Platte South Wellhead Protection Plan

METROPOLITAN
UTILITIES DISTRICT
SERVING THE COMMUNITY • 1913-2013

2013

Created by HDR Engineering, Inc. and JEO Consulting Group, Inc. for Metropolitan Utilities District

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FIGURES

SECTION 1: INTRODUCTION

Wellhead Protection is the management of the land surrounding a water supply well to prevent contamination of the water supply. The Safe Drinking Water Act of 1974, as amended (SDWA), recommended that public water supply systems develop Wellhead Protection Plans (WHPPs). The SDWA defines a wellhead protection area (WHPA) as: "the surface and subsurface area surrounding a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well fields." In response to this recommendation, the State of Nebraska (State) adopted the Nebraska Wellhead Protection Area Act in 1998, by Nebraska Legislature Bill (LB) 1161. This act's main goal is to minimize the amount of potentially polluting activities occurring on the designated lands that surround public water supply wells. Wellhead protection is a voluntary program in Nebraska. Public Water Supply Systems (PWSSs) in Nebraska have the option of developing a WHPP. The WHPP is generally written by a local community official or a technical advisor and provides the PWSS with a detailed account of the potential threats to the system and general management strategies, including ordinances related to wellhead protection.

The WHPP provides a detailed account of the potential threats to the Platte South Water Treatment facility and a summary of existing and recommended management strategies. Understanding the importance of protecting the water supply source, the Metropolitan Utilities District (MUD or the District) has developed this WHPP for the Platte South Water Treatment facility.

1.1 WELLHEAD PROTECTION PLAN PROGRAM ACTIVITIES

In Nebraska, the WHPP program is administered by the Nebraska Department of Environmental Quality (NDEQ). The process for developing a WHPP includes five steps, as summarized below:

1. Delineate the WHPA – The WHPA can be calculated from information such as geologic materials and annual pumping rates of the wells. A WHPA map can be computer-generated from NDEQ to depict the approximate path groundwater or a contaminant in groundwater may take to reach a well. The flow lines are associated with 20-year flow lines to determine the WHPA boundary.

2. Potential contaminant source inventory – A potential contaminant source inventory is conducted to determine any locations, activities, or structures that may pose a threat to drinking water. Inventories should be compiled from existing databases.

3. Contaminant source management – Management of a groundwater supply should be acted upon to minimize the threat to drinking water. The community can involve multiple management steps such as zoning restrictions on specific land uses, purchasing of land or conservation easements, ordinances, and voluntary actions including working with land owners to encourage best management practices (BMPs).

4. Emergency, contingency, and long-term planning – A plan should be developed to enable a community to react and provide a replacement source of drinking water in events such as natural disasters, contamination, or mechanical failures. The plan should include a reference or copy of the emergency plan, a short-term temporary source, and options for obtaining a long-term source of water.

5. Educate and involve the public – Community awareness can help provide citizens with information about what can be done to protect groundwater and drinking water. This will increase the likelihood that a WHPP will be successful.

1.2 WELLHEAD PROTECTION PLAN – INTENT AND USE

The MUD Platte South WHPP will be used to develop appropriate future plans and programs designed to help protect the water supply of the Greater Omaha Area. It shall address, at a minimum, the requirements stated in Section 1.1, above. The WHPP was not developed in response to any single specific issue, but rather was developed as a proactive approach to document existing conditions and to provide a means to develop future programs and activities aimed to reduce the potential for groundwater contamination within the WHPA.

It is recognized that the local aquifer provides water not only to the inhabitants of the Greater Omaha Area, but is also used by inhabitants that live within the WHPA. Therefore, a major component of this plan is to foster communication and partnership among all stakeholders within the WHPA.

The District currently provides some protection from the potential of off-site contamination for its water supply wells through ownership of the property immediately surrounding the wells. While property ownership provides some protection, it does not provide the recommended 20-year time-of-travel protection. The District does not have the authority to enforce or implement zoning. Developing partnerships with local jurisdictions and exploring the possibility to enact a wellhead protection overlay zone is one goal of the WHPP.

1.3 METROPOLITAN UTILITIES DISTRICT WELLHEAD PROTECTION CONTACTS

Table 1 below provides contact information for agencies that are responsible for the day to day management of this plan including the establishment of the WHPP, gathering data, providing summaries, or providing technical assistance with wellhead protection activities.

TABLE 1: METROPOLITAN UTILITIES DISTRICT WELLHEAD PROTECTION CONTACTS

Agency/Role	Name	Title	Phone/Email
MUD	Russel Iwan	Water Supply Engineer	(402) 504-7870 russ_iwan@mudnebr.com
NDEQ	Ryan Chapman	WHP Coordinator	(402) 471-2186 ryan.chapman@nebraska.gov
JEO Consulting Group	Jeffrey Ray	Planner	(402) 392-9931 jray@jeo.com
HDR Engineering, Inc.	Luca DeAngelis	Hydrogeologist	(816) 347-1138 luca.deangelis@hdrinc.com

SECTION 2: METROPOLITAN UTILITIES DISTRICT WATER SYSTEM

2.1 HISTORY OF METROPOLITAN UTILITIES DISTRICT

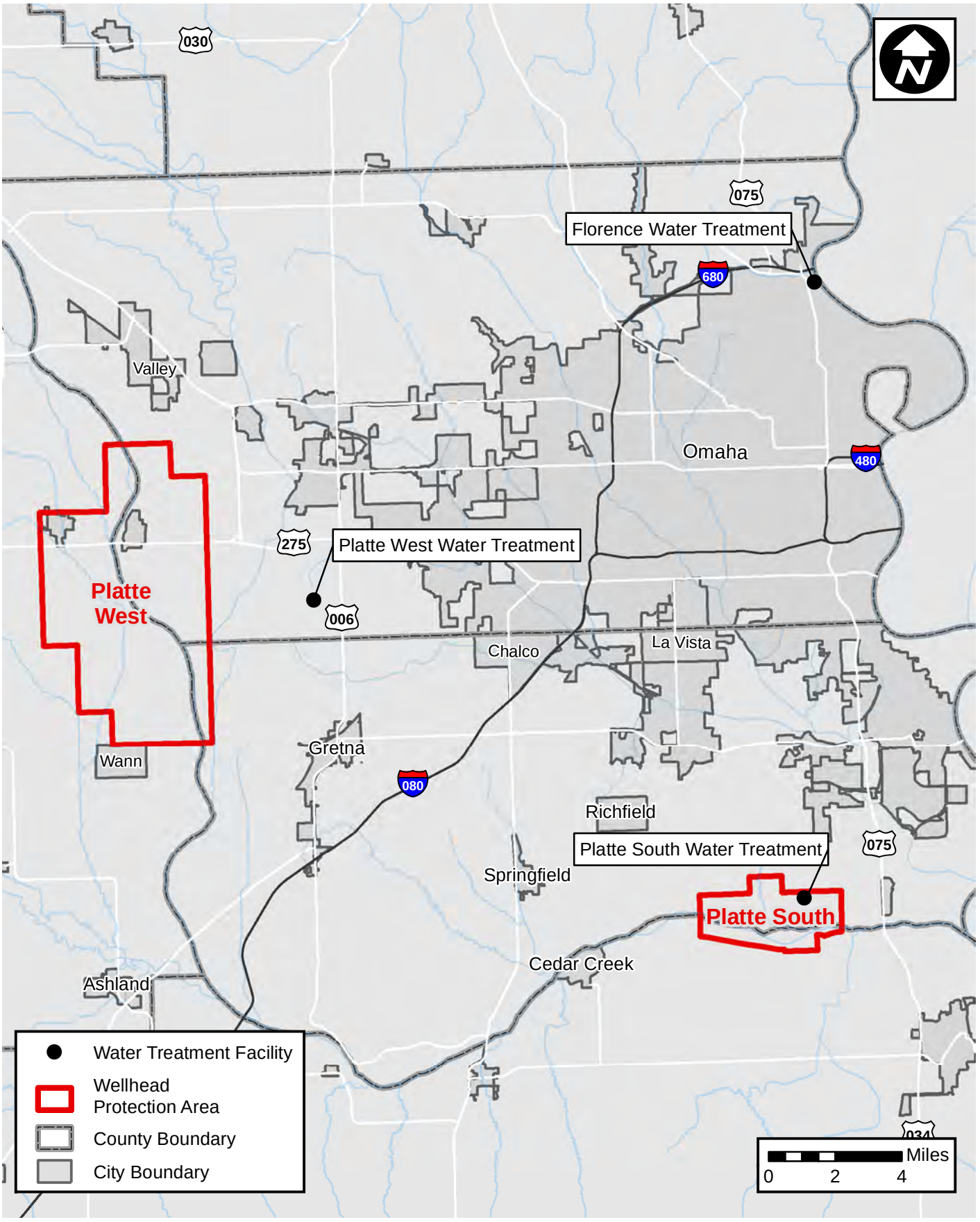
MUD was created in 1913, to take control of water service to the City of Omaha. Five years later, the District was formed after being assigned responsibility for operation of the gas system. It was created by the State to provide water and natural gas to the Greater Omaha Area.

2.2 METROPOLITAN UTILITIES DISTRICT WATER SERVICE

MUD provides safe drinking water to more than 200,000 customer-owners in Omaha, Bellevue, Bennington, Carter Lake, LaVista, Ralston, Waterloo, and the Papio-Missouri Natural Resources District (NRD). It is the only metropolitan utility district in the State. MUD began providing drinking water in 1922, with the operation of the Florence Water Treatment facility, which has a maximum day production capacity of 158 million gallons per day (mgd). The Florence Water Treatment facility obtains water from an intake in the Missouri River. In 1968, a second water treatment facility (the Platte South Water Treatment facility) was constructed south of the metropolitan area. The Platte South Water Treatment facility uses shallow wells constructed in the Platte River alluvial aquifer as the source of raw water. This facility provides MUD with a maximum day production capacity of 60 mgd. In 1971, Omaha annexed the Village of Millard, which operated wells that are constructed in the Dakota Sandstone Aquifer. MUD obtained control of these wells as a result of the annexation. These wells are operated as peak shaving wells to supplement the supply from the other sources. The only treatment for the peak shaving wells is disinfection.

In 1988, and again in 1995, maximum demand for water nearly exceeded the District's maximum production capacity. To address this issue, an additional well field and water treatment facility (Platte West Water Treatment facility) was added to the District's system. In 2008, the Platte West Water Treatment facility was opened to add to the increasing demands due to the District's expanding customer base. In July 2008, the Platte West Water Treatment facility began operations with the capacity to treat and distribute an additional 100 mgd of potable water, for a total system capacity of 333 mgd.

Omaha's MUD water system is now comprised of three treatment facilities: Florence Water Treatment facility, Platte South Water Treatment facility, and Platte West Water Treatment facility, shown in Figure 1. The placement of the three water treatment facilities and their alternative water supply sources create a triangle of reliability for the District's water supply. The diversity of the District's source of water supply provides a significant advantage to the District in its ability to use an alternative supply source in the event of an emergency in any one of the sources.



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Metropolitan Utilities District
Water Treatment Facilities

MUD Wellhead Protection Plans

DATE
May, 2013

FIGURE
1

2.3 METROPOLITAN UTILITIES DISTRICT WATER RIGHTS

MUD holds ten water rights from waters from the State. Water rights are from the Big Papillion Creek, the Platte River, the Missouri River, and the Mulhalls Regulating Pit. The Platte South well field utilizes two of the ten water rights, both for the Platte River. The use of these water rights are for induced groundwater recharge (IG). Table 2 below lists additional details about MUD water rights for the Platte South well field. In total, the Platte South well field has a water right of 500 cubic feet per second (cfs), which is equivalent to 322.5 mgd.

TABLE 2: METROPOLITAN UTILITIES DISTRICT WATER RIGHTS

App Number Priority Date Water Division RightID	Use Status Date Can / Dism Downstream	Source POD Facility Name County	Cur Tot Acres Grant Rate GPM
A-17310A	IG	Platte River	0.000
1/1/1970	Active	Sec: 29 T: 13 R: 13 E	480.0000 CFS
2B		End Wellfield	-
7731	774925	Sarpy	215,424 GPM
A-17310B	IG	Platte River	0.000
1/1/1990	Active	Sec: 30 T: 13 R: 13 E	0.0000 CFS
2B		Begin Wellfield	-
7732	774801	Sarpy	-
A-17310B	IG	Platte River	0.000
1/1/1990	Active	Sec: 29 T: 13 R: 13 E	20.0000 CFS
2B		End Wellfield	-
7733	774926	Sarpy	8,976 GPM
A-17310A	IG	Platte River	0.000
1/1/1970	Active	Sec: 30 T: 13 R: 13 E	0.0000 CFS
2B		Begin Wellfield	-
7748	774802	Sarpy	-

2.4 PLATTE SOUTH WATER TREATMENT FACILITY

The Platte South Water Treatment facility is located on approximately 700 acres of land along the bank of the Platte River, in Sarpy County, Nebraska. The Platte South Water Treatment facility began providing treated water to the Greater Omaha Area in 1968. The source water for this facility is obtained from 40 vertical wells constructed in the Platte River alluvial aquifer, many of which are located adjacent to the Platte River. The facility is classified as "Groundwater Under the Direct Influence". The facility consists of two treatment trains, each treating 30 mgd (60 mgd total), to provide potable water to MUD's distribution system. Water treatment consists of lime softening, fluoridation, filtration, chlorination, and chloramination.

TABLE 3: METROPOLITAN UTILITIES DISTRICT WATER SYSTEM – GENERAL WATER SYSTEM INFORMATION

General Water System Information	
Customers Served: 203,230	Water Hydrants Maintained: 27,471
Main Customer-Owners: Omaha, Bellevue, Bennington, Carter Lake, LaVista, Ralston, Waterloo, and the Papio-Missouri NRD (which supplies water to Fort Calhoun)	
Average Daily Consumption (1988-2011): 90,250,000 gallons	Average Peak Daily Consumption (1988-2011): 186,330,000 gallons
Average Summer Consumption (1988-2011): 110,708,000 gallons	Average Winter Consumption (1988-2011): 79,958,000 gallons
2012 General Water System Information	
Average Daily Demand: 148 mgd	Water Storage Capacity: 333,000,000 gallons
Average Summer Usage: 148,000,000 gallons	Peak Daily Usage: 103,000,000 gallons
Average Winter Usage: 73,000,000 gallons	Peak Monthly Average: 194,000,000 gallons

TABLE 4: METROPOLITAN UTILITIES DISTRICT PLATTE SOUTH WATER TREATMENT FACILITY INFORMATION

Platte South Water Treatment Facility Information	
Average Monthly High Service Pumpage (2011): 18,420,000 gallons	Peak Daily High Service Pumpage (June 1988): 62,000,000 gallons
Peak Total Monthly High Service Pumpage (July 1995): 1,788,000,000 gallons	Peak Total Yearly High Service Pumpage (1991): 16,298,000,000 gallons
2012 Platte South Water Treatment Facility Information	
Average Summer Usage: 37,600,000 gallons	Peak Daily Usage: 54,200,000 gallons
Average Winter Usage: 18,900,000 gallons	Peak Monthly Average: 49,300,000 gallons
Water Storage Capacity: 6,100,000 gallons	

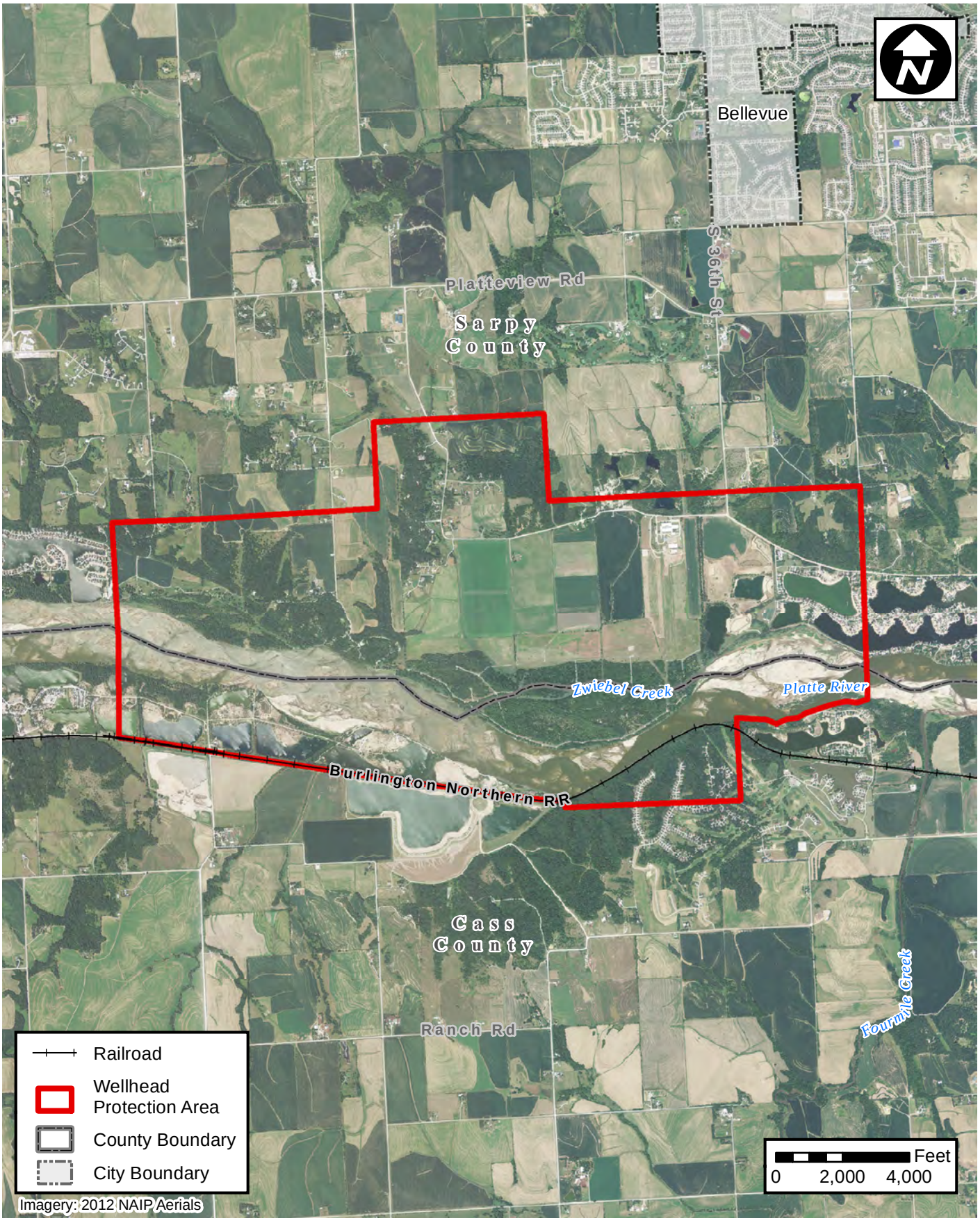
TABLE 5: METROPOLITAN UTILITIES DISTRICT PLATTE SOUTH FACILITY – CONTACT INFORMATION

System Contact Information:	
Mailing Address: 1723 Harney Street	**Physical Address:**
City/State/ZIP: Omaha/NE/68102	**City/State/ZIP:**
System Phone Number: (402) 504-7407	**System Fax Number:** (402) 504-7401
Water System Owned By: MUD	**Operated By:** MUD
Governing Body: MUD Board	
Administrative Contact Person:	
Financial Contact Person:	
Name: Deborah Schneider	**Phone Number:** (402) 504-7128
Operational Contact Person:	
Name: Scott Keep	**Phone Number:** (402) 504-7106
Legal Contact Person:	
Name: Ron Bucher	**Phone Number:** (402) 504-7238
Operational Information:	
Operator in Responsible Charge: Joel Christensen	**Title:** Vice President, Water Operations
Certification Grade: Grade I	**Certificate #:** 28
Expiration Date: December 31, 2013	**Home Address:**
	Phone Number: (402) 504-7774

SECTION 3: METROPOLITAN UTILITIES DISTRICT WELLHEAD PROTECTION AREA

MUD's Platte South WHPA map, shown in Figure 2, was provided by NDEQ. The Platte South WHPA covers 4,387 total acres. NDEQ creates WHPAs using a groundwater flow model and information such as the geologic material the wells are drilled into and the annual pumping rate of the wells.

The groundwater flow model used by NDEQ is the United States Environmental Protection Agency (EPA) Well Head Analytic Element Model WhAEM 2000. Groundwater particle traces that represent a 20-year time-of-travel are computed using WhAEM 2000, and are then overlain onto a topographic map as shown in Figure 3. The particle traces represent approximate flow lines that groundwater or a contaminant in groundwater may travel and the time it will take to reach a well. The flow lines are then associated with time-of-travel and the boundary for the WHPA is drawn on property lines to encompass all 20-year flow lines. Segments of the proposed Platte South WHPA could be added or removed by NDEQ if there were a compelling reason to do so.



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Metropolitan Utilities District
Platte South Wellhead Protection Area

MUD Wellhead Protection Plans

DATE
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FIGURE
2

NE3105507

R 12 E R 13 E

Platteview Rd

Platte River

Sarpy County

Cass County

T 13 N

T 12 N

A-010538K
A-010538J
A-010538L
G-129016
A-010538JJ
A-010538LL
A-010538KK
A-010538HH
A-010538B
G-128990
A-010538II
A-010538GG
A-010538C
A-010538D
A-010538E
A-010538F
A-010538G
A-010538H
A-010538I
A-010538M
A-105538A
A-010538N
A-010538O
A-010538P
A-010538S
A-010538X
A-010538AA
A-010538Q
A-010538T
A-010538W
A-010538Z
A-010538R
A-010538U
A-010538V
A-010538Y
A-010538FF
A-010538EE
A-010538DD
A-010538CC
A-010538BB

Wellhead Protection Area Boundary

Time-of-Travel lines are created using the U.S. EPA's Wellhead Analytic Element Model, WhAEM2000, 3.2.1 which assumes steady-state flow and average groundwater travel times. This model is a representation of reality based on the best known geologic, water level, and pumping information available. NDEQ will continue to update and revise wellhead protection areas as new information becomes available.

The wellhead protection boundary was deliberately drawn slightly larger than time-of-travel lines shown on the map to allow for seasonal changes and some natural variability in the aquifer. The wellhead protection boundary is also drawn to conform to property boundaries, section lines, and water bodies to allow for easier land management and identification.

0 0.375 0.75 1.5 2.25 3 Miles

Time of Travel

- 0-1 Year
- 1-2 Year
- 2-10 Year
- 10-20 Year

M.U.D.
SOUTH PLATTE
SARPY COUNTY

Drawn by Nebraska Department of Environmental Quality, Wellhead Protection Program, March 2011

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3.1 LAND COVER USE

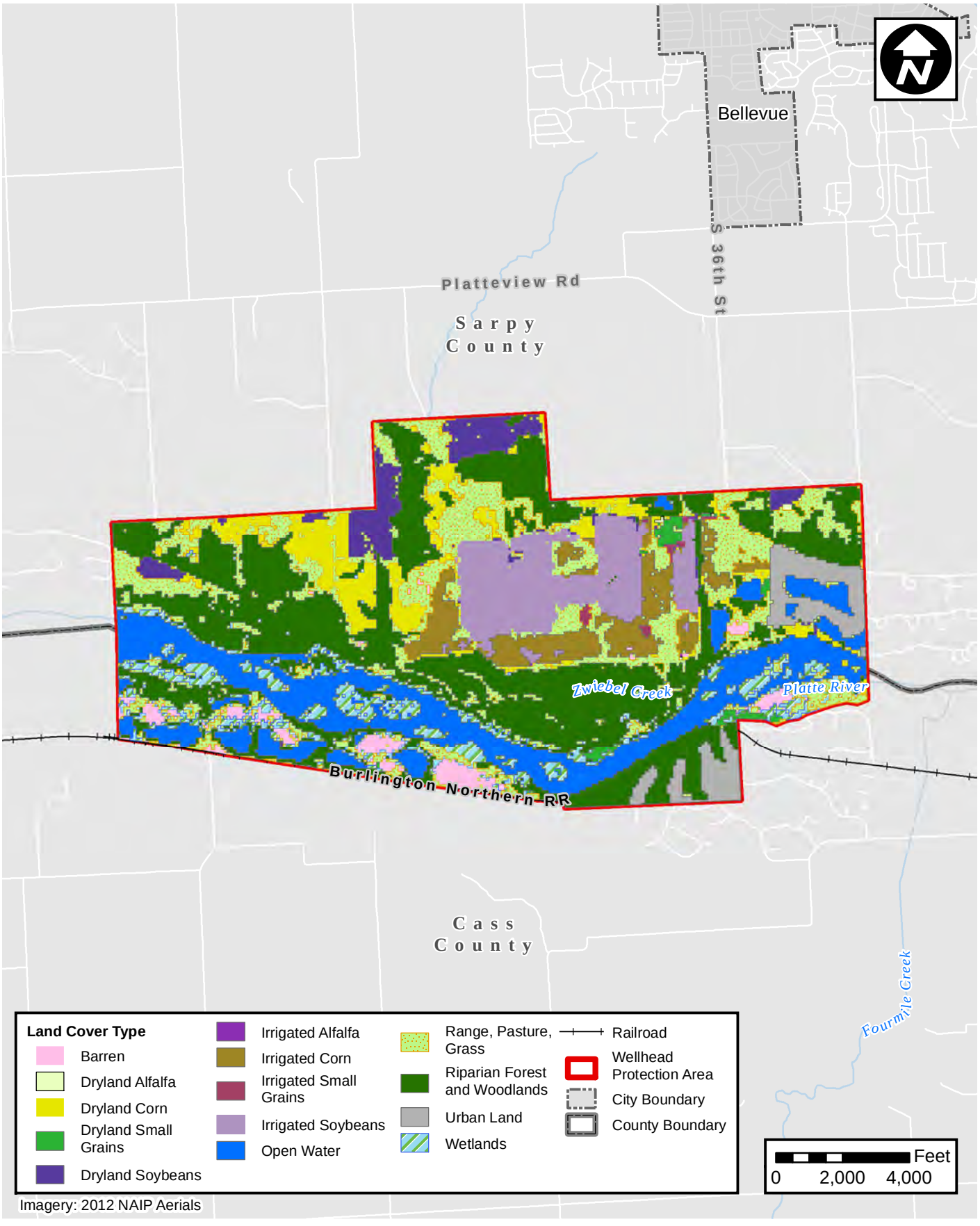
Land cover in the Platte South WHPA was analyzed using Geographic Information System (GIS) software and data collected from University of Nebraska-Lincoln (UNL) 2005 land cover database. Percentages of land cover type were compiled and presented in Table 6, for Platte South WHPA. See Figure 4, for the graphic breakdown of land cover type in the Platte South WHPA. Data for land cover type and total areas in the WHPA can be beneficial for land management practices and to prevent contamination. Land cover types in the WHPA is listed and described below (2005 NE Land Use Final Report):

- Barren – Areas with no vegetation, including blowouts and sandbars.
- Dryland alfalfa – Non-irrigated alfalfa harvested three to four times during the growing season starting in early May and ending in early October.
- Dryland corn – Includes non-irrigated corn used for grain or silage and harvested September through November.
- Dryland small grains – Includes non-irrigated winter wheat, spring wheat, oats, barley, rye, and millet.
- Dryland sorghum – Includes non-irrigated sorghum for grain and silage, as well as milo, sudan, and cane; harvested September through October.
- Dryland soybeans – Non-irrigated soybean fields.
- Irrigated alfalfa – Irrigated alfalfa harvested three to four times during the growing season starting in early May and ending in early October.
- Irrigated corn – Includes irrigated corn used for grain or silage and harvested September through November.
- Irrigated small grains – Includes irrigated winter wheat, spring wheat, oats, barley, rye and millet.
- Irrigated sorghum – Includes irrigated sorghum for grain and silage, as well as milo, sudan, and cane; harvested September through October.
- Irrigated soybeans – Irrigated soybean fields.
- Open water – Includes lakes, streams, ponds, and reservoirs. Water level varies due to irrigation draw-downs and evaporation.
- Range, pasture, and grass – Mostly range grasses and pastures with some cultivated grass and hay. Includes brome grass and land in the Conservation Reserve Program. Grazing occurs at irregular intervals.
- Riparian forest and woodlands – Forested areas including areas next to streams, lakes, and wetlands.
- Urban land – Areas defined as towns or cities with a population greater than 100 people.
- Wetlands – Emergent wetlands. Lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. May also include sub-irrigated grassland areas and shallow water areas.

TABLE 6: PLATTE SOUTH WELLHEAD PROTECTION AREA LAND USE COVER

Land Cover Type	Acres in WHPA	Percent of Total Cover
Barren	85	1.93%
Dryland alfalfa	3	0.06%
Dryland corn	258	5.88%
Dryland small grains	32	0.73%
Dryland soybeans	166	3.78%
Irrigated alfalfa	1	0.02%
Irrigated corn	235	5.36%
Irrigated small grains	12	0.28%
Irrigated soybeans	348	7.93%
Open water	646	14.74%
Range, pasture, and grass	785	17.89%
Riparian forest and woodlands	1,375	31.34%
Urban land	167	3.80%
Wetlands	275	6.26%
Total	**4,387**	**100%**

Riparian forest and woodlands cover the greatest percentage of total acres in the Platte South WHPA with approximately 31 percent, or 1,375 acres of the total 4,387 acres in the WHPA. Combined dryland and irrigated crops make up a total of approximately 24 percent of the total Platte South WHPA, or 1,055 acres of the total area. Open water and range, pasture, and grass lands provide the next largest contribution to the Platte South WHPA at approximately 15 percent and 18 percent, respectively.



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Platte South Wellhead Protection Area
Land Use / Land Cover

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FIGURE
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3.2 IMPAIRED RIVERS

Zwiebel Creek is located within the Platte South WHPA. It consists of two waterbody segments (ID 10400 and ID 10500) in the Lower Platte Subbasin (LP1). Stated in the 2012 Water Quality Integrated Report, Zwiebel Creek is an impaired waterbody that drains to the Platte River. The impairment listed is high pH for aquatic life and has National Pollutant Discharge Elimination System (NPDES) permit enforcement, shown in Table 7. According to the 2012 Nebraska Title 117, Zwiebel Creek is classified as a Class B warmwater aquatic life, Class A agriculture supply, and has key species listed in segment ID 10400, shown in Table 8.

TABLE 7: ZWIEBEL CREEK WATERBODY IMPAIRMENTS

Waterbody Name	Waterbody ID	Recreation	Aquatic Life	Public Drinking Water Supply	Agriculture Supply	Aesthetics	Overall Assessment	1012 IR	Impairments	Parameters of Concern	Comments /Actions
	LP1-10400		I		NA	NA	I	4b	Aquatic Life-High pH	pH	NPDES permit enforcement
Zwiebel Creek	LP1-10500		NA		NA	NA		3			

Source: NDEQ. April 1, 2012. *2012 Water Quality Integrated Report*. Nebraska Department of Environmental Quality, Water Quality Division. <http://www.deq.state.ne.us/publica.nsf/Pages/WAT184>.

I: Impaired Beneficial Use

NA: Not assessed

1012 IR Category 3: Waterbodies where there is insufficient data to determine if any beneficial uses are being met.

1012 IR Category 4b: Waterbody is impaired, but "other pollution control requirements" are expected to address the water quality impairment(s) within a reasonable period of time. Other pollution control requirements include but are not limited to, National Pollutant Discharge Elimination System (NPDES) permits and best management practices.

*A blank cell in the table will indicate the beneficial use is not assigned to this waterbody in Title 117-Nebraska's Surface Water Quality Standards.

TABLE 8: ZWIEBEL CREEK USE CLASSIFICATION

				Use Classification						
Waterbody	**Segment Name**	**Basin**	**Segment ID**	**Recreation**	**Warmwater Aquatic Life**	**Drinking Water**	**Agriculture Supply**	**Industrial Supply**	**Aesthetics**	**Key Species**
Zwiebel Creek	Unnamed Creek to Platte River (Sec 19-13N-13E)	Lower Platte	LP1-10400		B		A			I
	Headwaters to Unnamed Creek (Sec 19-13N-13E)	Lower Platte	LP1-10500		B		A			

Source: NDEQ. April 1, 2012. Nebraska Administrative Code, Title 117, Nebraska Surface Water Quality Standards. <http://www.deq.state.ne.us/RuleAndR.nsf/pages/117-TOC>.

Class B – Warmwater: These are waters where the variety of warmwater biota is presently limited by water volume or flow, water quality (natural or irretrievable human-induced conditions), substrate composition, or other habitat conditions. These waters are only capable of maintaining year-round populations of tolerant warmwater fish and associated vertebrate and invertebrate organisms and plants. Key species may be supported on a seasonal or intermittent basis (for example, during high flows) but year-round populations cannot be maintained.

Class A – Agricultural: These waters used for general agricultural purposes (for example, irrigation and livestock watering) without treatment.

Aesthetics: This use applies to all surface waters of the state. To be aesthetically acceptable, waters shall be free form human-induced pollution with cases: 1) noxious odors; 2) floating, suspended, colloidal, or settleable materials that produce objectionable films, colors, turbidity, or deposits; and 3) the occurrence of undesirable or nuisance aquatic life (for example, algal blooms). Surface waters shall also be free of junk, refuse, and discarded dead animals.

I – Channel catfish

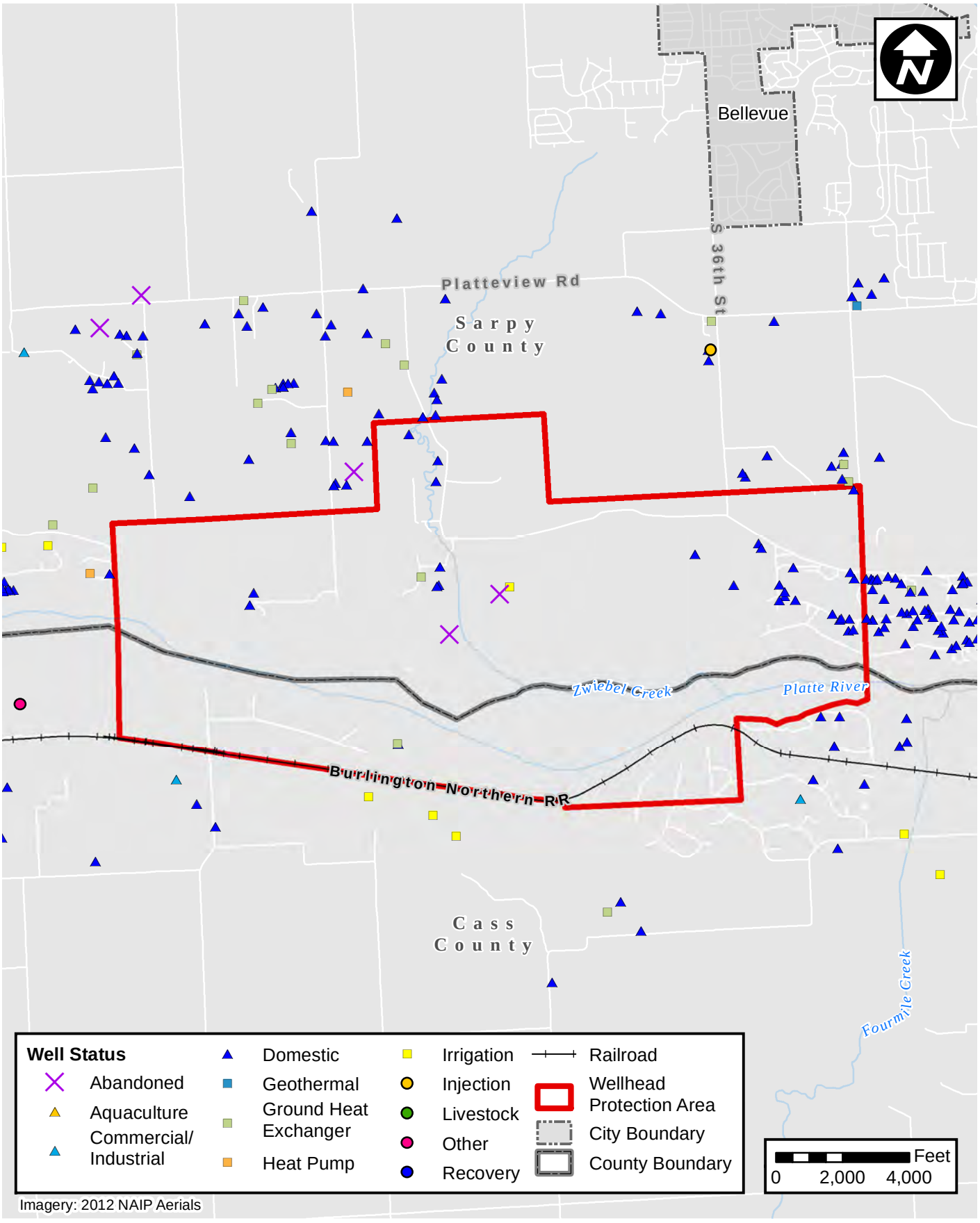
SECTION 4: POTENTIAL CONTAMINANT SOURCE INVENTORY

A contaminant source inventory is provided to compile sources and activities that could potentially contribute to pollution of the groundwater supplies. Databases for each of the potential contaminant sources were mapped using GIS software and aerial photography. Sources obtained include:

- Registered water wells (provided by NDEQ).
- NDEQ regulated facilities.
- Nebraska oil and gas wells from Nebraska Oil and Gas Conservation Commission (NOGCC) database.
- State Fire Marshal database for hazardous sites
- Underground storage tanks (USTs) database (State Fire Marshal database)

4.1 REGISTERED WATER WELLS

Registered water wells located within Platte South WHPA include mostly domestic water wells, along with two abandoned wells, two ground heat exchanger wells, and one irrigation well. Figure 5 shows the registered wells within and around the Platte South WHPA. Other wells located near Platte South WHPA include commercial and industrial, heat pump, and geothermal wells.



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Platte South Wellhead Protection Area
Registered Water Wells

MUD Wellhead Protection Plans

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FIGURE
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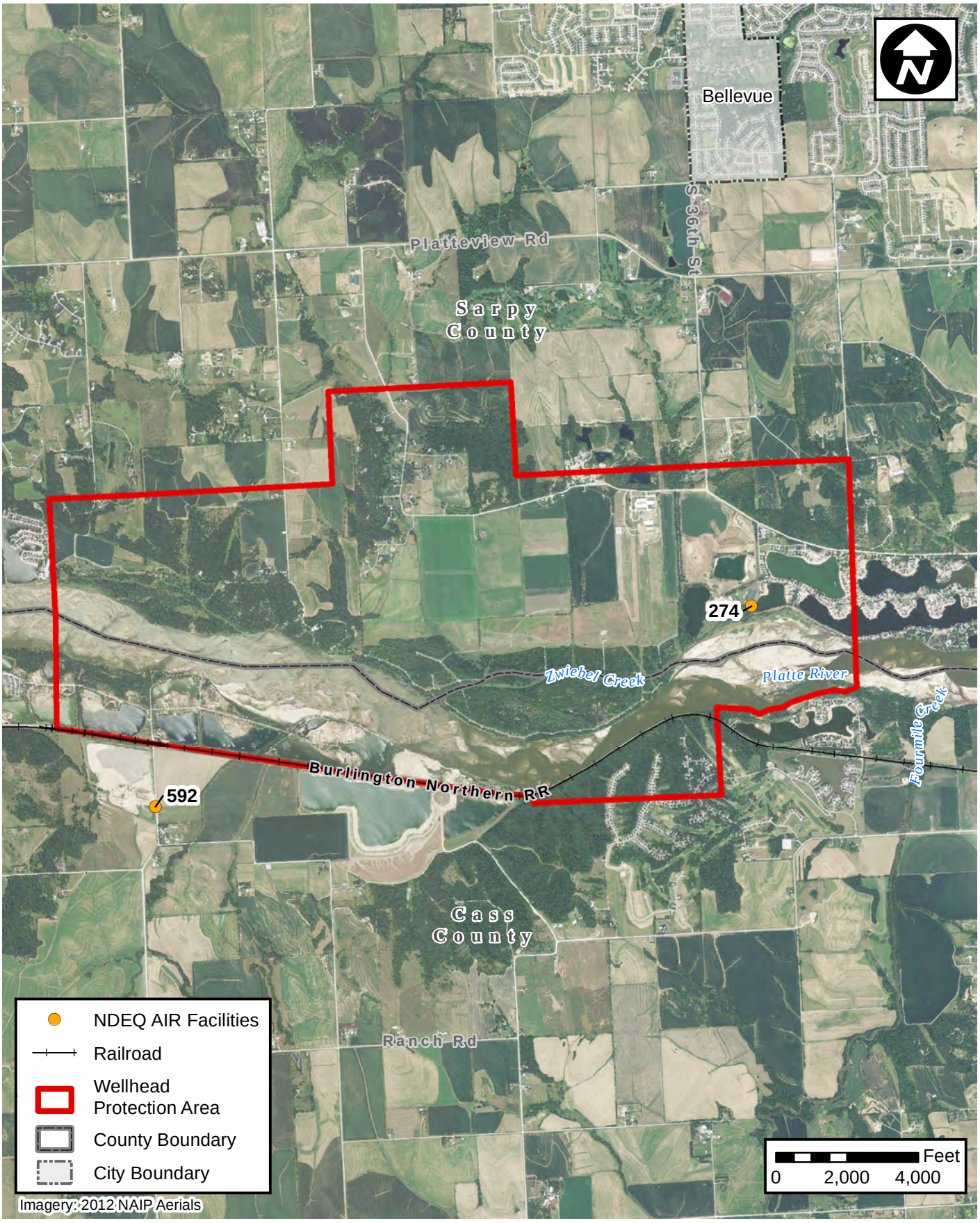
4.2 REGULATED FACILITIES

A database containing all NDEQ regulated facilities was mapped for the Platte South WHPA. This database includes any facilities that are associated with one or more of the NDEQ programs. NDEQ regulated facilities located within and around Platte South WHPA are mapped according to their registered programs and are shown in Figure 6 through Figure 15. A detailed list of each facility and their corresponding registered programs are presented in Table 9.



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Platte South Wellhead Protection Area
Clean Air Act Facilities

MUD Wellhead Protection Plans

DATE
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FIGURE
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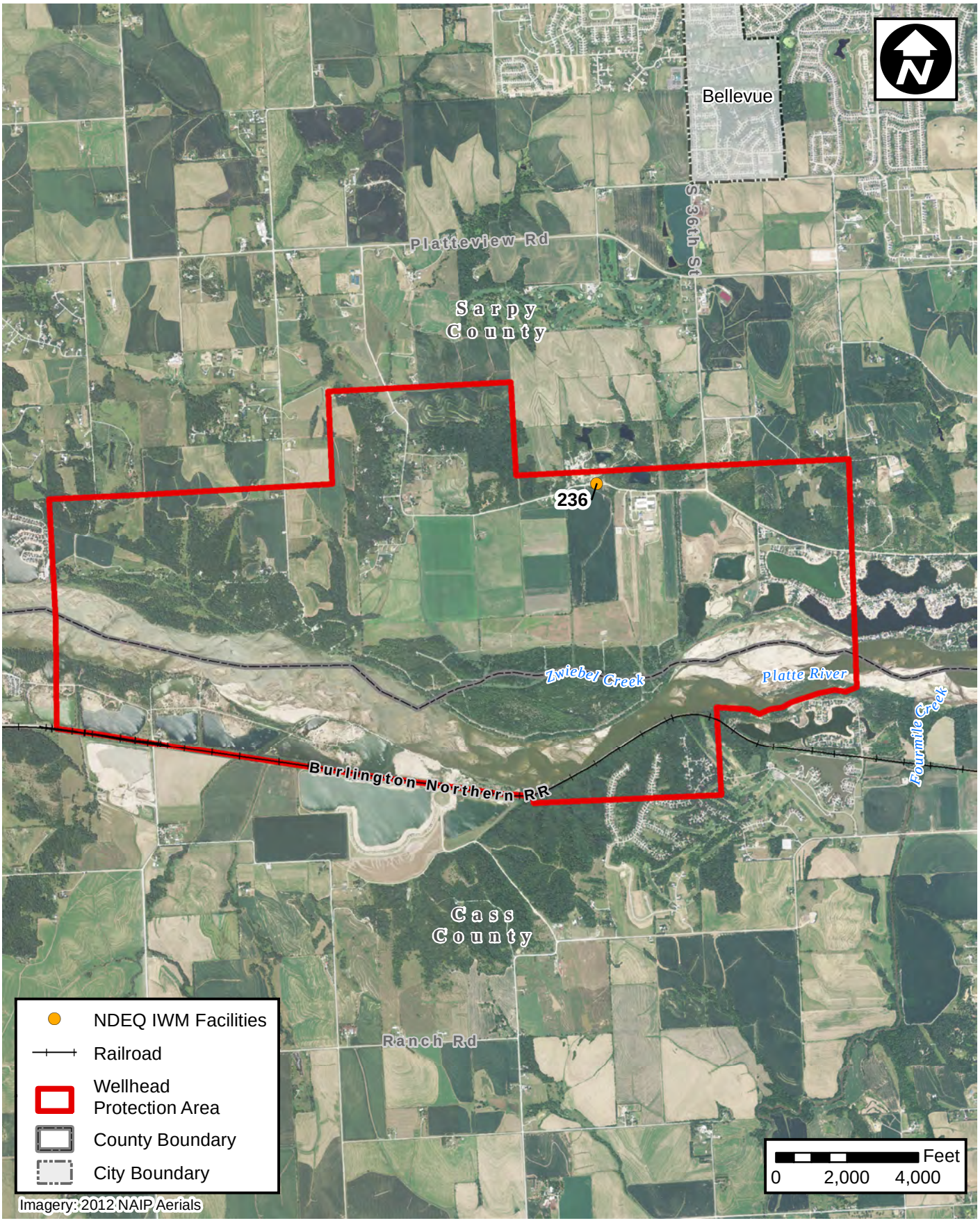

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Platte South Wellhead Protection Area
Integrated Waste Management Facilities

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FIGURE
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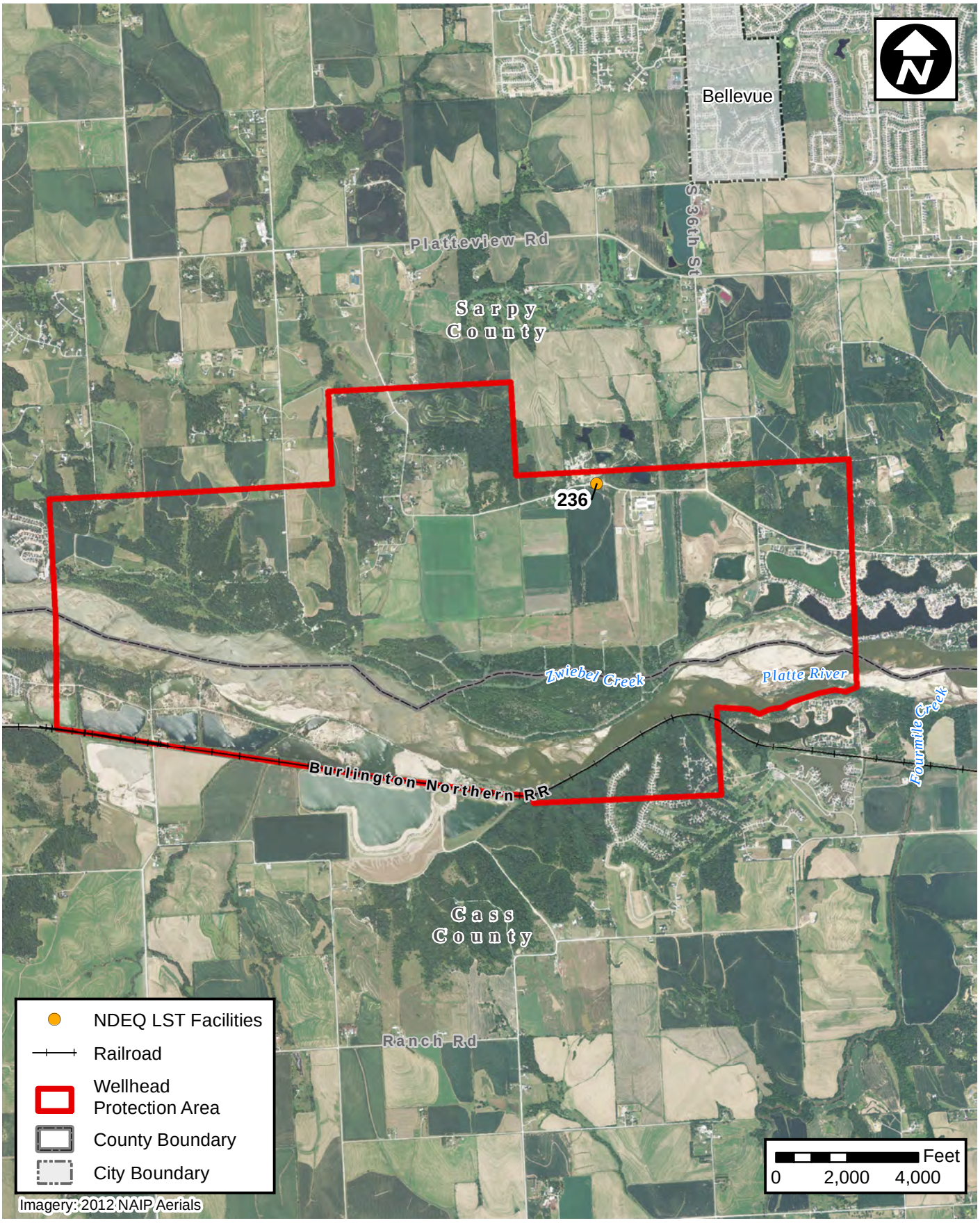

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Platte South Wellhead Protection Area
Leaking Storage Tank Facilities

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FIGURE
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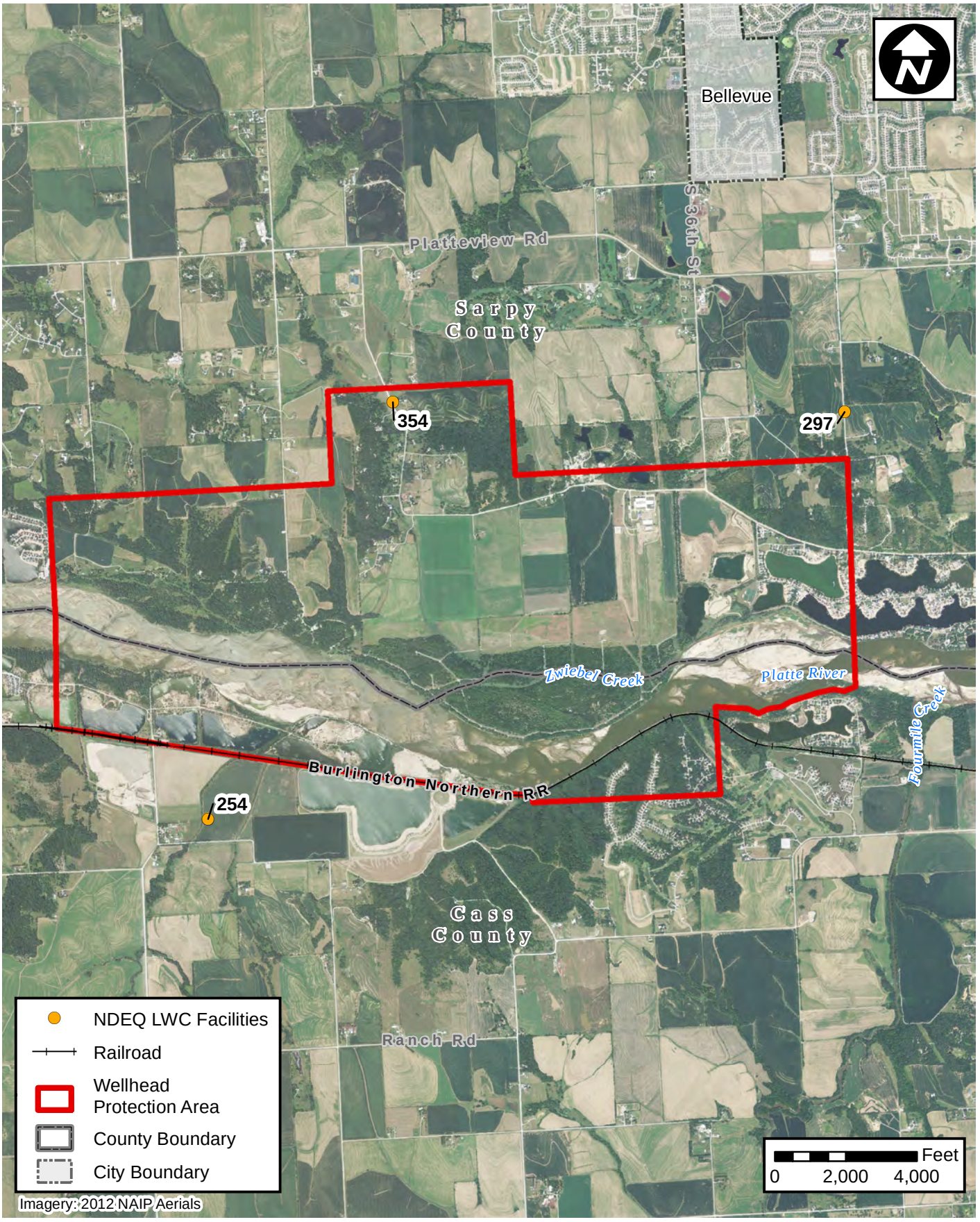

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Platte South Wellhead Protection Area
Livestock Waste Control Facilities

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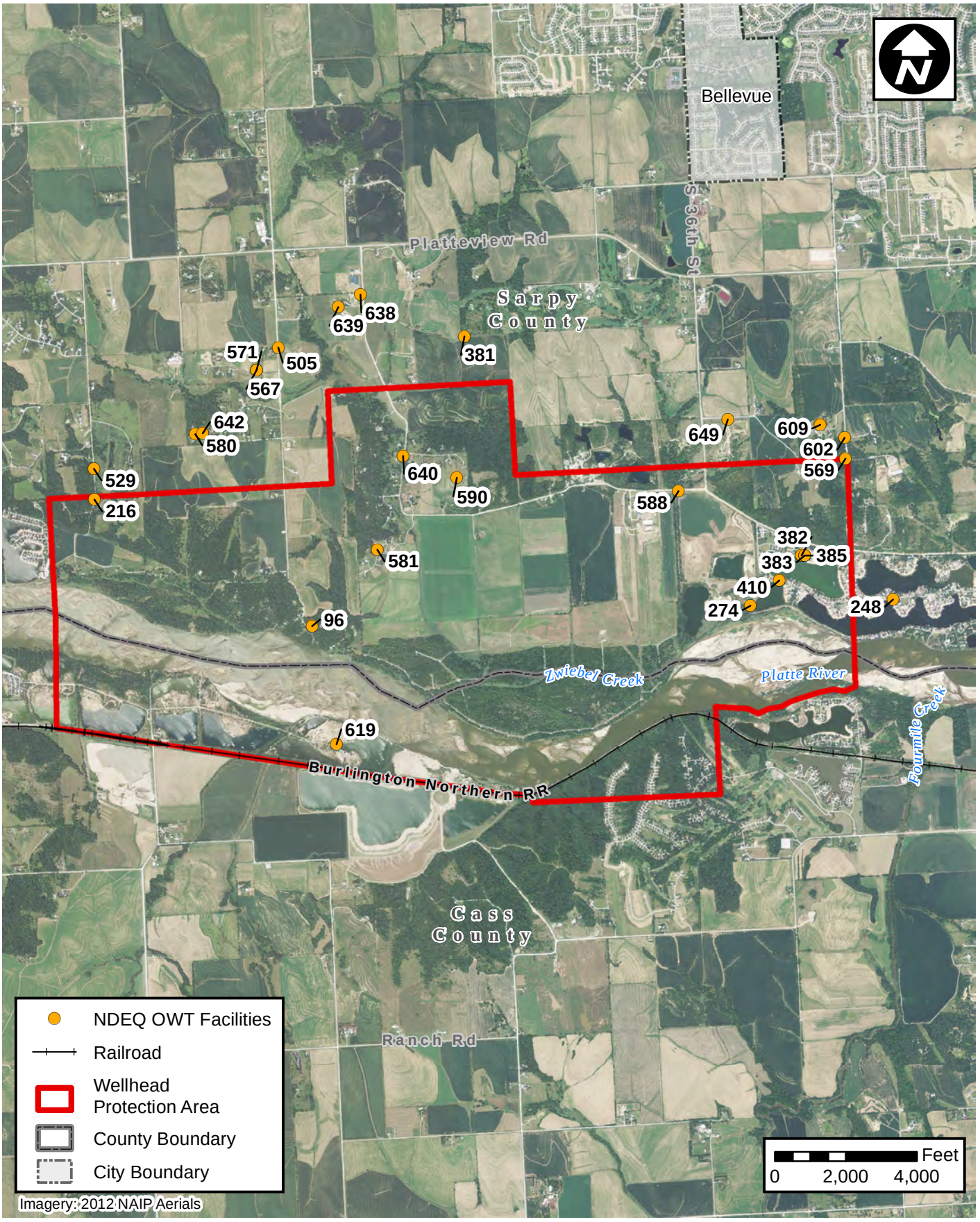
FIGURE
9



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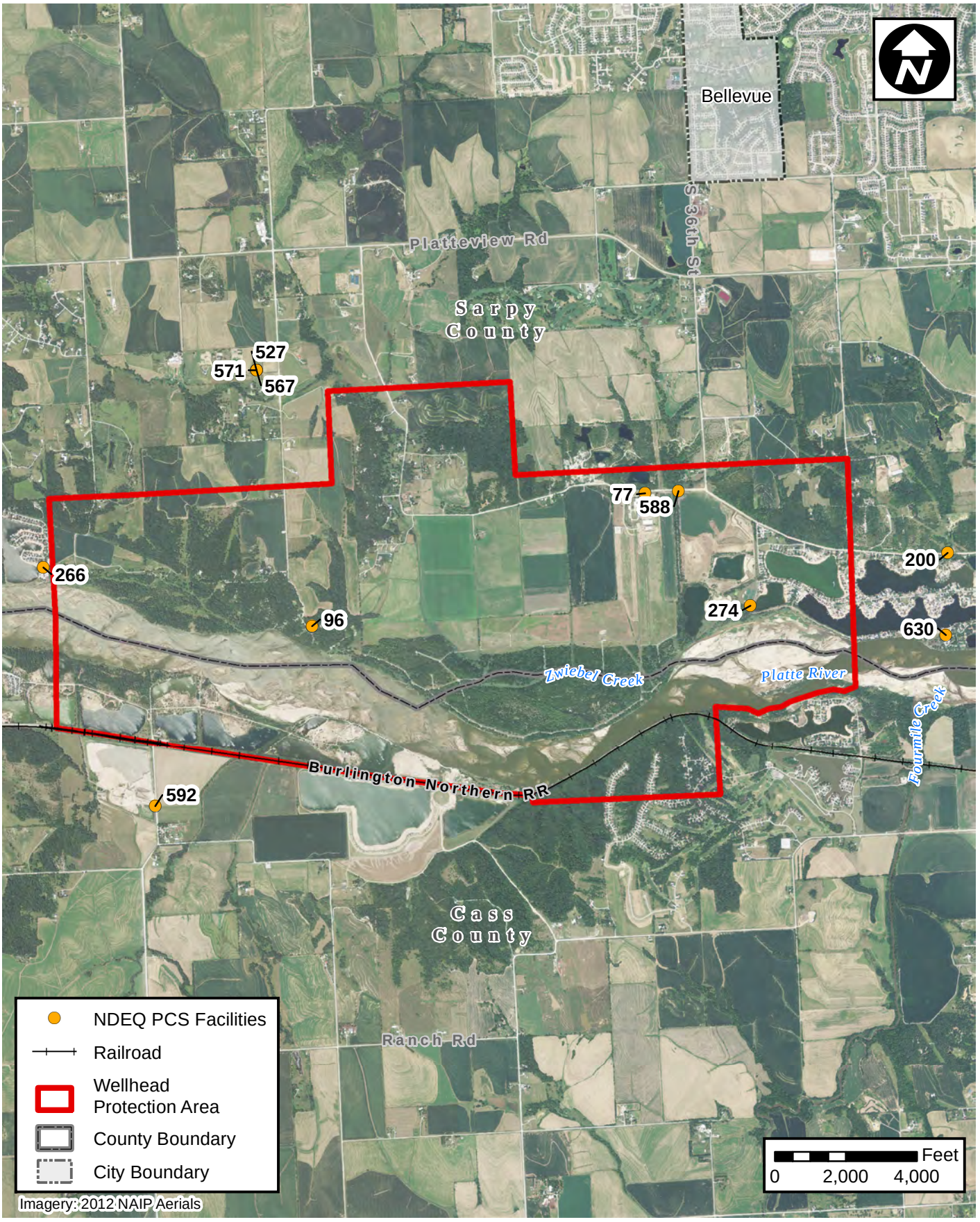
HDR

Platte South Wellhead Protection Area
Onsite Wastewater Treatment Facilities

MUD Wellhead Protection Plans

DATE
May, 2013

FIGURE
10



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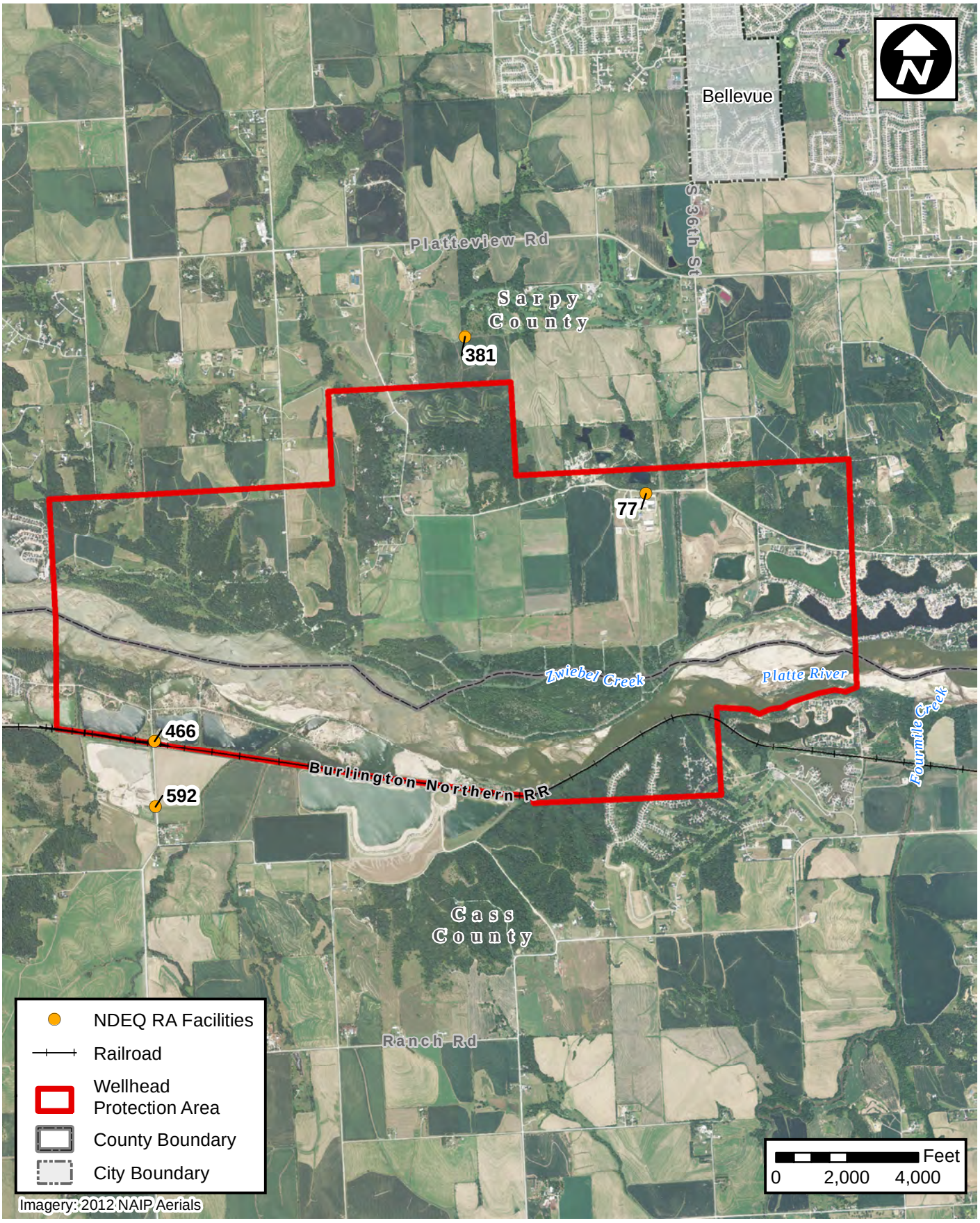
Platte South Wellhead Protection Area
NPDES Permits and Compliance Facilities

MUD Wellhead Protection Plans

DATE
May, 2013

FIGURE
11



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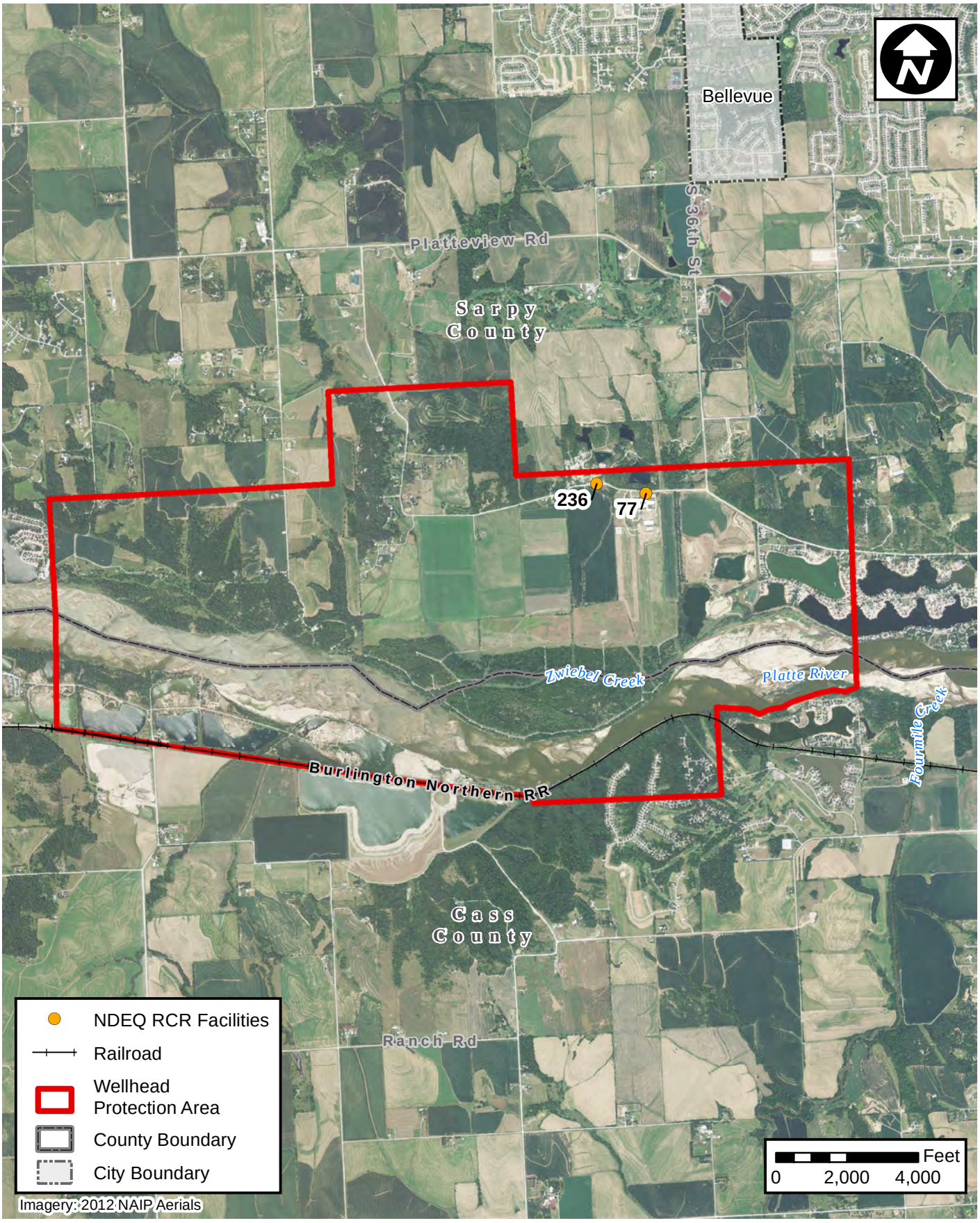
Platte South Wellhead Protection Area Release Assessment Facilities

MUD Wellhead Protection Plans

DATE
May, 2013

FIGURE
12



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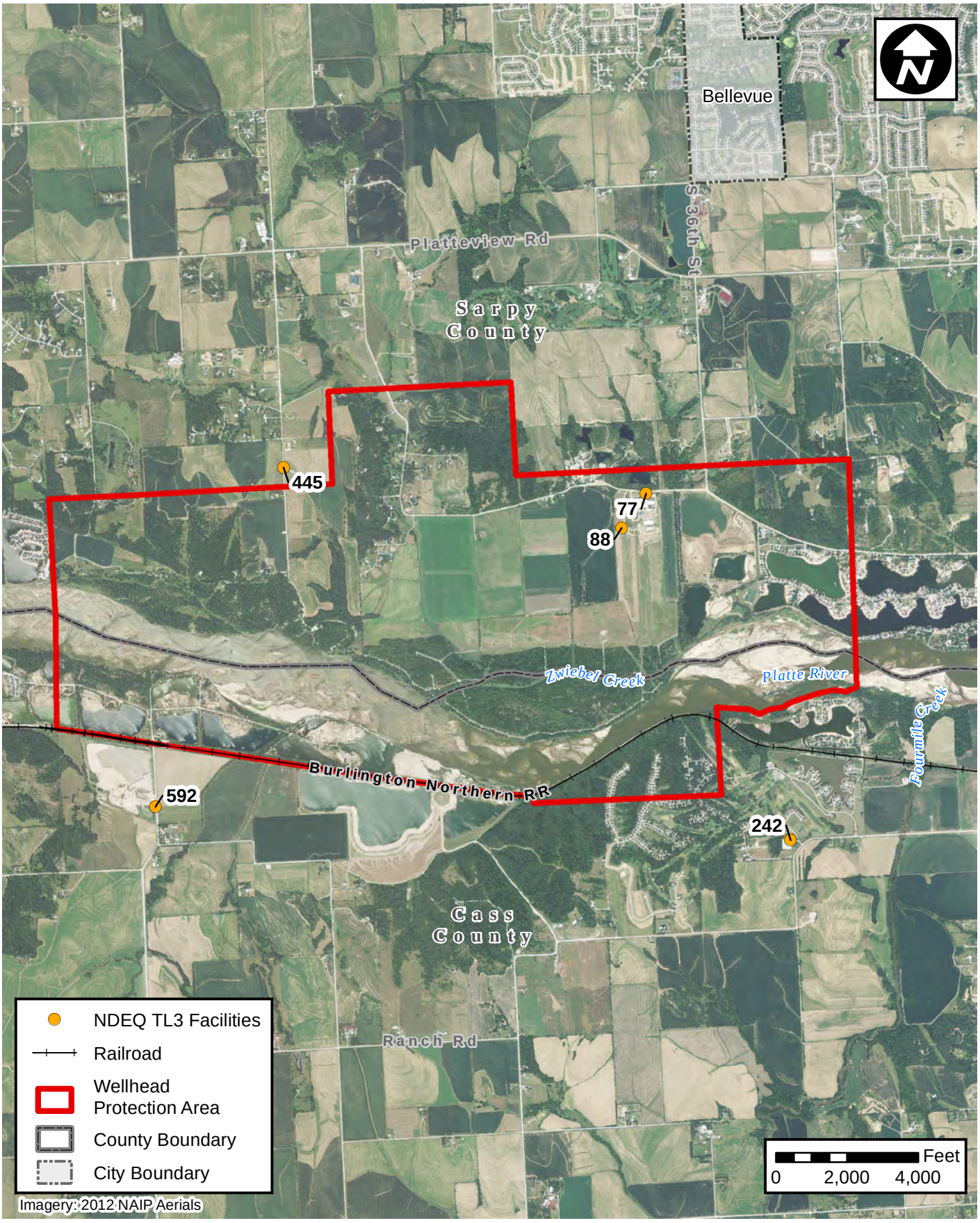
HDR

Platte South Wellhead Protection Area
Resource Conservation Recovery Facilities

MUD Wellhead Protection Plans

DATE
May, 2013

FIGURE
13



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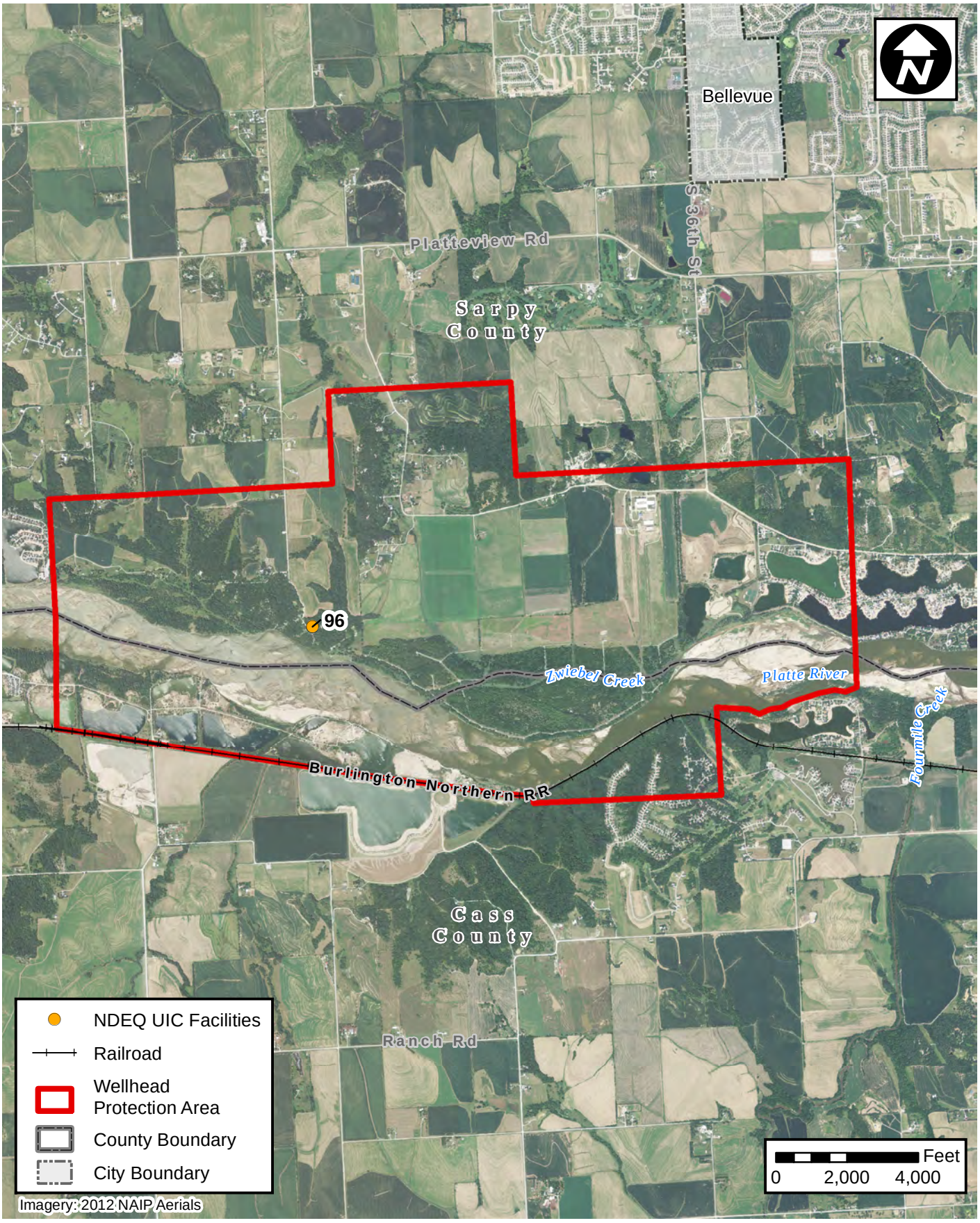
HDR

Platte South Wellhead Protection Area
SARA Title III Facilities

MUD Wellhead Protection Plans

DATE
May, 2013

FIGURE
14



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HDR

Platte South Wellhead Protection Area
Underground Injection Control Facilities

MUD Wellhead Protection Plans

DATE
May, 2013

FIGURE
15

TABLE 9: PLATTE SOUTH REGULATED FACILITIES

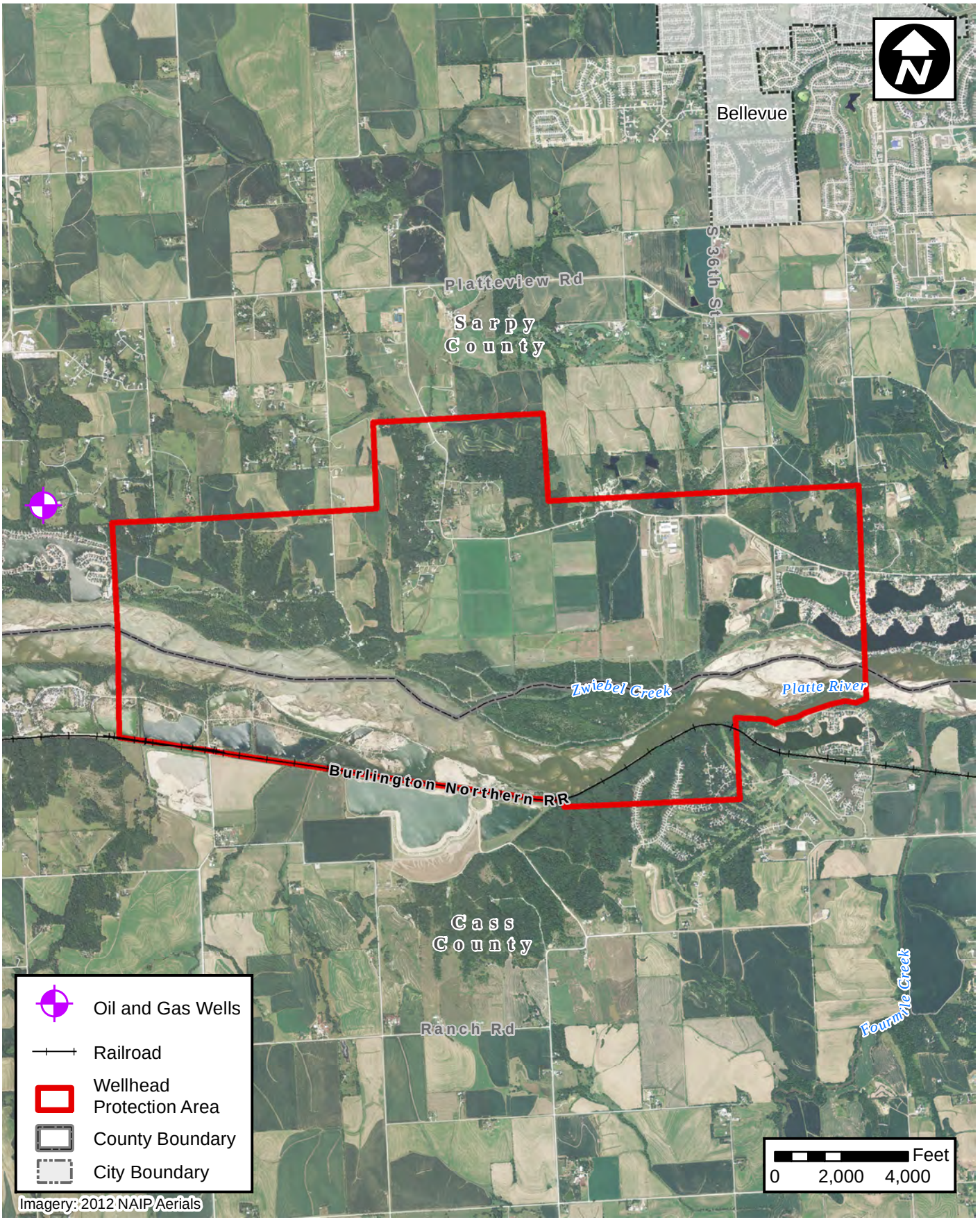
Platte South WHPA - NDEQ Regulated Facilities						
Record Number	**Facility Name**	**Address**	**City**	**County**	**ZIP Code**	**Registered Programs**
77	MUD Platte River Potable Water	4001 Laplatte Road	Bellevue	Sarpy	68123	PCS, RA, RCR, TL3
88	Omaha Public Power District Substation No. 904	4109 LaPlatte Road	Bellevue	Sarpy	68123	TL3
96	Girl Scouts Camp Maha	17114 South 63rd Street	Papillion	Sarpy	68133	OWT, PCS, UIC
200	Albert Burton farm	2002 Laplatte Road	Bellevue	Sarpy	68123	PCS
216	Jack Miller acreage	16402 South 75th Street	Papillion	Sarpy	68046	OWT
236	Iske Quarry	LaPlatte Road	Bellevue	Sarpy	68123	IWM, LST, RCR
242	Omaha Public Power District Substation No. 985	Davy Jones Drive	Plattsmouth	Cass	68048	TL3
248	Thomas W. Grange residence	17312 Iris Circle	Bellevue	Sarpy	68123	OWT
254	K Valley Farms Inc.	7104 Bay Road	Plattsmouth	Cass	68048	LWC
266	Hawaiian Village	7801 Kona Circle	Papillion	Sarpy	68046	PCS
274	Hanson's Lakes	Junction of Paradise Road and Annabelle Drive	La Platte	Sarpy	68123	AIR, OWT, PCS
297	Farmstead Acres Riding Academy	16401 Dyson Hollow Road	Bellevue	Sarpy	68123	LWC
354	H B Ghosh farm	15901 South 57th Street	Papillion	Sarpy	68133	LWC
381	Platteview Country Club	4215 Platteview Road	Bellevue	Sarpy	68123	OWT, RA
382	Leslie and Pamela Wise residence	3011 Crystal Drive	Bellevue	Sarpy	68123	OWT
383	Ronald Kucirek residence	2907 Annabelle Drive	La Platte	Sarpy	68123	OWT
385	Maurice Current residence	2902 Annabelle Drive	La Platte	Sarpy	68123	OWT
410	Howard L. Helm property	3110 Annabelle Drive	La Platte	Sarpy	68123	OWT
445	MUD Natural Gas Distribution	16650 South 63rd Street	Papillion	Sarpy	68133	TL3
466	Schmidt Pharmacy Fertilizer	South 72nd Street	Plattsmouth	Cass	68048	RA
505	Jerry Damme residence	15591 South 63rd Street	Papillion	Sarpy	68133	OWT
527	CainCrest	Junction of South 63rd Street and Cain Crest Plaza	Papillion	Sarpy	68133	PCS
529	Paul Edwards residence	16044 South 75th Street	Papillion	Sarpy	68046	OWT
567	Kraig Bougher residence	6541 Russell Emmett Court	Papillion	Sarpy	68133	OWT, PCS

Platte South WHPA - NDEQ Regulated Facilities						
Record Number	**Facility Name**	**Address**	**City**	**County**	**ZIP Code**	**Registered Programs**
569	Bob Chandler residence	16382 Dyson Hollow Road	Bellevue	Sarpy	68123	OWT
571	Clint and Laurie Wilen residence	6540 Russell Emmett Court	Papillion	Sarpy	68133	OWT, PCS
580	Chuck and Bonnie Kokes residence	16060 South 63rd Street	Papillion	Sarpy	68133	OWT
581	Dennis Birnstihl residence	5753 Merrill Mission Road	Papillion	Sarpy	68133	OWT
588	Leisure Village	16401 South 36th Street	Bellevue	Sarpy	68123	OWT, PCS
590	Mike Pritchard residence	5101 Country View Lane	Papillion	Sarpy	68133	OWT
592	Lyman-Richey Sand and Gravel 03	19746 72nd Street	Plattsmouth	Cass	68048	AIR, PCS, RA, TL3
602	Jeffrey and Patti Fries acreage	16226 Dyson Hollow Road	Bellevue	Sarpy	68123	OWT
609	Andrew and Peggy Tracey acreage	16222 Dyson Hollow Road	Bellevue	Sarpy	68123	OWT
619	Ronald Foupht acreage	6120 Sun Lake Drive	Plattsmouth	Cass	68048	OWT
630	Frank Labedz acreage	2205 Platte River Drive	Bellevue	Sarpy	68123	PCS
638	Chad and Denise Heinert acreage	15252 South 57th Street	Papillion	Sarpy	68133	OWT
639	Kevin Swierczek acreage	15260 South 57th Street	Papillion	Sarpy	68133	OWT
640	Joe and Charlene Kurtz acreage	16208 South 56th Street	Papillion	Sarpy	68133	OWT
642	Faron Williamson acreage	15918 South 63rd Street	Bellevue	Sarpy	68133	OWT
649	David Nicholson acreage	3401 Mitchell Road	Bellevue	Sarpy	68123	OWT

AIR: Clean Air Act - Ambient air monitoring not associated with point sources, Emissions from point sources
IWM: Integrated Waste Management - Facilities for the disposal of municipal solid waste (landfills), Construction and demolition debris, fossil fuel ash, and industrial waste
LST: Leaking Storage Tank - Above or underground storage tanks of petroleum substances
LWC: Livestock Waste Control - Prevent the discharge of wastes from livestock operations to waters of the State
OWT: Onsite Wastewater Treatment - Any type of individual septic tank or domestic lagoons, Any facility that is not connected to a community wastewater treatment facility
PCS: NPDES Permits and Compliance - Discharge of monitored pollutants to waters of the State including wastewater treatment facilities for industrial or domestic wastewater, remediation wells, and discharge of cooling water. Construction sites with are 5 acres or larger
RA: Release Assessment - Notification of spills, leaks, and other environmental emergencies to provide technical assistance and regulatory oversight to those that pose an immediate hazard to either the environment or public health
RCR: Resource Conservation Recovery - Hazardous waste handlers
TL3: SARA Title III - Voluntary reporting of hazardous chemical storage
UIC: Underground Injection Control - Septic tanks that handle things other than domestic waste (shop drains) or that are large capacity. Injection or discharge of monitored fluids into a well, including non-domestic wastewater and open loop heat pumps

4.3 OIL AND GAS WELLS

Oil and gas well data obtained from NOGCC database for Platte South WHPA is shown in Figure 16. Oil and gas wells were not found within Platte South WHPA and only one well located near the WHPA was defined in the database as a dry hole. The dry hole designates a bore hole and not an operational oil and gas well.



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HDR

Platte South Wellhead Protection Area
Oil and Gas Wells (Dry Holes)

MUD Wellhead Protection Plans

DATE
May, 2013

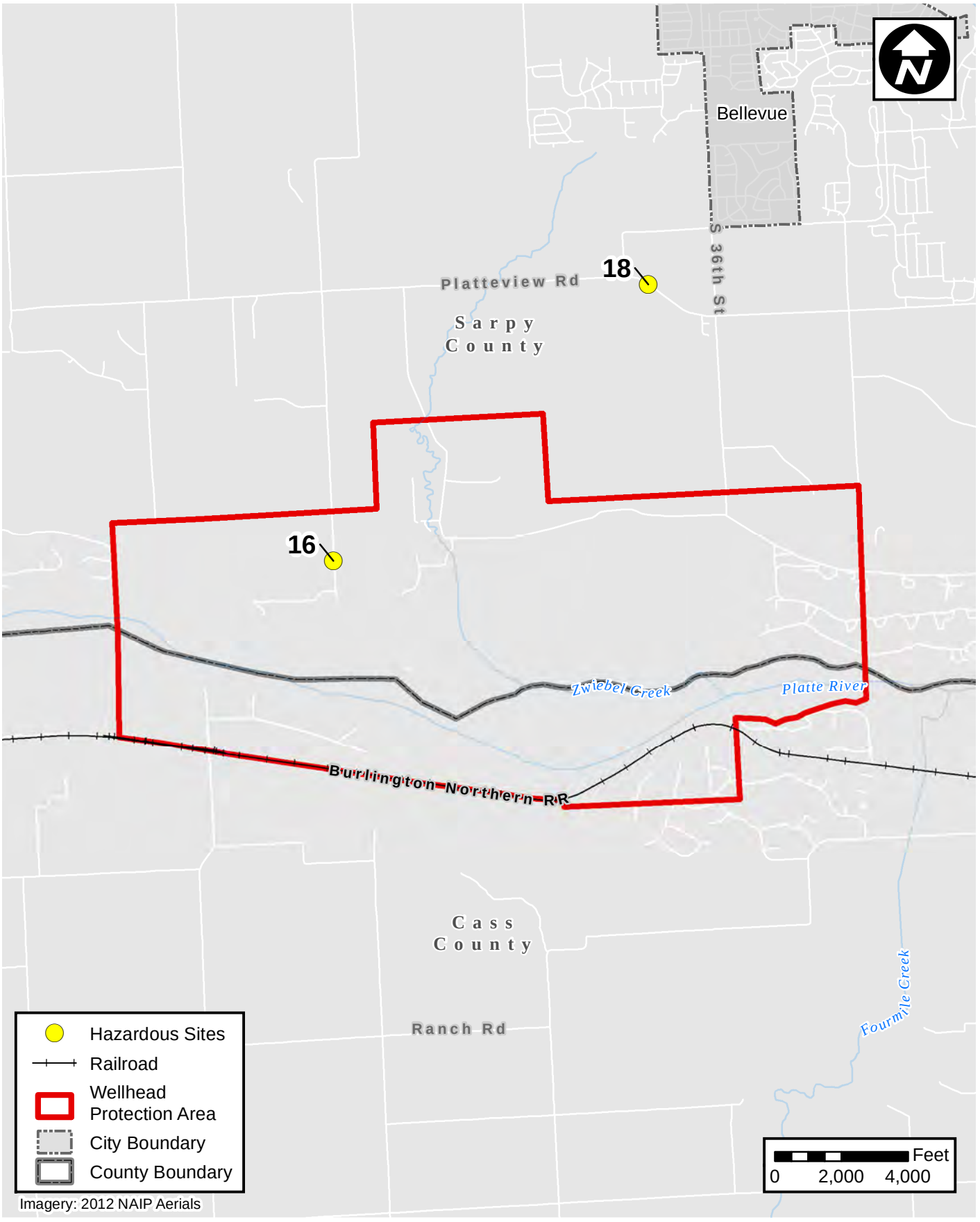
FIGURE
16

4.4 STATE FIRE MARSHAL REGISTERED HAZARDOUS SITES

Data obtained from the State Fire Marshal database for hazardous sites did not provide latitude and longitude coordinates, therefore the data plotted in GIS was conducted with use of the Geocoding function. This function plots the hazardous sites based on provided addresses of each facility found in the database. The plotted addresses may not be precisely located on the exact facility; therefore the points provided are estimations on the location of the actual facility. Only one State Fire Marshal site registered as a hazardous site was found in the Platte South WHPA. One other site, depicted in Figure 17, was located near the Platte South WHPA and both are described in Table 10.

TABLE 10: PLATTE SOUTH STATE FIRE MARSHAL HAZARDOUS SITES

Record Number	Facility Name	Address	City	State	ZIP Code
16	Girl Scouts of America - Camp Maha	17114 South 63rd Street	Papillion	NE	68133
18	Platteview Country Club	4215 Platteview Road	Bellevue	NE	68123



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HDR

Platte South Wellhead Protection Area
State Fire Marshal Hazardous Sites

MUD Wellhead Protection Plans

DATE
May, 2013

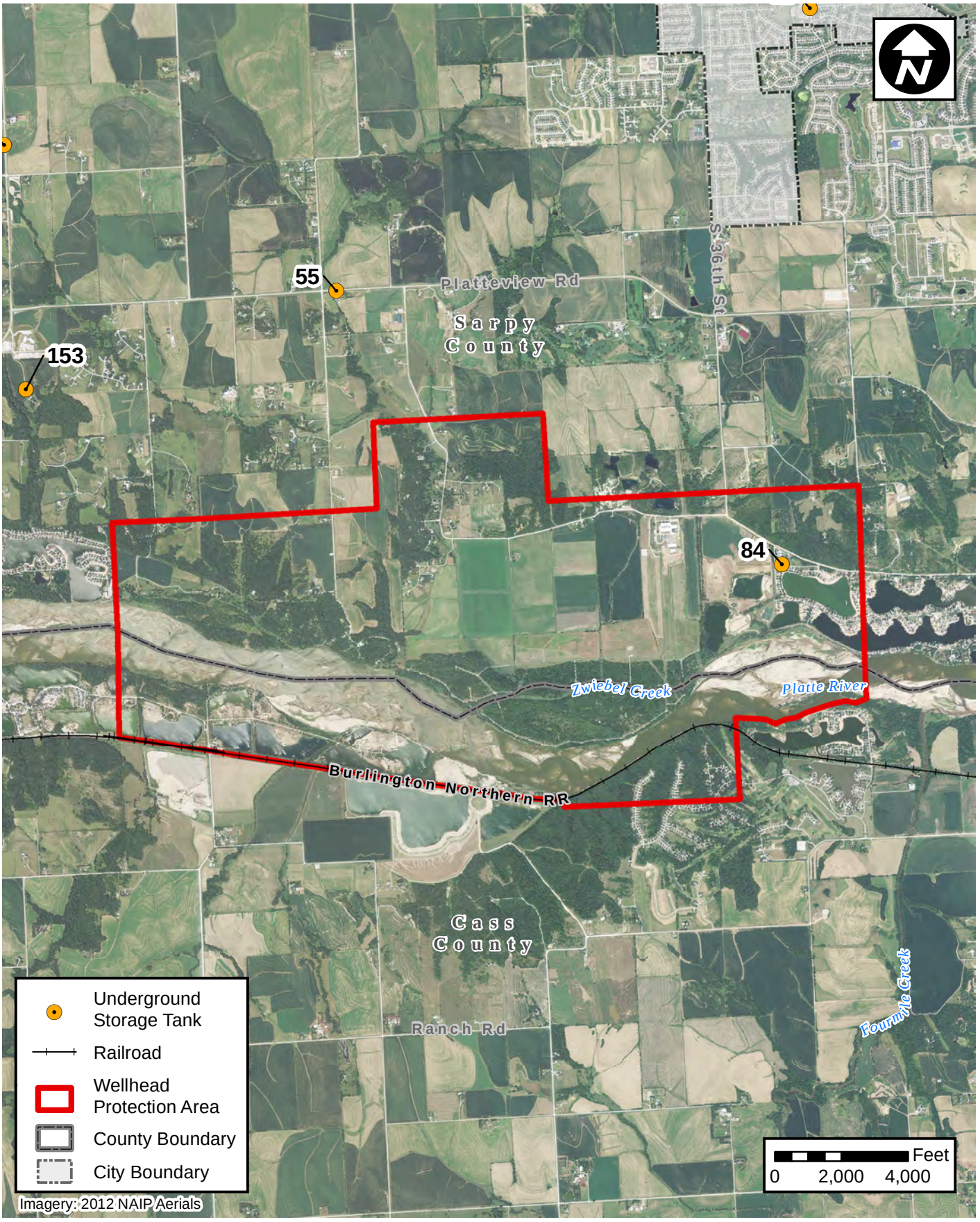
FIGURE
17

4.5 UNDERGROUND STORAGE TANKS

The database obtained from NDEQ for USTs was mapped for Platte South WHPA as shown in Figure 18. Data obtained for USTs did not provide latitude and longitude coordinates, therefore the data plotted in GIS was conducted with use of the Geocoding function. This function plots the USTs based on provided addresses of each UST found in the database. The plotted addresses may not be precisely located on the exact facility; therefore the points provided are estimations on the location of the actual USTs. One UST was found located within Platte South WHPA and two others were located to the north and south. All tanks plotted are described in Table 11.

TABLE 11: PLATTE SOUTH UNDERGROUND STORAGE TANKS

Record Number	Facility Name	Address	City	State	ZIP Code
55	Charles Kilker	6201 Platteview Road	Omaha	NE	68133
84	Chris Lake addition	3208 Crystal Drive	Bellevue	NE	68123
153	Sarpy County Highway Department	15100 South 84th Street	Papillion	NE	68046



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HDR

Platte South Wellhead Protection Area
Underground Storage Tanks

MUD Wellhead Protection Plans

DATE
May, 2013

FIGURE
18

4.6 SURFACE WATER QUALITY

The U.S. Geological Survey (USGS) has a stream gage located in the Platte River at Louisville, Nebraska (USGS 06805500). This gage has collected stream discharge data from June 1, 1953, to May 2, 2013. Collection of Nitrate data has been conducted at this gage from June 5, 2012, to May 2, 2013. Table 12 provides statistical data obtained from the gage for nitrates.

Another USGS stream flow gage with water quality data is located upstream of the Platte South WHPA at Leshara, Nebraska (06796500). Water quality data was collected at this location by USGS from 1994 to 2002. Comparing this data to the EPA Drinking Water Standards, all reported data regulated under the National Primary Drinking Water Standards were below maximum contaminant levels (MCLs).

TABLE 12: NITRATE LEVELS AT PLATTE RIVER GAGE AT LOUISVILLE

Nitrate plus Nitrite (mg/L as Nitrogen)				
USGS Gage	**Gage Number**	**Average**	**Maximum**	**Minimum**
Platte River at Louisville	6805500	0.849408	9.29	0

SECTION 5: MANAGEMENT STRATEGIES

A WHPP may not be successful unless local ordinances, county zoning, or voluntary activities within the WHPA are enacted. A management plan for the WHPA is designed to layout the framework for available options to help protect drinking water supplies. Some examples of management options include incentives to use agricultural BMPs and best management of the well field.

5.1 EXISTING WELL FIELD MANAGEMENT PRACTICES

Given the number of wells and the distribution of these wells, the well field can be managed to respond to a variety of different climatic and demand situations. How the well field is operated is impacted by a variety of factors, which include stream flow conditions and the quality of the source water.

As stated in Section 1, the WHPP was not developed in response to any single specific issue. However, there are several parameters that are monitored which could impact the operation of the well field, including: low streamflow levels, changes in source water quality associated with spring runoff (such as an increase in nitrate or atrazine), and nitrate in groundwater. The following section explains what procedures are in place to monitor for these concerns and what can be done to address these concerns in the future.

5.1.1 Monitoring Stream Flow Conditions

MUD monitors the stream flow conditions in the Platte River by reviewing the instantaneous data available at several gages that are upstream of the well field. MUD provides funding assistance to USGS to ensure that these stream gages continue to remain available. The gages that are monitored by MUD include:

- 06796500 Platte River near Leshara, Nebraska;
- 06796550 Platte River near Venice, Nebraska;
- 06801000 Platte River near Ashland, Nebraska; and
- 06805500. Platte River near Louisville, Nebraska.

The stream flow conditions observed at these gage locations have limited influence on the operation of the well field.

5.1.2 Water Quality Monitoring

The quality of the source water entering the water treatment facility is monitored by testing the blended raw water as it enters the treatment facility. This monitoring is performed by MUD staff using an Enzyme-Linked Immunosorbent Assay (ELISA) testing method. The specific ELISA test method used by MUD is the triazine metabolite, which is an immunoassay for the quantitative and sensitive detection of diaminochlorotriazine and other triazine herbicide metabolites (of which atrazine is a member). The test is suitable for the quantitative and qualitative detection of these triazine metabolites in water samples.

Although the ELISA tests are triazine specific rather than atrazine specific, the ELISA test is used by MUD as a rapid screen test to determine if triazines are present in the raw water. During the spring planting season, which typically begins in April, MUD collects two samples per week from both the raw water intake and the finished water exiting the treatment facility. This sampling is a way to monitor the impact (if any) of the water quality of the Platte River and Zwiebel Creek on the source water in the wells.

The results of the tests are used to adjust the pumping distribution in the well field. For example, if triazine is detected in the raw water, pumping can be shifted from wells that are close to the river to wells that are further inland.

5.1.3 Well Field Operation

During times of average stream flow and river water quality conditions, the base well field production will typically be provided by the wells that are located closest to the river. This operational practice minimizes the drawdown induced in the aquifer as a majority of the water is derived from river bank filtration. The benefit to using this as the BMP of the well field is that it minimizes the water pumped from aquifer storage, leaving this water available for use during periods when the water quality in the river is less desirable.

During periods of undesirable water quality in the Platte River, the well field can be managed by shutting off wells closest to the river and shift to pumping from wells that are located farther from the Platte River; or MUD may completely shut down the well field and shift the water supply production to either or both the Platte West or Florence water treatment facilities.

5.1.4 Well Field Sampling

As part of its groundwater management plan, the Lower Platte South Natural Resource District (LPS NRD) collects water quality samples from Community Water System Protection Areas (CWSPas) located within LPS NRD boundaries, which includes the Platte South Water Treatment facility. LPS NRD staff have sampled the raw water from one well in the well field (Well 35) annually since 1994. The water quality samples are analyzed for a variety of parameters, including nitrate-nitrogen, major ions, dissolved metals, pH, specific conductance, hardness, alkalinity, total dissolved solids, radon, and pesticides.

These data are monitored and evaluated by LPSNRD and by MUD to determine if there are any changes in the source water of the well field. Sample results indicate that the water quality of this well has not been impacted by nitrate results have typically been non-detect and no pesticides have been detected during the 18-year monitoring period. The most recent (2012) water quality results indicated that nitrate and all pesticides were non-detect. The water quality of this well will continue to be monitored by LPSNRD on an annual basis.

5.2 EXISTING LAND USE CONTROLS

The communities and counties located within the Platte South WHPA control land uses with their adopted Comprehensive Plans and Zoning Ordinances. A list of the existing zoning controls in place within the Platte South WHPA is presented in Appendix A. No well head protection ordinances exist within the Platte South WHPA.

MUD cannot enforce or implement zoning. However, through partnerships with the local jurisdictions, an inter-local agreement can assist MUD and the jurisdictions with the enactment of a wellhead protection overlay zone or adjust current zoning to allow for oversight of activities in portions of the zoning jurisdictions of the communities and counties. An example of a well head protection ordinance is provided in Appendix B.

5.2.1 Natural Resource District Groundwater Management

The area of influence for the MUD Platte South well field is within the LPS NRD and the Papio-Missouri River (Papio) NRD's jurisdictions. These NRDs have Groundwater Management Plans, which outline specific steps necessary to protect and enhance the resource.

The LPS NRD administers many programs and activities in response to its plan and maintains a detailed set of Ground Water Rules and Regulations. A Ground Water Annual Review is issued each March for the preceding year.

The permitting of wells is a way the LPS NRD protects ground water and existing ground water users. A proposed well's size and location determine the procedure a property owner needs to follow before approval of the well is considered.

The LPS NRD also regularly measures and samples selected wells throughout the District and has the authority to respond proactively when declining ground water quality or quantity in an area reaches certain established trigger levels. A phased process is then administered by the NRD to try and improve water quality or quantity.

The LPS NRD's Ground Water Management Plan contains detailed information about the district, its geology, needs related to ground water, and programs and plans the NRD has in reaction to those needs. It was approved by the State of Nebraska in 1996. To obtain a copy of the Ground Water Management Plan, contact the LPSNRD.

The Papio-Missouri River NRDs Groundwater Management Plan focuses on maintaining the quantity and quality of ground-water in our area. This task includes:

- Testing the water of 100 wells for nitrates every five years
- Establishing management areas if the ground-water reservoir life goal can't be met
- Continuing to administer permits for chemigation (application of agricultural chemicals through irrigation)
- And evaluating the need of rural landowners for a dependable drinking water supply.

5.3 POTENTIAL FUTURE MANAGEMENT STRATEGIES

MUD can establish a comprehensive management strategy to layout the framework for on-the-ground actions to protect its drinking water source over the next 10 to 20 years. The ultimate goal of the management practice recommendations is to provide the community with the best possible management strategies, which are both implementable and protective of the water supply for the community. It is important to note that the management strategies outlined below, while endorsed by NDEQ, were developed based on the potential pollution sources identified through the potential contaminant source inventory, land use evaluation, and comments gathered through the community planning process.

Educational activities and voluntary approaches should be considered the core of the recommended management strategies for MUD's WHPP because these can be implemented now. Furthermore, even though MUD is owner and operator of the community water system, it does not have jurisdiction over all of the land identified in the WHPAs. Consequently, educational activities, inter-local agreements, and voluntary approaches offer the greatest potential for more immediate and successful plan implementation.

Management strategies outlined below are general in nature. Specific strategies should be developed on a case-by-case basis through working with the Wellhead Advisory Committee, the community, and the landowners.

5.3.1 Public Education

MUD has provided education opportunities in the past and will continue to provide opportunities to educate all ages of citizens and property owners, in and around the WHPA, about the importance of source water protection. Public education efforts may include, but are not limited to:

- Focus groups

- Community workshops
- Press releases
- Distributing brochures
- School poster contests
- News/information articles
- Utility bill stuffers

Education opportunities could be on a variety of topics, such as:

- Proper animal waste handling
- Aquifer and groundwater basics
- Private well and lagoon management
- Urban and rural BMP practices

5.3.2 Wellhead Protection Area Signs

By approving the WHPP, MUD can post WHPA signs in the affected areas to alert property owners to the issues. These signs can be supplemented with information regarding the existing land use regulations and directing property owners to contact MUD.

5.3.3 Conservation Reserve Program

Agricultural producers with farmed land in a WHPA are eligible for increased payment amounts for enrolling land in the Conservation Reserve Program (CRP) when located in a WHPA. The local NRD and Natural Resources Conservation Service (NRCS) office will assist in this.

5.3.4 Best Management Practices

BMPs offer an effective prevention strategy or solution to a potential water quality challenge. Selection of the most appropriate BMP or combination of BMPs under a voluntary approach is each individual's decision.

Concerns have been raised about possible issues with nitrate levels in surface water and groundwater during certain periods of the year. Implementations of agricultural BMPs can help reduce potential contamination to groundwater aquifers and reduce runoff into surface waters through more efficient use of fertilizers. LPSNRD and others use incentives to landowners, operators, and custom applicators to encourage proper and controlled application of nutrients to reduce potential contamination, including offering assistance with low cost seeds for winter crops to address spring fertilization runoff. Also, a land use assessment program is offered through NDEQ to understand if changing irrigation practices may help reduce nitrate problems. Some other programs include the following:

- **Spring nitrogen application program –** Apply nitrogen fertilizer in the spring instead of the fall. The timing of fertilizer application is intended to reduce pollution of groundwater through accurate use and uniform applications. The cost-share program is available to any persons who apply nitrogen to lands in any CWSPA within LPSNRD.
- **Fertilizer meter program –** To encourage and demonstrate the use of a fertilizer meter and manifold to reduce pollution of water and soil through accurate use and uniform application of nutrients.

- **Soil sampling program –** To encourage sampling of soils to analyze for nutrient content. This assists in determining the application rate needed while reducing the potential for water and soil pollution.
- **Irrigation management assistance program –** Conserve water by improving irrigation water use efficiency (for example, pivot nozzle, conversion, and water sensors).
- **Water meter and water meter maintenance programs –** Encourage the use and maintenance of water meters to improve irrigation water use efficiency.
- **Well decommissioning –** If not properly sealed at the surface, water wells can become a conduit between surface water runoff and ground water. Financial assistance programs to ensure that wells are properly decommissioned are available through LPSNRD. There may also be assistance in the future through MUD. Since LPSNRD's well decommissioning program began in October 1990, a total of 919 wells within MUD have been decommissioned (as of 2012).
- **Urban BMP incentives** –MUD, LPSNRD, and others could encourage residents to utilize incentives to adopt BMPs in the urban setting such as: use of native plants in lawns and landscapes, recycling, mulching lawn clippings, rain barrels and rain gardens, and household hazardous waste collection.

SECTION 6: EMERGENCY AND CONTINGENY PLANS

As described in Section 2, Omaha's MUD water system now includes three water treatment facilities: Florence Water Treatment facility, Platte South Water Treatment facility, and Platte West Water Treatment facility (see Figure 1). In total, these three facilities can produce up to 333 mgd of treated water supply to meet peak day demands. The source water for these three treatment facilities is approximately split in half between the Missouri and Platte rivers, minimizing the threat of a loss of supply should the supply from one river source be temporarily unavailable. The placement of the three water treatment facilities and their alternative water supply sources create a triangle of reliability for the District's water supply. The diversity of MUD's source of water supply provides a significant advantage to the District in its ability to use an alternative supply source in the event of an emergency in any one of the sources. This concept of the triangle of reliability, with varied sources of supply, is key in MUD's emergency and contingency planning. A description of those plans is provided below.

6.1 EMERGENCY PLANS

MUD's water operations emergency plan, including emergency contact sheets, was last updated in June 2012. The cover page for the emergency plan is located in Appendix C. Because of the sensitive security information in the emergency plan, a full copy of the plan is not included. In case of a water operations emergency at the Platte South Water Treatment facility, the proper personnel (as outlined in the emergency plan) will be contacted, an assessment of the problem will be conducted, and an isolation of the damaged facility or system will occur if necessary. Inspection of the site will determine the next step and what decisions may need to be made according to the type of problem.

6.2 SPILLS

In the event of a spill of hazardous material into the Missouri River or Platte River above the District intakes, the spill procedure, located in Appendix D, should be followed. In general, one of the following agencies may notify the District:

- Omaha Public Power District
- U.S. Coast Guard
- EPA
- U.S. Army Corps of Engineers (USACE)
- Nebraska State Health Department
- Nebraska Game and Parks Commission
- NDEQ
- Iowa Department of Natural Resources

The agencies will notify the Districts Communications Clerk, who will record the following information:

1. The type and quantity of material spilled, if known.
2. The location of the spill.
3. The time of the spill, if known.
4. The name, phone number, and agency of the person calling.

The District Communications Clerk will then immediately notify the facility Superintendent and the Vice President of Water Operations. In the absence of the Vice President of Water Operations, the District Communications Clerk will notify the Water Supply Engineer or other designated person in charge of

Water Operations. The Vice President of Water Operations, or designee, will notify the President and the Senior Vice President of Operations, if operation is affected.

Subsequently, the facility Superintendent, Vice President of Water Operations, or designee, will decide appropriate response. More information about the spill may be needed. Consultation with Water Quality or others may be needed. Actions may include observation of river conditions and raw water quality, additional treatment or temporarily discontinuing water intake. The Vice President of Water Operations will be responsible for appropriate communication regarding the situation and response.

The Vice President of Water Operations or the District Communications Clerk will notify the appropriate water treatment facility supervisor, the Director of Water Quality, the Safety and Security Office, and/or the Senior Communication Specialist.

6.3 OPERATIONS EMERGENCY PLANS

If a major emergency or disaster would cause curtailment of water from the facility, the duty operator will notify the facility Superintendent, the Vice President of Water Operations, and Systems Control. The Vice President of Water Operations will evaluate the problem and notify the Senior Vice President of Operations (if necessary). The Superintendent of the Platte South Water Treatment facility and/or foreman will report to the facility (if necessary).

A command room will be set up in the control room. Additional help will be called in if phones are in service. Mobile radios will also be used to relay phone numbers and messages to people needed to report to work. Additional help could come from Water Distribution, Engineering, Platte West, Florence, the Maintenance Division, or the Construction Division, as needed.

6.3.1 Assessment of Problem

The Superintendent of the Platte South Water Treatment facility shall call in additional supervisors and operating personnel (if phones are available) to determine the extent of the damage. The personnel should be sent out in teams to evaluate the damage and report back to the command center. The command center leader (Superintendent of Platte South Water Treatment facility or Vice President of Water Operations) will report to the following to District Management:

1. Nature and extent of damage
2. Estimated time to repair
3. Pumping capacity available
4. Need to curtail water pumpage
5. Support personnel and other resources needed for repair and clean-up
6. Applicability of the District's Water Conservation Plan

6.3.2 Isolation of Damaged Facilities

The Superintendent of the Platte South Water Treatment facility, Vice President of Water Operations, or other designated management, shall direct the isolation of affected area. The Superintendent of Water Distribution shall make personnel available for valve operation if needed. When affected areas have been isolated, the Superintendent of the Platte South Water Treatment facility, Vice President of Water Operations, Engineering, and possibly the Superintendent of Water Distribution, shall determine the type of repairs needed and provide people needed to complete repairs, etc. The Director of Water Quality should also be informed of the type of problems, and supply personnel for bacteriological testing, if it is determined to be necessary.

The command center personnel should keep management informed. The reports received by management from the command center should enable the following decisions to be made:

1. The need to curtail production
2. Notifying appropriate regulatory agencies
3. The need to isolate water in storage
4. News releases to the public

6.3.3 Chlorine or Ammonia Leak Emergency

A chlorine or ammonia leak emergency will be handled in accordance with the Chlorine and Ammonia Manual.

6.3.4 Flood Emergency

A flooding emergency within and around the Platte South well field will be handed in accordance with the Platte South Flood Emergency Response Plan in the Emergency Notification Procedures manual.

6.4 SUPERVISORY CONTROL AND DATA ACQUISITION EMERGENCY PLANS

If the emergency involves the Supervisory Control and Data Acquisition (SCADA) system, tele-communications or other circumstance where the operating center is usable for voice communications, the systems control area will be the command center.

If the operating center is unusable, the command center will be located at the Florence Water Treatment facility or other, suitable location. (It is assumed that if the operating center is unavailable, the dispatchers and others will be using the Platte West Water Treatment facility or the construction center.)

The Controller, Water Supply Engineer, or Vice President of Water Operations will be the coordinator.

6.4.1 Assessment of Problem

The coordinator will assess the problem and report to District Management the following:

1. Nature and extent of the problem
2. Estimated time to repair
3. Personnel and other resources needed for continued operation and repair
4. Need to notify the public of the problem
5. Need to notify appropriate regulatory agencies
6. Need for isolating water in storage

6.4.2 Emergency Operations

The coordinator will determine the need for manual operation of facilities and call out personnel such as off-duty operating personnel, electricians, instrument technicians, and others to manually operate key facilities. Repump stations should be put on automatic operation to the extent possible. The controllers will initiate manual recordkeeping of the system operation.

If the emergency operation is extended, dedicated telephone lines and a backup SCADA system will be installed at the command center. Note: A backup systems control center at Platte West Water Treatment facility will be operational in the future.

6.5 STANDBY CAPACITY DURING AREA-WIDE LOSS OF ELECTRICITY

The maximum facility standby production capacities are 60 mgd at Florence Water Treatment facility and 30 mgd each at Platte West and Platte South water treatment facilities, for a total of 120 mgd. With the largest unit (one Florence low service generator, reducing Florence production to 35 mgd) out of service, the total firm standby production capacity is 95 mgd.

MUD has 18 natural gas engine driven pumps with a total pumping capacity of 341 mgd.

TABLE 13: METROPOLITAN UTILITIES DISTRICT NATURAL GAS ENGINE DRIVEN PUMPS

Station	Name	Capacity
Walnut Hill	Pump #4	24 mgd
Turner Boulevard	Pump #2	25 mgd
132nd and Harney	Pump #3	10 mgd
132nd and Harney	Pump #4	10 mgd
36th and Edna	Pump #3	10 mgd
78th and Harrison	Pump #2	14 mgd
Rainwood	Pump #3	20 mgd
Skyline	Pump #Z2-3	25 mgd
Skyline	Pump #Z2-5	25 mgd
Skyline	Pump #Z2-6	25 mgd
Skyline	Pump #Z3-1	9.5 mgd
Skyline	Pump #Z3-3	9.5 mgd
Maple Road	Pump #3	6 mgd
Maple Road	Pump #4	8 mgd
Platte South	Pump #1	20 mgd
Platte South	Pump #3	20 mgd
Florence	Pump #5-7	60 mgd
Platte West	Generators	20 mgd

6.6 CONTINGENCY PLANS

MUD is fortunate to be located near two reliable sources of water; the Missouri and Platte rivers, and gets about one-half of its production total from each river. The Florence Water Treatment facility, located on the banks of the Missouri River, has a capacity of 158 mgd. This is more than enough water to meet the

customers' average daily usage of 90 to 100 mgd. USACE regulates the Missouri River flow. The minimum sustained flow in the river is 8,000 cfs. At this rate, an amount of water equivalent to the 158 mgd facility capacity flows by MUD's intakes every 44 minutes. The Platte South Water Treatment facility is located in Sarpy County on the Platte River. While the Platte River is more susceptible to low flows caused by a drought, as long as there is some flow in the river, the facility can produce 60 mgd capacity. The Platte West Water Treatment facility is located in Douglas County with well fields along the Platte River in both Douglas and Saunders counties. The facility can produce 100 mgd capacity. The triangle of reliability created with the three MUD water treatment facilities relieves the overall reliance of supply water from only one source by allowing other water treatment facilities sources to supply water demands to customers if needed.

The chance of experiencing a long-term water shortage in MUD's water sources is remote, as the Platte and Missouri rivers are reliable long-term supplies. However, a possibility does exist for short-term water shortages. These could be drought-related, caused by limited facility or distribution system failures, or due to any number of emergency situations. As previously described in the Emergency Plan, MUD's contingency for most short-term water shortages is to shift the water production to the facilities that are not impacted. For example, if a long drought impacts the Platte River, more water production will be produced at the Florence Water Treatment facility.

If water demands exceed available production for any reason, it may be necessary to implement water use restrictions as a contingency. The water conservation contingency plan relies on public education, system conservation measures (such as leak detection and accurate metering), and public alerts.

Some examples of pieces of the Public Education Plan include:

- Wise water use messages on customer bills and wise water use tips in customer newsletters.
- Wise water use messages on the on-hold customer voice message system.
- Sponsor a wise water use flower garden at the Village Pointe Shopping Center in conjunction with the UNL Extension Office and Master Gardeners.
- A Water Conservation section on MUD's website at www.mudomaha.com, which also includes wise water use tips, charts, statistics, and links to helpful resources.
- "Make Every Drop Count" rain gauges and moisture sensors are distributed to customers at community events.
- New customer booklet section with an extensive list of water conservation tips.

The water alert system part of the contingency plan is grouped into four levels, each imposing more restrictions than the last. The responsibility for calling for these alerts will be with the President and will be based on consultations with the Senior Vice President of Operations and with the Vice President of Water Operations. Once the decision has been made, it will be the responsibility of the Senior Vice President, Chief Customer Officer, and the Director of Corporate Communication to make the appropriate notification to the news media. The Water Conservation and Alert Plan is included in Appendix E, but the four levels are listed below.

- Level 1 Water Alert (Voluntary A Alternate Day Watering)
- Level 2 Water Alert (Voluntary No-Watering Days)
- Level 3 Water Alert (Mandatory watering restrictions)
- Level 4 Water Emergency (All non-sanitary, non-essential use of water must be discontinued)

6.7 LONG-TERM PLANNING

With the most recent addition of the Platte West Water Treatment facility in 2008, a reliable supply of high quality drinking water can be provided to the Greater Omaha Area. The Platte West Water Treatment facility added 100 mgd of capacity to the already existing 234 mgd capacity from the Florence and Platte South water treatment facilities and ensures that MUD will be able to meet the maximum daily water demand beyond the year 2030. The completion of the Platte West well field provided an alternative source of supply water to enhance system reliability. It decreases the overall reliance on the water supplied from a surface water intake located in the Missouri River to the Florence Water Treatment facility and the Platte River supply to the Platte South Water Treatment facility. These three treatment facilities form a triangle of reliability to provide drinking water to the area. At this time, no additional water supply sources are required to meet the needs within the MUD service area beyond the year 2030.

SECTION 7: PUBLIC EDUCATION AND NOTIFICATION

During the establishment of the Platte South WHPP, MUD identified key stakeholders that would be interested in the plan and established an Advisory Committee to provide input into the plan development. After two Advisory Committee meetings, MUD made the plan publicly available and collected comments and responded to questions from the general public about the plan. Appendix F contains additional Public Education and Notification materials.

7.1 METROPOLITAN UTILITIES DISTRICT PLATTE SOUTH WELLHEAD ADVISORY COMMITTEE

A fifteen member Advisory Committee was established at the beginning of the plan development. Members of the Advisory Committee include representatives of City of Bellevue, Cass County, Leisure Village, Lower Platte River Corridor Alliance, LPSNRD, Lyman-Richey Corporation, Papio-Missouri River NRD, Sarpy County, and local property owners. The Advisory Committee was responsible for providing key input into the plan through their attendance and discussions at the two Advisory Committee meetings. Below is a brief summary of the two Advisory Committee meetings and a list of the members.

TABLE 14: METROPOLITAN UTILITIES DISTRICT PLATTE SOUTH WELLHEAD ADVISORY COMMITTEE

Title	First Name	Last Name	Company Name
Ms.	Tammi	Palm	Bellevue Planning Department
Mr.	Michael	Jensen	Cass County Zoning
Mr.	Frank	Krejci	Leisure Village
Mr.	Bob	Krejci	Leisure Village
Ms.	Meghan	Sittler	Lower Platte River Corridor Alliance
Mr.	Dick	Ehrman	Lower Platte South NRD
Mr.	Glenn	Johnson	Lower Platte South NRD
Ms.	Carol	White	Lyman-Richey Corporation
Mr.	Bob	Roos	Lyman-Richey Corporation
Mr.	John	Winkler	Papio-Missouri River NRD
Mr.	Bruce	Fountain	Sarpy County Planning
Ms.	Donna	Lynam	Sarpy County Planning
Mr.	Lou	Riedmann	SID101 Chris/Hansen Lake
Mr.	Doug	Hill	SID101 Chris/Hansen Lake
Ms.	Inez	Boyd	Landowner

7.1.1 Advisory Committee Meeting 1: April 18, 2013

The first Advisory Committee meeting was held to share the purpose and process of the WHPP. Project staff provided presentation that summarized the information that was currently available in terms of groundwater conditions and potential contaminants within the WHPA. Advisory Committee members were asked for their input in helping identify any additional locations with potential groundwater contaminants.

Advisory Committee members were invited to attend the second meeting where the draft WHPP was presented and discussed.

7.1.2 Advisory Committee Meeting 2: June 6, 2013

The second Advisory Committee meeting was held to present a draft version of the WHPP. Project staff provided a presentation that summarized the WHPP and requested input and formal comments from the Advisory Committee members. The comment period was held open until July 10, 2013. The comments provided by the Advisory Committee members were included in this document.

7.2 PUBLIC COMMENT PERIOD AND PUBLIC BOARD MEETING

Public comment on the WHPP was sought as part of the plan development. The plan was advertised on August 4, 2013, in a Sunday printing of the Omaha World-Herald. Communication regarding the availability of the plan was improved by including notification of the plan with MUD's July utility bill.

7.2.1 Public Comment Period: August 5, 2013

The plan was made available to the public on August 5, 2013 as an online document found on MUD's website.

(Placeholder for future summary of comments received)

7.2.2 MUD Board Meeting – Public Comment Received: September 4, 2013

The public was invited to attend a regularly scheduled MUD Board meeting on September 4, 2013 to hear discussion of the plan, ask questions, and provide comments.

(Placeholder for future summary of discussion and comments made))

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APPENDIX A

Existing Zoning Controls

EXISTING LAND USE CONTROLS

Within the MUD's Platte South Wellhead Protection Area (as delineated by NDEQ) the Counties of Cass and Sarpy, along with the City of Bellevue have zoning controls within their adopted Comprehensive Plans and Zoning Ordinances. A summary of those zoning controls is presented below.

CASS COUNTY

AG-1: Agricultural District

A. Intent: It is the intent of this zoning district to conserve and otherwise preserve the prevailing rural agricultural farming characteristics, values, and resources. The intent is to encourage and to promote in every practicable manner, the interest of agriculture, the facilitation of farm production, and to encourage soil and water conservation.

B. Permitted Principal Uses.

1. Single family dwellings restricted to the living facilities for the family, relatives, or persons owning, operating, and/or employed thereon.

2. Single-family dwellings

3. General farms primarily crops and pasture land

4. Agricultural farm production crops: field crops, cash grain crops, vegetables, fruits, tree nuts

5. Agricultural farm production livestock: dairy products, cattle, hog, sheep, goat, horse, rabbit, poultry, egg production, and other animal husbandry specialties provided there are less than two hundred fifty animal units. Operations less than two hundred fifty animal units are considered a farm and are permitted by right provided other requirements in this district are met.

6. Horticultural farm specialties, apiaries, mushroom barns

7. Farm buildings and structures used for farm equipment, machinery, grain, animals and poultry

8. Farm irrigation facilities

9. Railroads and public thoroughfares

10. Roadside stands offering for sale farm products produced on the farm

11. Public overhead and underground utilities distribution systems and plants

12. Public parks, forest preserves, and conservation areas

13. Public facilities, fire protection, police protection, fairgrounds, libraries

14. Historical sites or monuments

15. Agricultural farm services: soil preparation, veterinary, animal services

16. Forestry

C. Permitted Conditional Uses: A Conditional Use Permit shall be required for the following conditional or special uses:

1. Livestock Feeding Operations, subject to the license requirements, waste disposal requirements and recommendations of the State of Nebraska and the Land Use specifications in the Cass County Comprehensive Plan.

The following minimum sanitation and odor practices, and those imposed by the Planning Commission and/or County Board of Commissioners in considering the health, safety, and general welfare of the public, including such items as property values, dust, lighting, disposal of waste and dead livestock. The Conditional Use Permit shall be approved after public notice has been given and public hearing conducted as required by law.

a. Livestock Feeding Operations (LFO) will be classified in one of four levels according to total number of animal units (A.U.) in the operation at any one time. Levels will include 251-500 animal units; 501-1,000 animal units; 1,001-5,000 animal units; and 5,001+ animal units. LFOs having more than one type feeding operation at one location shall be categorized according to the operation which constitutes the majority of the total operation.

NOTE: Livestock Operations of 250 A.U. and under are considered a farm as defined in these Regulations and do not require a Conditional Use Permit provided the Animal Unit ratios as defined in Farming are met.

All existing LFOs that expand within their designated level, as outlined below, shall not require a conditional use permit. All new LFOs and those expanding to the next level shall require a Conditional Use Permit and shall be located no less than at a distance from non-farm residences or other residences not on an owner's property in any affected Zoning District as hereafter described:

(1) LFO having 251 to 500 animal units shall locate 1,320 feet from any non-farm residence or other residence not on the owner's property.

(2) LFOs having 501 to 1,000 animal units shall locate 1,980 feet from any non-farm residence or other residence not on the owner's property.

(3) LFOs having 1,001-5,000 animal units shall locate 2,640 feet from any non-farm

SARPY COUNTY ZONING

SECTION 9 – AG - AGRICULTURAL FARMING DISTRICT (20 acres)

The **intent and purpose** of this district is for the conservation and preservation of the agriculture areas of the County and to retain its economic asset to the County.

9.1 **PRINCIPAL PERMITTED USES**

The following principal uses are permitted in the Agricultural District:

9.1.1 Agricultural, horticultural, viniculture, aquaculture, ranching and the usual agricultural buildings and structures associated with such uses.

9.1.2 Farm dwellings for the owners and their families, tenants, and employees.

9.1.3 Feeding and raising of livestock where a portion of the feed is raised and the feeding and raising is in the normal operation of an agricultural use.

9.1.4 Public utility main transmission lines or pipelines including substations, distribution centers, regulator stations, pumping stations storage, equipment buildings towers, or similar public service uses.

9.1.5 Public parks and recreation areas, playgrounds, forests and conservation areas. Private recreation areas and facilities, including lakes and ponds.

9.1.6 Personal use of Recreational Vehicles.

9.1.7 Religious facilities, including residences for religious leaders and teachers.

9.1.8 Roadside stands offering for sale agricultural products produced on the premises.

9.1.9 Single Family Dwellings

9.2 **PERMITTED SPECIAL USES**

The following special uses are permitted in the Agriculture Farming District with the issuance of a special use permit:

9.2.1 Automobile wrecking and junk yards provided the yards are at least 500 feet from a State or U.S. designated highway and screened by a wall at least 50 percent solid or uniformly painted solid fence not less than 6 feet in height with deciduous evergreen trees and large shrubs to provide a landscape screen at least 10 feet high.

9.2.2 Commercial feed lots for cattle, swine, poultry facilities, mink, fox, chinchilla, or similar farms.

9.2.3 Commercial recreational areas and camping areas including fishing lakes, gun clubs, rifle ranges, trap shoots, and similar uses.

9.2.4 Commercial fertilizer trailer tank farms.

9.2.5 Construction and demolition waste disposal sites.

9.2.6 Country clubs, golf courses, tennis clubs, and swimming clubs.

9.2.7 Extraction and processing of rock, gravel or sand, clay, and dirt.

9.2.8 Mobile homes with intermittent occupancy for recreational use only.

9.2.9 Nursing homes, cemeteries, and charitable institutions.

9.2.10 Open and enclosed storage of recreational vehicle and trailers; when recreational vehicles are stored in the open, the recreational vehicles must be operable.

9.2.11 Other agricultural wastes disposal and storage sites.

9.2.12 Private and commercial kennels and facilities for raising, breeding, and boarding of dogs and other small domestic animals, provided all buildings and facilities are at least 100 feet from any property line and 300 feet from any residential zoning districts.

9.2.13 Private small non-commercial air landing fields or strips.

9.2.14 Private schools, colleges and universities.

9.2.15 Publicly-owned and operated buildings and facilities such as community centers, auditoriums, libraries, museums, and privately owned non-commercial museums and historic areas.

9.2.16 Radio, television, and communication towers and transmitters

9.2.17 Sanitary sewage treatment facilities.

9.2.18 Sanitary landfills.

9.2.19 Seasonal dwellings.

9.2.20 Sludge disposal and storage sites.

9.2.21 In-home Child Care Facility

9.2.22 Wind Energy Generation Systems
9.2.23 Use of recreational vehicles in a commercial recreational or camping area
9.2.24 Home Occupations I (Major).

CITY OF BELLEVUE

Section 5.05 AG Agricultural District

5.05.01 Intent: The Agricultural District is established for the purpose of preserving agricultural resources within the extraterritorial jurisdiction of Bellevue and is unlikely to be compatible with adjacent urban growth within the planning period. However, it is not intended for commercial feedlot operations for livestock or poultry because these uses are 1) not in the identified growth areas for the community, and 2) accommodating very low density residential development, the district is designed to limit urban sprawl.

5.05.02 Permitted Uses:

The following principal uses are permitted in the **AG District**.

1. Farming, pasturing, animal husbandry, orchards, greenhouses and nurseries, including the sale of products rose on the premises, subject to rules and regulations of the Board of Health and NDEQ, provided that no livestock feedlot or yard for more than 25 animals shall be established.

2. Ranch and farm dwellings for the owners and their families, tenants, and employees.

3. Single family dwellings.

4. Bed & Breakfasts.

5. Kennels, stables and riding academies.

6. Public overhead and underground local distribution utilities.

7. Public parks and recreation areas, playgrounds and conservation areas including flood control facilities operated by the City of Bellevue or other political subdivision.

8. Public services and publicly owned and operated facilities, including utilities, but not including general offices, material yards or repair shops. Such facilities shall observe yard space rules, but shall not be required to provide the full lot size and lot width requirement.

9. Railroads, not including sidings, switching, terminal facilities, freight yards, service repair, or administrative facilities.

10. Personal use of recreational vehicles, limited to one recreational vehicle per lot and provided that use of recreational vehicles located within the 100-year floodplain shall be subject to the regulations of Section 5.30 of this ordinance.

5.05.03 Conditional Uses:

The following uses are subject to any conditions listed in this Ordinance and are subject to other conditions relating to the placement of said use on a specific tract of ground in the **AG district** as recommended by the Planning Commission and approved by the City Council.

1. Campgrounds.

2. Cemeteries, provided all structures are located at least 100 feet from all property lines.

3. Commercial mines, quarries and sand and gravel pits.

4. Commercial/Utility grade wind energy systems, subject to Section 8.10.

5. Construction batch plants that are temporary in nature.

6. Family Child Care Home II which comply with Nebraska State Statutes.

7. Governmental services – administrative services.

8. Governmental services – maintenance and service facilities.

9. Hospital, nursing homes, assisted living, and convalescent facilities.

10. Indoor/Outdoor Recreation facilities.

11. Private recreation areas and facilities including country clubs and golf courses (but not miniature golf) on at least five acres, and swimming pools.

12. Public and quasi-public buildings and structures and uses of an administrative, educational, religious, cultural or public service type including colleges.

13. Radio, television and wireless communication towers and transmitters, as per Section 8.05.

14. Recreational camps operated by public, charitable or religious organizations.

15. Religious institutions such as churches, synagogues, chapels, and similar places of religious worship and instruction.

16. Wastewater treatment facilities.

17. Winery, including subordinate use of microbrewery.

5.05.04 Permitted Accessory Uses:

1. Amateur radio towers and associated facilities, as per Section 8.05.

2. Buildings and uses customarily incidental to the permitted and conditional uses, provided they are located to the rear or side of the primary structure, including private sheds, barns, stables, and garages, provided size of the accessory structure is in conformance with these regulations.

City of Bellevue's Residential Estates:

Section 5.07 RE Residential Estates

5.07.01 Intent: The Residential Estates District is established for the purpose of allowing low density residential uses on larger parcels of land that are compatible with adjacent urban growth. The **RE classification** is to be used only for suburban single family homes and the community services and facilities appurtenant thereto.

5.07.02 Permitted Uses:

The following principal uses are permitted in the RE District.

1. Single family dwellings.

2. Crop and tree farming.

3. Public overhead and underground local distribution utilities.

4. Public parks and recreation areas, playgrounds and conservation areas including woodlands and flood control facilities operated by the City of Bellevue or other political subdivision.

5. Public utility main transmission lines including substations, distribution centers, regulator stations, pumping stations, treatment facilities, storage, equipment buildings, garages, towers, or similar public service uses.

5.07.03 Conditional Uses:

The following uses are subject to any conditions listed in this Ordinance and are subject to other conditions relating to the placement of said use on a specific tract of ground in the **RE District** as recommended by the Planning Commission and approved by the City Council.

1. Accessory structures larger than one thousand two hundred (1,200) square feet, but in no event larger than three thousand (3,000) square feet, provided they meet the following requirements:

A. The accessory structure shall comply with the applicable space limitations, including maximum building height, for the principal structure on the lot.

B. The accessory structure shall be adequately screened, in accordance with the provisions of Article 9, from abutting residential properties.

C. Use of the accessory structure shall be limited to the residents of the lot upon which the structure is located.

D. The accessory structure shall not be used for a home based business or any other commercial use.

The City Council shall determine that the purpose, design, and construction of the accessory structure shall be compatible or otherwise in keeping with the surrounding neighborhood.

2. Bed & Breakfasts.

3. Cemeteries, provided all structures are located at least 100 feet from all property lines.

4. Family Child Care Home II.

5. Governmental services – administrative services.

6. Governmental services – maintenance and service facilities.

7. Private recreation areas and facilities including country clubs, golf courses (but not miniature golf), and swimming pools.

8. Public, parochial and private schools and colleges offering courses of general instruction when located on sites of at least 5 acres and including convents, monasteries, dormitories and other related living structures when located on the same site as the school or college.

9. Quasi-public buildings, structures and uses.

10. Radio, television and wireless communication towers and transmitters, as per Section 8.05.

11. Religious institutions such as churches, synagogues, chapels, and similar places of religious worship and instruction when located in a substantial structure and on a site of at least two acres.

5.07.04 Permitted Accessory Uses:

1. Amateur radio towers and associated facilities, as per Section 8.05.

2. Buildings and uses customarily incidental to the permitted and conditional uses, provided they are located to the rear or side of the primary structure, including private sheds, barns, stables, and garages, provided size of the accessory structure is in conformance with these regulations.

3. Family Child Care Home I.

4. Guest houses, not rented or otherwise conducted as a business.

5. Home based businesses, as per Section 8.04.

6. Incidental public safety uses such as emergency sirens.

7. Living quarters for not more than two persons regularly employed on the premises, but not including labor camps or dwellings for transient labor.

8. Offices incidental to and necessary for conducting a permitted use.

9. Portable Outdoor Storage shall be a permitted accessory uses subject to the following conditions:

A. Portable outdoor storage shall be permitted for no more than seven days in any thirty day period.

B. Portable outdoor storage containers shall be no more than eight feet wide, eight feet high, and sixteen feet long.

C. Portable outdoor storage containers shall be placed on an approved hard surface.

D. No more than one portable outdoor storage container may be located on a lot at any one time.

10. Private stables, corrals and paddocks when located no closer than 20 feet from any property line, no closer than 50 feet from a street line and no closer than 40 feet from any dwelling on the same or adjoining property. No horse or other equine shall be kept on a lot of less than one acre and two horses, or other equines, may be kept on an acre, but for each additional horse or other equine above two kept there shall be an additional 20,000 square feet in lot area.

11. Raising of hens, as per Section 8.12.

12. Residential and small wind energy systems, subject to Section 8.09.

13. Roadside stands not exceeding 400 square feet in floor area, for the sale of agricultural products grown on the premises.

14. Temporary buildings incidental to construction work where such buildings or structures are removed upon completion of work.

15. The keeping of dogs, cats, and other household pets, but limited to 3 animals over six months of age.

APPENDIX B

Model Zoning Ordinance

State of Nebraska Well Head Protection Statutes and Model Well Head Protection Ordinance

WELLHEAD PROTECTION STATUTES

Below is a listing of Nebraska's legislature statutes that allow local jurisdictions to protect public health and safety. NDEQ administers the wellhead protection program and provides technical assistance to any controlling entity designating a wellhead protection area and adopting controls to limit potential threats to the public water supply. The Nebraska Rural Water Association also can assist with wellhead protection in Nebraska. State statues and laws are summarized below.

Sections 46-1501 to 46-1509 shall be known and may be cited as the Wellhead Protection Area Act.

46-1502 - Terms defined
For purposes of the Wellhead Protection Area Act:
(1) Controlling entity means a city, a village, a natural resources district, a rural water district, any other entity, including, but not limited to, a privately owned public water supply system, or any combination thereof operating under an agreement pursuant to the Interlocal Cooperation Act or the Joint Public Agency Act that operates a public water supply system;
(2) Department means the Department of Environmental Quality;
(3) Director means the Director of Environmental Quality; and
(4) Wellhead protection area means the surface and subsurface area surrounding a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field.

46-1503 - Wellhead protection area; designation
Any controlling entity may designate a wellhead protection area and adopt controls pursuant to the Wellhead Protection Area Act for the purpose of protecting the public water supply system. The department shall provide technical assistance to any controlling entity designating a wellhead protection area and adopting controls pursuant to the act.

46-1504 - Wellhead protection area designation; controlling entity; duties
Any controlling entity proposing to designate a wellhead protection area and adopt controls shall:
(1) Designate the boundaries of the wellhead protection area following the procedure in section 46-1505. The wellhead protection area shall be based on all reasonably available hydrogeologic information on ground water flow, recharge, and discharge and other related information necessary to adequately determine the wellhead protection area for the purposes stated in this section;
(2) Identify within each proposed wellhead protection area all potential sources of contaminants which may have any adverse effect on the health of persons;
(3) Describe a program that contains, as appropriate, technical assistance, financial assistance, implementation of controls, education, training, and demonstration projects to protect the water supply within the wellhead protection area from such contaminants;
(4) Include contingency plans for the location and provision of alternate drinking water supplies for each affected public water supply system in the event of water well or well field contamination by such contaminants; and
(5) Propose the controls necessary to provide protection from contaminants which may have any adverse effect on the health of persons served by the public water supply system of each participating controlling entity.

46-1505 - Proposed wellhead protection area; public notice and comment
The controlling entity shall publicize proposed boundaries for the wellhead protection area and the proposed controls and shall provide time for public comment at one or more regularly scheduled public meetings of the governing board of the controlling entity. Notice of the time for public comment shall be published in conjunction with notice of such regularly scheduled meeting. A description of the proposed boundaries and the text of the proposed controls shall be available at the office of the controlling entity for thirty days before such meeting. Persons shall be given the opportunity to speak on the proposed designation and the proposed controls or to submit written testimony for consideration by the controlling entity.

46-1506 - Boundaries of wellhead protection area; designation; procedure

Within sixty days after the last time for public comment under section 46-1505, the controlling entity shall make a final designation of the boundaries of the wellhead protection area and the controls necessary to protect the water in the wellhead protection area and shall submit them to the director for approval or disapproval. Such approval shall be based on whether the boundaries of the wellhead protection area are reasonably defined, the controls are reasonably related to the purpose of ground water protection in the area, and such approval is in the public interest. The director shall act on the proposed designation of boundaries and proposed controls within ninety days after the date the proposals are received by him or her.

If the director approves the proposed boundaries and controls, he or she shall so notify the controlling entity, but the boundaries and controls shall not be deemed effective until the controlling entity has adopted such boundaries and controls by ordinance or resolution. If the director disapproves either or both of the proposals, he or she shall return the proposals to the controlling entity with an explanation of the reasons for such disapproval. The controlling entity may revise such proposed designation of boundaries and proposed controls and, after notice and hearing as provided for in the original proposed designation of boundaries and proposed controls, submit the revised proposed designation of boundaries and proposed controls to the director for approval or disapproval.

If the director does not act on either the original or revised proposed designation of boundaries and proposed controls within ninety days after submission by the controlling entity, the proposed designation of boundaries and proposed controls shall be deemed approved by the director.

46-1507 - Existing wellhead protection areas; effect of act

Any wellhead protection area established before July 15, 1998, by resolution or ordinance of the controlling entity need not be reestablished under the Wellhead Protection Area Act unless controls are proposed. If such controls are proposed, the controls and the boundaries of the wellhead protection area are subject to the requirements of sections 46-1504 to 46-1506. Any wellhead protection area purported to have been established before July 15, 1998, other than by official action of a controlling entity shall be null and void beginning nine calendar months after July 15, 1998, unless reestablished by resolution or ordinance of the controlling entity.

46-1508 - Designated wellhead protection area; boundary area changes

A designated wellhead protection area may be amended as to boundaries and controls as provided for in the initial designation of a wellhead protection area in the Wellhead Protection Area Act.

46-1509 - Environmental Quality Council; rules and regulations

The Environmental Quality Council shall adopt and promulgate rules and regulations to carry out the Wellhead Protection Area Act.

MODEL ZONING ORDINANCE

Note: this model ordinance intends to limit or prohibit specific uses and activities within a close proximity to a public well(s) providing potable water.

ORDINANCE NO. _____

AN ORDINANCE TO PROVIDE FOR A WELLHEAD PROTECTION ZONE FOR THE CITY OF _____, NEBRASKA IN _____ COUNTY, NEBRASKA PURSUANT TO SECTION 17-536 OF THE REVISED STATUTES OF NEBRASKA BY ESTABLISHING LIMITATIONS UPON THE LOCATION OF POTENTIAL SOURCES OF POLLUTION OR INJURY TO THE MUNICIPAL WATER SUPPLY; TO ESTABLISH RULES AND REGULATIONS DEFINING AND ENFORCING SUCH LIMITATION; TO PROVIDE PROCEDURES FOR IMPLEMENTATION OF RULES AND REGULATIONS; TO PROVIDE FOR REPEAL OF ALL ORDINANCES OR PARTS OF ORDINANCES IN CONFLICT HEREWITH; AND TO PROVIDE FOR AN EFFECTIVE DATE.

WHEREAS, Section 46-1503 of the Nebraska Wellhead Protection Area Act in the Revised Statutes of Nebraska provides that the _____ may designate a wellhead protection area and adopt controls pursuant to said Act for the protection of the public water supply system;

WHEREAS, pursuant to the Nebraska Wellhead Protection Act, Sections 46-1501 et. Seq. of the Revised Statues of Nebraska, the controlling entity has adopted the _____ Wellhead Protection Plan;

WHEREAS, it is necessary to place limitations upon the location of potential sources of pollution or injury to the municipal water supply and groundwater within the Wellhead Protection Area and to prescribe rules and regulations with respect to such limitation and the enforcement thereof;

WHEREAS, the Nebraska Department of Environmental Quality has analyzed available data and prepared a map (Exhibit 1) reflecting recommended boundaries for the City of _____ Wellhead Protection Area;

WHEREAS, the _____ intends to enforce wellhead protection regulations of the _____ to the extent of the boundary recommended by the Nebraska Department of Environmental Quality and has adopted a wellhead protection area map (Exhibit 1) as per Section _____ of the Code, as may be amended and which includes the following described real estate:

LEGAL DESCRIPTION:

NOW THEREFORE BE IT ORDAINED BY THE _____ OF _____, NEBRASKA:

Section 1
The findings set forth above are hereby made a part of this ordinance as fully as if set out at length herein.

Section 2
Words or phrases used in this ordinance shall be interpreted so as to give them the same meaning as they have in common usage and so as to give this ordinance its most reasonable application.

Section 3
The area inside the bold lines on the attached map (Exhibit 1, _____ Wellhead Protection Area) and made part of this ordinance, shall be the official Wellhead Protection Area for the City of _____, Nebraska.

Section 4
It shall be unlawful for any person, other than the _____, to place, install, construct or replace any of the following structures or conduct any of the following activities and those listed in Section _____ of the Municipal Code which has be designated by the _____ as a potential threat to the water supply within the Wellhead Protection Area(s) without the proper permit from the _____, except as may be provided herein, to-wit:

Activity or structure:

1) Non-potable water well
2) Sewage lagoon, or sludge or livestock manure storage and stockpiling
3) Absorption or disposal field for water or waste
4) Cesspool (prohibited under NDEQ Title 124, Chapter 1, Section 032)
5) Dumping grounds
6) Feedlot or feedlot runoff, or manure application
7) Livestock Pasture or Corral
8) Pit toilet (prohibited under NDEQ Title 124, Chapter 1, Section 032
9) Sanitary landfill
10) Chemical or petroleum product storage
11) Septic tank
12) Sewage treatment plant
13) Sewage wet well (prohibited under NDEQ Title 122, Chapter 3, Section 005)
14) Sanitary sewer connection
15) Sanitary sewer manhole
16) Sanitary sewer line
17) OTHERS
    a. Potable water well
    b. Sandpoint well
    c. Feed mill
    d. Packing plant
    e. Fertilizer plant
    f. Anhydrous ammonia storage tank facilities or plants
    g. Fuel tank storage
    h. Gas Station
    i. Automotive service station
    j. Geothermal well and system

Section 5
The _____ shall be responsible for implementation and enforcement of the rules and regulations established by this ordinance and shall consider all applications filed pursuant hereto. Such applications must be presented to the _____ at any regular or special meeting. After reviewing the application of any person desiring to drill or operate any of the above-described facilities within the designated area(s), the_____ must approve or deny said permit. The _____ shall designate one of its employees as Wellhead Protection Administrator. This employee shall be charged with administration of the rules and regulations.

Section 6
The placing, installing, constructing or replacing of any structure or activity as set forth in Section 4 of this ordinance, hereinafter termed "wellhead structure or activity", within the Wellhead Protection Areas shall not be permitted after the effective date of this ordinance unless a permit, approved by the _____, has been obtained. The owner of any wellhead structure or activity shall have the burden of establishing the existence and use of said wellhead structure or activity at the time of the effective date of this ordinance.

Section 7
No permit shall be issued by the _____ within the following setback distances from any _____ water well:

ACTIVITY	MINIMUM DISTANCE (feet)
Non-potable and potable water well	1,000
Sewage lagoon, or sludge or livestock manure storage and stockpiling	1,000
Closed loop geothermal well	100
Absorption or disposal field for water or waste	500
Cesspool	Not allowed
Dumping grounds	500
Feedlot or feedlot runoff, or manure application	500
Livestock pasture or corral	500
Pit toilet	Not allowed
Sanitary landfill	500
Chemical or petroleum product storage	500
Septic tank	500
Septic tank (greater than1,000 gallons per day)	1,000
Sewage treatment plant	1,000
Sewage wet well	Not allowed
Sanitary sewer connection	100
Sanitary sewer manhole	100
Sanitary sewer line	50
Sanitary sewer line (water tight)	10

Any activity described above located within the defined setback distance shall be considered prima facie a hazard to the quality of the municipal water supply. Such distances will change automatically if said footages are revised as per Nebraska Statutes.

Section 8
For purposes of this ordinance, in the event conditions at an animal feeding operation, as defined by Title 130 of the regulations of the Nebraska Department of Environmental Quality, shows indication there is a high potential for waste discharge which may threaten the municipal water supply or groundwater, as determined by NDEQ, the_____ permit for the operation shall be subject to revocation, unless the owner of the operation can provide evidence to the _____ and _____ that the threat has been eliminated.

Section 9
Any wellhead structure or activity, not prohibited by Section 7 above, shall be allowed upon determination by _____ that such activity does not constitute a hazard or threat to the quality of the municipal water supply and upon issuance of a permit by the _____.

Section 10
Prior to placing, installing, constructing, expanding or replacing any wellhead structure or activity, the owner of the real estate upon which the structure or activity is proposed shall file with the Administrator an application for a wellhead structure or activity permit. Said application shall be on a form furnished by the Administrator and shall include supporting information indicating why approval would not adversely impact the quality of the _____ water supply or groundwater. The Administrator shall thereafter submit the application to the _____ for consideration. Prior to acting upon such application, the _____ may refer back to the Department of Utilities and Public Works or may seek an engineering report, recommendations of the Natural Resources District, the Nebraska Department of Environmental Quality or any other party or agency in evaluating the impact of the proposed structure or activity on the quality of the municipal water supply. A permit shall only be issued if it is determined the structure or activity is unlikely to contaminate or pollute the water supply. In the event that the wellhead structure or activity is closed for more than one year and re-opened, the owner-operator shall re-apply for a new permit.

Section 11
Wellhead structures or activities in existence and use in the Wellhead Protection Area as of the effective date of this ordinance shall continue to be permitted unless such continued existence or use, in the opinion of the Department of Utilities and Public Works, presents a hazard to the quality of the municipal water supply or groundwater. If the Department of Utilities and Public Works determines an existing wellhead structure or activity presents a water quality hazard, the Department of Utilities and Public Works shall authorize the Administrator to notify the owner of the structure or activity to cease and desist said structure or activity. If the owner of the wellhead structure or activity desires to continue operation of said structure or activity, the owner may seek to procure a permit pursuant to this ordinance. If the owner does not cease and desist pursuant to such notice, the Administrator may proceed pursuant to Section 12 of this ordinance against said owner and/or the wellhead structure or activity.

Section 12
Any person found violating any provision of this ordinance shall be subject to a fine not to exceed $100.00. The continuation of a violation of this ordinance shall be deemed an additional crime for every 24 hours of such continued violation. In addition, the_____ may obtain injunctive relief and sue for damages and remediation, and pursue any other remedy available to it under the laws of the State of Nebraska or other authority having jurisdiction over such matters. (Section _____ of the Code)

Section 13
Should any section, paragraph, sentence or word of this ordinance hereby adopted be declared, for any reason, to be invalid, it is the intent of the _____and _____ of the _____, Nebraska, that it would have passed all other portions of this ordinance independent of the elimination hereof of any such portion as may be declared invalid.

Section 14
All ordinances or parts of ordinances in conflict with the provisions of this ordinance are hereby repealed.

Section 15
This ordinance shall be in full force and effect from and after its passage, approval and publication according to law.

PASSED AND APPROVED this _____ day of _____, 20__.

(Seal) _____, _____ COUNTY, NE

_____
Title

Attest:

_____
Clerk

APPENDIX C

Water Operations Emergency Plan

METROPOLITAN UTILITIES DISTRICT

OF OMAHA

WATER OPERATIONS

EMERGENCY PLAN

Limited Distribution
Contains Sensitive Security Information

June 2012

APPENDIX D

Spills into the Missouri or Platte River

Spills into the Missouri or Platte Rivers

In the event of a spill of hazardous material into the Missouri River above the District intakes or into the Platte River above the District, one of the following agencies may notify the District:

Omaha Public Power District
U. S. Coast Guard
U. S. Environmental Protective Agency
U. S. Army Corps of Engineers
Nebraska State Health Department
Nebraska Game and Parks Commission
Nebraska Department of Environmental Quality
Iowa Department of Natural Resources

The agencies have been instructed to notify the Communications Clerk on 402-504-7970. The Communications Clerk will record the information, including:

1. The type and quantity of material spilled, if known.
2. The location of the spill.
3. The time of the spill, if known.
4. The name, phone number, and agency of the person calling. THIS IS IMPORTANT!

The District Communications Clerk will immediately notify:

1. The Vice President of Water Operations:

In the absence of the Vice President of Water Operations, the Communications Clerk will notify the Water Supply Engineer or other designated person in charge of Water Operations.

The Vice President of Water Operations or designee will notify the President and the Senior Vice-President of Operations, if plant operation is affected.

The Vice President of Water Operations or designee will decide appropriate response. More information about the spill may be needed. Consultation with Water Quality or others may be needed. Actions may include observation of river conditions and raw water quality, additional treatment or temporarily discontinuing water intake. The Vice President of Water Operations will be responsible for appropriate communication regarding the situation and our response.

2. If directed by the Vice President of Water Operations, the Communications Clerk will notify the appropriate water treatment plant supervisor, the Director of Water Quality, the Safety and Security Office and/or the Senior Communication Specialist.

APPENDIX E

MUD Water Conservation and Alert Plan

Water Conservation and Alert Plan

METROPOLITAN
UTILITIES DISTRICT

Metropolitan Utilities District
Water Conservation Plan
September 2012

Goal

The goal of the Water Conservation Plan is to promote the wise use of water through public education programs, rate structure and operating plans and to assure our customers receive safe water in sufficient quantity and quality to serve their needs.

General Discussion

Our community is fortunate to be located near two reliable sources of water; the Missouri and Platte Rivers. M.U.D. has about one-half of our production total from each river. The Florence Water Treatment Plant, located on the banks of the Missouri River, has a capacity of 158 million gallons per day. This is more than enough water to meet our customers' average daily usage of 90 to 100 million gallons per day. The Corps of Engineers regulates the Missouri River flow. The minimum sustained flow in the river is 8,000 cubic feet per second. At this rate, an amount of water equivalent to the daily plant capacity flows by M.U.D.'s intakes every 44 minutes.

The Platte South Water Treatment Plant is located in Sarpy County on the Platte River. While the Platte River is more susceptible to low flows caused by a drought, as long as there is some flow in the river, the plant can produce near its 60 million gallons per day capacity.

The Platte West Water Treatment Plant is located in Douglas County with well fields along the Platte River in both Douglas and Saunders Counties. The plant can produce 100 million gallons per day capacity.

Water supplies are reliable. The chance of experiencing a long-term water shortage is remote. A possibility does exist, however, for short-term water shortages. These could be drought-related, caused by limited plant or distribution system capacities or due to any number of emergency situations. If water demands exceed available production for any reason, it may be necessary to implement water use restrictions.

M.U.D. must not lose sight of the fact that it does share the natural resources of the rivers with other users and there may be conditions in which the wise use of water would benefit those users. M.U.D. has and will continue to support all types of water conservation measures.

Benefits

There are many benefits that can be derived from the wise use of water both for M.U.D. and for our customers. Our customers benefit by receiving lower bills – the result of

using less water and possibly delaying capital expenditures. We all benefit by conserving natural resources and by having a safe, reliable supply of water to our community.

Public Education Plan

The Education Plan promotes the overall wise use of water and encourages water conservation during peak usage periods and will familiarize our customers with the Water Conservation Plan.

The audience for the Education Plan is residential, commercial and industrial customers, school-aged children, government officials, and regulators.

Specific items in the Public Education Plan include:

Wise water use messages on customer bills and wise water use tips in customer newsletters

Wise water use messages on our "on-hold" customer voice message system.

Sponsor a wise water use flower garden at the Village Pointe Shopping Center in conjunction with the UNL Extension Office and Master Gardeners.

A Water Conservation section on our website at *www.mudomaha.com*, which also includes wise water use tips, charts, statistics and links to helpful resources.

"Make Every Drop Count" rain gauges and moisture sensors are distributed to customers at community events.

New customer booklet section with an extensive list of water conservation tips.

Our Employee Speakers Bureau presented more than 100 programs during the past year, reaching nearly 200,000 members of the community through civic groups, schools, and water plant tours.

Through ESB, we have a water mascot called "Thirstin," to promote wise water use in classrooms and at community events.

For the 23rd consecutive year, we participated in the Annual "Eyes on Conservation" Water Festival, held in the spring at Schramm Park. The Festival attracts approximately 1,600 fifth grade students.

We distributed "Make Every Drop Count" water conservation wheels to people attending community events, such as World of Water! and the Omaha Safety Council Exposition.

We created two videos, “Trip Behind Your Water Faucet” and “Wise Use of Resources,” which include wise water use messages. These videos are used in Speakers Bureau presentations and copies were distributed to area libraries.

We have scheduled individual meetings with editors and reporters of the daily newspaper, two radio stations and four television stations so they could get to know our people and our operations. We also have given tours of our facilities, prior to any news event, for information purposes.

Water Conservation Measures

Since 1979, M.U.D.'s rate structure has been designed to encourage water conservation. During the summer months, when usage is at its peak, the majority of M.U.D.'s customers are under an increasing block rate structure. This type of rate encourages conservation by charging a higher rate as the water usage is increased. This is the most effective way of using rates to encourage water conservation.

M.U.D. has also created a separate rate category for customers with a high peak usage factor. Customers who use water for commercial and industrial sprinkling, lake-recharge and cooling pay a higher rate to help compensate for the increased peak load. This encourages these heavy users to pay closer attention to how often and when they use water.

M.U.D. has an understandable water bill with water consumption and cost clearly identified. We also have regular meter readings so seasonal use can be identified.

M.U.D. has universal metering including public use. Meters are regularly tested and calibrated, repaired, or replaced to maintain accuracy.

Water loss is minimized by regular leak surveys and leak repairs.

We utilize pressure management techniques including use of pressure reducing valves within selected areas of the water distribution system.

M.U.D. promotes landscape efficiency with projects such as the wise water use garden at the Village Pointe Shopping Center and other public education presentations.

We use supply side technologies such as chemical-efficient split treatment and natural gas energy management to reduce peak electrical demands.

We support demand side technologies by educating our customers about wise water use and supporting the use of water-efficient plumbing.

The responsibility for calling for these alerts will be with the President and will be based on consultations with the Senior Vice President of Operations and with the Vice President of Water Operations. Once the decision has been made, it will be the responsibility of the Senior Vice President, Chief Customer Officer and the Director of Corporate Communication to make the appropriate notification to the news media.

All of the following actions or restrictions may only be required in certain sections of the system, depending on circumstances. In this case the press releases will include a delineation of the restricted area.

Level 1 Water Alert (Voluntary Alternate Day Watering)

Trigger:

Water Consumption reaches 95% (about 300 million gallons per day) of available supply or system capacity, or any of the water storage reservoirs cannot be refilled from day to day, or low pressure jeopardizes fire fighting or causes numerous customer complaints.

Action:

The M.U.D. Director of Corporate Communication will issue a press release notifying the public that we are issuing the alert. The press release will include a basic list of water conservation tips.

M.U.D. will limit hydrant flushing and main filling, comply with alternate day water restrictions, and shut down decorative fountains at the Florence Plant and the Headquarters Building.

All customers will be asked to voluntarily adhere to alternate day watering. Customers will be asked to water no more often than every other day. If possible, customers should water every third or fourth day. Customers may use their own discretion regarding which days they water and which days they refrain from watering.

Customers will be told what to expect if a level 2 alert is issued.

All customers will be asked to voluntarily discontinue hosing down driveways, shut off decorative fountains, discontinue filling swimming pools, and other actions deemed appropriate by M.U.D.

The City of Omaha and other municipalities served by M.U.D. will be asked to voluntarily comply with alternate day watering restrictions, curtail sewer flushing, lake filling, fire fighting drills, street washing and other non-essential uses of water.

Enforcement:

There will be no enforcement at this level.

Level 2 Water Alert (Voluntary No-Watering Days)

Purpose:

Specified no-watering days will allow M.U.D. to fill the water system reservoirs.

Trigger:

Water Consumption reaches 95% of available supply or system capacity, or
any of the water storage reservoirs cannot be refilled from day to day, or
low pressure jeopardizes fire fighting or causes numerous customer complaints.

Action:

The M.U.D. Director of Corporate Communication will issue a press release notifying the public that we are issuing the alert. The press release will include a basic list of water conservation tips.

M.U.D. will limit hydrant flushing and main filling, comply with no-watering day restrictions, and shut down decorative fountains the Florence Plant and the Headquarters Building.

All customers will be asked to voluntarily discontinue all outdoor uses of water on specified days. The days will be determined by M.U.D. at the time the alert is issued. They will allow one full day after the press release for notification.

All customers will be asked to voluntarily discontinue hosing down driveways, shut off decorative fountains, discontinue filling swimming pools, and other actions deemed appropriate by M.U.D.

The City of Omaha and other municipalities served by M.U.D. will be asked to voluntarily comply with no-watering day restrictions, curtail sewer flushing, lake filling, fire fighting drills, street washing and other non-essential uses of water.

Enforcement:

There will be no enforcement at this level.

Level 3 Water Alert (Mandatory)

Trigger:

Water Consumption meets or exceeds available supply or system capacity, or useable water storage has been reduced 50%, or there are widespread pressure problems.

Action:

The M.U.D. Director of Corporate Communication will issue a press release notifying the public that the voluntary requirements of the Level 1 or Level 2 water alerts have become mandatory.

M.U.D. will stop hydrant flushing and main filling, comply with designated restrictions, including shut down decorative fountains at the Florence Plant and the Headquarters Building.

All customers will be required to adhere to watering restrictions.

All customers will be required to discontinue hosing down driveways, shut off decorative fountains, discontinue filling swimming pools, and other actions deemed appropriate by M.U.D.

The City of Omaha and other municipalities served by M.U.D. will be required to comply with watering restrictions, stop sewer flushing, lake filling, fire fighting drills, street washing and other non-essential uses of water.

Enforcement:

Customers who do not comply with the watering restrictions will be subject to having their water shut off until mandatory restrictions are lifted. The current turn-on fee will be charged to restore service.

Exceptions:

Circumstances sometimes dictate that customers must water on designated non-watering days. Exceptions may be made for new sod less than three weeks old and other circumstances deemed appropriate by M.U.D.

Level 4 Water Emergency (Water Quantity)

Trigger:

Water usage exceeds production or distribution capacity due to emergency situations.

Action:

The M.U.D. Director of Corporate Communications will issue a press release notifying the public that a Water Emergency is in effect.

All non-sanitary, non-essential use of water must be discontinued.

Enforcement:

Customers who do not comply with the watering restrictions will be subject to having their water shut off until the Water Emergency is lifted. The current turn-on fee will be charged to restore service.

Level 5 Water Quality Emergency

Trigger:

Water quality for human consumption cannot be assured due to a contamination or suspected contamination.

Action:

The M.U.D. Director of Corporate Communications will issue a press release notifying the public that the water cannot be consumed safely unless it is boiled or cannot be consumed safely at all. This will include water used in food preparation.

M.U.D., in cooperation with the State of Nebraska Health and Human Services Department, will take action to make the water safe for consumption and conduct tests to assure it is safe.

M.U.D. will issue a press release informing customers the water is now safe for consumption.

Enforcement:

None.

APPENDIX F

Public Involvement Materials

METROPOLITAN
UTILITIES DISTRICT

MUD Wellhead Protection Plan
Platte South Well Field – Advisory Group Meeting 1
Thursday, April 18, 2013
Platte South Water Treatment Plant

7:00 p.m. – 9:00 p.m.

Attendees:

Mike Jensen, Cass County Zoning
Robert Krejci, Century/Leisure Village
Tammi Palm, City of Bellevue
Dan Schulz, Lower Platte South NRD
Carol White, Lyman-Richey Corp
Meghan Sittler, LPRCA
Bruce Fountain, Sarpy County Planning Dept.
Inez Boyd, Landowner
Marlin Petermann, P-MRNRD
Brian Henkel, P-MRNRD
Russ Iwan, MUD
Scott Keep, MUD
Doug Whitfield, MUD
Joel Christensen, MUD
Jeff Ray, JEO
Luca DeAngelis, HDR
Stephen Sykes, HDR

Agenda:

I. Introduction of Project Staff
II. Introduction of Advisory Group
    a. Name
    b. Affiliation
    c. What you hope to get out of this process
III. Wellhead Protection Plan Presentation
    a. Goals of the Wellhead Protection Plan
    b. Stakeholder Engagement Process and Review of Advisory Group Involvement Expectations
    c. Role of the Advisory Group
    d. Provide input on the Plan
        i. If you have input, provide written communication to Luca DeAngelis (see below) by the end of April
IV. Next Meeting – Thursday, June 6, 7:00 p.m. – 9:00 p.m., same location
    a. HDR will present technical portions of the Plan
V. Questions/Closing Comments

METROPOLITAN
UTILITIES DISTRICT

Notes:

After a PowerPoint presentation by DeAngelis, the discussion was opened to the group for questions and comments on the Plan process and information gathered to date. (The PowerPoint accompanies these notes for Advisory Group members to use as a reference.)

- Petermann asked if there are existing issues with water quality that precipitate this Plan development. Iwan responded that there is no history or current information that indicates a current water quality problem or issue that this Plan is intended to address.
- Schulz asked whether a contingency plan for induced recharge would include known contamination coming down river and whether they can manage or prepare for that?
    - DeAngelis replied that MUD can shift pumping to wells away from river if needed. Water providers talk to each other to let them know if there is a problem, or contaminant, coming down river. Managing the wells through ongoing communication is part of the contingency plan.
    - Louisville USGS added a gauge for nitrates that could be useful as a reference.
- Schulz discussed correcting the county line that runs along historic Zwiebel Creek.
- Whitfield asked whether the Papillion Wellhead Protection Area and the proposed Platte South WHPA will overlap. DEQ responded that they weren't sure but they thought that there is a wastewater treatment plant west Betty Lake/Hansen Lake.
- Boyd commented that package sewer treatment plants aren't effective.
- Krejci asked how the wells stay protected in a flood. DeAngelis responded that well houses are elevated and that slower water on the north side of the river doesn't have the potential for structural damage that the faster flows on the south side of the river would.
- DeAngelis asked if there were WHPP areas in LPSNRD. Schulz replied yes, the District encourages it for monitoring benefits provided.
- LPSNRD has BMP's cost-sharing for community watershed protection and has funding for well abandonment. The Board would be receptive to having MUD propose some of these practices. It was mentioned that Fremont has an overlay zone that addresses ground water quality and Sarpy County is doing a study of Platteview Road corridor.
- There was a suggestion to study Zwiebel Creek for potential point sources and potential conveyance of contamination. Petermann offered that P-MRNRD could be involved with Zwiebel Creek in helping to develop best management practices in Sarpy County.
- Sittler mentioned that LPRCA thermal imagery will be available soon to use as reference for point source pollution in the area. There could be cost-sharing assistance for septic system rehab or maintenance.
- Whitfield wanted to draw comments and input out of the group by asking what are you concerned about (e.g. or do you think someone might be) regarding this plan development? There was a comment that developers are going to think we are trying to curb development (e.g. in the area).
- Iwan mentioned that if Advisory Group members were interested there could be a brief tour of the water facility before the next meeting.

METROPOLITAN
UTILITIES DISTRICT

- The meeting was ended with words of thanks and appreciation for the Advisory Group members' time and commitment to working with MUD on the development of this Plan.

METROPOLITAN
UTILITIES DISTRICT

MUD Wellhead Protection Plan
Platte South Well Field – Advisory Group Meeting 2
Thursday, June 6, 2013
Platte South Water Treatment Plant

Plant Tour: 6:30 p.m. – 7:00 p.m.
Meeting: 7:00 p.m. – 9:00 p.m.

Attendees:

Mike Jensen, Cass County Zoning
Tammi Palm, City of Bellevue
Dick Ehrman, Lower Platte South NRD
Donna Lyman, Sarpy County Planning Dept.
Inez Boyd, Landowner
Brian Henkel, P-MRNRD
Doug Hill, SID 101
Ryan Chapman, NDEQ
Russ Iwan, MUD
Scott Keep, MUD
Doug Whitfield, MUD
Joel Christensen, MUD
Mathew Rogue, JEO
Luca DeAngelis, HDR
Stephen Sykes, HDR

Agenda:

I. Introduction of Project Staff
II. Introduction of Advisory Group
    a. Name
    b. Affiliation
III. Discuss Wellhead Protection Plan
    a. Provide input on the Plan - If you have comments or other input; please provide written communication to Luca DeAngelis by June 20.
IV. Questions/Closing Comments

Notes:

After brief introductions from Iwan and a PowerPoint presentation by DeAngelis that reviewed the information covered in the first Advisory Group meeting, the project team presented an overview of the draft Wellhead Protection Plan (a copy of the Draft Wellhead Protection Plan was emailed to Advisory Group members prior to the meeting for their review). The discussion was opened to the group for questions and comments on the draft Plan and the information gathered to date.

The following is a summary of the group discussion:

- Ehrman asked about MUD water quality monitoring and management during times of spikes in undesirable water quality. Are quantifiable numbers or standards determined? MUD staff explained that water samples are taken and tested multiple times a day to assess water quality

and comply with regulations. MUD staff explained that, historically, nitrates have not been detected at levels that would cause any adjustment to Plant operations.

- MUD staff explained that if one or two of the three water treatment plants go offline for maintenance the other plant(s) can provide drinking water for the entire service territory. Staff also responded to a question about system capacity by explaining that the transmission and delivery pipes hold enough water to provide one to two days of water at normal winter use levels.
- Representatives of LPSNRD and PMRNRD explained that they provide funding, cost-sharing assistance, and education for sampling wells. Chapman added that NDEQ can provide assistance with septic tank education and decommissioning. Keep added that once this Plan is complete and adopted by the Board, MUD plans to work with County staff to improve education and safety related to septic systems. Hill asked whether NDEQ anticipates banning septic systems within the wellhead protection zones in the future; Chapman responded that it was hard to speculate on that issue but was not aware of current efforts toward that end. Keep mentioned that MUD does not currently have an issue or problem with septic systems near their well fields but wants to ensure that they can avoid future problems or issues.
- The City of Yutan, NE's zoning ordinance was used as an example for discussion. Chapman suggested including clarification in the Plan that makes it clear that the ordinance does not propose an outright ban on septic systems. Iwan, Chapman, and Rogue all agreed that there are pros and cons to seeking a county-wide ordinance on a zoning overlay.
- The meeting was concluded with words of appreciation to the Advisory Group members from all MUD staff in attendance.