation
- Demographics
- P-MRNRD Projects and Partnerships
- Future Development Trends/Current Projects
- Parcel Improvements and Valuations
- Critical Infrastructure and Key Resources
- Historical Occurrences
- Hazard Identification and Risk Assessment
- Governance
- Capability Assessment
- Plan Integration
- Mitigation Actions

PARTICIPATION

LOCAL PLANNING TEAM

Table PMR.1 provides the list of participating members that comprised the P-MRNRD 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 PMR.1: The P-MRNRD Local Planning Team

Name	Title	Department / Jurisdiction
Lori Laster	Stormwater Management Engineer	P-MRNRD
Ron Woodle	Subdistrict 11 NRD Director	P-MRNRD
Marlin Petermann	Assistant General Manager	P-MRNRD
Terry Schumacher	Land and Water Programs Coordinator	P-MRNRD
Zach Nelson	Project Manager	P-MRNRD

PUBLIC PARTICIPATION

The local planning team made several efforts to notify the public of this planning process and how they could participate in the development of the plan update. The following table identifies the dates and types of public outreach notifications.

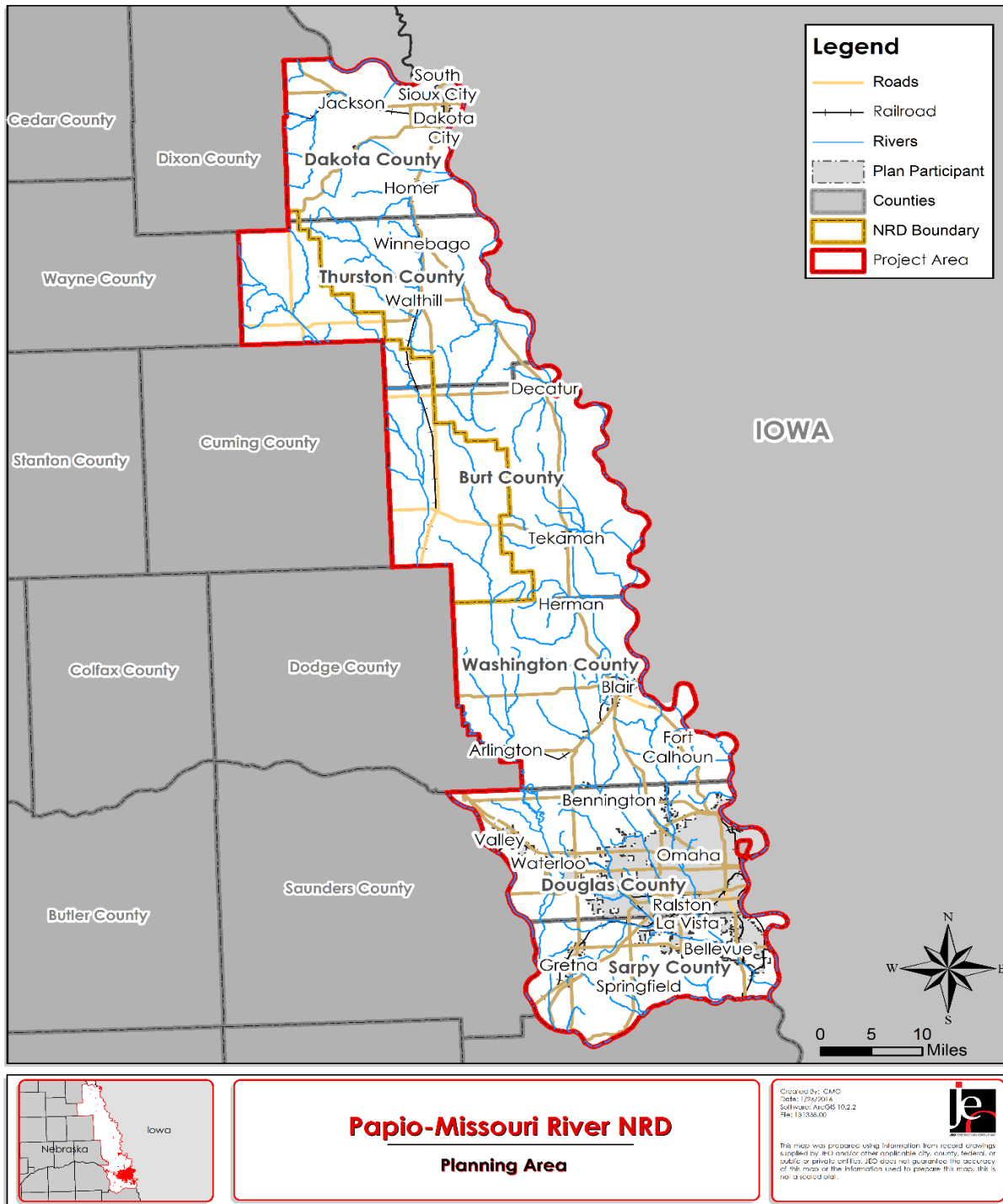
Table PMR.2: Public Notification Efforts

Date	Notification	Location
February 17, 2015	Project Website	http://jeo.com/papiohmp/
May 2015	Post Project Flyer	P-MRNRD Offices
August 24, 2015	Link to Project Website	Facebook Post
December 22, 2015 – January 30, 2016	Participant Section available for public comment and review	http://jeo.com/papiohmp/
January 2016	Two posts with link to Project Website	Facebook Post
January 2016	Public Review Notice	http://papiionrd.org/
January 14, 2016	Public Hearing at NRD Board Meeting	P-MRNRD Offices

LOCATION AND GEOGRAPHY

The P-MRNRD covers a total area of approximately 1,790 square miles and is located in eastern Nebraska on the border with Iowa. The NRD is comprised of Dakota, Douglas, Sarpy, and Washington Counties as well as parts of Burt and Thurston Counties. Major waterways in the area include the Missouri River, which forms the eastern boundary, Elkhorn River, Papillion Creek, and Platte River.

Figure PMR.1: Map of the P-MRNRD



CLIMATE

For the P-MRNRD, the average high temperature for the month of July is 85.6°F, and 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.

Table PMR.3: Climate Data for the Village of Walthill

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

TRANSPORTATION

The P-MRNRD's major transportation corridors include Interstates 80 and 680 and U.S. Highways 6, 20, 30, 75, and 77. The major railroads which travel through the NRD include Amtrak, Burlington-Northern Santa Fe Railway, Union Pacific Railroad, and the Nebraska Northeastern Railway Company. There are several large and small airports across the area including Eppley Airfield in Omaha, Offutt Air Force Base in Bellevue, Millard Airport, Blair Municipal Airport, South Sioux City Martin Airport, and Tekamah Municipal Airport. Transportation information is important to hazard mitigation plans because it suggests possible evacuation corridors in the community, as well as areas more at risk to transportation incidents.

DEMOGRAPHICS

It is estimated that the P-MRNRD serves a population of over 742,000 across six counties, which is approximately 39 percent of the State of Nebraska's population. Furthermore, 75 percent of the NRD's population resides in Douglas County. Please note that 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 additional information regarding population data, please refer to the specific jurisdiction community profiles or to *Section Three: Demographics and Asset Inventory*.

P-MRNRD PROJECTS AND PARTNERSHIPS

RECREATION AREAS

As part of the NRD mission to conserve and protect natural resources, the P-MRNRD has been involved in several large-scale dam and reservoir projects. These multi-purpose projects are designed for flood and erosion control, ground water recharge, and used in ground water management and research. An additional benefit of these projects is the opportunity for outdoor recreation.

The NRD maintains five recreation areas: Chalco Hills (Sarpy County), Danish Alps (Dakota County), Elkhorn Crossing (Douglas County), Prairie View (Douglas County), and Summit Lake (Burt County). Many of the recreation areas offer hiking/biking trails, picnic shelters, fishing, and boating. Danish Alps, Elkhorn Crossing, and Summit Lake also offer tent/RV camping in their campgrounds.

In addition to the recreation areas, the NRD maintains the Graske Crossing Canoe Access, Papio Trail Project, Platte River Landing, and the West Maple Road River Access.

RURAL WATER PROJECTS

The NRD operates three rural water districts in Dakota County, Thurston County, and Washington County. These projects are operated separately and independently with no District funds. The following projects address this resource management need:

1. Washington County Rural Water System – The NRD has operated this project since 1980 in southeast Washington County. The City of Fort Calhoun and 730 rural water customers are served by the project. Treated water is purchased from Blair and the Metropolitan Utilities District. In addition, this system was designed to connect the municipal water systems of Blair and Omaha such that either could provide water to the other in the event of a catastrophe.
2. Dakota County Rural Water Project – This system purchases treated water from Dakota City and serves 650 rural households. An interconnection exists between the municipal systems of Dakota City and South Sioux City such that either could provide water to the other in the event of a catastrophe.
3. Thurston County Rural Water Project – This system, located in central Thurston County, purchases treated water from Pender and serves 145 rural customers.

FLOOD CONTROL PROJECTS

The P-MRNRD has a long history of constructing, supporting, and maintaining numerous effective flood control programs and activities. The NRD has sponsored numerous channel and levee projects in the area, and will continue to operate and maintain these projects in the future. These efforts are aimed at keeping the floodplains safe and reducing the potential for loss of life and property. The NRD continues to provide education and information to residents within the P-MRNRD, and also offers technical assistance to cities, counties, other zoning jurisdictions, insurance agents, developers, and individuals in need of flood hazard information and information.

The following programs and projects, as provided in the P-MRNRD Master Plan (2010), address flood control in the NRD.

1. Channel Maintenance Program (CMP) – The District maintains channels and levees along the Papillion Creek in Douglas and Sarpy Counties.
2. Missouri River R-613 Levee – The District, as local sponsor, maintains this Corps of Engineers levee along the Platte and Missouri Rivers, and the lower Papillion Creek in Sarpy County.
3. Missouri River R-616 Levee – The District, as local sponsor, maintains this Corps of Engineers levee along the Missouri River north of the Papillion Creek outlet.
4. Union Dike – The District maintains this levee along the north side of the Platte River between Valley and Fremont.
5. Big Papillion Creek Channel Project – The District constructed and maintains this channel project between Harrison and Blondo Streets in Douglas County.
6. Papio Reservoirs and Water Quality Basins – The District has constructed several of the Corps' original 21 flood control structures in the Papillion Creek Watershed. These include Newport Landing (Site 6), Walnut Creek (Site 21), and Youngman (Site 13). Operation and maintenance will continue on these structures. Currently, two regional reservoirs, WP5 and Dam Site 15A, are have recently been completed or will be completed soon. In the future, additional sites are planned.

7. Little Papillion Creek Channel Project – The District maintains the channel improvement project along the Little Papillion Creek between Boyd and Q Streets in Douglas County. Douglas County was the original sponsor of this Corps of Engineers project.
8. Floodplain Management Program – The District provides technical assistance to communities, developers, and individuals concerning the wise use of designated floodplains in the District.
9. Western Sarpy/Clear Creek Levee Project – The District merged with the Western Sarpy Drainage District in 1999. Following the severe flooding in 1993, the District, along with the Lower Platte South NRD and the Lower Platte North NRD, is sponsoring a levee improvement project with the Corps of Engineers. This project is located in southwest Sarpy County along the Platte and Elkhorn Rivers.
10. Floodway Purchase Program – The District participates in the buy-out of structures in the floodway to lessen flood damages and prevent loss of life during flood events.
11. Flood Mitigation Planning Program – The District develops, and consistently updates a regional All Hazard Mitigation Plan.
12. Pigeon/Elk Creek Improvement Project Area – The District merged with Drainage District #5 in Dakota County encompassing the Elk Creek and Pigeon Creek Watersheds. The project includes levee improvement and maintenance, plus measures to reduce sedimentation. Grade stabilization structures are planned for the area.
13. Small Flood Control Program – This program provides technical and financial assistance to landowners for the installation of small flood control structures (less than one square mile drainage way area) in the Papillion Creek Watershed.
14. Urban Stormwater Program – This program encourages wise management of stormwater in urbanized and developing areas in the District. The PCWP was an outgrowth of this program.
15. Stormwater BMP Program – This District program provides technical and financial assistance to communities for the installation of innovative best management practices to control stormwater and to improve water quality.
16. Offutt Drain Project – The District, in cooperation with the City of Bellevue and Offutt Air Force Base, improved a drainage channel from the base to Missouri River Levee R616in Sarpy County. The District maintains the project.
17. Urban Drainage way Program – The District provides technical and financial assistance to units of government to solve major erosion and flooding concerns on drainage ways in urban areas.
18. Elkhorn River Breakout Improvement Project Area – The District is cooperating with the Lower Platte North NRD on this flood control project. The project itself is along the Elkhorn River in Dodge County, but a portion of the benefited area is in Douglas County. The Lower Platte North is the lead agency on this project.

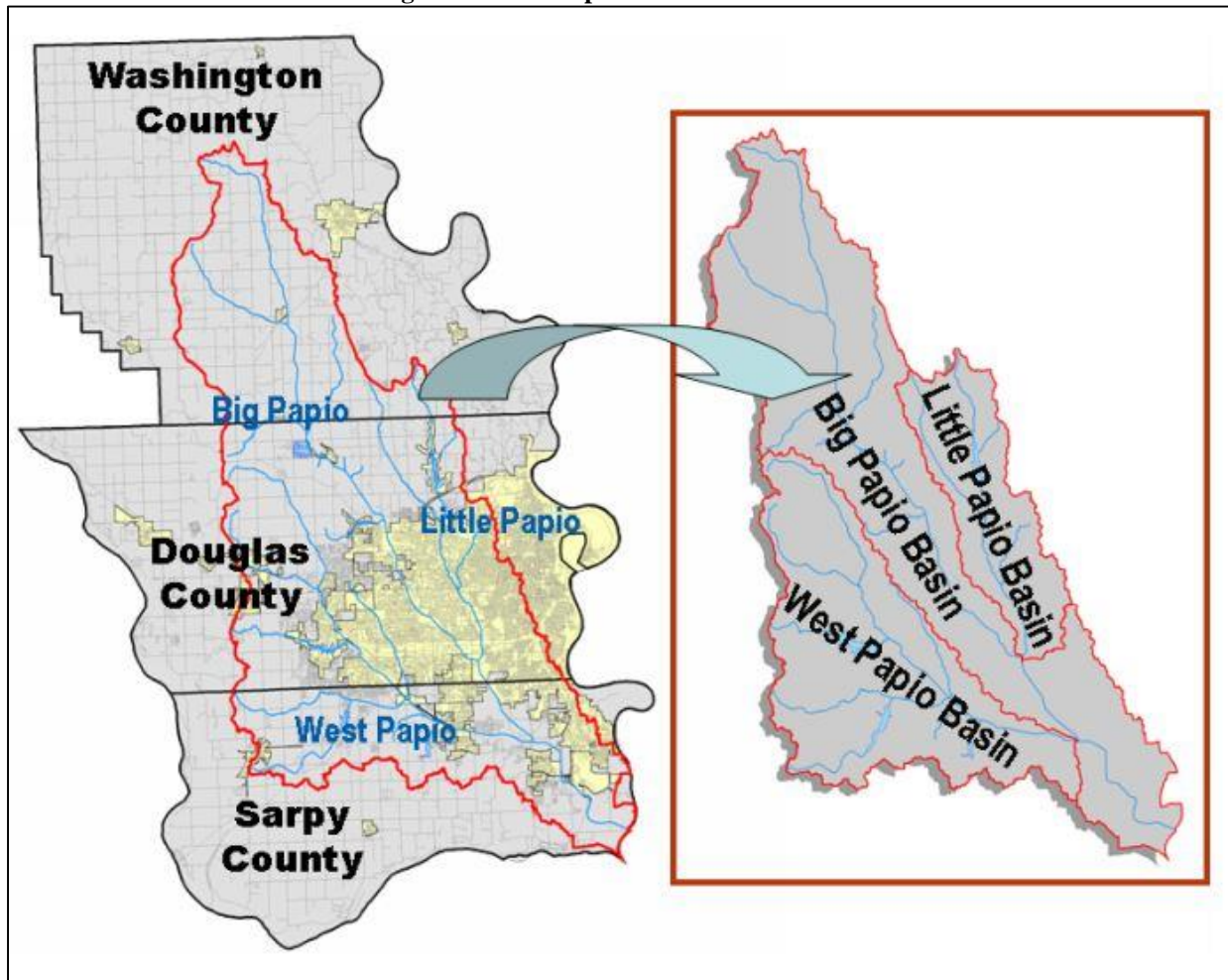
PAPILLION CREEK WATERSHED PARTNERSHIP

The Papillion Creek Watershed Partnership (PCWP) was created in 2001 through an inter-local agreement to proactively deal with the demands on the Papillion Creek drainage area and to develop an implementation plan that addresses solutions to water quantity and quality problems. The watershed covers approximately 402 square miles of drainage area extending from northern Washington County southward through Douglas and Sarpy Counties and ultimately discharges to the Missouri River south of Bellevue (Figure PMR.2). The following jurisdictions are participants in this plan: P-MRNRD; the Cities of Omaha, Gretna, La Vista, Ralston, Papillion, and Bellevue; the Village of Boys Town, and Sarpy County.

The goals of the PCWP are:

1. Compliance with the Clean Water Act
2. Reduction of existing and future flood impacts
3. Improvement of water quality in the Watershed’s streams and reservoirs
4. Increased water-based recreational opportunities and associated improvement in quality of life
5. Standardization of the construction site soil erosion and sediment control
6. Assessment and characterization of current water quality and quantity conditions for the watershed
7. Watershed Master Plan

Figure PMR.2: Papillion Creek Watershed



Source: Papillion Creek Watershed Management Plan, 2014

FUTURE DEVELOPMENT TRENDS/CURRENT PROJECTS

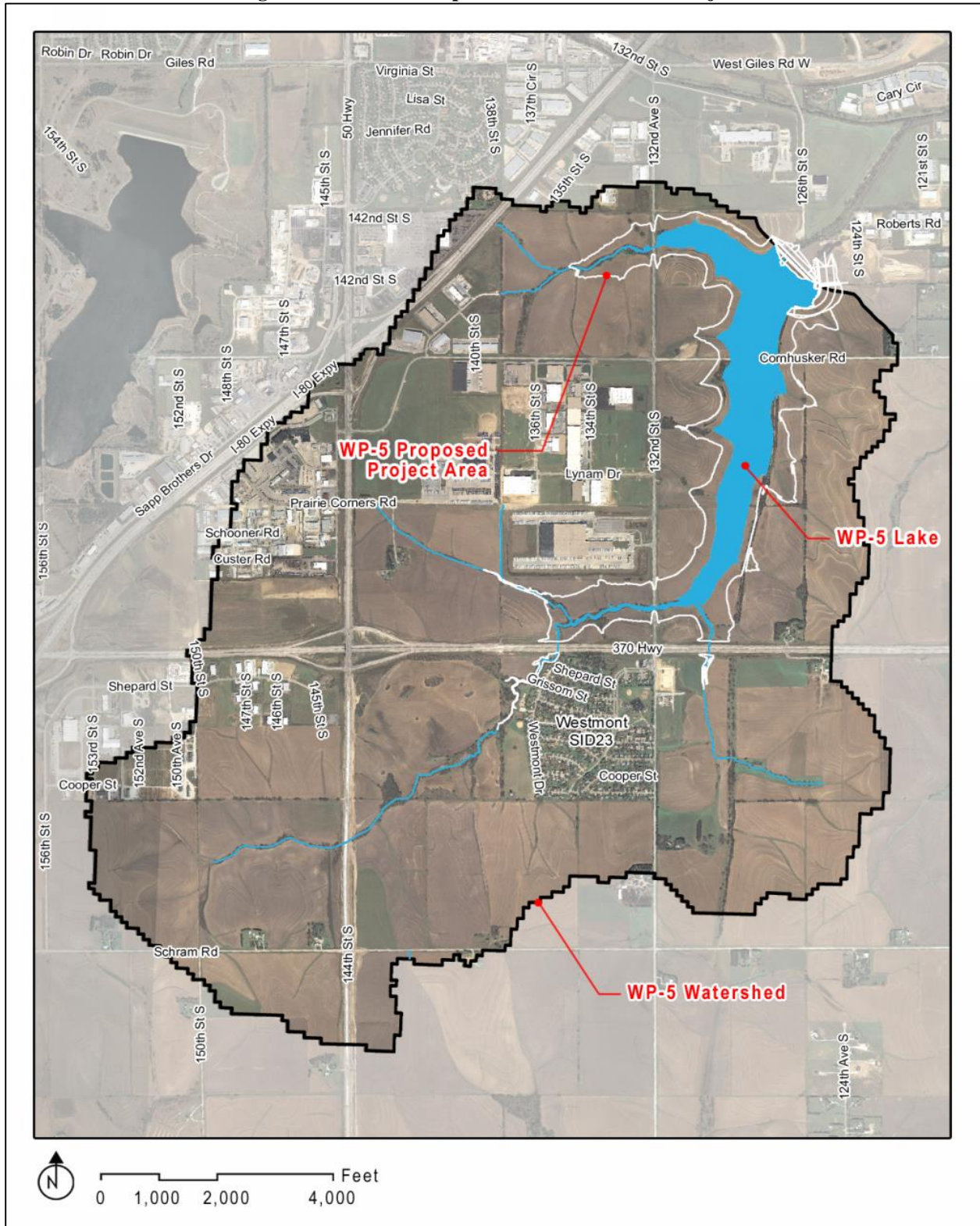
Several flood control projects are planned for the next few years or are nearing completion in the P-MRNRD. In cooperation with the PCWP, the West Papillion Retention Basin 5 Project (WP-5), also known as the Prairie Queen Recreation Area, is a 135 acre lake, which is located in Sarpy County near 126th and Cornhusker Road (Figure PMR.3). The project broke ground in the fall of 2012 and completed construction in the spring of 2015. The project addresses the immediate need for flood control in areas surrounding and including the City of Papillion.

Another project in cooperation with the PCWP, construction of Dam Site 15A (Figure PMR.4) located northwest of 168th and Fort Streets in Omaha, began in the spring of 2015 and is scheduled to be completed in late 2016. The project will address the immediate need for flood control in the Omaha metropolitan area and areas downstream along the West Papillion Creek.

Missouri River levees R-613 and R-616 will be improved by the P-MRNRD. These levees, which protect southeastern Bellevue, are currently at risk of losing their FEMA accreditation. These levees provide protection for a significant number of infrastructure including Offutt Air Force Base, the City of Omaha's Papillion Creek Wastewater Treatment Plant, major transportation corridors, Highway 34 bridge access, Union Pacific Railroad and Burlington Northern Railroad lines, and residential areas. In order to keep the accreditation, the levees will need to have substantial upgrades and improvements. It is estimated that the total cost of construction and upgrades will be \$25 million. The P-MRNRD has proposed a cost share agreement with the City of Omaha, City of Bellevue, and Sarpy County to fund the needed modifications. The P-MRNRD will also request funds through the Nebraska State Water Sustainability Fund.

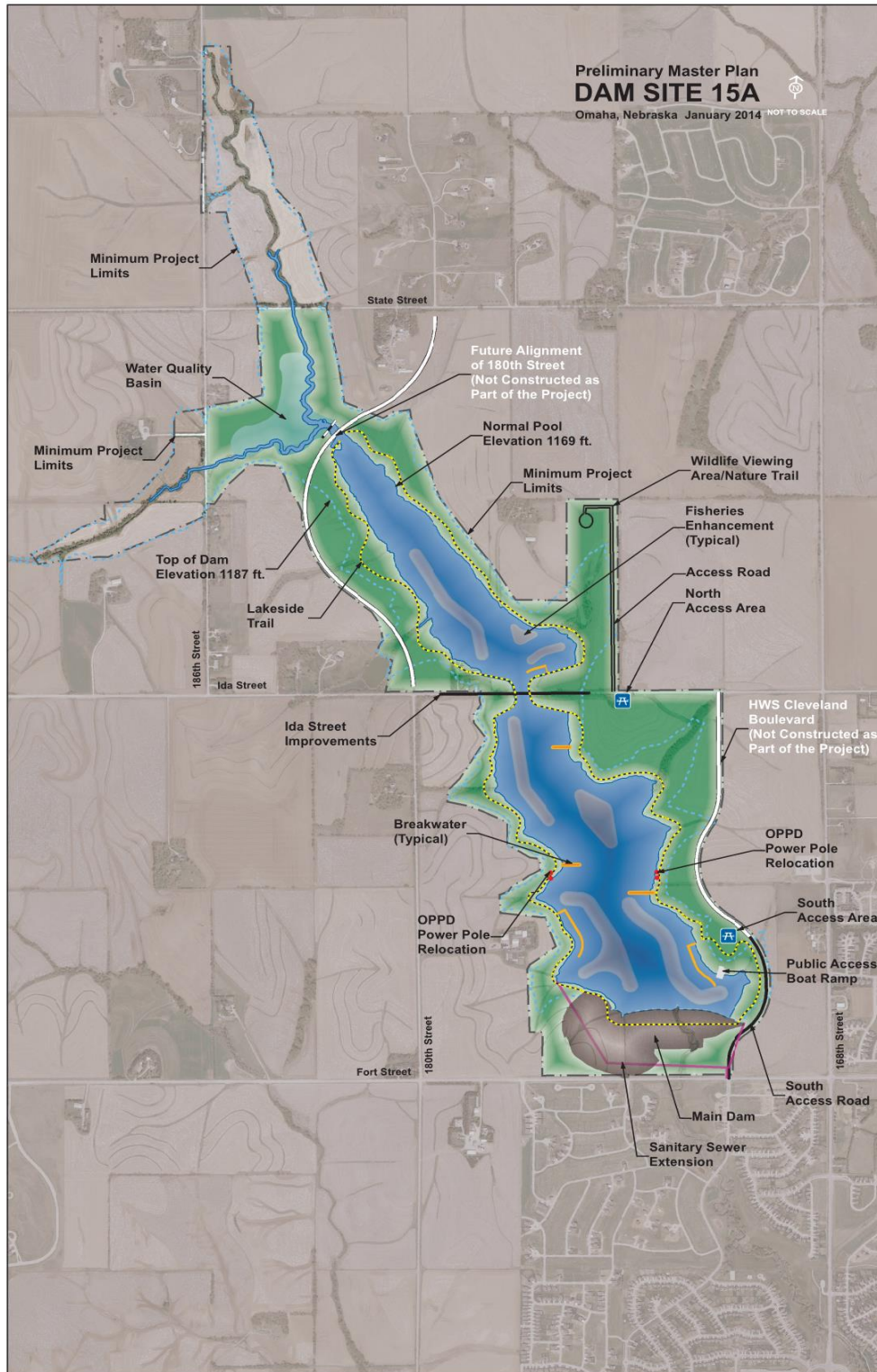
The P-MRNRD has hired independent engineering consultants to evaluate and analyze the problem and design the needed improvements. As of the fall of 2015, the design work is near completion and has applied for 404 and 408 permits from the USACE. The P-MRNRD anticipates that construction on the levees will begin in late summer or early fall of 2016 and that total construction time will take about two years.

Figure PMR.3: West Papillion Retention Basin 5 Project



Source: PCWP website (<http://www.papiopartnership.org/projects/wp5.shtml>)

Figure PMR.4: Dam Site 15A



Source: PCWP website (http://www.papiopartnership.org/projects/damsite_15a.shtml)

PARCEL IMPROVEMENTS AND VALUATION

Please refer to *Section Three: Demographics and Asset Inventory* for structural inventories, valuation, and discussion 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 participant section.

HISTORIC SITES

The location of historic sites in each jurisdiction, according to the National Register of Historic Places for Nebraska, can be found in their 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 P-MRNRD.

Table PMR.4: List of Critical Facilities

CF Number	Type	Name	Address	Generator (Y/N)	Located in Floodplain (Y/N)
1	NRD Facility	P-MRNRD Headquarters	8901 S. 154 th St, Omaha	N	N
2	NRD Facility	Operations and Maintenance	15604 Giles Rd, Omaha	N	N
3	NRD Facility	Washington County Field Office	1060 Wilbur St, Blair	N	N
4	NRD Facility	Burt County Field Office	539 S. 13 th St, Tekamah	N	N
5	NRD Facility	Thurston County Field Office	106 S. Costello St, Walthill	N	N
6	NRD Facility	Dakota County Field Office	1505 Broadway, Dakota City	N	N

HISTORICAL OCCURRENCES

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

RISK ASSESSMENT

A complete risk assessment for each of the hazards profiled in the HMP can be found in *Section Four: Risk Assessment* and is representative of the entire P-MRNRD. The hazards that are a priority for the P-MRNRD are flooding, levee failure, and dam failure.

Figure PMR.5: Critical Facilities

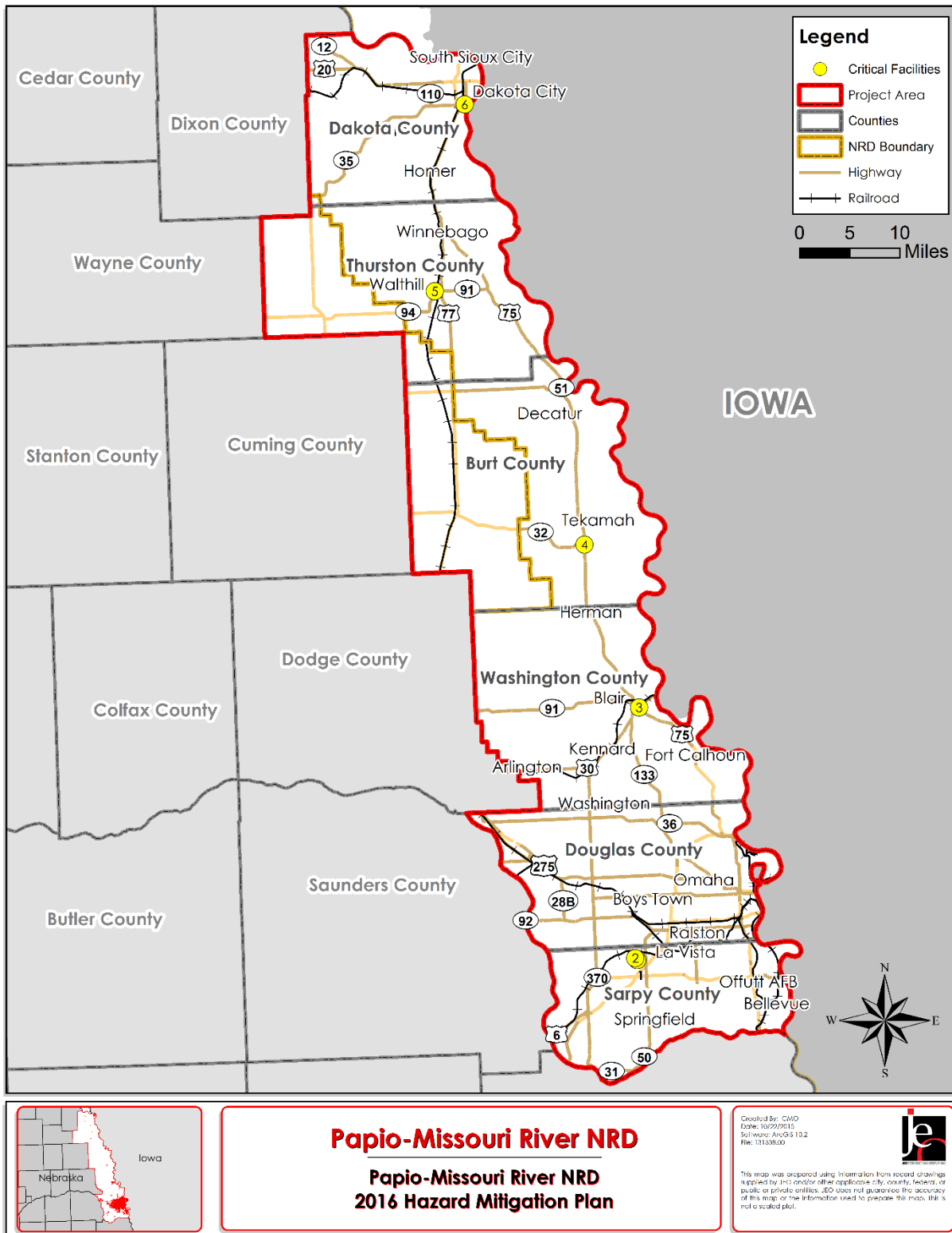
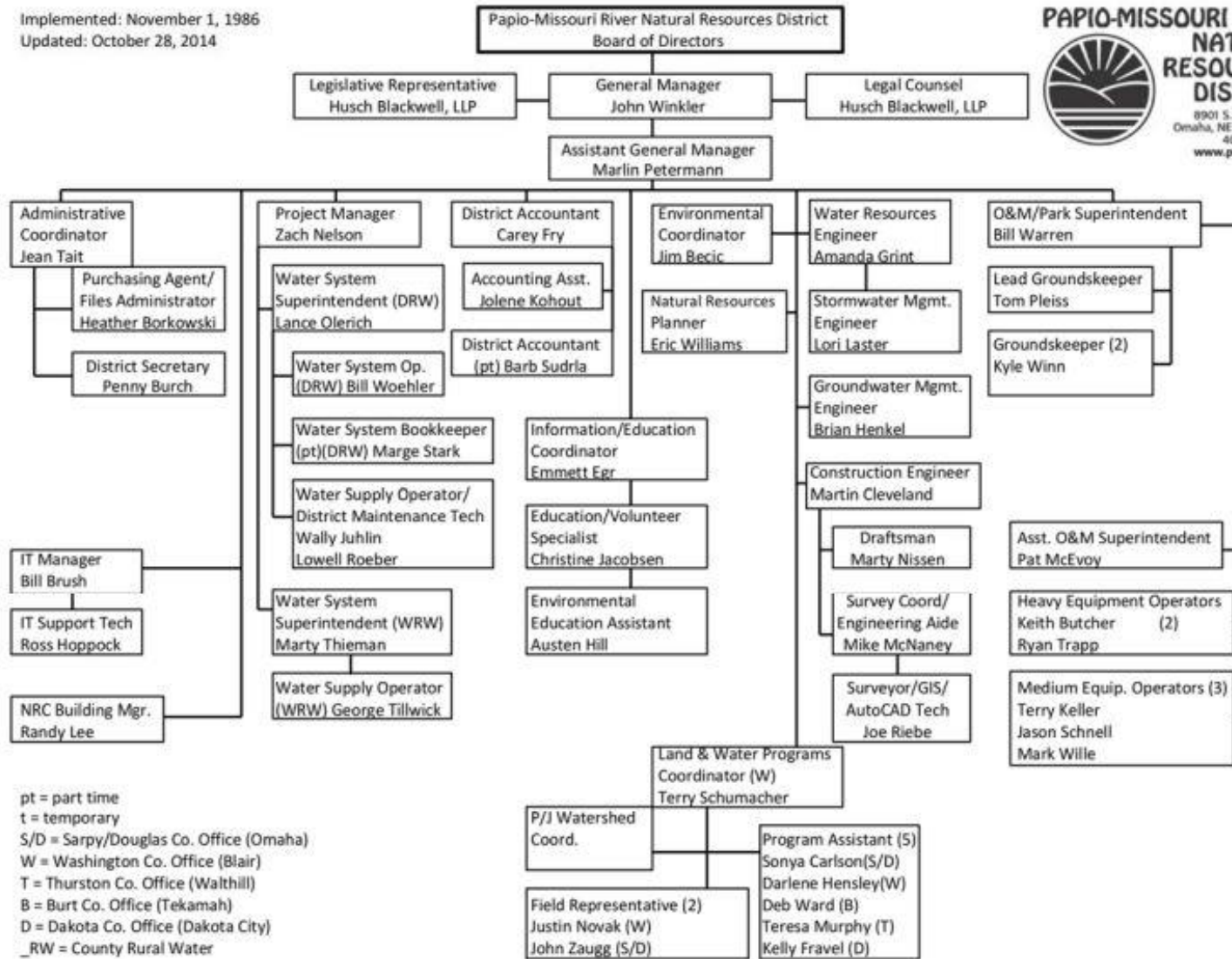
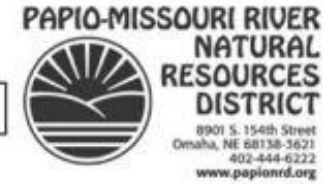


Figure PMR.9: Papio-Missouri River NRD Staff

Implemented: November 1, 1986
Updated: October 28, 2014



GOVERNANCE

Eleven member NRD Board:

- Set NRD policy
- Provide local knowledge

DEPARTMENTS

The NRD works closely with community members as well as elected officials and staff from counties and communities. The NRD supports communities in many areas related to hazard mitigation including: flood control structures, watershed projects, water quality, rural water supply, public outreach, recreational areas, and education.

CAPABILITY ASSESSMENT

The capability assessment consisted of two main components: a Capability Assessment Survey completed by the jurisdiction and a review of local existing policies, regulations, plans, and the programs. The survey is used to gather information regarding the jurisdiction's planning and regulatory capability; administrative and technical capability; fiscal capability; and educational and outreach capability.

The NRD does have the authority to levy taxes for specific purposes and to issue general obligation bonds to finance flood control and water quality enhancement projects. The current bonding authority will expire in 2019. The NRD regularly engages in public education and information programs related to hazard mitigation in the area. Also, the NRD routinely works with other counties, cities, and villages within their jurisdictional boundaries.

PLAN INTEGRATION

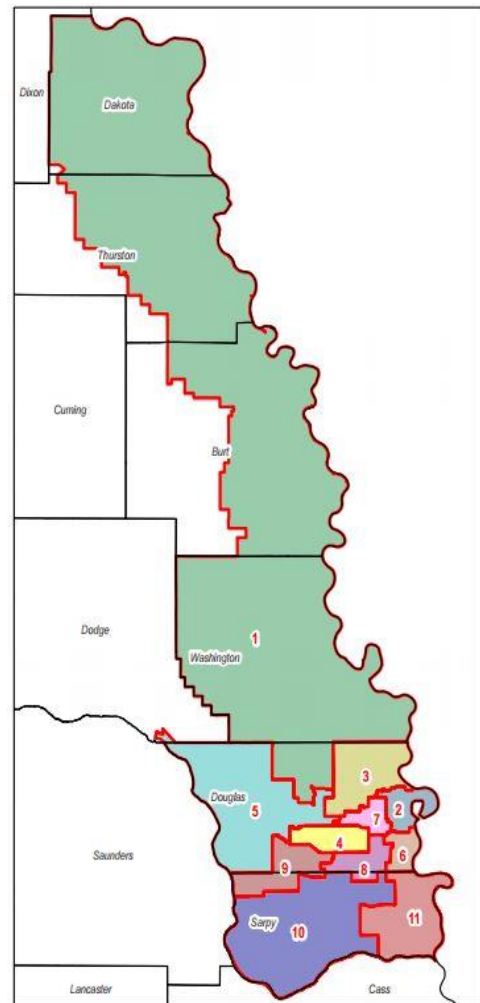
Building safe and smart communities can be accomplished through effective plan integration. Integrating hazard mitigation principles into other local planning mechanisms, such as plans addressing land use, transportation, climate change, sustainability, natural and cultural resource protection, watershed management, economic development, and others can greatly increase an area's level of resiliency. While this HMP planning process involved interdepartmental coordination at the local level, this planning process also sought to analyze how existing planning mechanisms were presently integrated and make suggestions for further integration.

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

- Master Plan (2010)
- Papillion Creek Watershed Management Plan (2014)
- Voluntary Integrated Management Plan (2014)

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

Figure PMR.10: NRD Districts



under the *P-MRNRD Projects and Partnerships* section, including the Papillion Creek Watershed Management Plan.

The Master Plan outlines an action plan for the NRD through 2020. The following goals are discussed in the plan:

- Reduce flood damages
 - Reduce losses due to flooding through watershed planning and management, structural flood risk reduction projects, and promote sound floodplain management
- Maintain water quality and quantity
 - Protect and improve surface and ground water through watershed planning, promotion of low impact development techniques, establish groundwater management areas, and provide technical and financial assistance
- Reduce soil erosion and sedimentation damages
 - Promote programs and projects such as soil erosion and sedimentation reduction, control gully and ephemeral erosion, reduce sedimentation from developed areas, and control streambank erosion
- Provide outdoor recreation facilities
 - Construction of recreational trails and continue to construct multi-purpose projects that include recreation as an equal purpose
- Provide domestic water supply
 - Continue to investigate, develop, operate and maintain potable water supply systems
- Develop and improve fish and wildlife habitat and forest resources
 - Promote best management practices that will provide adequate habitat for wildlife, establish and maintain woodland areas, and preserve, protect, and enhance wetlands and other natural features
- Participate in solid waste management and pollution control
 - Assist units of government with pollution control and proper disposal of solid, household, and hazardous wastes
- Develop programs, policies, and other resources to implement the Master Plan

The Papillion Creek Watershed Management Plan (PCWP) is an inter-local agreement to proactively deal with the demands on the Papillion Creek drainage area and to develop an implementation plan that addresses solutions to water quantity and quality problems. Participating jurisdictions and the goals of the PCWP are outlined on page 9 of this document.

The Voluntary Integrated Management Plan is a collaboration of the NDNR and P-MRNRD. It is a water planning document that provides a framework for how to work collaboratively to manage groundwater and surface water use across an area where the two are hydrologically connected. Goals, objectives, and action items are outlined in the plan to manage the Lower Platte River Basin.

MITIGATION STRATEGY
Completed Mitigation Actions

Description	West Branch Papillion Creek Channelization from Papillion to Giles Road
Analysis	Channelization project for the West Branch of Papillion Creek
Goal/Objective	Goal 3/Objective 3.2
Hazard(s) Addressed	Flooding
Location	Papillion to Giles Road
Funding	P-MRNRD
Year Completed	2014

Ongoing and New Mitigation Actions

Description	Elevation of Bridges
Analysis	Elevate low bridges to keep bridges open and reduce damage during high flooding events, particularly the bridge at 66 th Street in Sarpy County.
Goal/Objective	Goal 3/Objective 3.8
Hazard(s) Addressed	Flooding
Estimated Cost	\$500,000+
Funding	General tax dollars, FMA, PDM
Timeline	3-5 years
Priority	Medium
Lead Agency	P-MRNRD and Sarpy County
Status	Not yet started.

Description	Channel and Drainage Improvements
Analysis	Channel stabilization can protect structures, increase conveyance and provide flooding benefits. Drainage improvement projects such as ditch upsizing, ditch cleanout, and culvert improvements
Goal/Objective	Goal 3/Objective 3.5
Hazard(s) Addressed	Flooding
Estimated Cost	\$100,000+
Funding	General tax dollars, FMA, PDM
Timeline	Ongoing
Priority	High
Lead Agency	Natural Resources Planner
Status	Ongoing. District has cost shared with communities through urban drainage way program

Description	Floodplain Buyouts
Analysis	Acquisition and/or demolition of properties located in the floodplain, particularly at King Lake, Cole Creek, and the Platte and Missouri Rivers in Sarpy County.
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	Flooding
Estimated Cost	\$1,000,000+
Funding	General tax dollars, FMA, PDM
Timeline	Ongoing
Priority	Medium
Lead Agency	P-MRNRD
Status	Ongoing. Have spent about \$2 million over the past 5 years. About 30 properties have been purchased/demolished in Sarpy County and about 10 properties in Douglas County. Several areas have been targeted for acquisition/demolition and this will continue to be an ongoing project.

Description	Drainage Studies
Analysis	To identify and prioritize design improvements to address site specific flooding/drainage issues to reduce and alleviate flooding
Goal/Objective	Goal 3/Objective 3.3
Hazard(s) Addressed	Flooding
Estimated Cost	\$50,000+
Funding	General tax dollars, FMA, PDM
Timeline	5+ years
Priority	Medium
Lead Agency	P-MRNRD
Status	Ongoing. Several watersheds have been targeted including Papillion Creek and Bell Creek.

Description	Include additional communities in next NRD Plan Update
Analysis	The goal is for 100% participation in the hazard mitigation plan
Goal/Objective	All
Hazard(s) Addressed	All
Estimated Cost	Staff Time
Funding	General tax dollars, HMGP
Timeline	Ongoing
Priority	High
Lead Agency	Stormwater Management Engineer/P-MRNRD
Status	Ongoing

Description	Floodplain Management
Analysis	Continue to encourage communities on floodplain management practices such as adoption of higher standards in floodplain ordinances, floodplain identification and mapping
Goal/Objective	Goal 3/Objective 3.1
Hazard(s) Addressed	Flooding
Estimated Cost	Staff Time
Funding	N/A
Timeline	Ongoing
Priority	Medium
Lead Agency	P-MRNRD working with individual communities
Status	Ongoing. Several communities have adopted higher standards, which the NRD continues to encourage.

Description	Identify Population Centers At Risk to All Dam Failures
Analysis	Continue to update breach routing for high-hazard dams, update EAPs, etc.
Goal/Objective	Goal 1/Objective 1.5
Hazard(s) Addressed	Dam Failure
Estimated Cost	Unknown
Funding	General tax dollars, FMA, PDM
Timeline	5+ years
Priority	Medium
Lead Agency	Construction Engineer/P-MRNRD
Status	Ongoing. Breach routing was updated in 2012.

Description	Flood Awareness and Insurance Education for Homeowners
Analysis	Provide educational opportunities including public information sessions and other education activities throughout the P-MRNRD

Description	Flood Awareness and Insurance Education for Homeowners
Goal/Objective	Goal 1/Objective 1.5
Hazard(s) Addressed	Flooding
Estimated Cost	Staff Time
Funding	N/A
Timeline	Ongoing
Priority	High
Lead Agency	P-MRNRD
Status	Ongoing. NRD provides assistance to public as requested, runs public service announcements, and maintains website with educational information.

Description	Flood Warning System Upgrades
Analysis	Provide additional upgrades such as predictive inundation mapping and additional gauges for the flood warning systems for the Papillion Creek Watershed. This is a joint effort between the NRD, USGS, NWS, and Douglas, Sarpy, and Washington Counties.
Goal/Objective	Goal 1/Objective 1.4
Hazard(s) Addressed	Flooding
Estimated Cost	\$150,000
Funding	P-MRNRD, USGS, and inter-local agreement with communities in the watershed
Timeline	Ongoing
Priority	Medium
Lead Agency	P-MRNRD
Status	Ongoing. New gauges were bought in 2013 however, additional upgrades may be needed.

Description	Upgrades and Improvements to Levees MR-R-613 and MR-R-616
Analysis	Complete construction upgrades and improvements to levees MR-R-613 and 616 in order to maintain FEMA accreditation
Goal/Objective	Goal 2/Objective 2.3
Hazard(s) Addressed	Flooding
Estimated Cost	\$25 million
Funding	P-MRNRD, City of Bellevue, City of Omaha, and Sarpy County
Timeline	Ongoing
Priority	High
Lead Agency	P-MRNRD
Status	A memorandum of Understanding was agreed between the NRD, Omaha, Bellevue, and Sarpy County. Design work for the levee improvements are nearing completion. 404 and 408 permits have been submitted. Construction anticipated to begin in late 2016.

Description	Obtain Back-up Power Generators
Analysis	Provide a portable and/or stationary source of back-up power to P-MRNRD main offices, Rural Water Projects, and other critical facilities and shelters.
Goal/Objective	Goal 2/Objective 2.2
Hazard(s) Addressed	All hazards
Estimated Cost	\$50,000+/generator
Funding	General funds, HMGP, PDM
Timeline	2-5 years
Priority	Medium
Lead Agency	P-MRNRD
Status	Not yet started.

Description	Conduct Table Top Exercises
Analysis	Conduct table top exercises to determine the response scenarios for several hazards including but not limited to: tornado, drought, dam failure, levee failure, chemical releases, etc.
Goal/Objective	Goal 1/Objective 1.5
Hazard(s) Addressed	All hazards
Estimated Cost	\$10,000
Funding	General funds
Timeline	1-3 years/recurring
Priority	Medium
Lead Agency	P-MRNRD and County EMs
Status	Ongoing.

Removed Mitigation Actions

Description	Tree Mitigation Plan
Analysis	Identify and remove hazardous limbs and/or trees
Reason for Removal	Not a priority of the NRD at this time.

Description	Elevation of Structures in the Floodplain
Analysis	Elevate structures in the floodplain to reduce or prevent losses
Reason for Removal	P-MRNRD's general policy is to only do acquisition/demolition of properties in the floodplain.