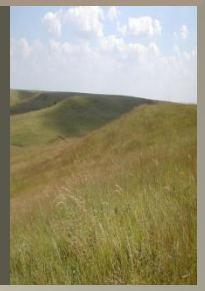
Nebraska's
Natural Resources Districts



NRD Water Management in Nebraska
Local Governance & Funding

Governor's Conference on the Future of Water in Kansas
Hilton Garden Inn & Conference Center -- Manhattan, KS
November 9, 2017

Dean E. Edson
Executive Director
Nebraska Association of Resources Districts

"Protecting Lives, Protecting Property and Protecting the Future"

Presentation Overview

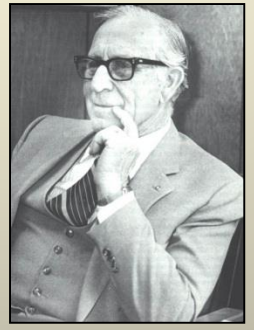
1. Nebraska Natural Resources Districts (NRDs) Structure & Funding
2. NRD Groundwater Management for Quality and Quantity
3. Integrated Management Plans (IMPs)
4. Projects
5. Questions and Answers

Creation of the NRD System

- **In April 1969, four senators introduced LB1357 in order to consolidate 154 special-purpose districts into a series of multipurpose districts based on river basin boundaries.**
- **Unique to Nebraska**
- **Law became effective in 1972**

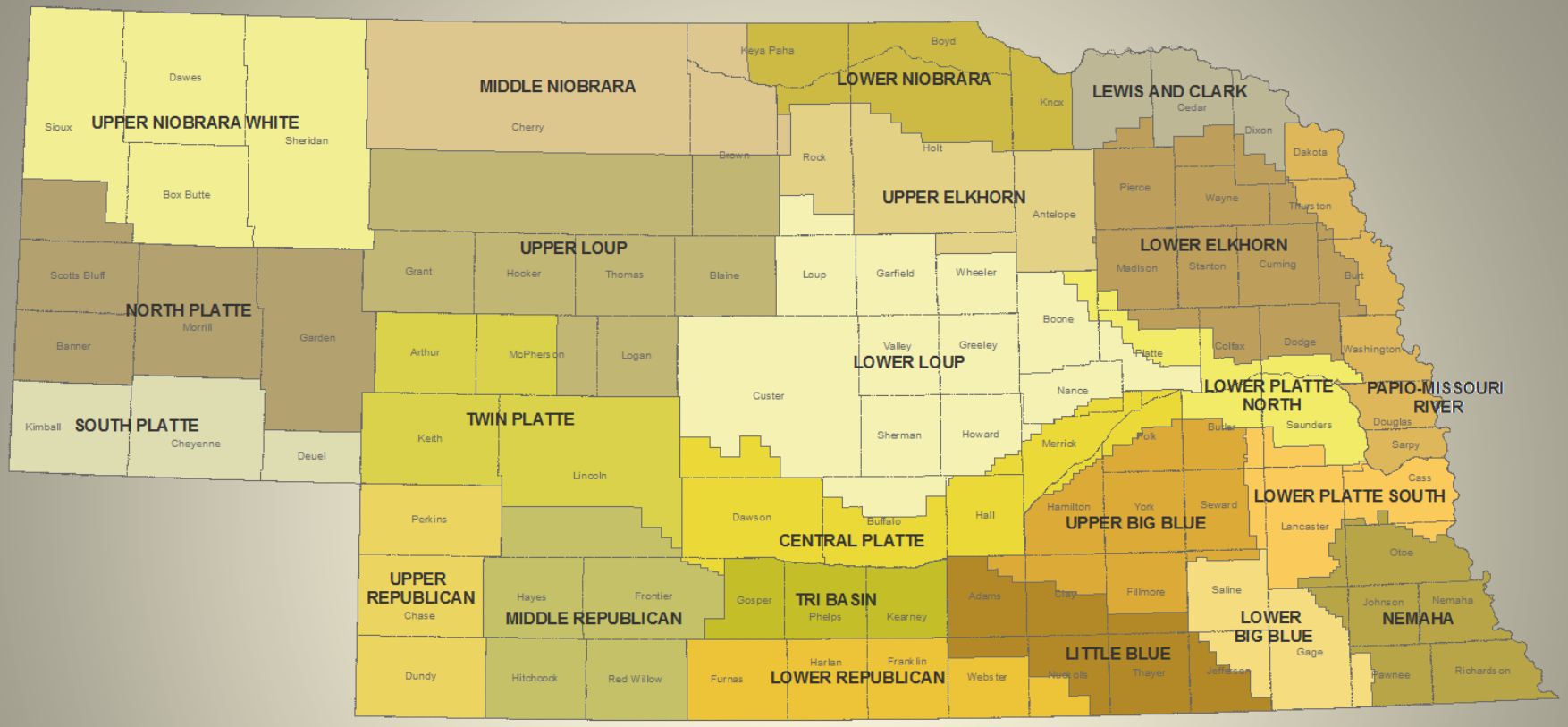
<u>Primary Sponsor of L.B. 1357:</u>

- ***Maurice Kremer*** (Aurora)



What Does a NRD Really Do?…
12 Statutory Responsibilities:

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



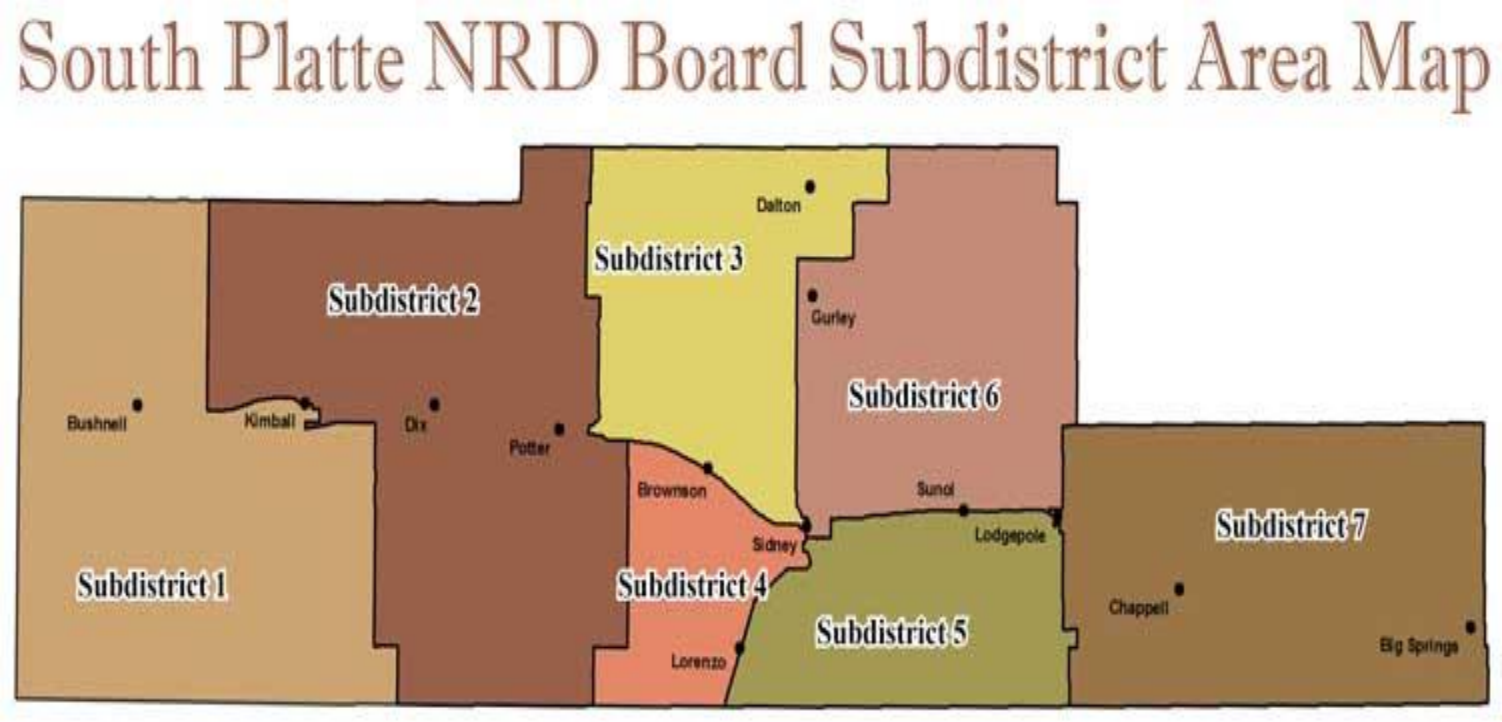
Nebraska's 23 Natural Resources Districts

NRD Board Structure

- Locally elected at the general election
- Any eligible voter can run
- Board size – 5 -21 members (set by the local board)
- 321 board members total
- Elections by Sub districts and/or at large
- Statute allows for 3 to 1 ratio but most at 1 person – 1 vote

South Platte NRD

Sub-districts are updated every 10 years from census data



NRD Board Meetings

- Monthly Public Meetings
- Public Notice and follow the Open Meetings Act
- Public comment is allowed at each meeting
- Special hearings on development of regulations and plans – open to the public and public comments

NRD Employees

- 360 employees
- Various specialist – Business managers, groundwater technicians, engineers, hydrologist, soil conservationist.
- NARD provides some training and certification programs for employees
- All full-time employees are provided health insurance & retirement benefits.

Total NRD Funding FY 17-18 Budgets

- Total Budgets -- $224.7 Million
  - Property Tax -- $78.4 Million
  - Occupation tax -- $13.5 Million
  - Other -- $132.8 Million (59.1% of total)

    (Leveraging other local, state and federal funds)

Property Tax Funding

- NRD Property Tax Levy – up to 8.5 cents per $100 as determined by the local board.
  - 4.5 cents – General operation
    - Raises $58.4 Million
    - Range -- $300K to $19.4 million
  - 1.0 cent – Groundwater Management Activities
    - Used by 19 of 23 districts
    - Raises $9.4 million
    - Range -- $78.7K to $1.7 million
  - 3.0 cents – Fully appropriated (10 districts qualify)
    - Used by 6 of 10 districts
    - Raises $6 million
    - Range -- $28.6K to $2.6 million

Occupation Tax on Irrigated Land

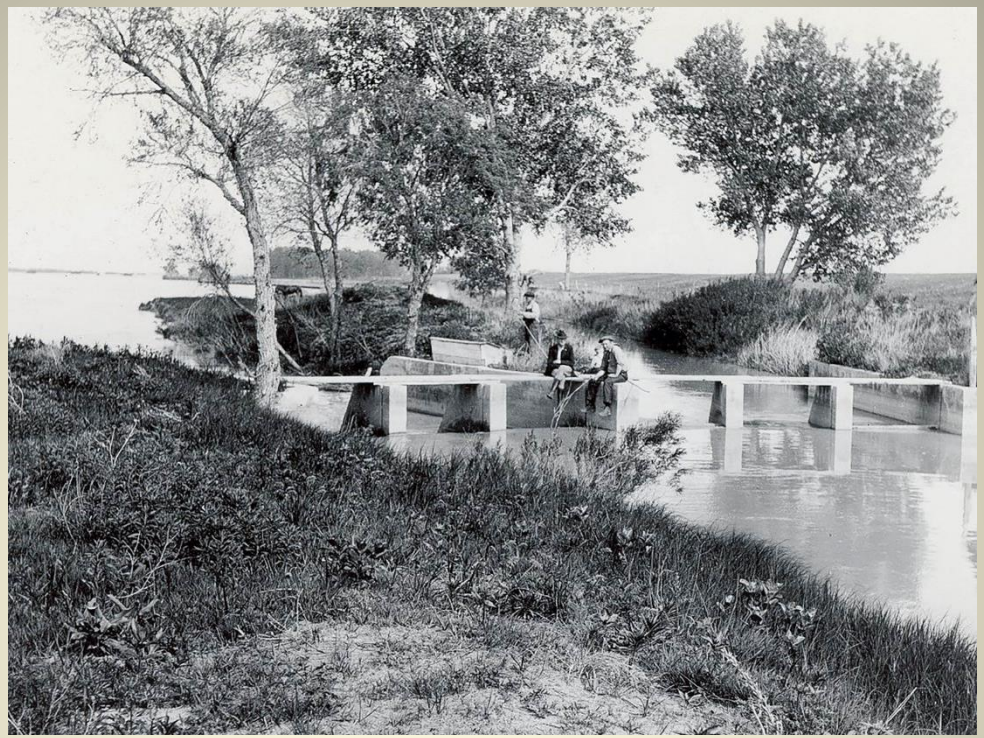
- Up to $10/acre as determined by the local board.
- Has to be incorporated into the IMP
- Four districts using it
  - Raises $13.6 Million
  - Range -- $2.9 M -- $4.4 M
- Limited bonding authority for water augmentation, stormwater programs and rural water systems.

Bonding

- Limited bonding authority for water augmentation, stormwater programs and rural water systems.
- Projects –
  - Occupation Taxes for Augmentation Projects - NCORPE & Rock Creek
  - One Cent of GF Levy for Flood Control Projects in Papio- Missouri River NRD (Omaha) -- $4.6 Million.
  - Rural Water Systems operate outside NRD General Operations and paid for by the users.

Nebraska Water Law

- The water owned by the state and is dedicated to the people of the state for beneficial purposes.
- Permits are granted for use by the Department of Natural Resources (DNR) and NRDs.
- Different doctrines and laws apply depending on the use.
- Preference system applies to all – 1) Domestic, 2) Agriculture, 3) Manufacturing, 4) Other



Surface Water Rights – Prior Appropriation Doctrine

- ***Set up to encourage settlement of the territory and the State of Nebraska.***
- ***Permitted and regulated by DNR.***

Groundwater Rights - Correlative Rights Doctrine

- ***The right to use groundwater on the overlying land as long as it does not harm someone else.***

- ***Permitted and regulated by local NRDs with a few exceptions for municipal and interstate transfers.***

- ***All users share in any shortage***

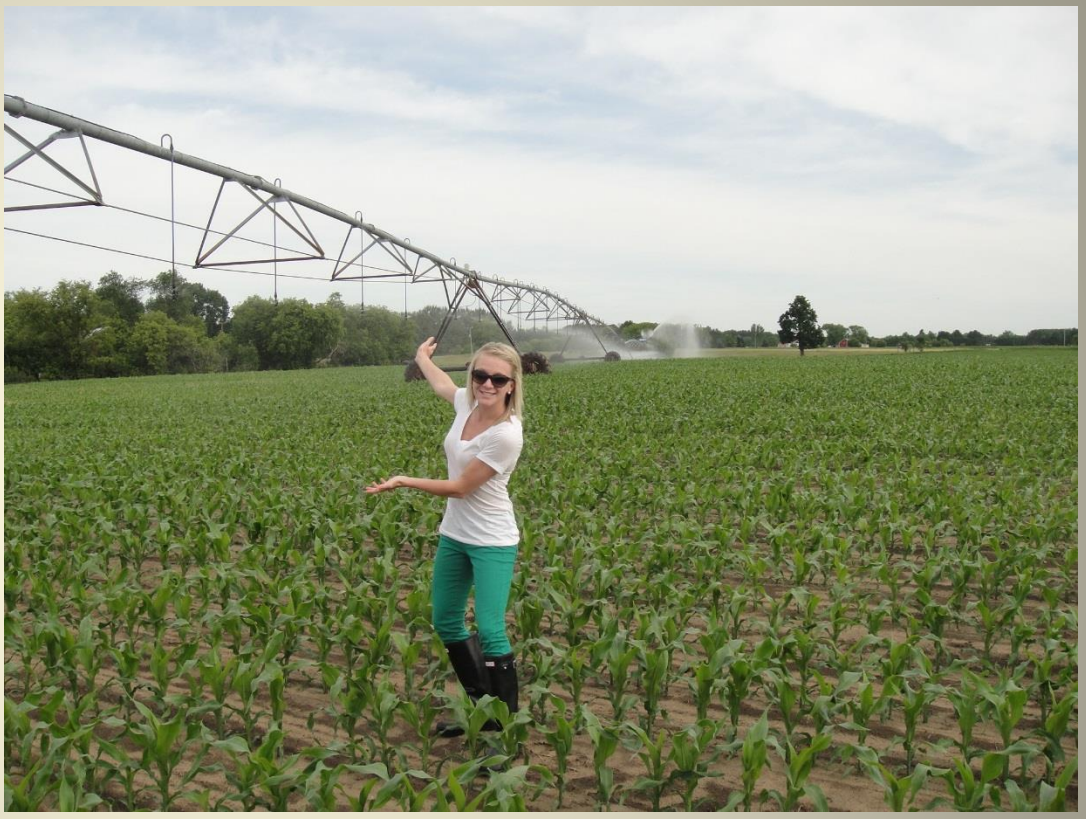
- ***Amounts to 90% of the irrigation total and uses about 70% of the irrigation water.***

Groundwater Rights - Correlative Rights Doctrine

- ***Nebraska has 8.3 million irrigated acres.***
- ***Number 1 in the US.***
- ***2015 Report -- 1% groundwater decline since pre-development.***
- ***2016 – Close to predevelopment.***

Groundwater Rights - Correlative Rights Doctrine

- ***All 23 NRDs have a Groundwater Management Plan approved by DNR and DEQ.***
- ***Local NRD rules and regulations in place to manage for quantity and quality.***
- ***Can go to allocations if declines in water tables are severe.***
- ***Can impose regulations for quality.***

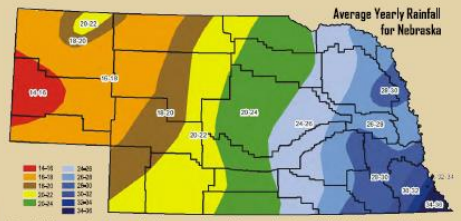


NRD Groundwater Quantity Management

NRDs Are Managing Water Statewide:

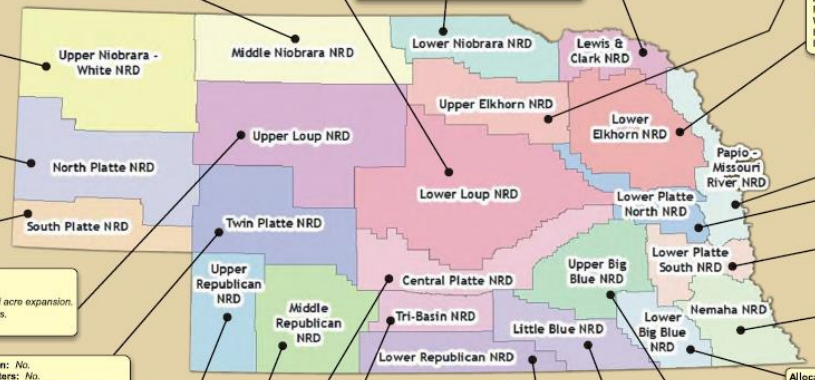
Nebraska's 23 Natural Resources Districts (NRDs) are uniquely positioned to manage the conservation of the state's natural resources through local governance. Because of Nebraska's diverse geology, climatology, and hydrology, each NRD—and it's locally elected board of directors—are able to enact rules, regulations, and programs that can assist its District's citizens and protect local natural resources for future generations to share. Water management regulations in particular include allocating groundwater, augmenting surface water, requiring flow meters, instituting well drilling moratoriums, requiring water use reports, and restricting the expansion of irrigated acres. Individual NRDs use these regulations in different combinations and to different degrees depending on their respective geographic areas of concern. Below is a map showing all 23 NRDs and their most recent status of water management techniques.

So why does this matter to you? Quite simply, Nebraska's NRDs are working to ensure that you and future generations can continue to share in the use and enjoyment of our natural resources. Nebraska's NRDs: Protecting Lives, Protecting Property, and Protecting the Future...



Precipitation varies dramatically across the state ranging from 14" to 16" a year in the Panhandle to 34"-36" a year in the most southeastern portion of Nebraska. Therefore, allocation amounts, along with historic water use, take precipitation into consideration.

NRD GROUNDWATER QUANTITY REGULATIONS ACROSS NEBRASKA (October 2017)



Allocation: No.
Flow meters: Yes, new development.
Well Drilling Moratorium: Yes, temporary stay.
Required Water Use Reports: Yes, in sub-area.
Rainfall Yearly Average: 16"-20"

Allocation: No.
Flow meters: Yes, in sub-areas.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes, in sub-areas.
Rainfall Yearly Average: 22"-27"

Allocation: No.
Flow meters: Yes, on new wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes, in sub-areas.
Rainfall Yearly Average: 22"-24"

Allocation: No.
Flow meters: Yes, on new wells.
Well Drilling Moratorium: No.
Required Water Use Reports: Yes, in sub-areas.
Rainfall Yearly Average: 24"-26"

Allocation: No.
Flow meters: Yes.
Well Drilling Moratorium: No, but limited irrigated acre development determined annually.
Required Water Use Reports: Yes, Phase II areas.
Rainfall Yearly Average: 24"-28"

Allocation: 65"/5yrs.
Flow meters: Yes, all wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 15"-19"

Allocation: 13"-14"/1yr., in sub-areas.
Flow meters: Yes, for all irrigation wells by Jan. 1, 2018 and for all new high capacity wells.
Well Drilling Moratorium: No, but new irrigated acres only with an approved variance.
Required Water Use Reports: Yes, for all District required flow meters.
Rainfall Yearly Average: 26"-30"

Allocation: No.
Flow meters: No.
Well Drilling Moratorium: No, but limited irrigated acre development.
Required Water Use Reports: No.
Rainfall Yearly Average: 30"-32"

Allocation: 70"/5yrs. & Pumpkin Creek = 60"/5yrs.
Flow meters: Yes, on all wells by 12/31/16.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 14"-18"

Allocation: 27"/3yrs., in sub-areas.
Flow meters: Yes, in sub-areas.
Well Drilling Moratorium: Yes, in sub-areas.
Required Water Use Reports: Yes, in sub-areas.
Rainfall Yearly Average: 26"-30"

Allocation: 39"- 48"/3yrs. by sub-area.
Flow meters: Yes, all wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 14"-18"

Allocation: 21"/3yrs. 9"/yr. maximum, in NW sub-area.
Flow meters: Yes, all wells.
Well Drilling Moratorium: No, but restrictions on irrigated acres in NW sub-area.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 28"-30"

Allocation: No.
Flow meters: Yes.
Well Drilling Moratorium: Limited acre expansion.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 18"-22"

Allocation: No.
Flow meters: Yes, on new wells.
Well Drilling Moratorium: No, well permit ranking.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 34"-36"

Allocation: No.
Flow meters: No.
Well Drilling Moratorium: Yes.
Required Water Use Reports: No.
Rainfall Yearly Average: 18"-22"

Allocation: Set when triggered.
Flow meters: Yes, on new wells.
Well Drilling Moratorium: No; well permit ranking.
Required Water Use Reports: No.
Rainfall Yearly Average: 28"-30"

Allocation: 27"/3yrs., in sub-areas.
Flow meters: Yes-Republican Basin.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 22"-24"

Allocation: 65"/5yrs.
Flow meters: Yes, all wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 17"-20"

Allocation: No.
Flow meters: No.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 18"-26"

Allocation: When triggered = 30"/3yrs., then 45"/5yrs.
Flow meters: Yes, on all wells by 1/1/16.
Well Drilling Moratorium: No.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 26"-28"

Allocation: 60"/5yrs.
Flow meters: Yes, all wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 20"-22"

Allocation: 45"/5yrs.
Flow meters: Yes, all wells.
Well Drilling Moratorium: Yes.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 22"-24"

Allocation: No.
Flow meters: Yes, on all wells by 3/31/17.
Well Drilling Moratorium: Yes, in sub-area.
Required Water Use Reports: Yes.
Rainfall Yearly Average: 26"-31"

EDITOR's NOTE: *The information presented statewide reflects water management and conservation data as of October 2017.*

This map is intended for general reference only. District, and sub-area specific rules and regulations are put in place by a locally elected board of directors for each Natural Resources District. As a result, rules and regulations are subject to change per local board action. Not all restrictions pertaining to water management are represented on this map. Please contact your local NRD to obtain the most current rules and regulations for that District.

Information gathered and published by:
Upper Big Blue Natural Resources District-York, NE;
Updated: October 31, 2017

Groundwater Quality Management Plans and Regulations

- Approved by NDEQ for Quality
- Developed with hearings and public meetings
- Implemented in Phases depending on issues
- Applies in subareas where problems exist
- Phase 1, 2, 3 & 4
- Starts with applicator education programs and regulations increase as contamination increases.

NRD Groundwater Quality Management

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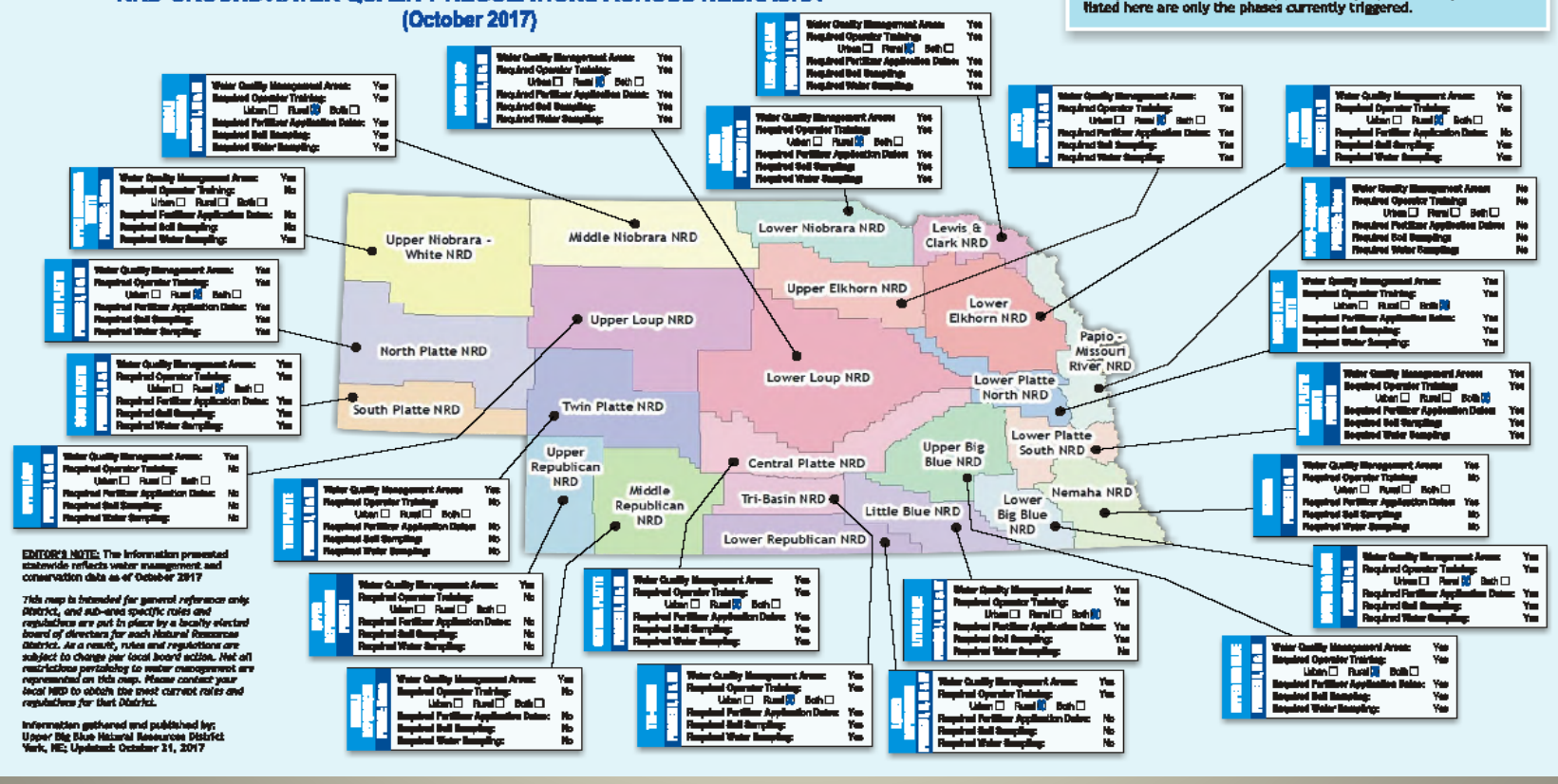
In reference to Phase I, II, III and IV areas, NRDs utilize trigger points signifying specific levels of nitrate in groundwater through monitoring well testing. These triggers are put in place to protect the drinking water supply. Trigger points may vary within the individual NRD boundary, but are relative to the safe drinking water standards mandated federally. A district may have all, none, or part of its districts designated as Phase I, II, III and IV areas, or any combination. The higher the Phase, the more implementation of management efforts for protection is required. It is best to consult with your local NRD to identify with their programs. The phases listed here are only the phases currently triggered.

NRD GROUNDWATER QUALITY REGULATIONS ACROSS NEBRASKA
(October 2017)



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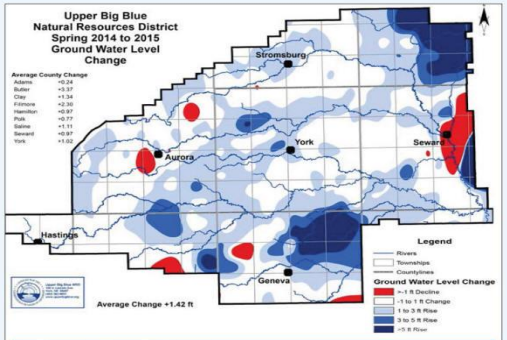
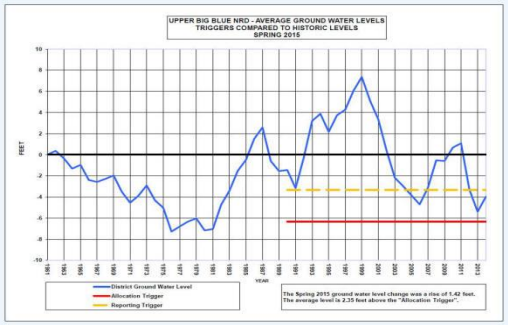
York, NE; Updated: October 31, 2017

Historical and accurate data is key

Groundwater Levels



Average County Change			
Adams	+0.24	Polk	+0.77
Butler	+3.37	Saline	+1.11
Clay	+1.34	Seward	+0.97
Fillmore	+2.30	York	+1.02
Hamilton	+0.97	**Average Change**	**+1.42**



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Protecting Lives, Protecting Property, and Protecting the Future...

319 East 25th Street York, NE 68467 402.362.6601 www.upperbigblue.org

Upper Big Blue
Natural Resources District

NRD Programs -- Integrated Water Management Plans (IMPs)

- Manage both Surface and Groundwater.
- Mandatory for fully or over appropriated as determined by the Nebraska Department of Natural Resources (10 of 23).
- Voluntary for NRDs not fully appropriated (13 of 23).
- All 23 Districts have or are developing IMPs

NRD Programs -- Integrated Water Management Plans (IMPs)

- *Joint management plan between DNR and NRDs.*
- *Sustain a balance between basin water supplies and uses (both ground and surface water)…*
- *…to sustain the economic viability and environmental and social health, safety, and welfare of the basin…*
- *Includes Basin Management Plans to coordinate with all NRDs in the basin.*

Technical Study Support for IMPs

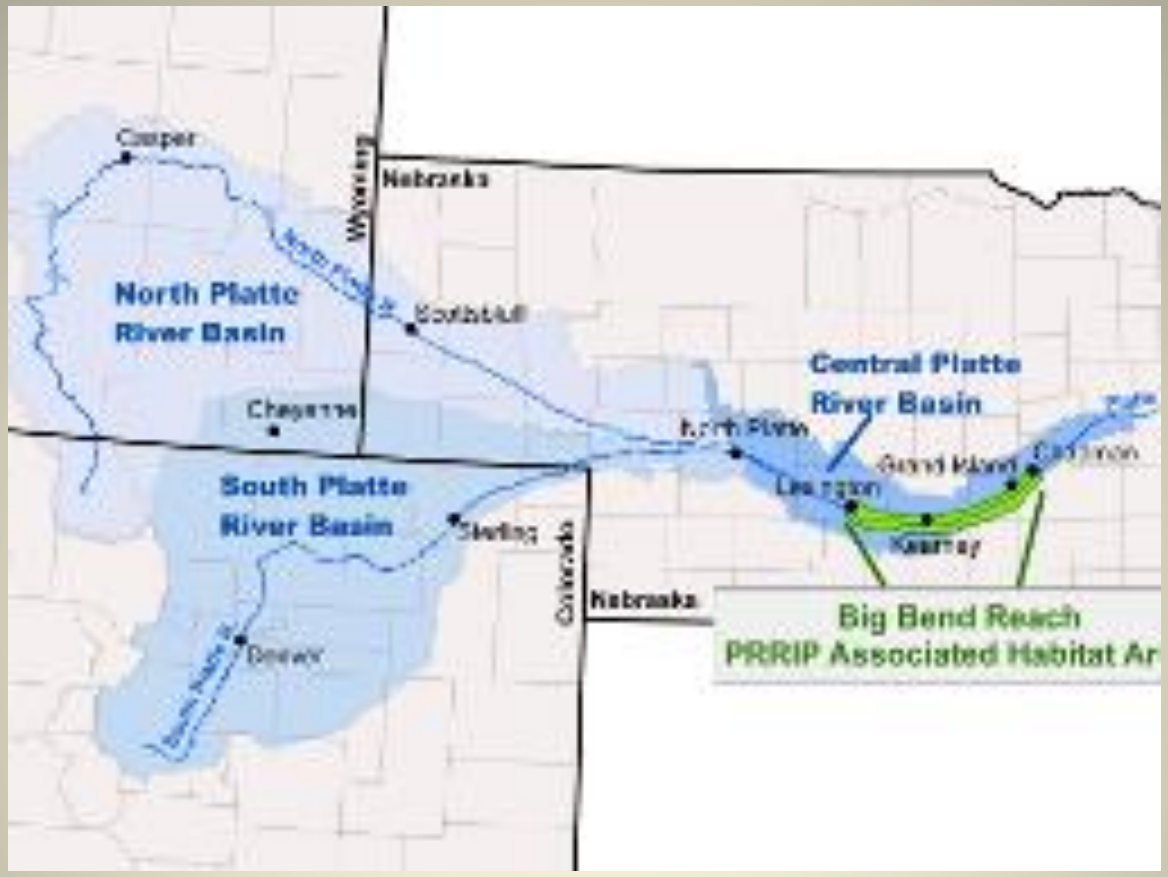
- What are the future impacts of current levels of development?
- What are the water supplies and how variable are those supplies?
- What are the demands on water supplies? (both current and future projections)
- What, if any, excess water supplies exist?
- What are the economic costs & benefits of the various uses of water?

Integrated Management Plans <u>Are Not</u> Required to Include

- Restrictions on current users (allocations, reduced irrigated acres, etc).
- Moratoriums on new uses.
- Restrictions on municipal and industrial development.

Nebraska Interstate Agreements and Compacts

- Platte River Recovery Program – Nebraska, Colorado, Wyoming and the US Dept. of Interior (FERC Licenses in Nebraska)
- Republican River Compact – Nebraska, Kansas & Colorado
- In addition to groundwater management, what else can be done?



Platte River Recovery Program

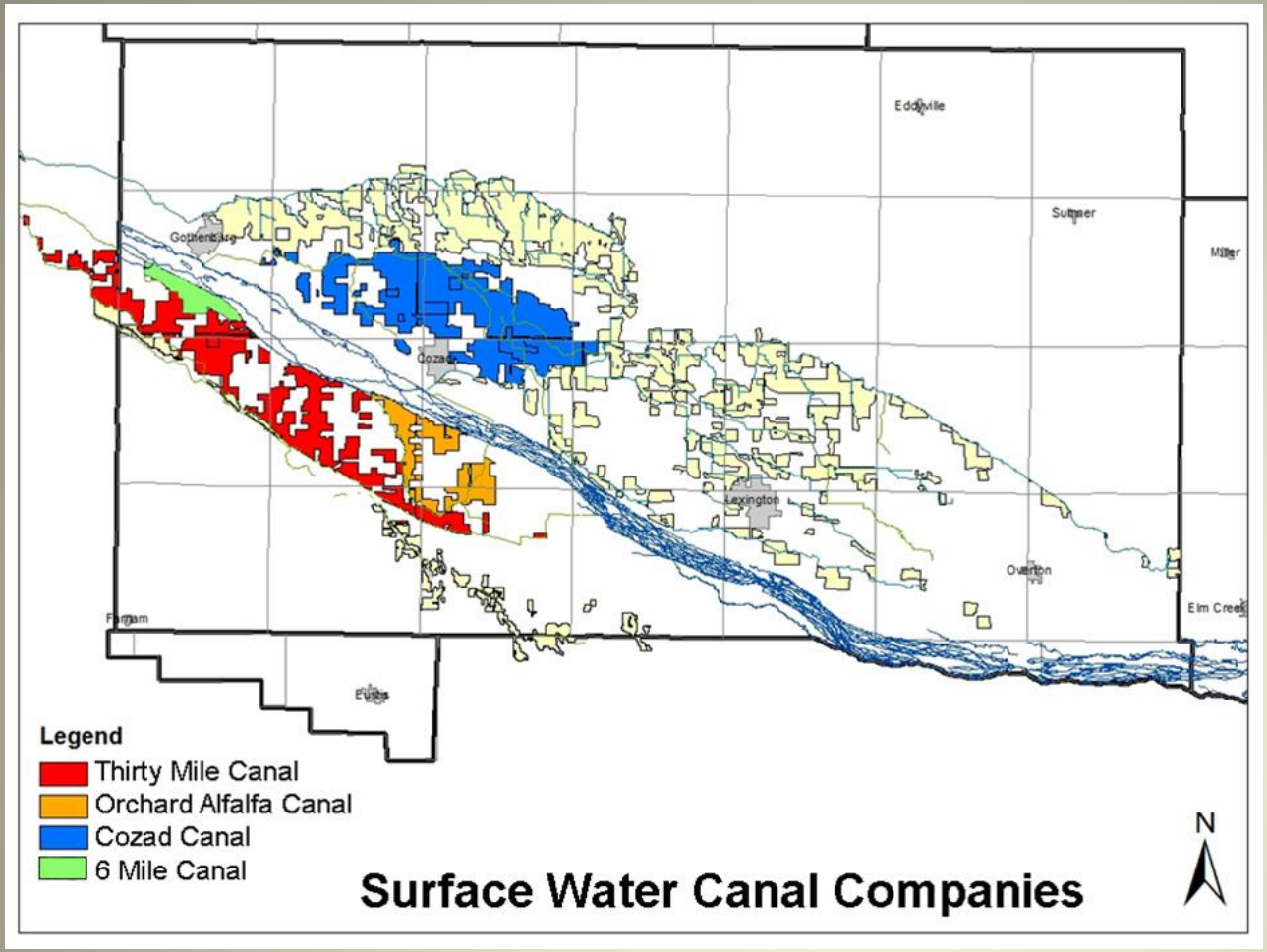
Colorado, Wyoming, Nebraska and the Department of Interior formed a unique partnership with the goal of developing a shared approach for managing the Platte River.

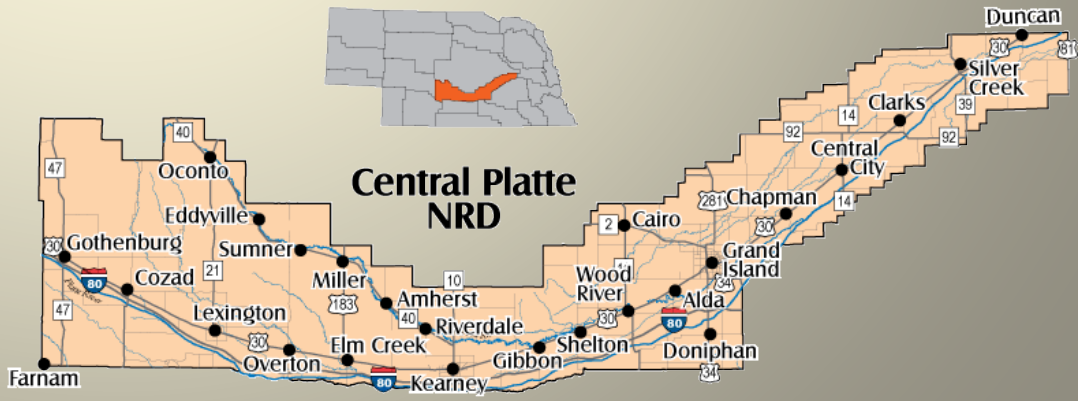
Platte River Recovery Program

- Nebraska – Seven NRDs & DNR Basin IMP
- Provide sufficient water to and through the central Platte River habitat area to assist in improving and maintaining habitat for the target species.
- Focus is on re-timing and improving flows to reduce target flow shortages by an average of 130,000 to 150,000 acre-feet per year.
- In addition to the improved flow conditions, small pulse flows in the spring are intended to create vegetation-free sand bars suitable for plover and tern nesting.
- Can’t get all that just regulating groundwater use.

Platte River: Central Platte NRD - and surface water irrigation companies

- About 75% of the Surface Water Irrigators have switched to Groundwater irrigation.
- Central Platte NRD form partnerships with irrigation districts and return excess flows to the Platte River.
- Four canal companies in Dawson County with about 45,000 service acres.


Eddyville
Sumner
Miller
Gothenburg
Cozad
Lexington
Overton
Elm Creek
Farnam
Eustis
Legend
Thirty Mile Canal
Orchard Alfalfa Canal
Cozad Canal
6 Mile Canal
Surface Water Canal Companies
N


Central Platte NRD
Duncan
Silver Creek
Clarks
Central City
Chapman
Cairo
Grand Island
Wood River
Alda
Doniphan
Shelton
Gibbon
Kearney
Riverdale
Amherst
Elm Creek
Overton
Lexington
Miller
Sumner
Eddyville
Oconto
Gothenburg
Cozad
Farnam

Six Mile Canal

Agreements Completed

- Complete Buy-Out
  - Natural flow irrigation rights in process of being transferred to Thirty Mile Canal.
  - Recharge for groundwater supply or groundwater quality not necessary.

The Six Mile Irrigation Canal at its peak, provided irrigation water to approximately 1,700 acres and multiple landowners.

After the removal of the canal, field rows are longer which saves farmers time and fuel.

Cozad Canal, 30 Mile & Orchard

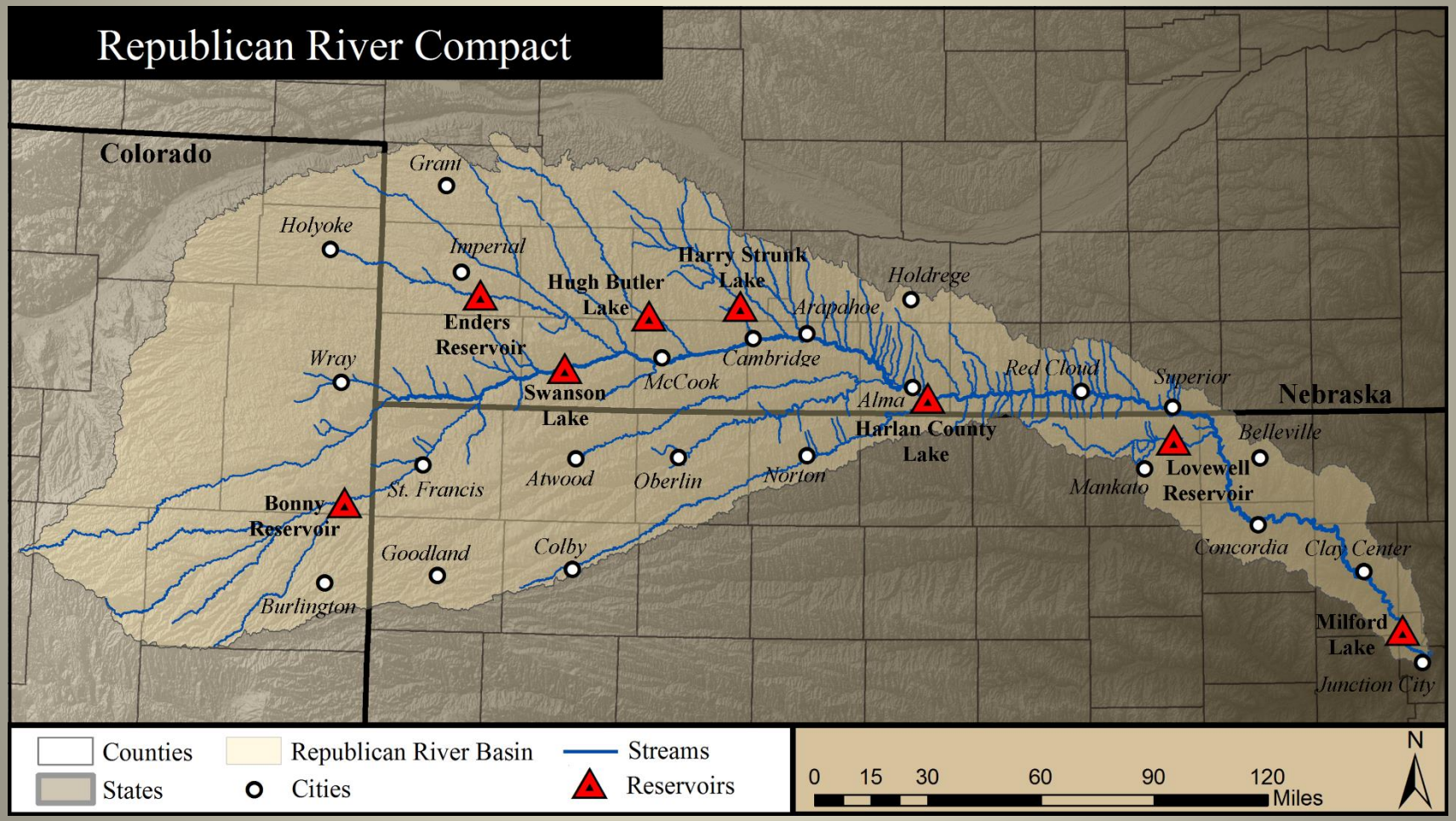
Agreements Completed

- Management/Lease
- 50-50 Ownership
- Long-term Inter-local Agreements
- Over 30,000 acre-feet back to the river annually with no reduction in irrigated acres.
- Project still provides groundwater recharge
- Divert flood water in off-irrigation season for recharge.

Cozad Canal before clean up.

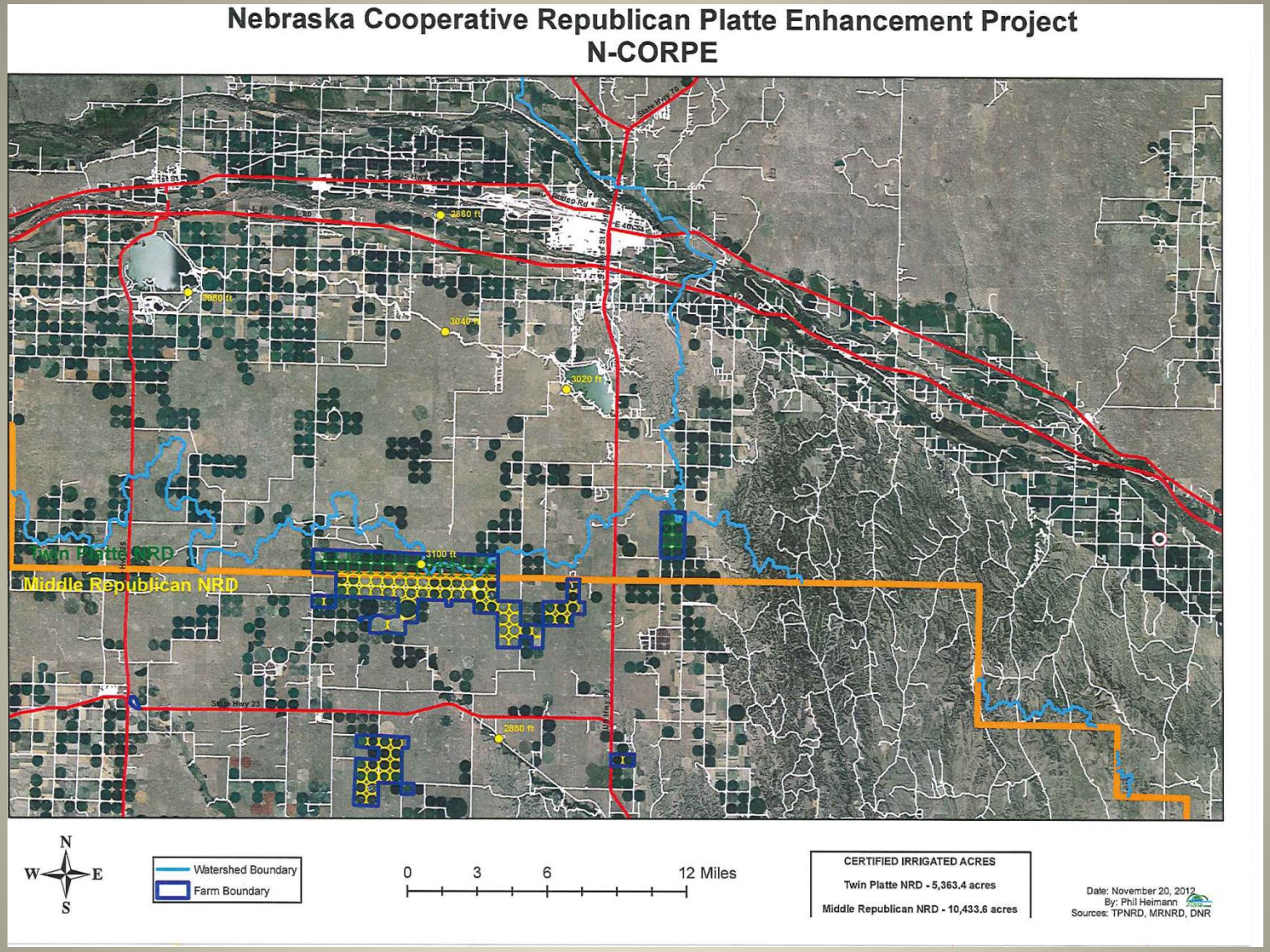
Cozad Canal after tree removal and cleanup.

Republican River Compact – Nebraska, Kansas & Colorado



Republican River Compact

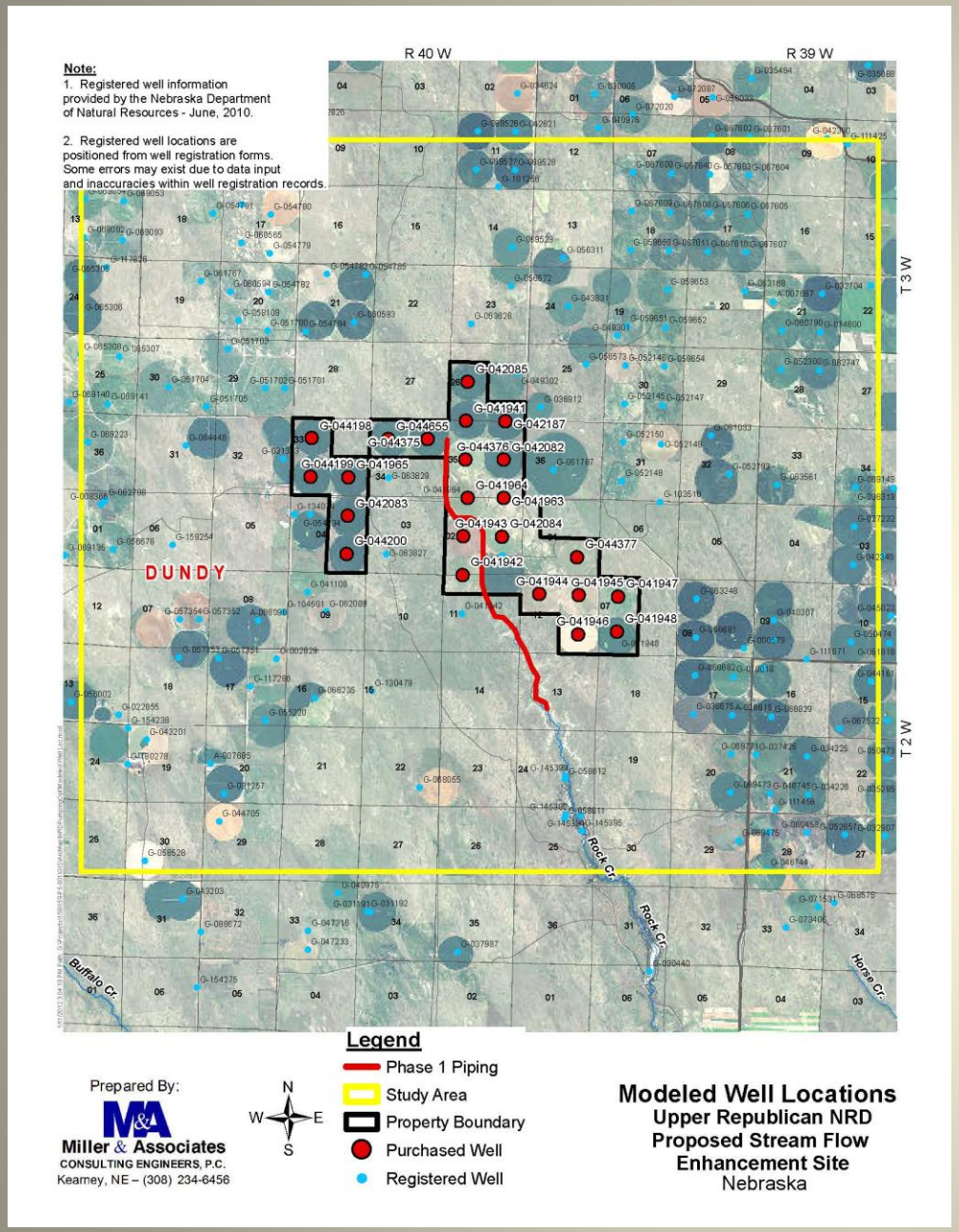
- New agreements on water management to help all three states manage water for beneficial uses.
- Nebraska Republican River Basin groundwater irrigation is the heaviest regulated in any river basin in the US – 9 to 13 inches/acre annually.
- Over $180 million invested in two NRD augmentation projects provide water to Kansas on a timely basis.



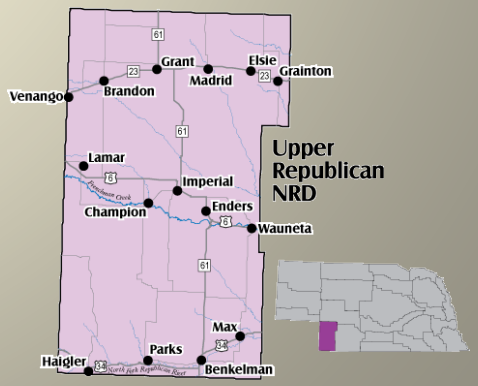
Project Examples: N-CORPE - Nebraska Cooperative Republican Platte Enhancement Project

N-CORPE - Nebraska Cooperative Republican Platte Enhancement Project

- 15,784 certified irrigated acres
  - Republican -10,240 acres; Platte 5,364 acres
- Groundwater levels are increasing in the area.
- Twin Platte, Upper, Middle and Lower Republican NRDs (25% share each)
- All acres back to grass
- Water pumped only in water short years – less than amount originally used for irrigation.
- Timed to get water to Kansas when they need it.
- The water is banked in normal or wet years.


Note:
1. Registered well information provided by the Nebraska Department of Natural Resources - June, 2010.
2. Registered well locations are positioned from well registration forms. Some errors may exist due to data input and inaccuracies within well registration records.
R 40 W
R 39 W
T 3 W
T 2 W
DUNDY
G-042085
G-041941
G-042187
G-044198
G-044655
G-044375
G-044376
G-042082
G-044199
G-041965
G-041964
G-041963
G-042083
G-041943
G-042084
G-044200
G-044377
G-041942
G-041944
G-041945
G-041947
G-041946
G-041948
Rock Cr.
Buffalo Cr.
Horse Cr.
Legend
Phase 1 Piping
Study Area
Property Boundary
Purchased Well
Registered Well
Prepared By:
Miller & Associates
CONSULTING ENGINEERS, P.C.
Kearney, NE – (308) 234-6456
N
W
E
S
Modeled Well Locations
Upper Republican NRD
Proposed Stream Flow
Enhancement Site
Nebraska

VALLEY

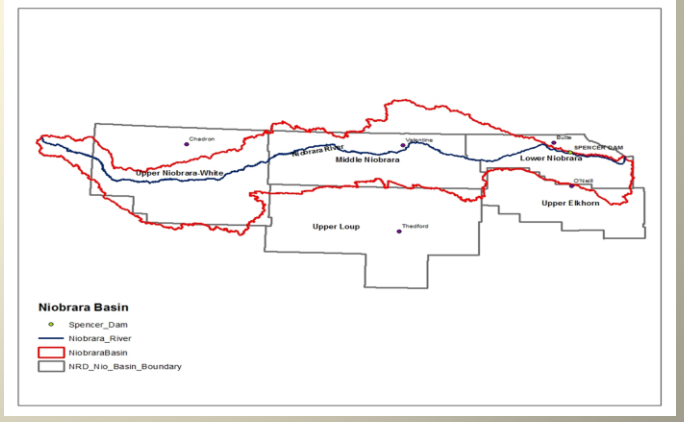

Grant
Elsie
Grainton
Madrid
Venango
Brandon
Lamar
Imperial
Champion
Enders
Wauneta
Max
Parks
Haigler
Benkelman
Upper Republican NRD

Republican River - Rock Creek Project

- Augmentation: The District purchased approximately 3,260 irrigated acres (24 Pivots) in Dundy County
- Irrigation pivots removed
- The land is restored to native grass
- In water-short years, groundwater will be pumped to the Republican River
  - Less than the amount consumed by the former crop.

Voluntary IMP: Niobrara River

- ***Designated as a National Scenic River in Nebraska.***
- ***Originates by Lusk, Wyoming.***
- ***Runs 500 miles across northern Nebraska through five NRDs.***
- ***<u>Threats by USFWS to file for a federal water right jeopardizes all existing and future water uses.</u>***



Water Challenges – Niobrara River

- ***Nebraska Public Power District holds essentially all of the water rights (over 2,000 cfs) for a small power plant at the lower end of the river.***
- ***Senior to all other uses -- 1935***
- ***The dam for the hydro is not stable enough to run both turbines at the same time.***
- ***Annual electricity generation is about equal to one wind tower.***

Water Challenges – Niobrara River

- ***Agreement reached by the five NRDs, Nebraska Game and Parks and NPPD to purchase the water right for $9 million and convert part to a instream flow right for fish, wildlife and recreation under state law.***

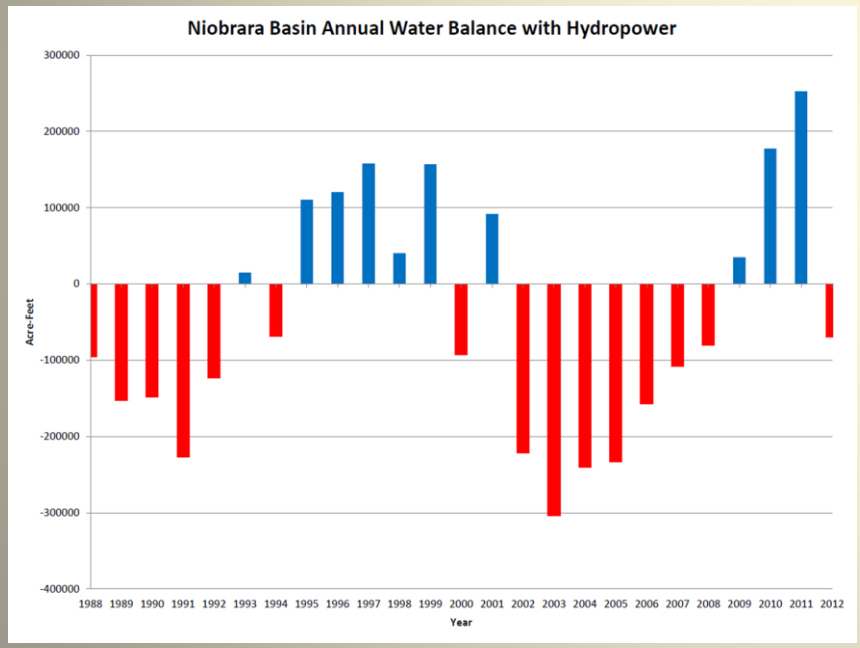
- ***Maintain the 1935 Priority Date – Senior to all others.***

- ***<u>All other existing water uses are protected – over 540,000 irrigated acres, livestock uses, industrial, municipal & domestic uses.</u>***

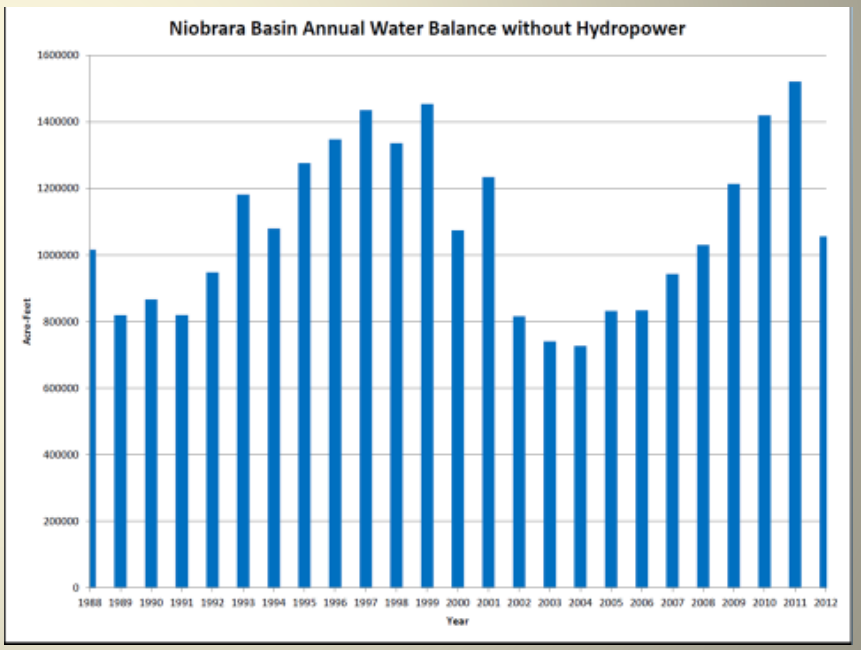
- ***Excess water is banked and available for other future water uses.***

WATER AVAILABLE

WITH HYDRO

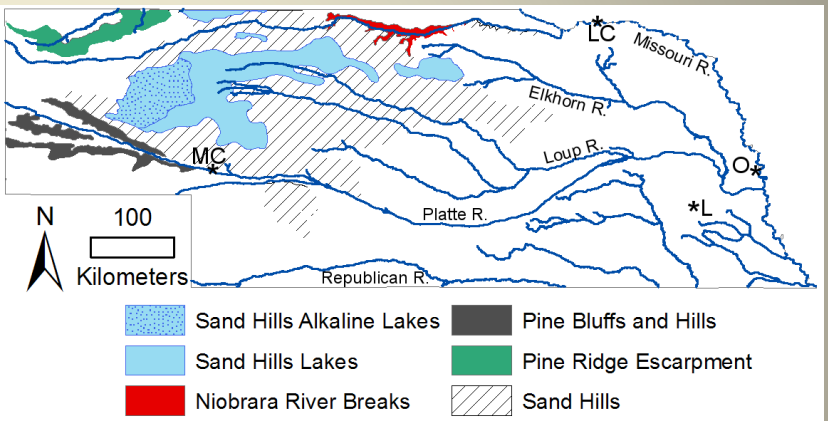


WITHOUT HYDRO



Future Issues – Lincoln and Omaha Water Supply

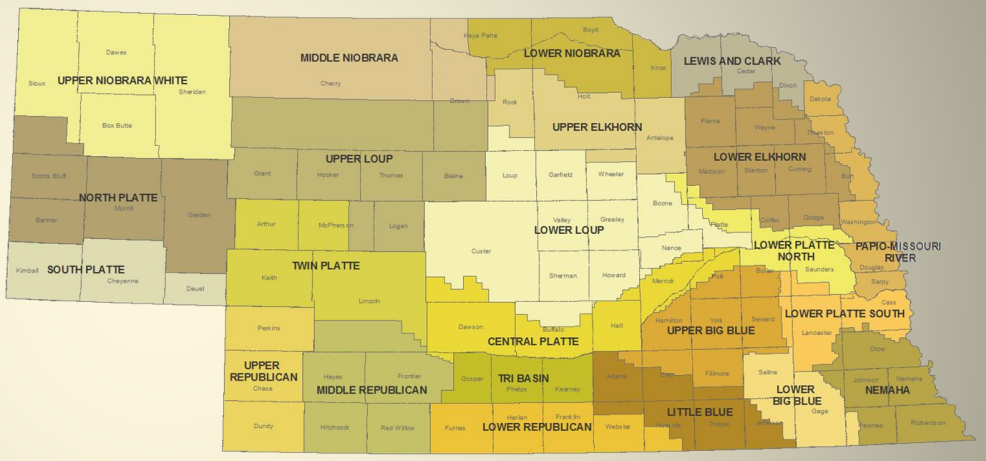
- ***Lincoln and Omaha are Nebraska's largest cities and have about half of the population in Nebraska.***
- ***Both have cities have wellfields at the lower end of the Platte River.***
- ***Loup and Elkhorn rivers flow into the Platte just above the wellfields.***



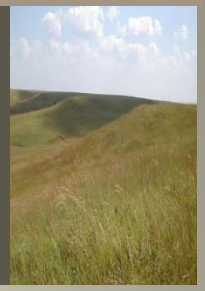
Future Issues – Lincoln and Omaha Water Supply

- ***Seven NRDs and DNR are in the process of developing a basin plan that includes all three basins to protect the existing users and look at storage and/or augmentation projects for drought years.***

- ***The three basins cover one-third of the state and encompass seven NRDs.***



Nebraska's
Natural Resources Districts



Nebraska #1 in irrigation & groundwater levels are at Pre-development levels - Thanks to local NRD management!

Questions ?

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Visit www.nrdnet.org to learn more!