

Water Planning in Nebraska

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Overview

- Water Planning & Management
 - Why is it important?
 - Core goals of water planning in Nebraska
- Nebraska's Planning Approach
 - History/Statutes/Structure of Approach
 - Integrated Water Management
 - Nebraska's Current Water Planning Framework
- Nebraska's Water Planning Future
 - Opportunities and Challenges



WATER PLANNING AND MANAGEMENT

Why is Water Planning Important?

- Identifies and addresses uncertain attributes of water
 - Water is unevenly distributed in time and space
- Reflects value of having amount of water desired when it is desired
 - For existing and future users
 - For sources and types of users (surface water, groundwater, agriculture, recreation, wildlife, municipal, etc.)

Why is Water Planning Important?

- Economic Viability
 - Water is for beneficial use
 - Maximize economic productivity of water related activities
- Aquifer
 - Minimize long term impacts to aquifer quantity and quality
- Streamflow
 - Streams often provide established benefits
 - Excess streamflow can be captured for later use

Core Goals of Water Planning in Nebraska

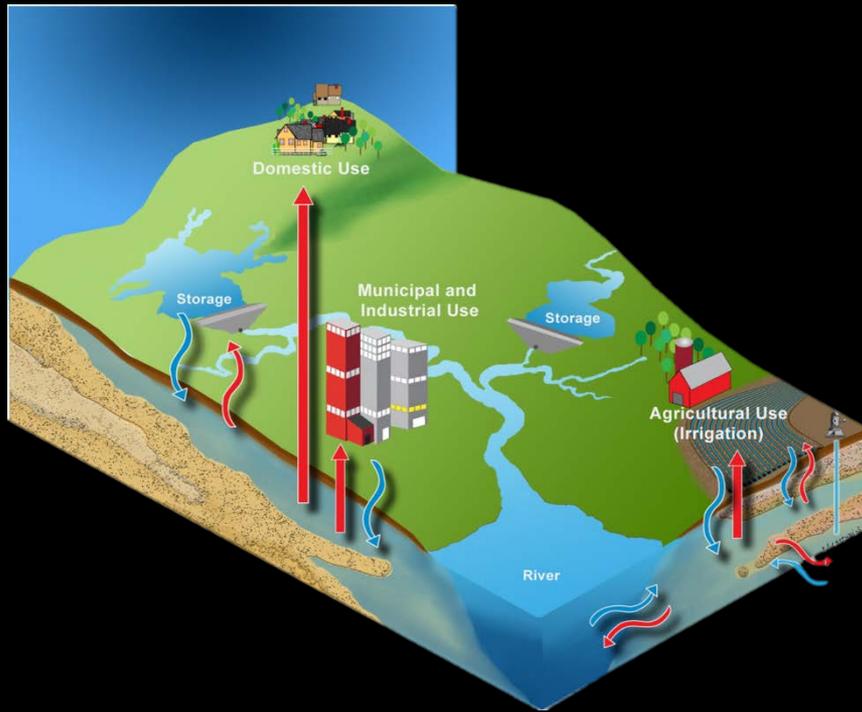
ECONOMIC
VIABILITY

AQUIFER

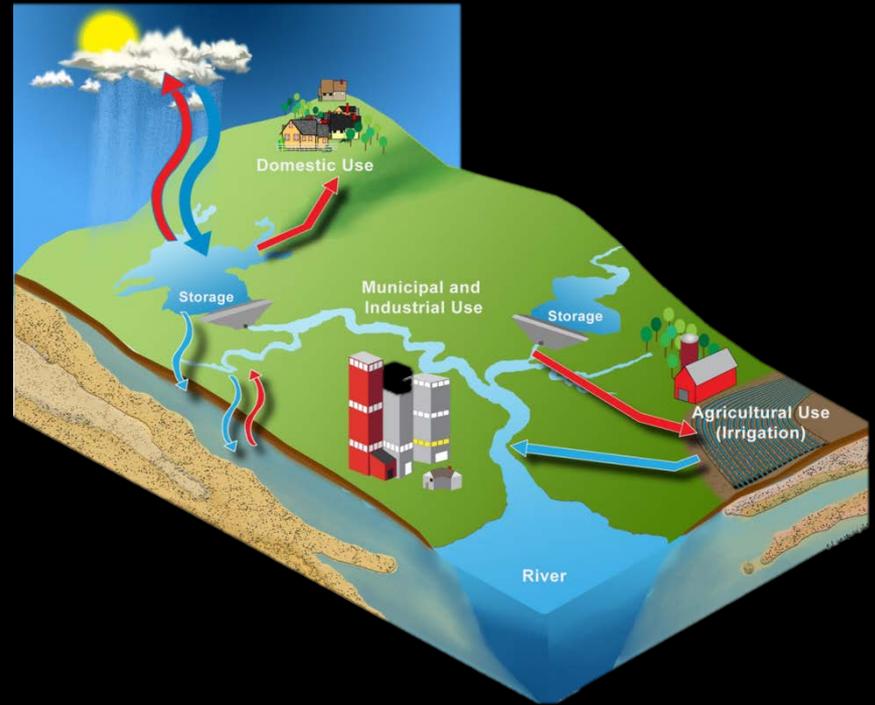
STREAMFLOW



The Hydrologic Cycle



Groundwater



Surface Water

NEBRASKA'S WATER PLANNING AND MANAGEMENT APPROACH



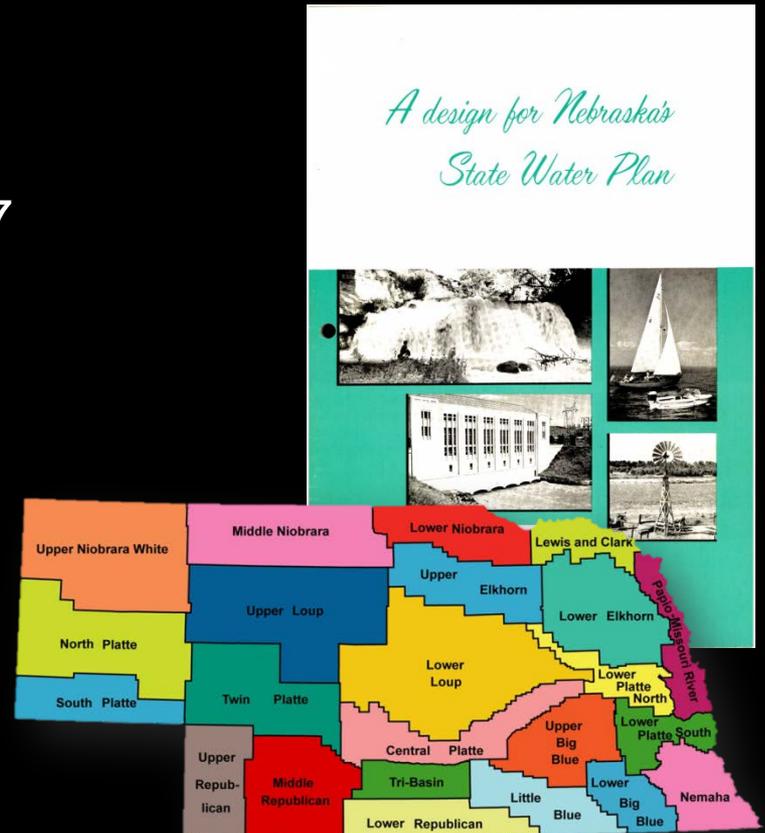


Nebraska decision-makers have put in place a system of inter-linked statutes and regulations, providing a variety of tools to develop, conserve, manage, and protect both surface water and ground water.

Kelly, 2010

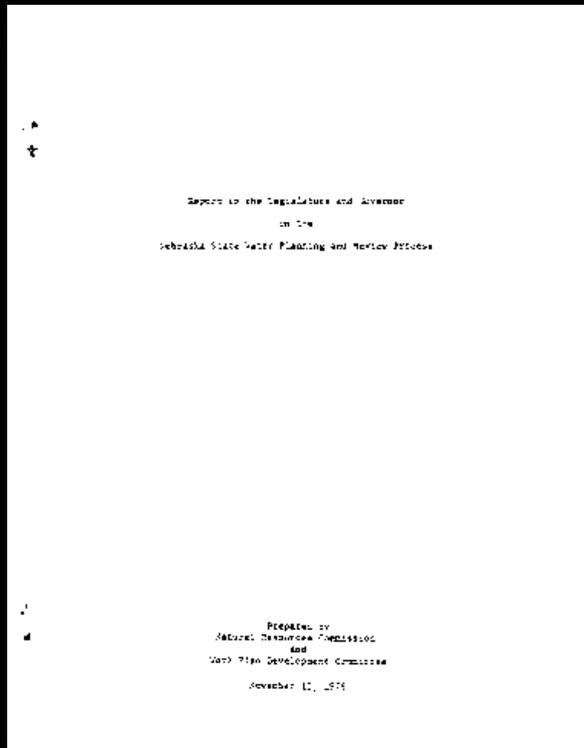
In The Beginning ...

- The *NEBRASKA STATE WATER PLAN*
 - Development was initiated in 1967
- Then there was change:
 - Natural Resources Districts are created (1972)
 - The Clean Water Act (1972)
 - The Endangered Species Act (1973)
- In 1978 Legislature directs a re-examination of planning policies



Policy Study - 1978

“Experience has shown that published plans frequently become outdated rapidly, and some serve only to collect dust after a short time.”



- Report to the Legislature and Governor on the Nebraska State Water Planning and Review Process
 - Prepared by Natural Resources Commission and Work Plan Development Committee
 - November 15, 1978

“those involved in the state’s water planning activities have been attempting to correct the misconception that the State Water Plan would be a blueprint and present their work as a continuing process that would provide flexible guides for future decisions.”

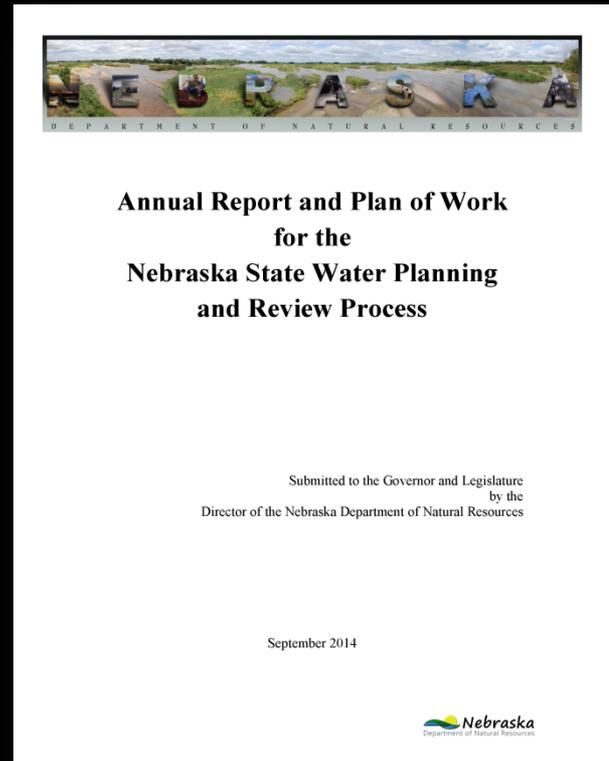
“the agencies involved ... felt that it was necessary to eliminate any reference to a State Water Plan and concentrate on the Process.”



State Water Planning and Review Process

- Adopted by the Legislature through LB 326 in 1981 (Statutes 2-1599 – 2-15,106)
- Requires an Annual Report and Plan of Work
 - These and other reports can be found at:

<http://www.dnr.nebraska.gov/publications>



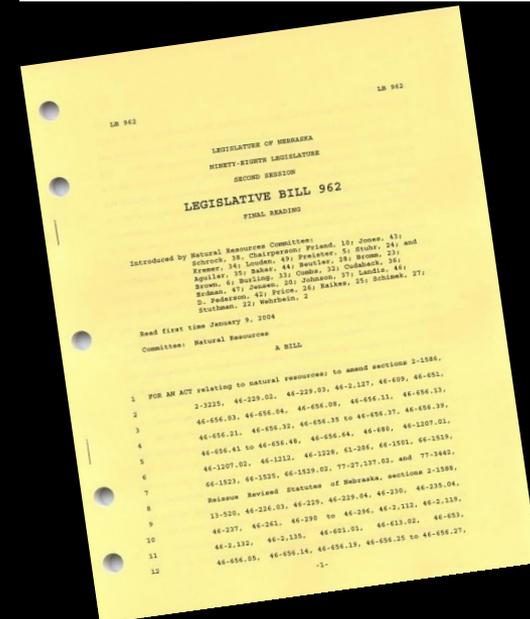
State Water Planning and Review Process

- Policy Issue Studies
 - Completed 1981 through 1986
 - Many recommendations have been adopted
- State Initiated Problem Analyses and Area Planning
 - Emphasis on flexible studies done on a priority basis
 - Continues today within Water Planning and Integrated Management Division

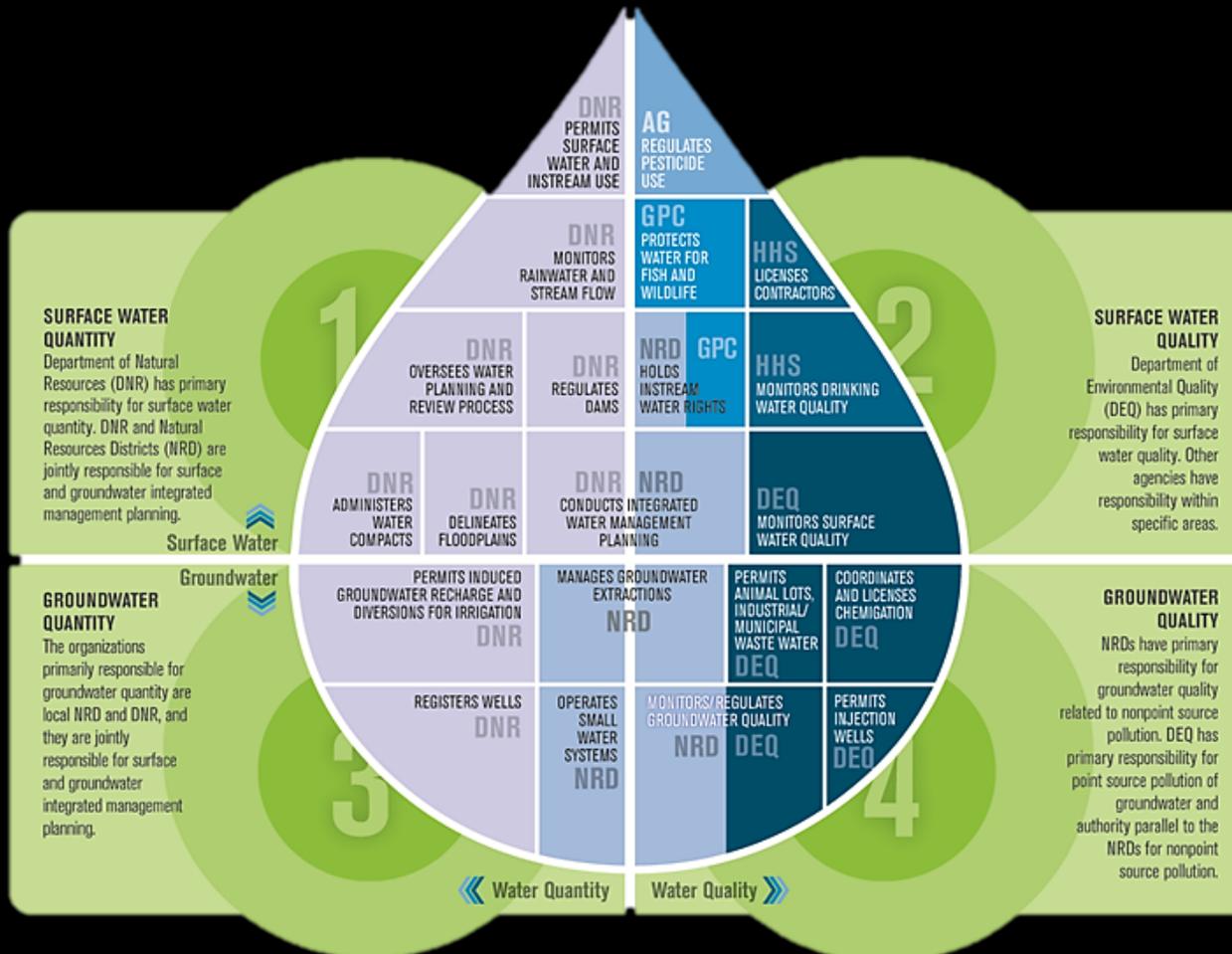


Integrated Management Planning

- A Water Policy Task Force recommended a significant expansion of the DNR's and the NRD's authorities within the Groundwater Management and Protection Act.
- **LB 962 (2004, and since significantly augmented) Nebraska becomes the first western state to explicitly and meaningfully consider the effects of ground water pumping on streamflows in making water allocation decisions**
- The State Water Planning and Review Process was not changed, though many synergies exist between the two



Current Era of Collaborative Water Planning



Nebraska's Approach



In adopting LB 962, "...Nebraska becomes the first western state to explicitly and meaningfully consider the effects of ground water pumping on streamflows in making water allocation decisions"

Aiken, Jess, Zellmer & McMahon, 2004

- Current Framework
 - Local control
 - NRDs have broad and flexible powers, particularly when compared to others states' local control powers
 - Recognizes hydrological connection
 - Process over plan, Integrated Water Resources Management Planning

Nebraska's Water Plans: *Integrated Management Plans*

- Requires NRDs and DNR to jointly develop, adopt, and implement IMPs in fully and overappropriated areas
- Areas not fully or overappropriated are reviewed annually by the DNR through its *Annual Evaluation of Availability of Hydrologically Connected Water Supplies:*

“Integrated water resources management is a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.”

Global Water Partnership, 2000

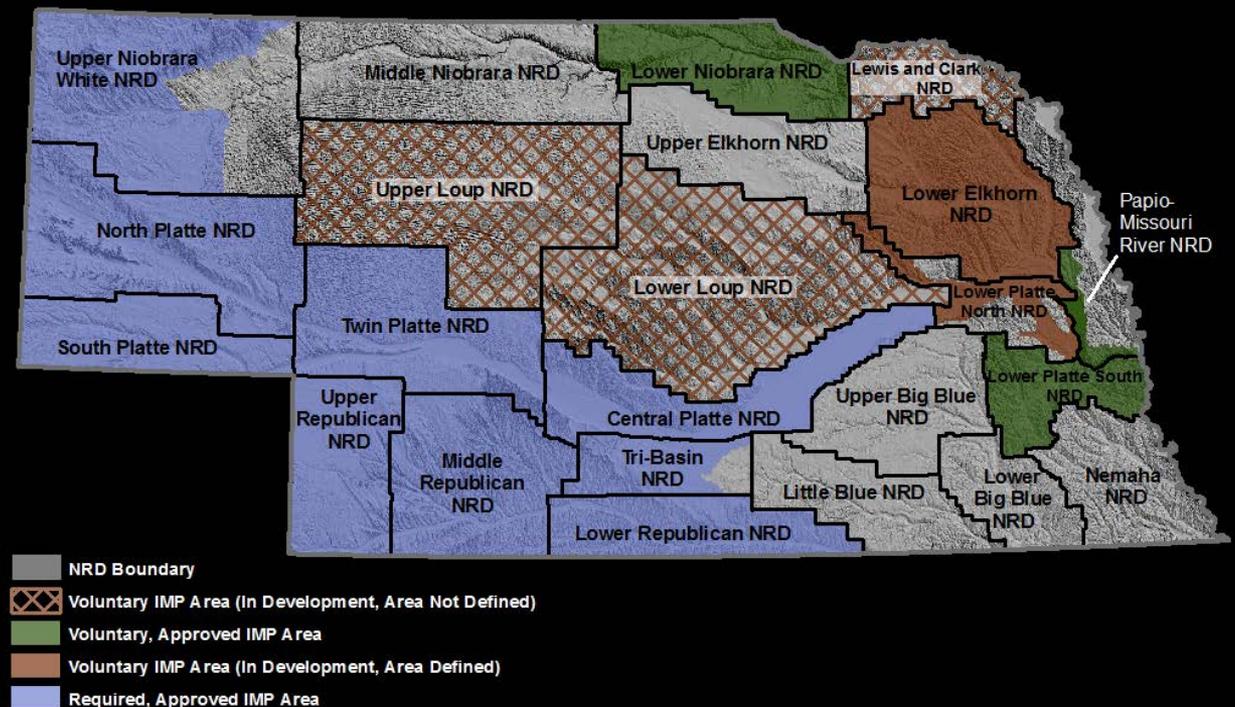
<http://www.dnr.nebraska.gov/iwm/fab-reports>

Nebraska's Water Plans

Integrated Management Plans

Areas Involved in Integrated Management Planning, as of November 2014

- 10 required
- 8 voluntary
- Covers 80% of state



Nebraska's Water Plans

Basin-Wide Plans

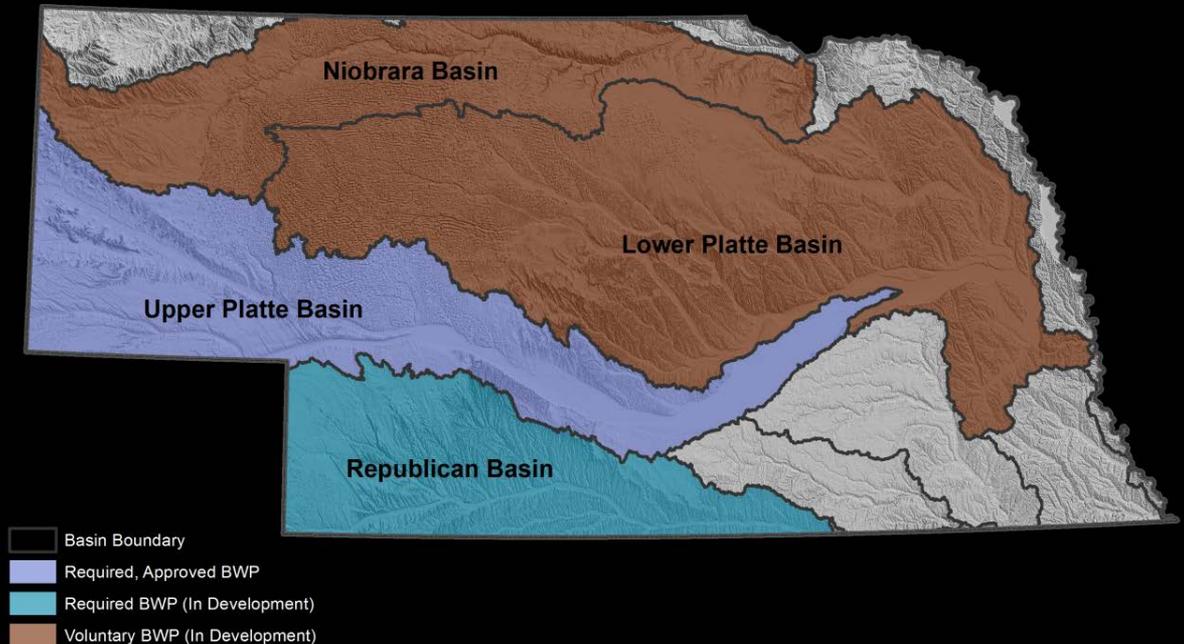
- Created consistency between individual IMPs within a given basin
- For mandatory basin-wide plans, the individual NRD IMPs are required to be consistent with the basin-wide plan
- Voluntary basin-wide plans provide a means to collaborate with other NRDs in a given basin ahead of adopting a voluntary IMP and/or during IMP implementation

Nebraska's Water Plans

Basin-Wide Plans

- Required in Upper Platte and Republican
- Pursuing voluntary plans in Niobrara and Lower Platte
- Covers ~80% of state

Basins Involved in Basin-Wide Planning, as of November 2014



FUTURE OPPORTUNITIES AND CHALLENGES



Nebraska's Water Supplies

“Abundant” but limited renewable resource

High Plains Aquifer

- ~2 Billion ac-ft available
- Provides substantial buffer to span dry years

Streamflow Supply

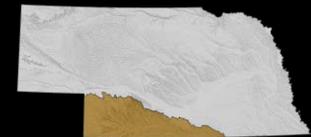
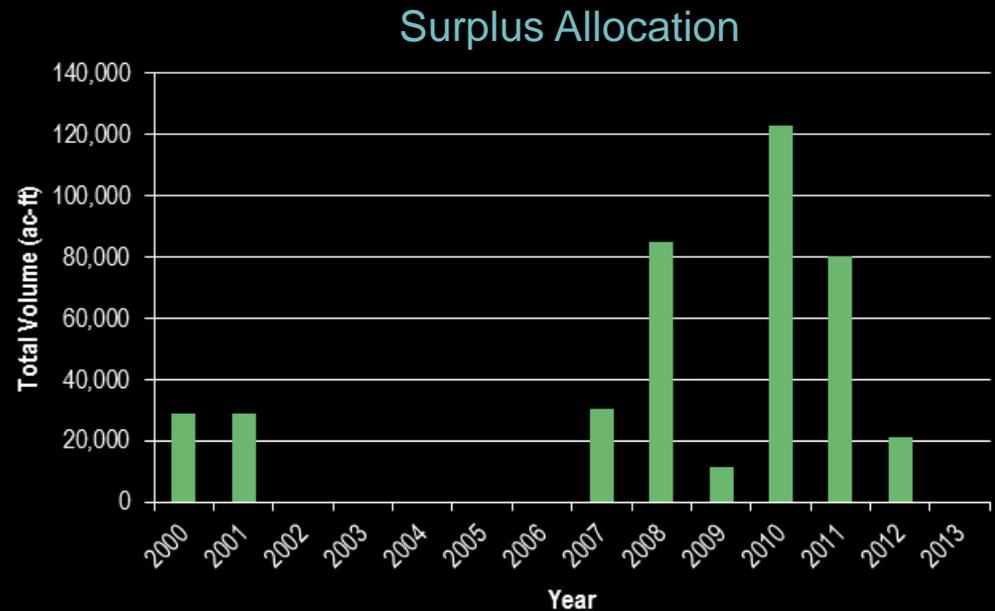
- This is the renewable part
- Includes streamflow and water use



River discharge indicated by line width

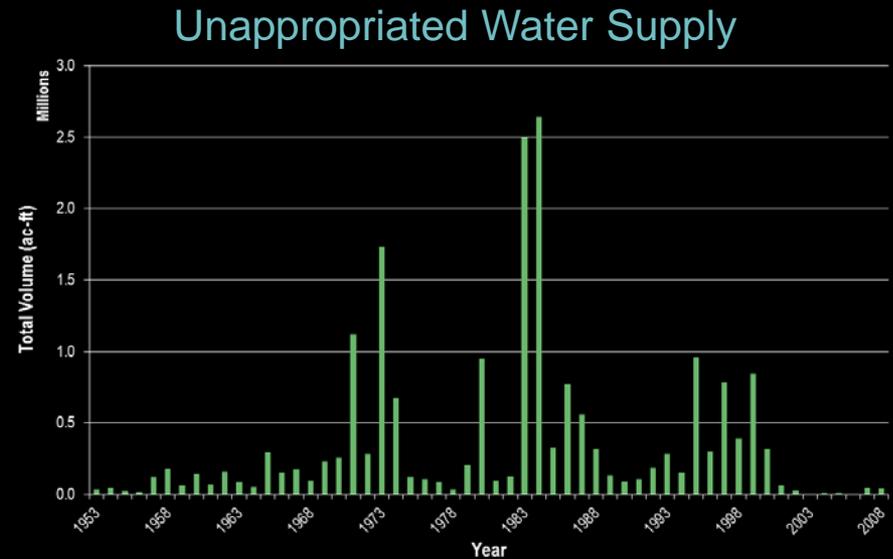
Republican River Water Supplies

- Determined by the Republican River Compact
- The total basin water supply is generally between 500,000 and 700,000 ac-ft
- Nebraska receives roughly half under the Compact
- During some dry years Nebraska fully utilizes its Compact allocations
- Many years Nebraska significantly underuses its Compact allocations
 - Approximately 400,000 ac-ft since 2000



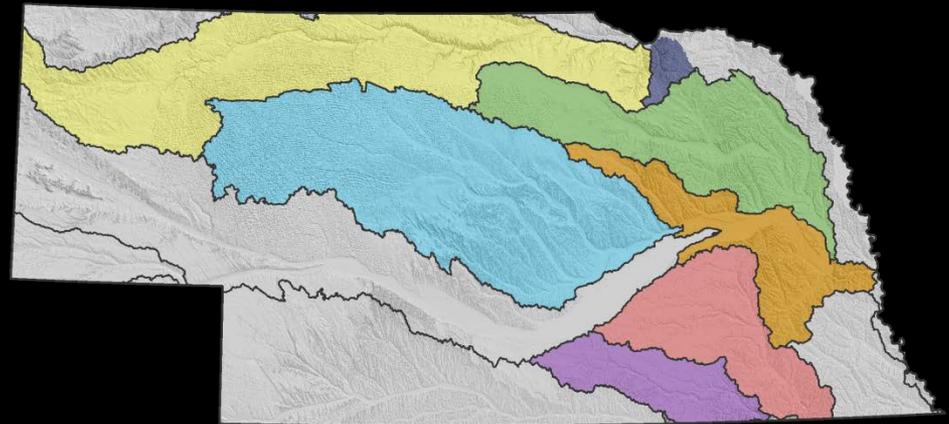
Upper Platte River Water Supplies

- Receives average of 1 million ac-ft from snowmelt in Wyoming each year (North Platte Decree)
- More variable inflows in South Platte from Colorado
- Water is generally fully allocated, particularly above Elm Creek (overappropriated)
- Unappropriated water does occur during some very wet years, during shorter intervals, and outside of the irrigation season



Remaining River Basin Water Supplies

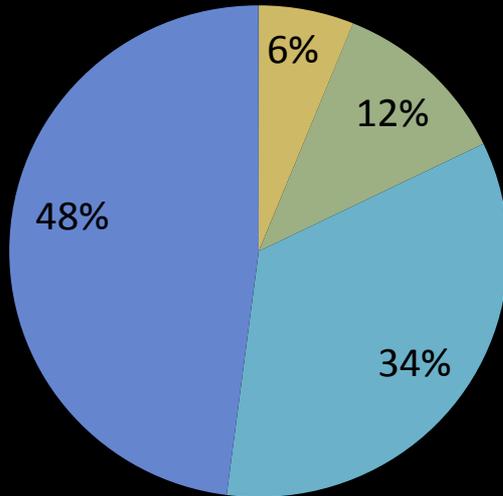
- Water use and water demands for:
 - Niobrara River
 - Loup River
 - Elkhorn River
 - Lower Platte River (including Salt Creek)
 - Big and Little Blue River
 - Bazile Creek



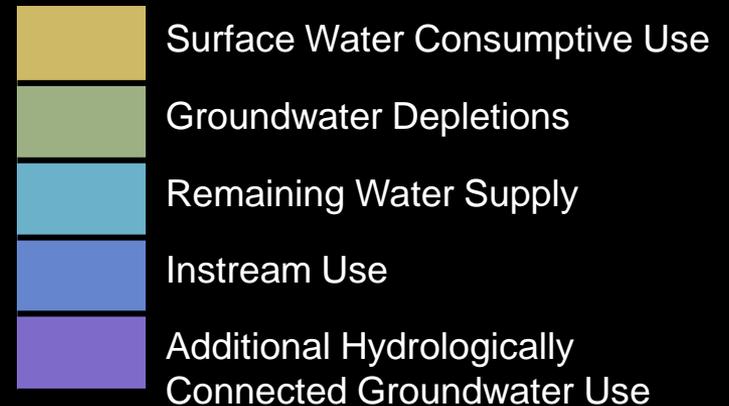
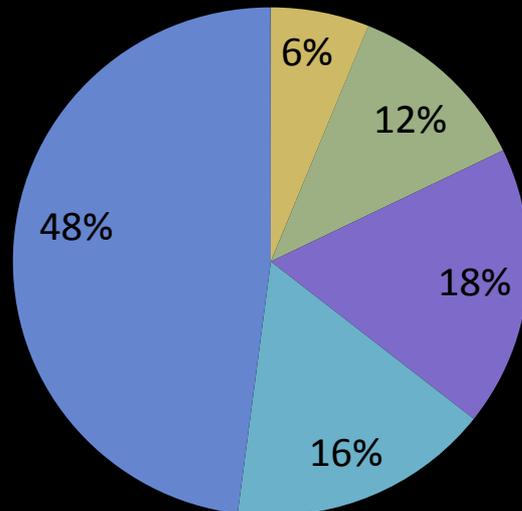
Remaining River Basin Water Supplies

Total Water Supply = 7.3 M ac-ft

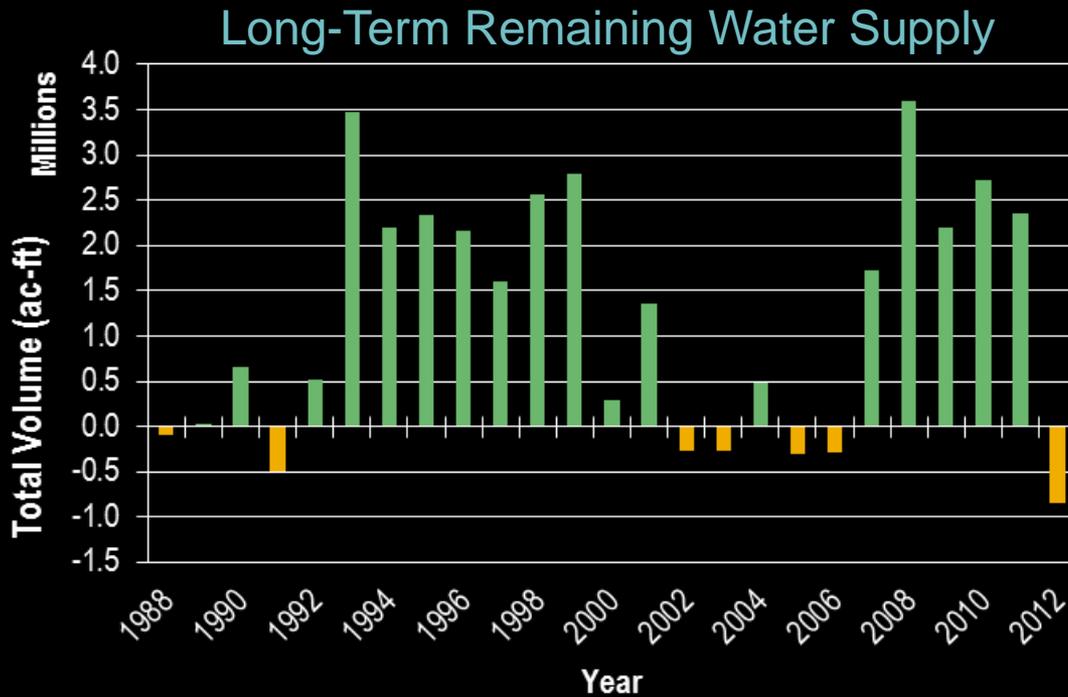
Near-Term



Long-Term



Remaining River Basin Water Supplies

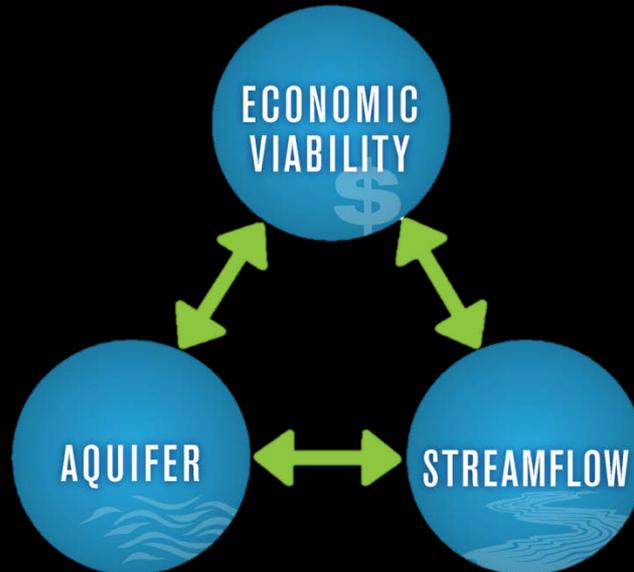


Opportunities and Challenges

Challenges	Opportunities
Water Supply <ul style="list-style-type: none">- Finite- Variable	Water Supply <ul style="list-style-type: none">- Vast- Infrastructure
Water Use <ul style="list-style-type: none">- Competing	Water Use <ul style="list-style-type: none">- Diverse/Beneficial
Planning <ul style="list-style-type: none">- SW vs GW- Compacts- NNESCA, ESA	Planning <ul style="list-style-type: none">- Integrated Water Management- Broader Collaboration & Planning- Public Engagement

Nebraska's Water Future

- What will water planning strive to do?
 - Develop approaches to provide a framework for sustainability of core management goals
 - Protect existing users of water



Nebraska's Water Future

- What will water planning strive to do?
 - Expand implementation of alternate projects such as conjunctive management/stream augmentation
 - Drive producer and water manager level innovation



Cozad Canal, Gothenberg, NE

Nebraska's Water Future

- What will water planning strive to do?
 - Create flexible water markets where needed
 - Increase opportunities for public engagement



Nebraska... [has] responded...with impressive dedication, new ideas, and financial resources. The results include the ambitious innovations of LB 962; cooperative efforts to recover species and habitat quality in the Platte River; financing for reducing consumptive water use in various basins and NRDs; and increasing recognition of the economic value of recreation and ecotourism.

Kelly, 2010

