



Nebraska
Department of Natural Resources

NEBRASKA'S WATER MANAGEMENT RESOURCE

Providing the sound science and support for
managing Nebraska's most precious resource.

Voluntary Approaches to Integrated Water Resources Management in Nebraska

AWRA Annual Conference, Denver, CO

November 17, 2015

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Nebraska Department of Natural Resources



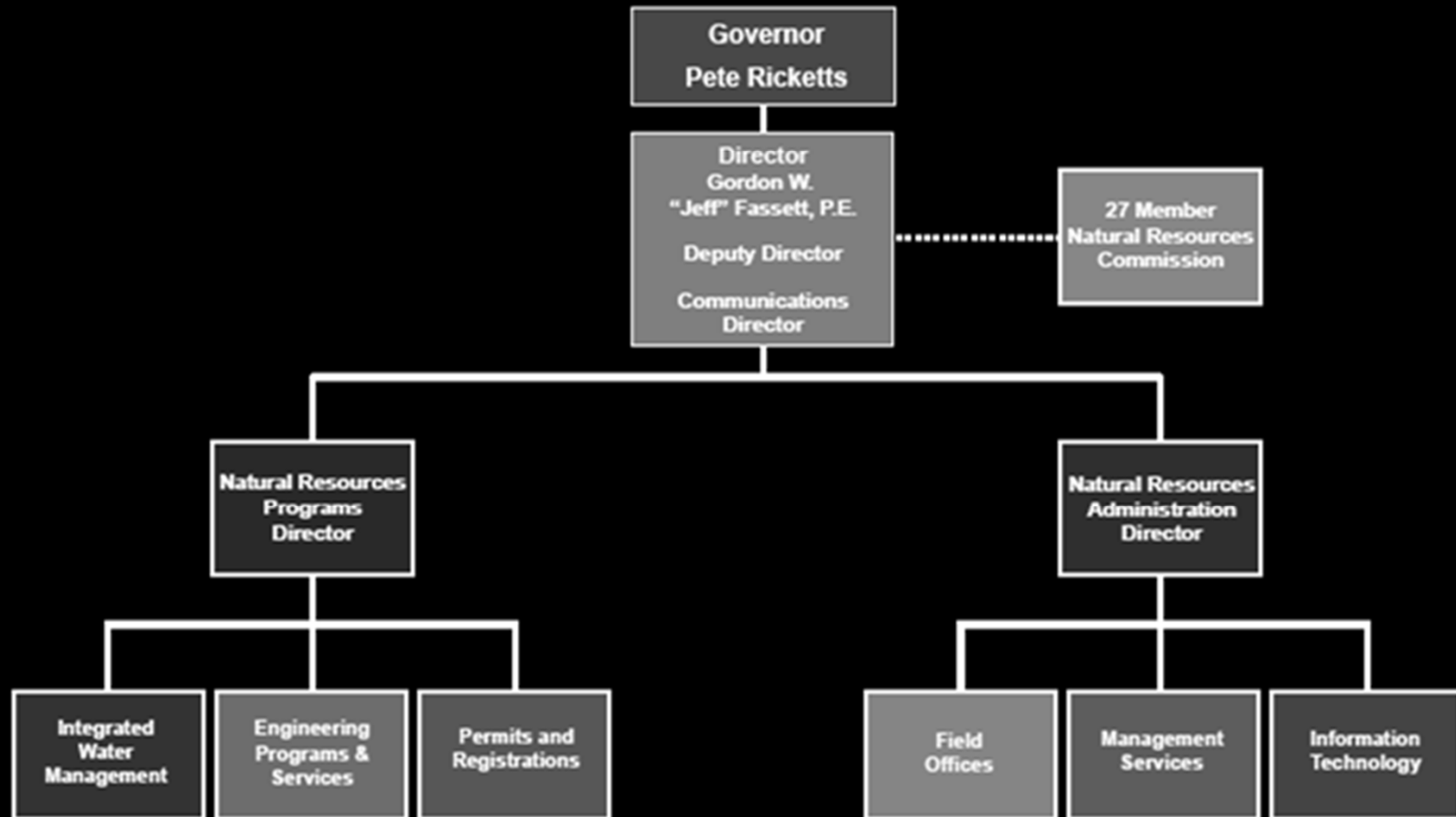
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Outline

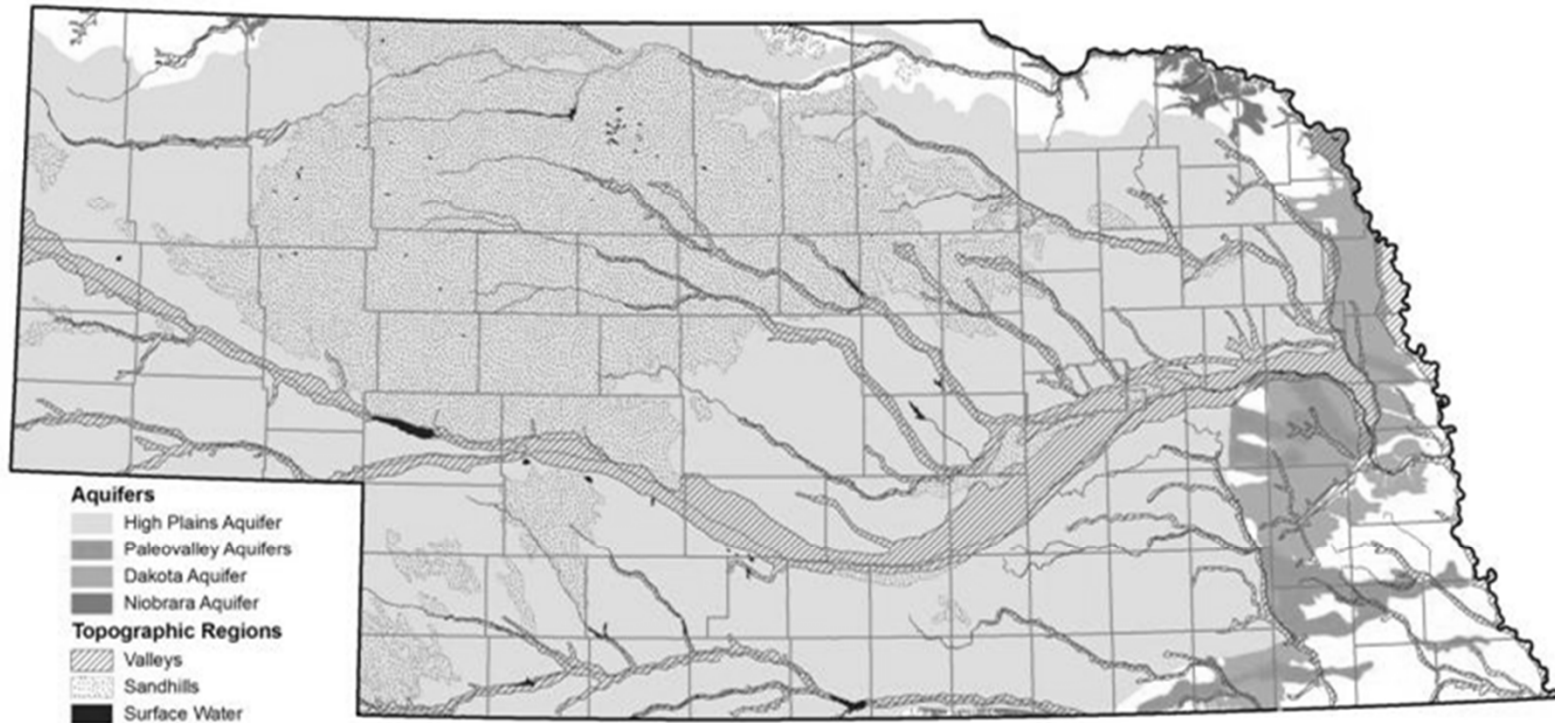
- Background on Nebraska water and land use development
- IWMR in Fully Appropriated Basins
- Voluntary IWRM in Non-Fully Appropriated Basins
 - Inception
 - Current status
 - Stakeholder process
 - Benefits

Water Resources in Nebraska



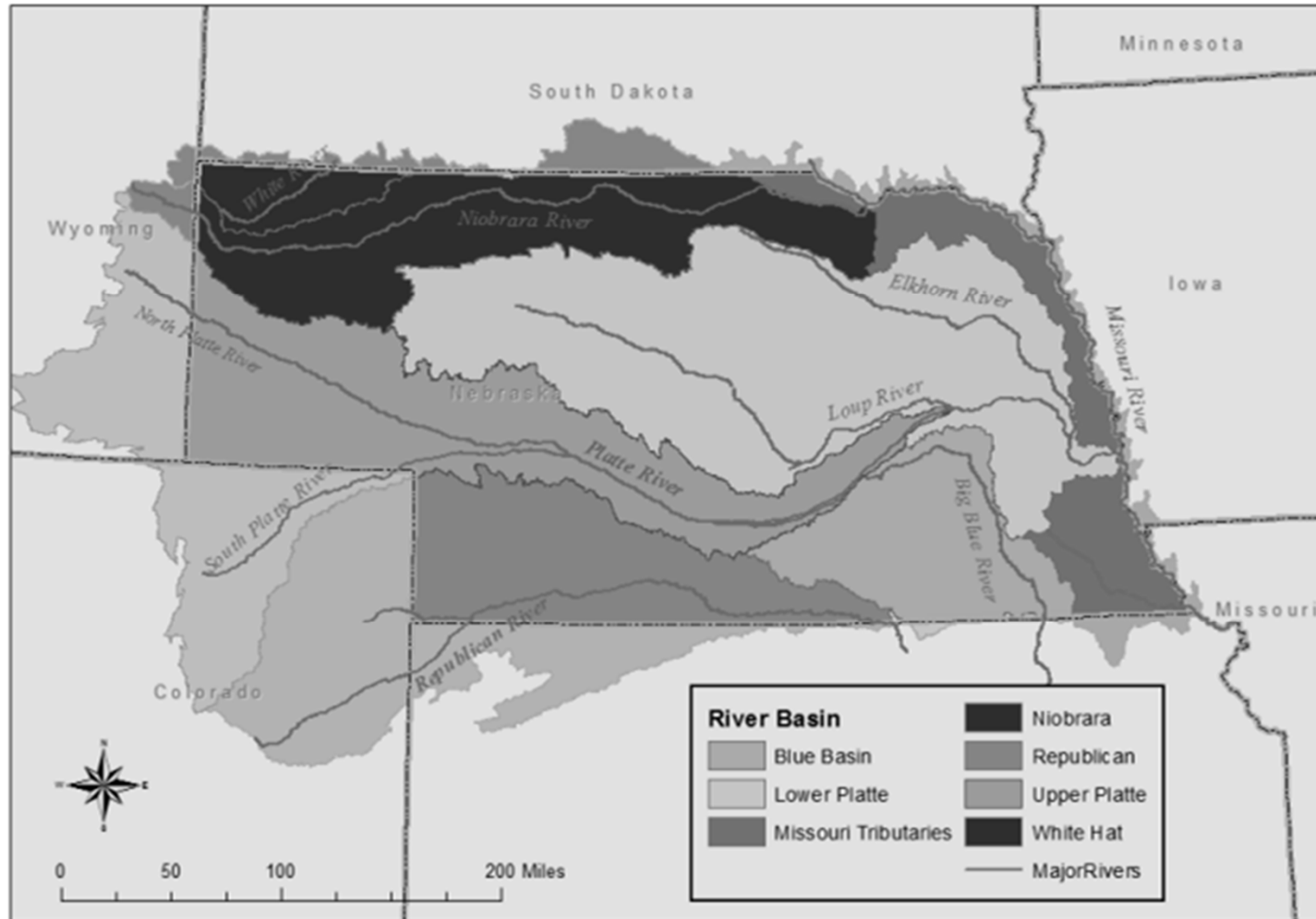
Water Resources in Nebraska

Important Aquifers and Topographic Regions of Nebraska



From: <http://snr.unl.edu/csd/images/surveyareas/water/AquifersinNebraska.jpg>

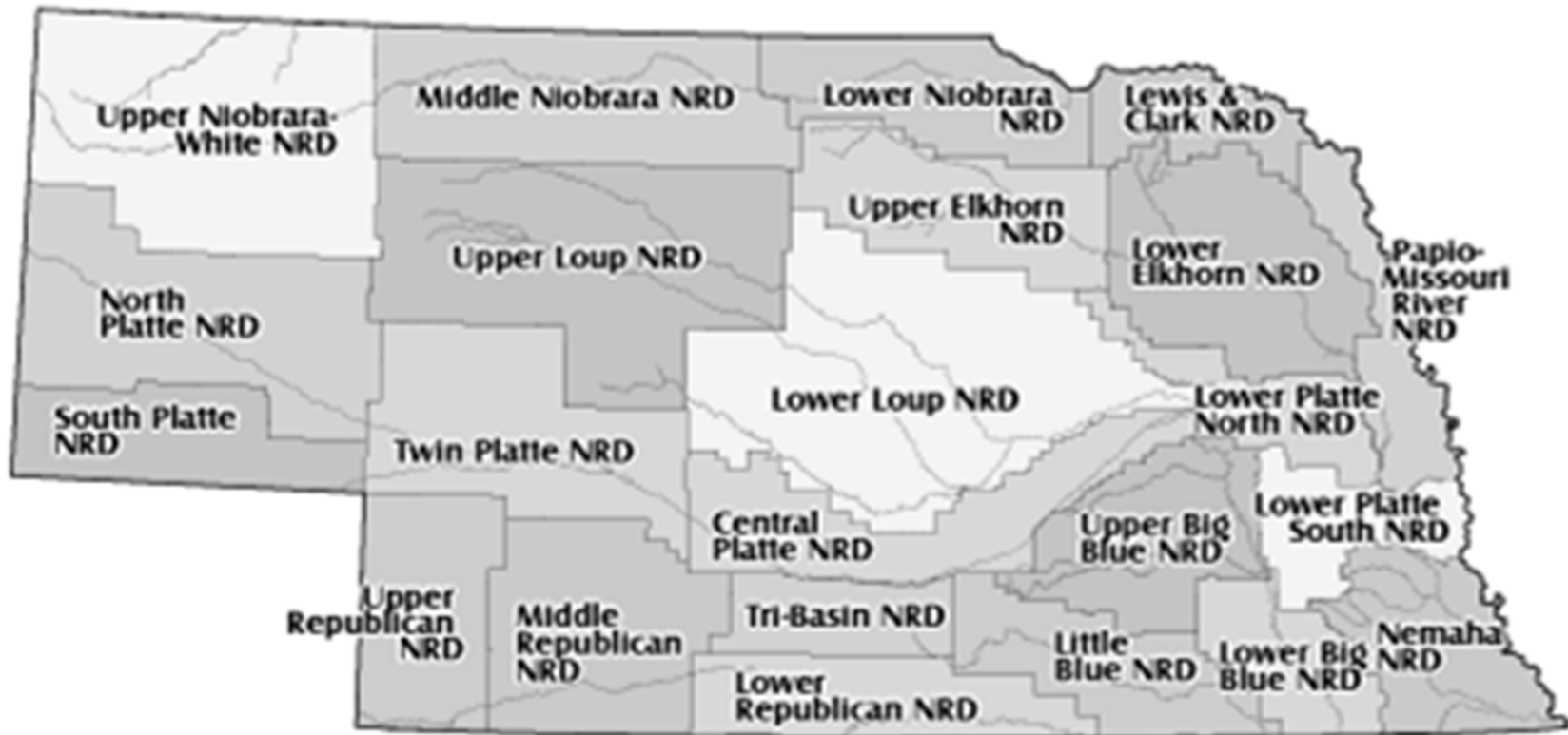
Water Resources in Nebraska



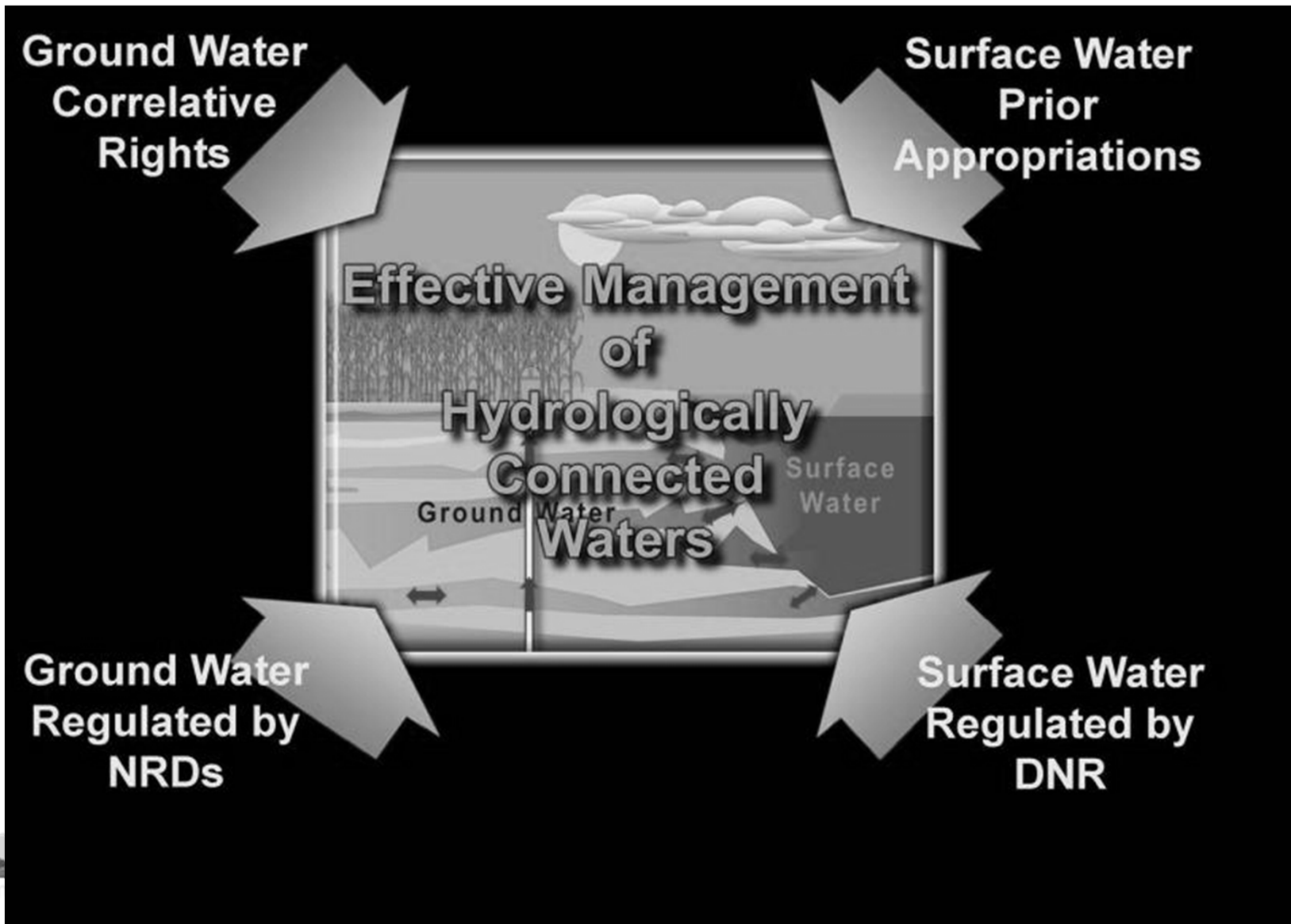
Water Management in Nebraska

- 1889 - Surface water prior appropriation system adopted
- 1933 - Correlative rights of groundwater established
- 1972 - Natural resources districts (NRDs) created
 - Governed by a locally elected board of directors
 - Boundaries based on river basins
 - Each NRD has groundwater management authorities

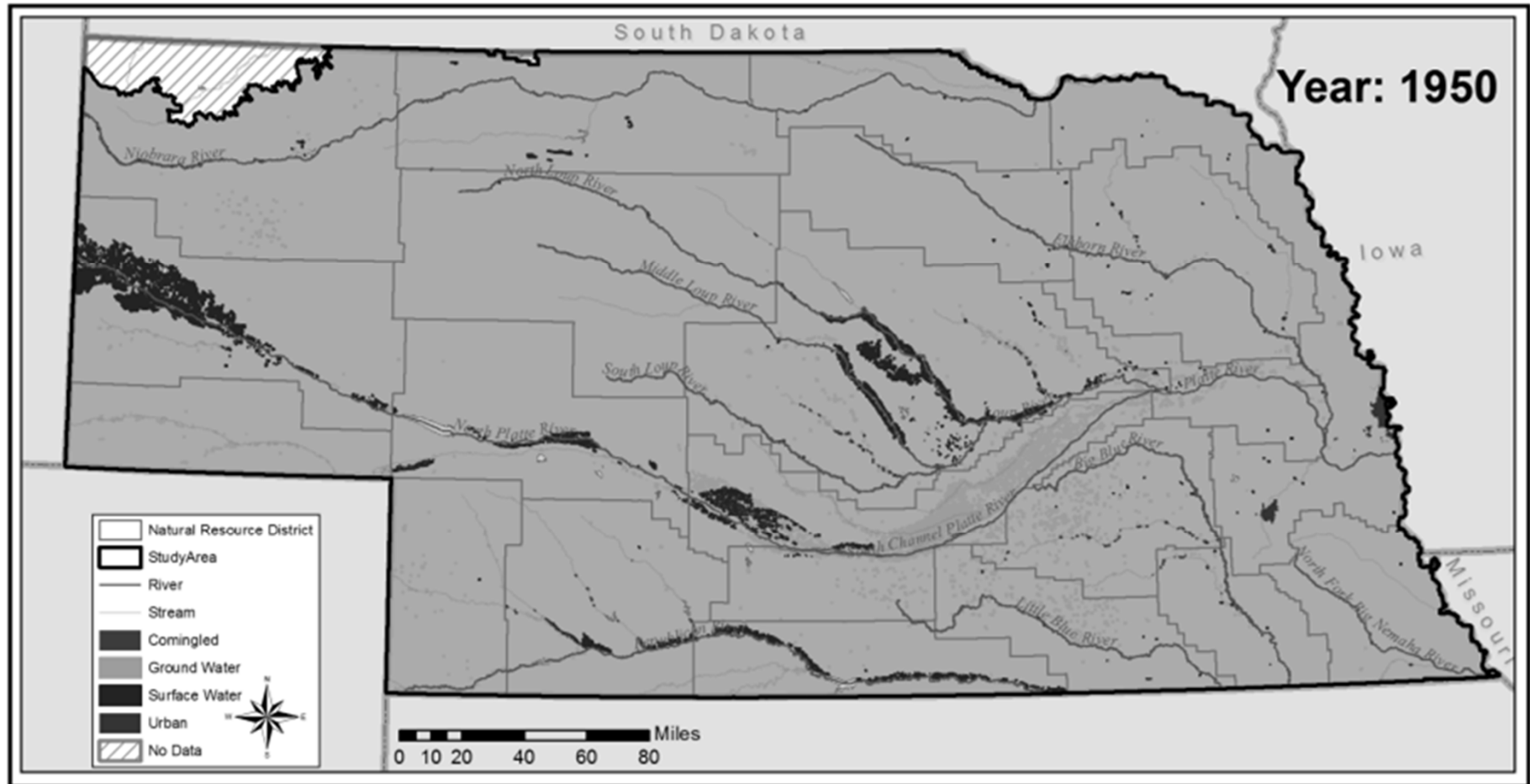
Management of GW through Local NRDs



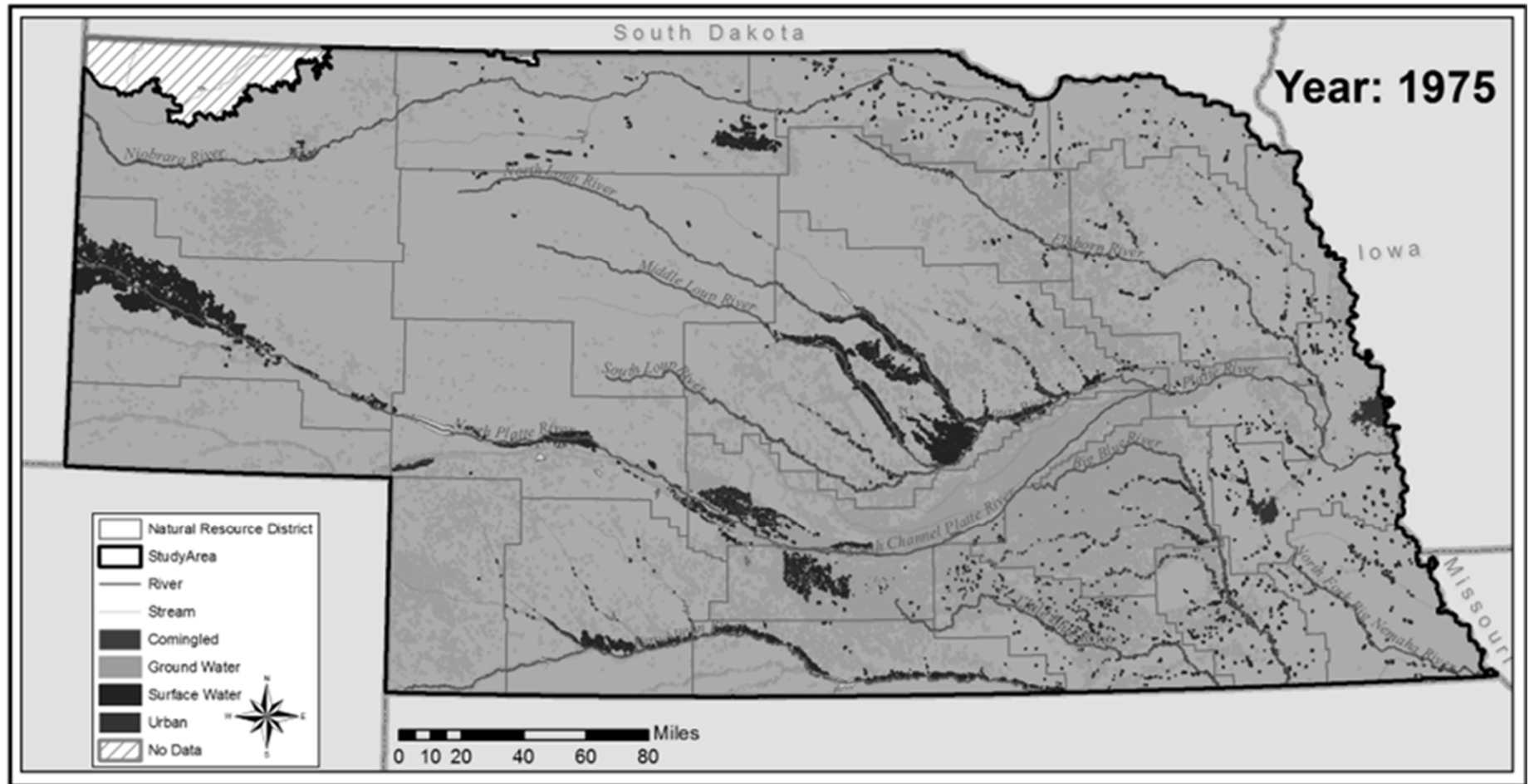
Management of Water in NE



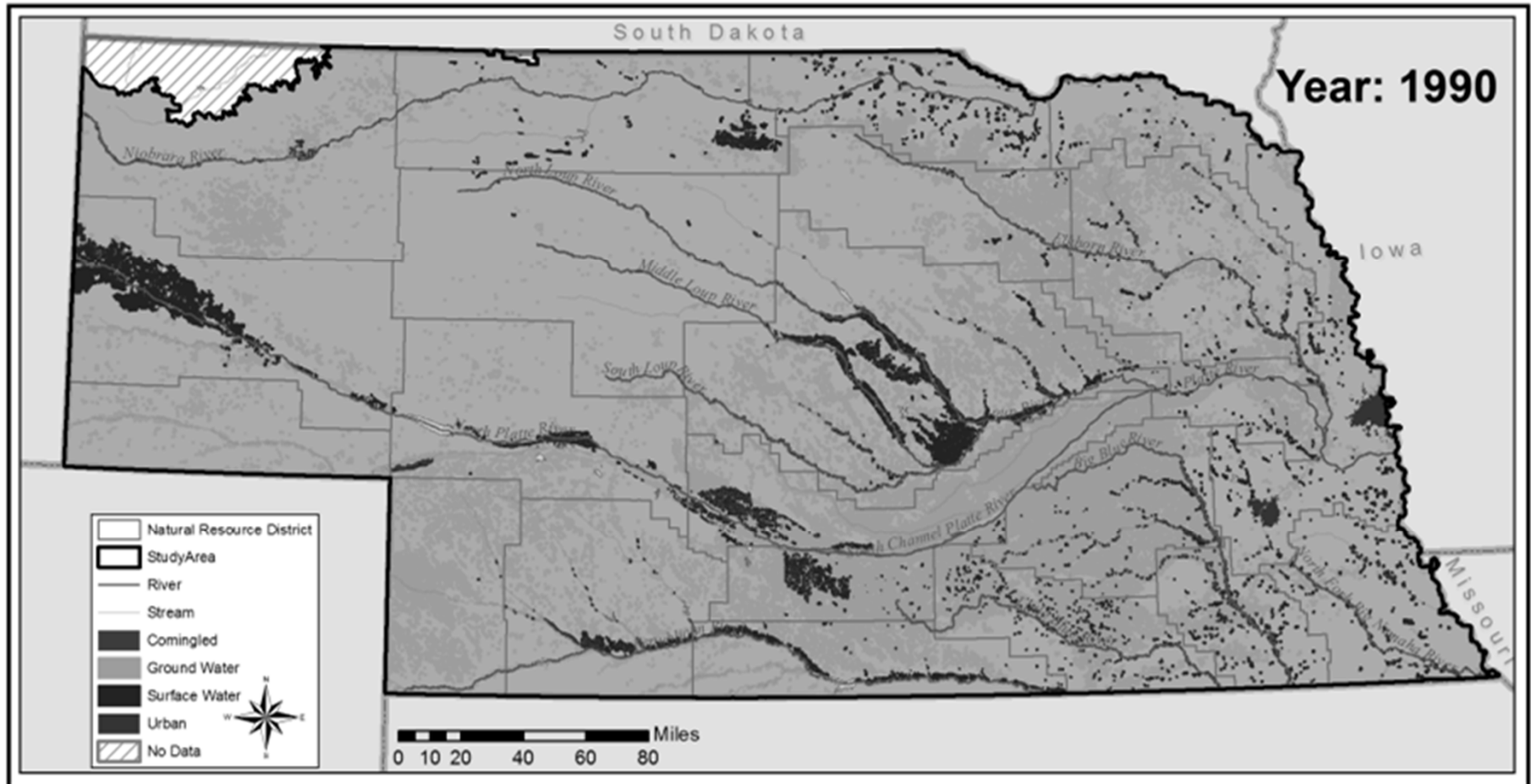
Land Use Development



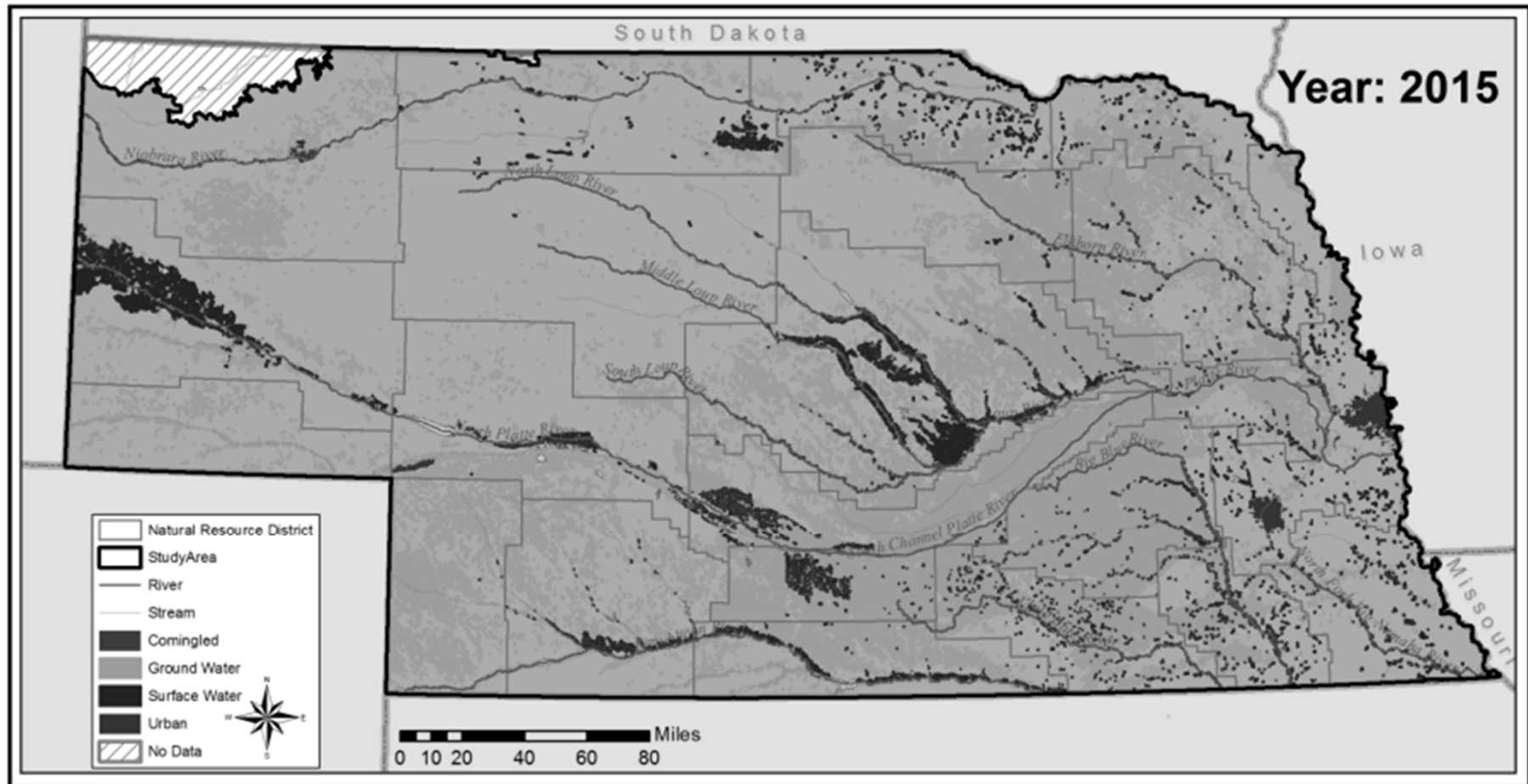
Land Use Development



Land Use Development



Land Use Development



IWRM for Fully Appropriated Basins

- LB962 (2004) recognized hydrologic connection between ground- and surface water
- LB962 set up a framework for NRD/DNR joint management of ground- and surface water
 - Originally required only in fully-appropriated basins
 - Integrated management plans were to be developed within 3 years of a fully appropriated designation
- Stakeholder process during development of IMP

IWRM for Fully Appropriated Basins

- Integrated management plan components
 - Clear goals and objectives to achieve and sustain water balance sustainability and economic viability for the near and long term
 - At least one surface water control and one groundwater control, some examples–
 - Limits on new development
 - Allocations
 - Educational requirements
 - Monitoring
 - Incentive plans/Education

IWRM for Fully-Appropriated Basins

INSIGHT
An Integrated Network of Scientific Information & GeoHydrologic Tools

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HOME ABOUT MODELING DATA

Welcome to INSIGHT! The data and charts represent our second release which contains updated data and new features for viewing and downloading data. The "Getting Started with INSIGHT" box explains more about using the new features. See the updated methodology and the data available through the Modeling Data page for more detailed information. The data is in review and will be finalized by the end of the year.

SELECT REGION ▾

Getting Started with INSIGHT

Begin by exploring hydrologic data for supplies, demands, and nature and extent of use for the state of Nebraska in the charts and graphs found below. If you would rather learn more about one of the state's basins and corresponding subbasins, start by double-clicking the map to zoom in to the basin level. The red dot in the center of the map will hover over the basin whose data will be displayed. Use your mouse to pan to the basin of interest by clicking and dragging until the red dot is in that basin or simply click on the basin you wish to view. You may double-click again to zoom in to the subbasin level and use your mouse to pan to or click on the subbasin of interest. The plus and minus buttons in the upper left of the map also allow you to zoom in and out. Alternatively, you can select a basin or subbasin from the SELECT REGION drop-down

Map showing the Middle Loup River basin and surrounding subbasins (Upper Loup, Middle Loup, Lower Loup, South Loup) in Nebraska. The map includes a search bar, zoom controls, and a satellite view toggle.

Big Picture Supply Demand Nature & Extent of Use **Balance**

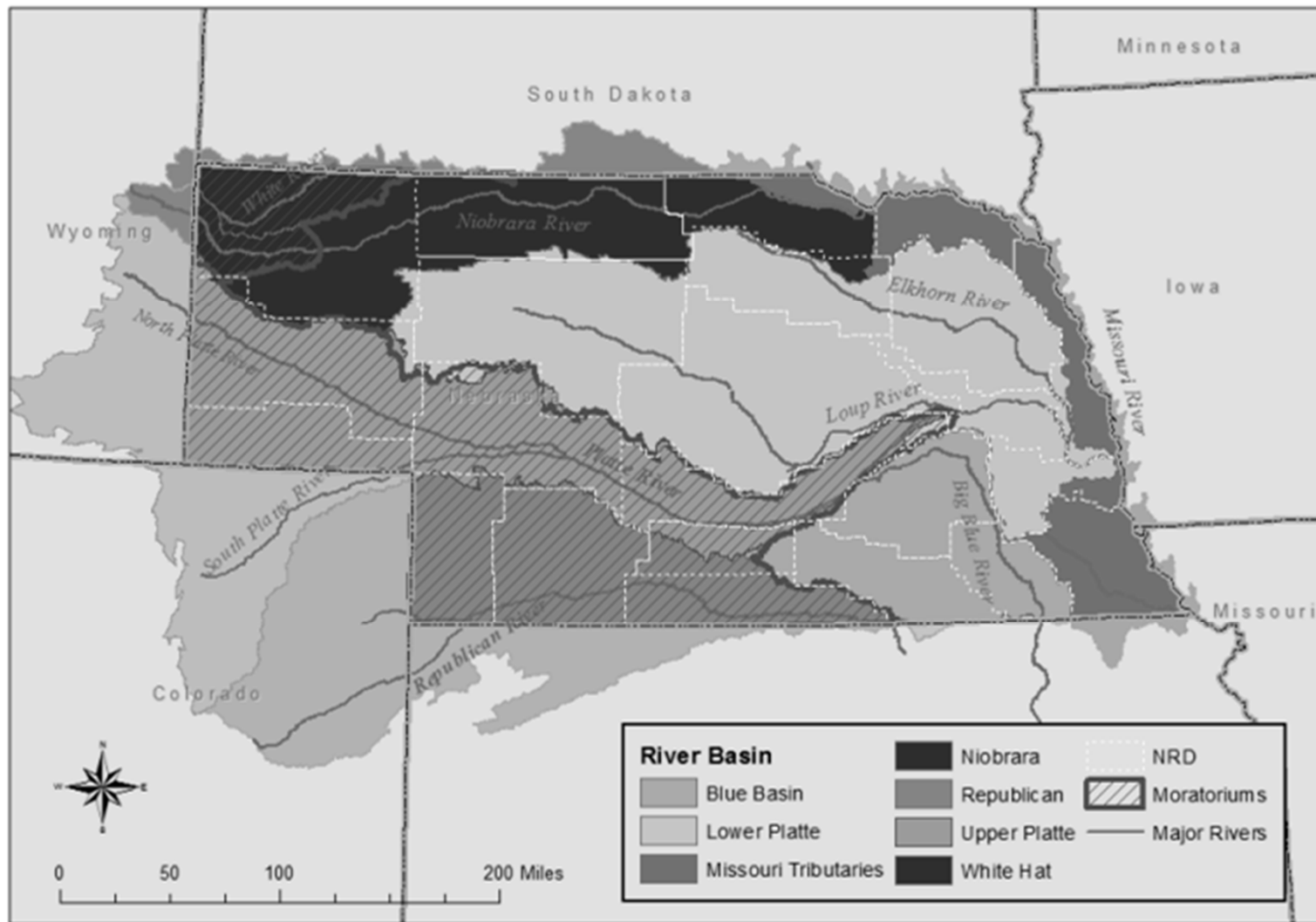
Chart: Balance - Season: June - August Time Frame: Projected

Year	Balance (Acres-Feet)
2008	-40,000
2009	-20,000
2010	-30,000
2011	-10,000
2012	-80,000
2013	90,000
2014	60,000
2015	-30,000
2016	-10,000
2017	20,000
2018	-20,000
2019	-30,000
2020	-10,000
2021	20,000
2022	-70,000
2023	-40,000
2024	20,000
2025	-10,000
2026	70,000
2027	-90,000

Middle Loup River
Balance

INSIGHT provides data to evaluate the near-term, long-term and projected water supplies of a basin or subbasin. Once the water supply and total use are determined for each basin, a comparison can be made to determine the balance. To recognize the impact that timing may have on the ability of water supply to meet water use, a comparison is done for two time periods in a given year, in addition to the annual comparison: non-peak - i.e., non-irrigation season (September

IWRM for Fully Appropriated Areas



Non-fully Appropriated Basins-IWRM?

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Big Picture Supply Demand Nature & Extent of Use Balance

Chart: Balance - Season: June - August Time Frame: Projected

Lower Platte River North Bend to Louisville

Balance

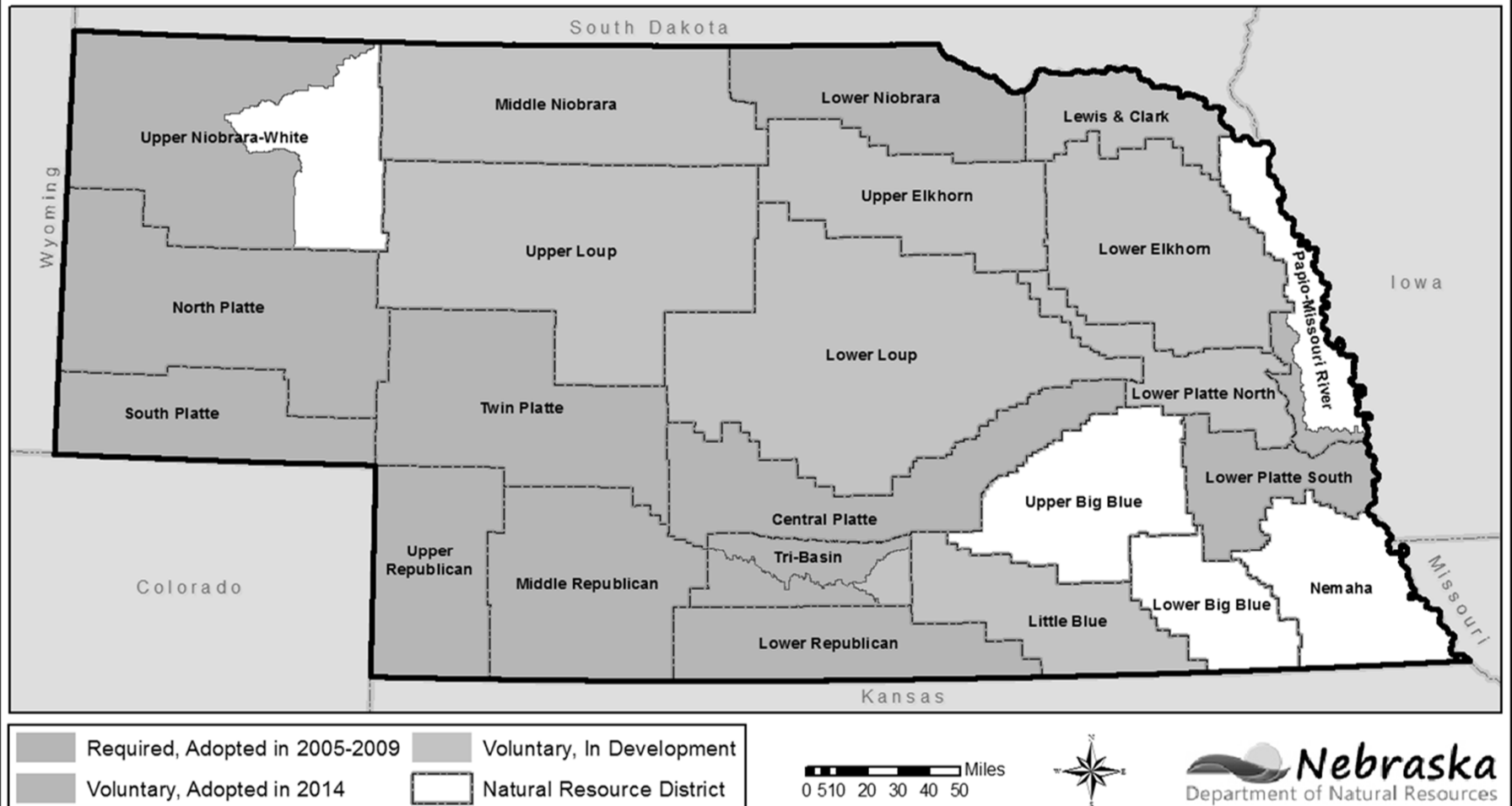
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Voluntary IWRM (2010)

- In 2010, inclusion of voluntary integrated management process in statute
- NRDs in non-fully appropriated basins could request to jointly develop an IMP with NDNR
- The area of the IMP can be the hydrologically connected area or the whole NRD (up to the NRD)
- In 2014, the water sustainability fund was authorized
 - NRDs who have or are developing IMPs are eligible to apply for funds

NRD Areas Involved in Integrated Management Planning: 2015



Bottom up approach for Voluntary IWRM

- Consult with stakeholders on issues, goals, objectives
- By statute, controls should be consistent with goals and objectives
- NRDs choose the control(s) for groundwater that are consistent with G&O
- NDNR chooses control(s) that mirror the NRD controls

Bottom up approach for Voluntary IWRM



Bottom up approach for Voluntary IWRM



Examples of Current Voluntary IWRM Implementation

- Well metering
- Limits on new acres
- Certification of acres
- Evaluate need for new gages
- NRD/DNR IWRM combined education events
- Recognition of need for consistent database formatting between NRDs/DNR

Benefits of Voluntary IWRM

- Proactive approach to water management
- NRD/DNR transparency on what each respective agency can/cannot do
- Stakeholders better understand management framework, seem appreciative to be part of planning
- Improved knowledge of data and information and sharing of data between agencies
- Management framework is in place; better able to respond for climate, socio-political emergencies

Summary/Conclusions

- IWRM officially began in 2004, limited to fully appropriated basins (reactive)
- More recently, voluntary IWRM is being implemented in basins that are not fully appropriated (proactive)
- Initial benefits of voluntary IWRM have been relationship building, better understanding of issues, needs and data
- Stakeholder process is key; stakeholders can reach many more people than the agencies alone can
- Local buy-in leads to better management of resources



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