An Overview of Water Management in Nebraska

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Water Planning
Surface Water
Groundwater
Floodplain
Management
Dam Safety

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

Overview

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

Water Planning and Management

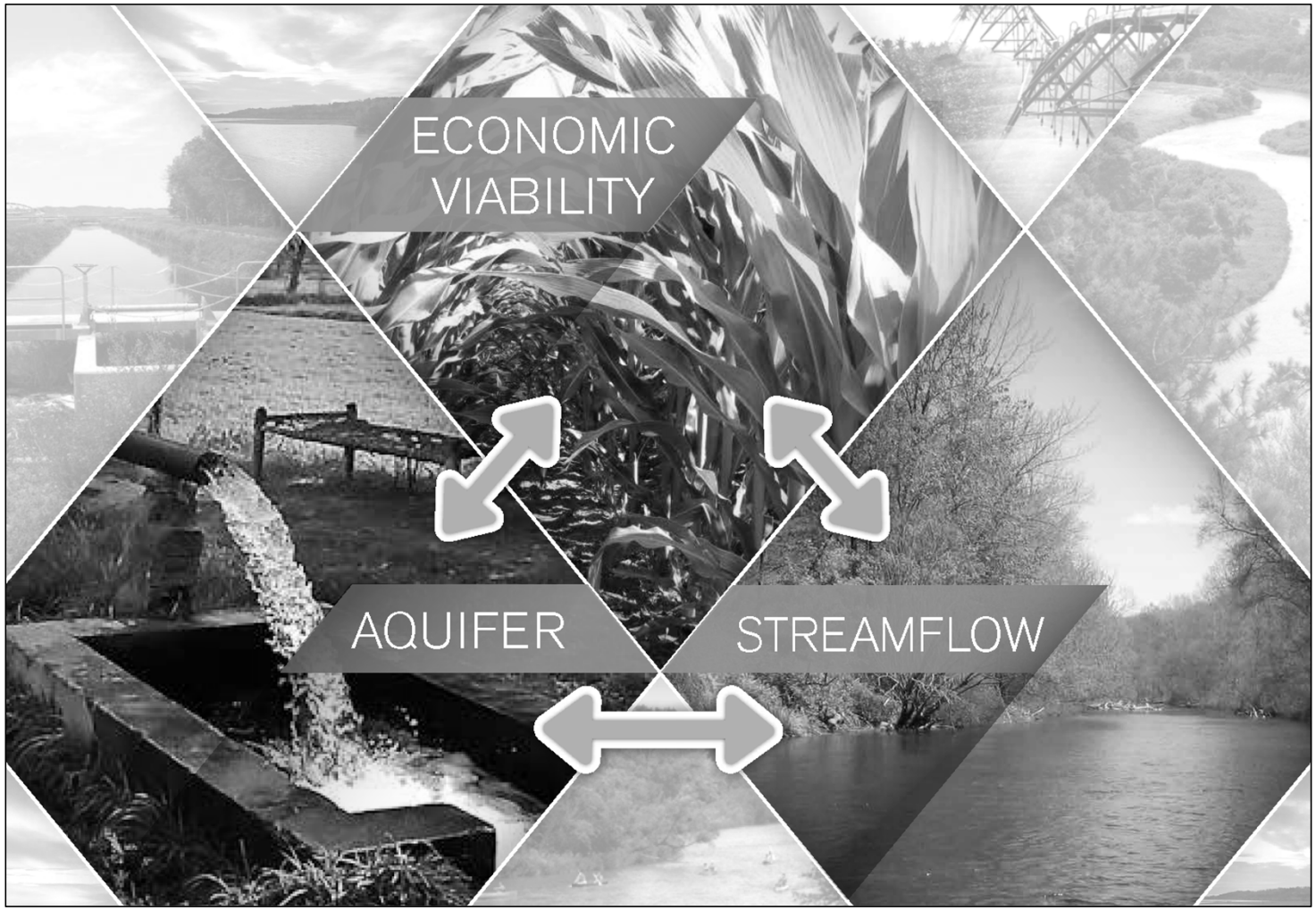
Why is water planning important?

- Identifies and seeks to address uncertain attributes of water
  - Water is unevenly distributed in time and space
  - Droughts/floods
- Reflects values water users place on certainty and distribution
  - Existing vs. future users
  - Types of users (agriculture, recreation, wildlife, municipal, etc.)
  - Differing sources (surface water/groundwater)

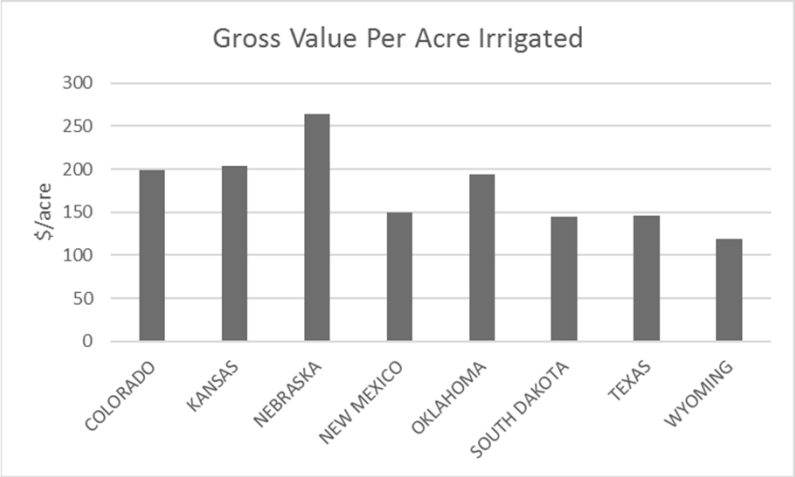
Why is water planning important?

- Economic Viability
  - Water is for beneficial use (consumptive, non-consumptive, instream)
  - Maximize economic productivity of water related activities
- Aquifer
  - Minimize long term impacts to aquifer quantity and quality
- Streamflow
  - Highly variable (shortages and excesses)
  - Streams often provide established instream benefits

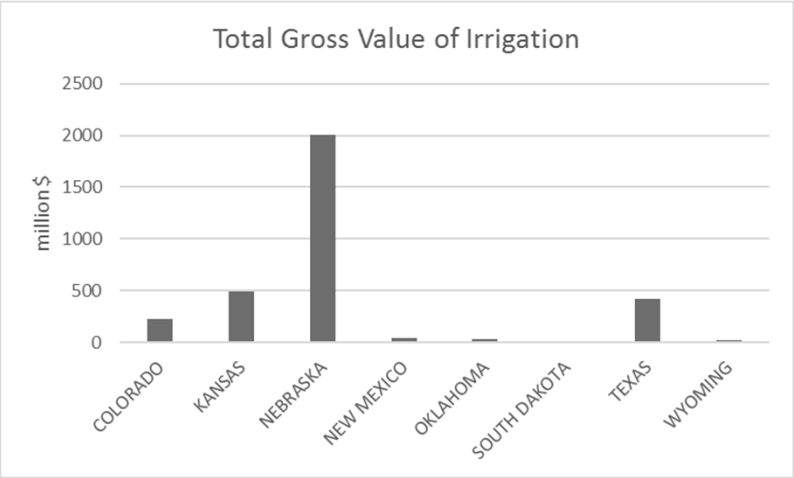
Core Goals of Water Planning in Nebraska



Why is water planning important?



2012 NFB study indicated the value of irrigation to farmers and ranchers exceeded $11B



$2 Billion in Nebraska
$3.2 Billion across HPA

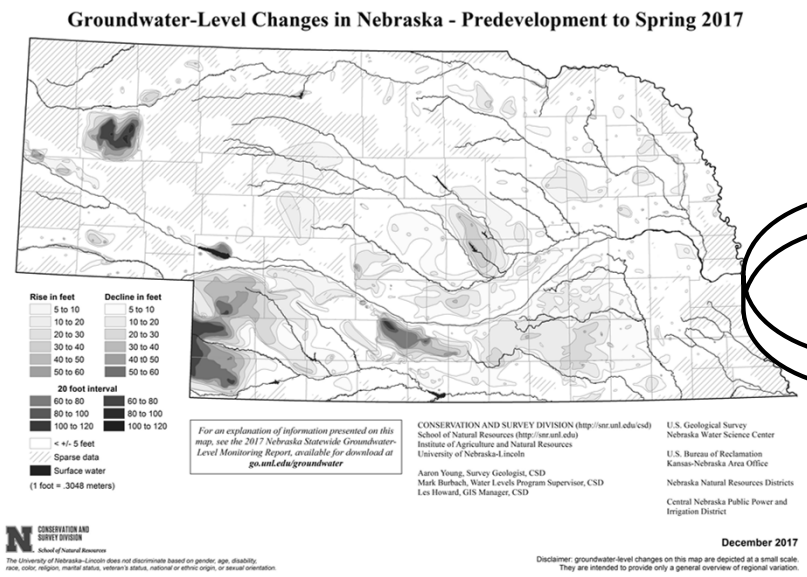
Richard Perrin, Lilyan Fulginiti, Federico Garcia, 2007

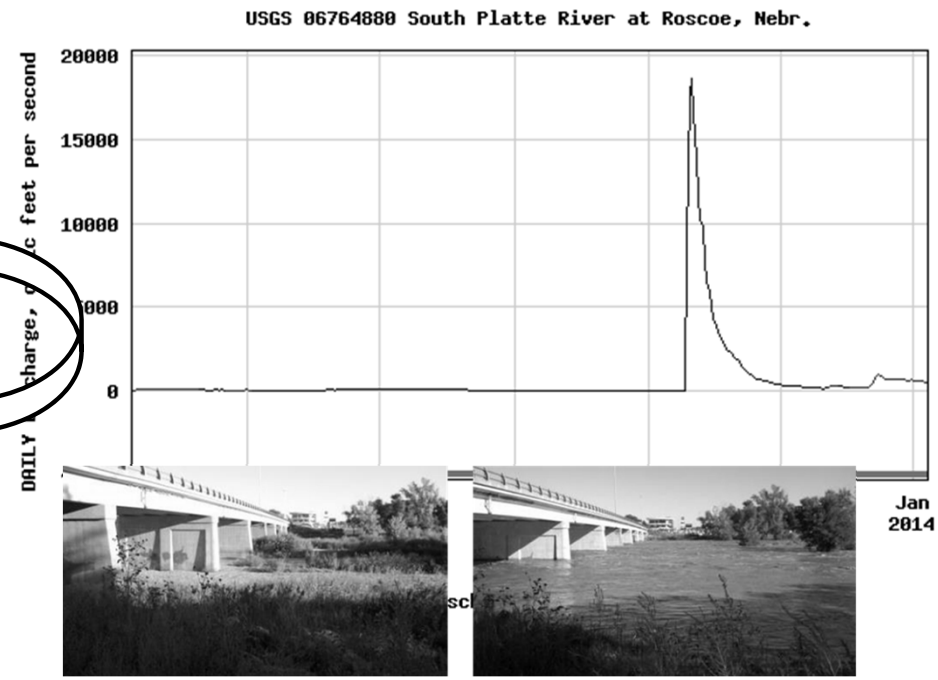
Why is water planning important?

6 out of the top 10
tourist attractions
in Nebraska in 2017
included recreational water

In 2017 more than
1.7 million people visited
Lake McConaughy,
the second most-visited
tourist attraction in Nebraska.

Why is water planning important?

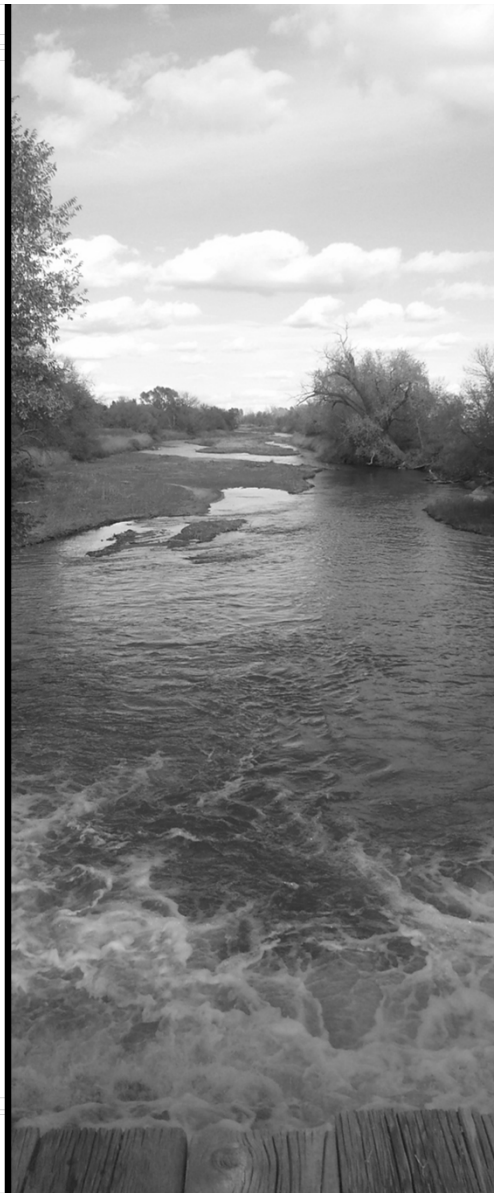




Aquifer sustainability

Streamflow variability

Nebraska's Water Planning and Management Approach



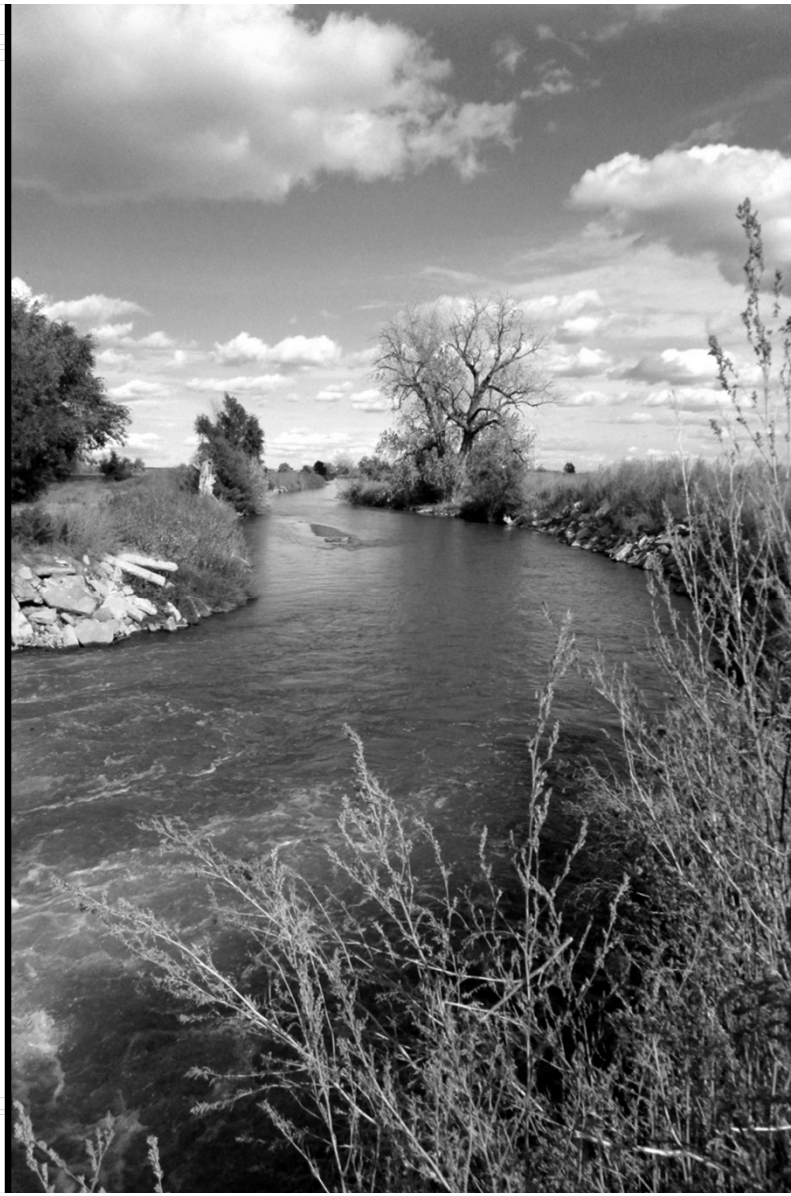
A Bit of History…

- 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

“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.”

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

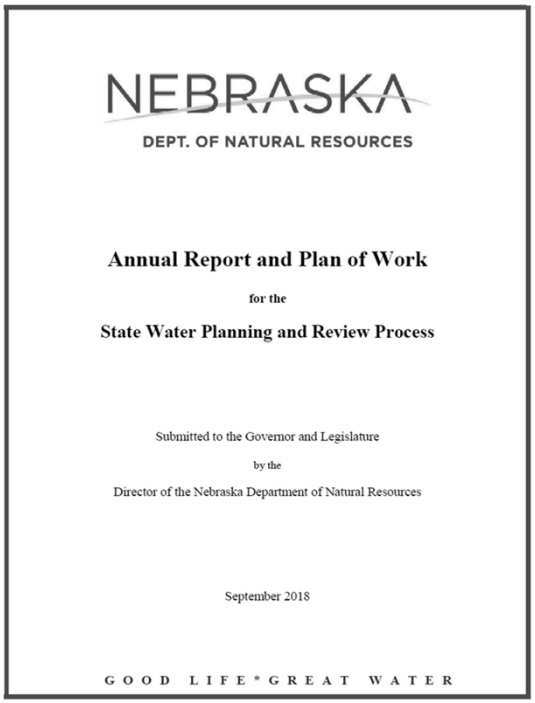
“The agencies involved … felt that it was necessary to eliminate any reference to a State Water Plan and concentrate on the Process.”



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
  - The 2018 report can be found at:

https://dnr.nebraska.gov/sites/dnr.nebraska.gov/files/doc/water-planning/publications/20180912_AnnualReportToLeg_Final.pdf



NEBRASKA

DEPT. OF NATURAL RESOURCES

Annual Report and Plan of Work

for the

State Water Planning and Review Process

Submitted to the Governor and Legislature

by the

Director of the Nebraska Department of Natural Resources

September 2018

GOOD LIFE * GREAT WATER

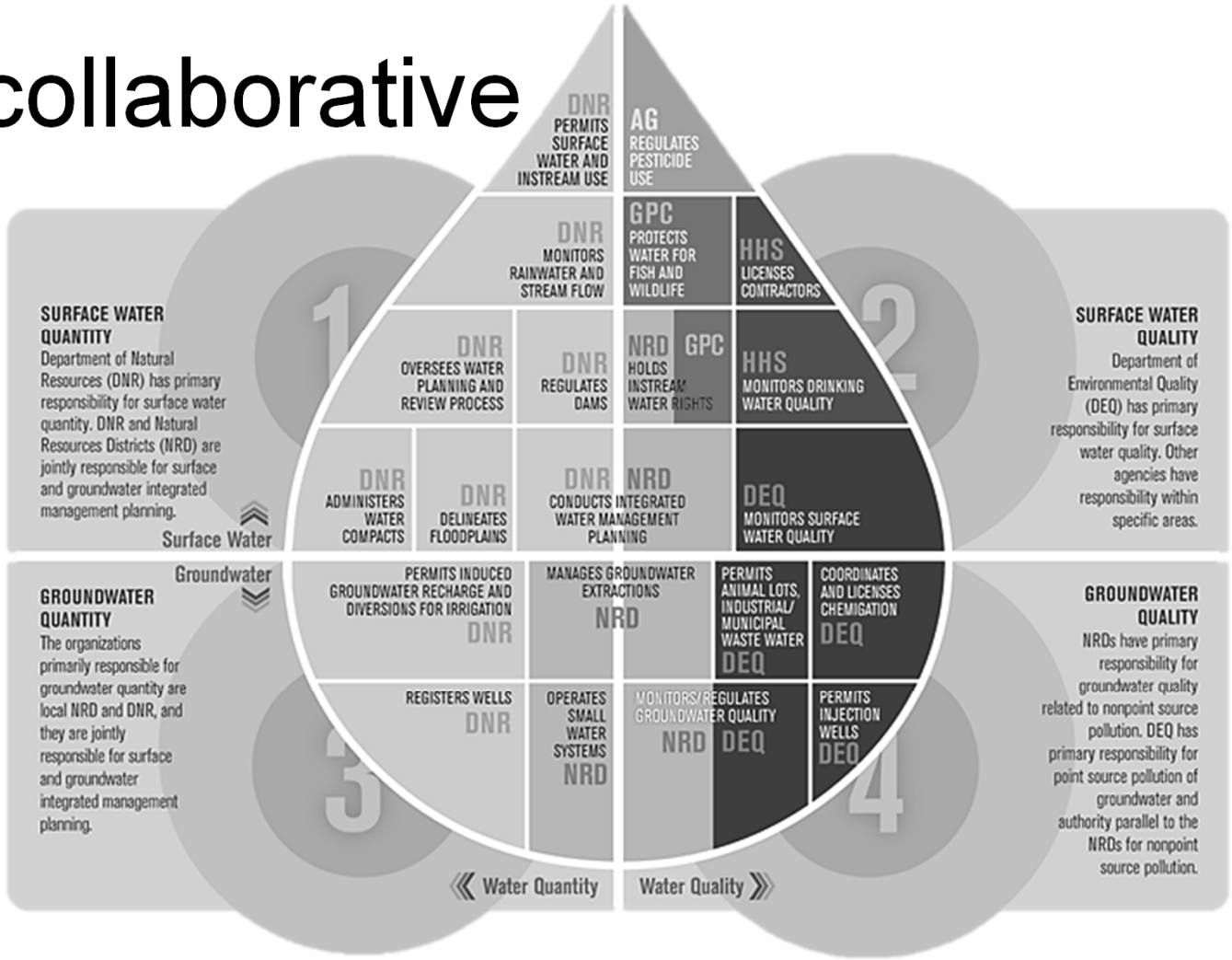
State water planning and review process

- 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

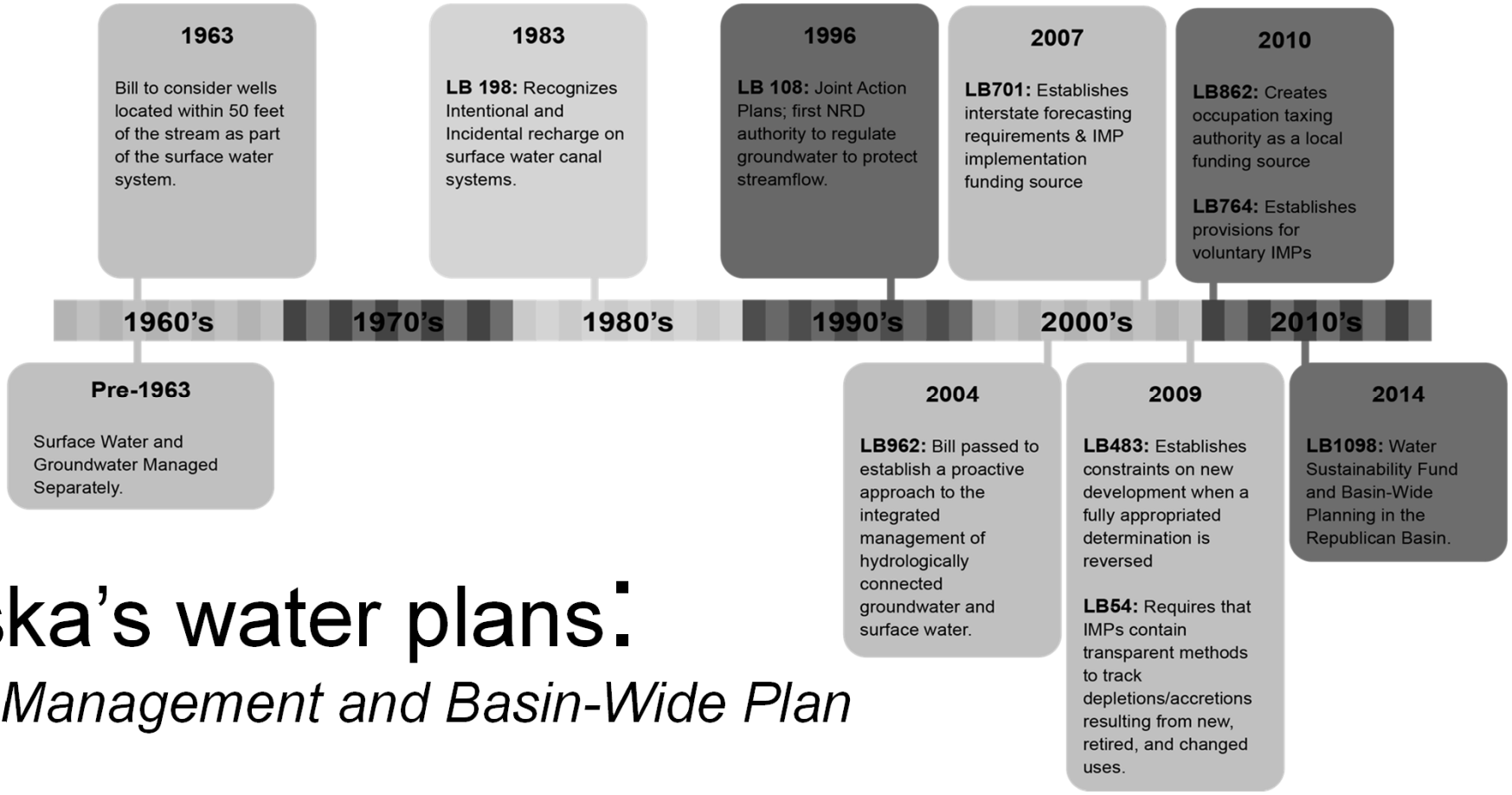
Nebraska's Current Water Planning Approach

- Process over plan, Integrated Water Resources Management Planning
- Local control
  - Local NRDs have broad and flexible control in resource management
- Recognizes hydrological connection
- Decentralized approach distributes water management authorities over several agencies

Current era of collaborative water planning



Nebraska's Water Planning: Integrated Water Management Activities



Nebraska's water plans:

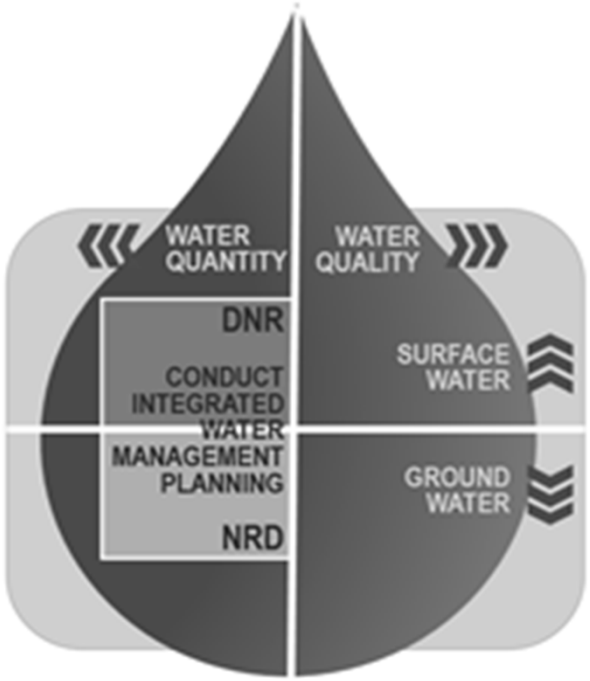
Integrated Management and Basin-Wide Plan Legislation

What Is Integrated Water Management In Nebraska?

Nebraska's water plans:

Integrated Management and Basin-Wide Plans (LB 962)

- Requires NRDs and NeDNR to jointly develop, adopt, and implement IMPs in fully and overappropriated areas
- Areas that have not designated fully or overappropriated are participating in voluntary IMPs
- NeDNR can designate areas fully appropriated through its "*Annual Evaluation of Availability of Hydrologically Connected Water Supplies*"



Integrated Management Plan Essential Goals

"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

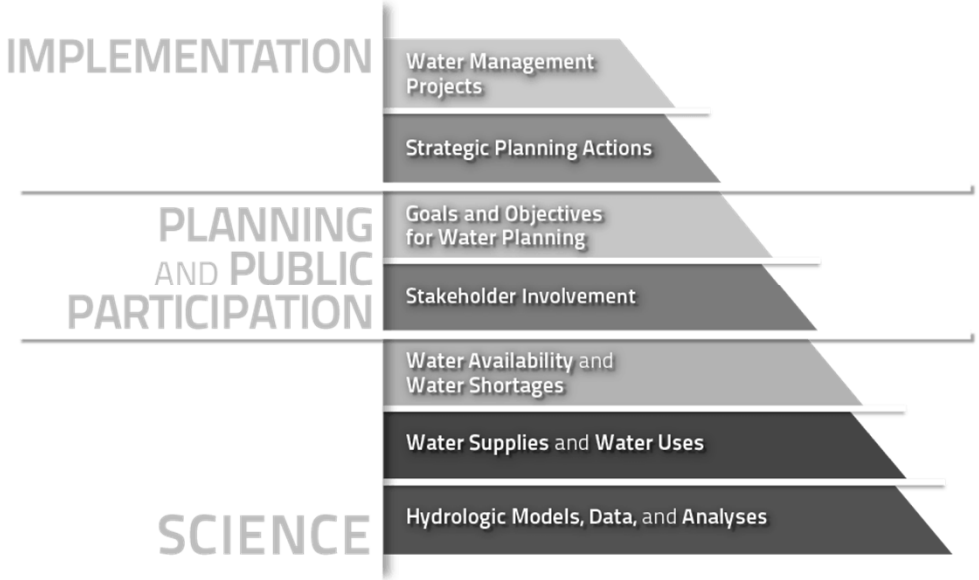
- Protect investments of existing water users from adverse impacts of overuse
- Ensure State compliance with federal and state laws and interstate compacts and agreements
- Proactively monitor and manage basin water supplies before problems develop – process of maintaining a balance of water supplies and uses
- Develop a plan suited to the local values and physical conditions of the basin.

Nebraska Department of Natural Resources Roles in Integrated Management Planning

Implementation
- Project conceptualization
- Funding
- Monitoring and Project Reviews

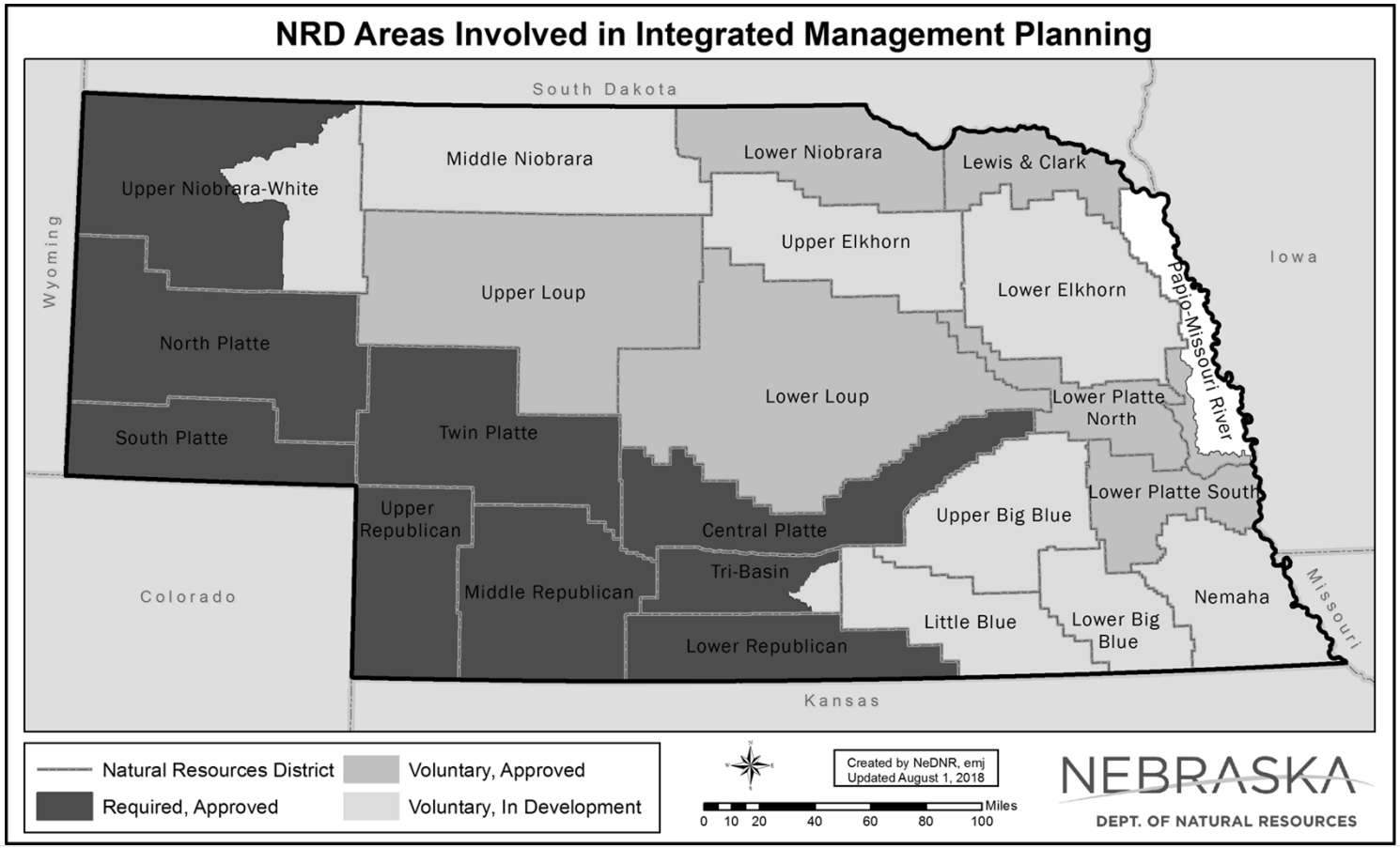
Public participation and planning
- Facilitation
- Plan writing
- Goal setting

Scientific foundation for decision making
- Models
- Landuse/Water use assessments
- Monitoring (canals/streams)

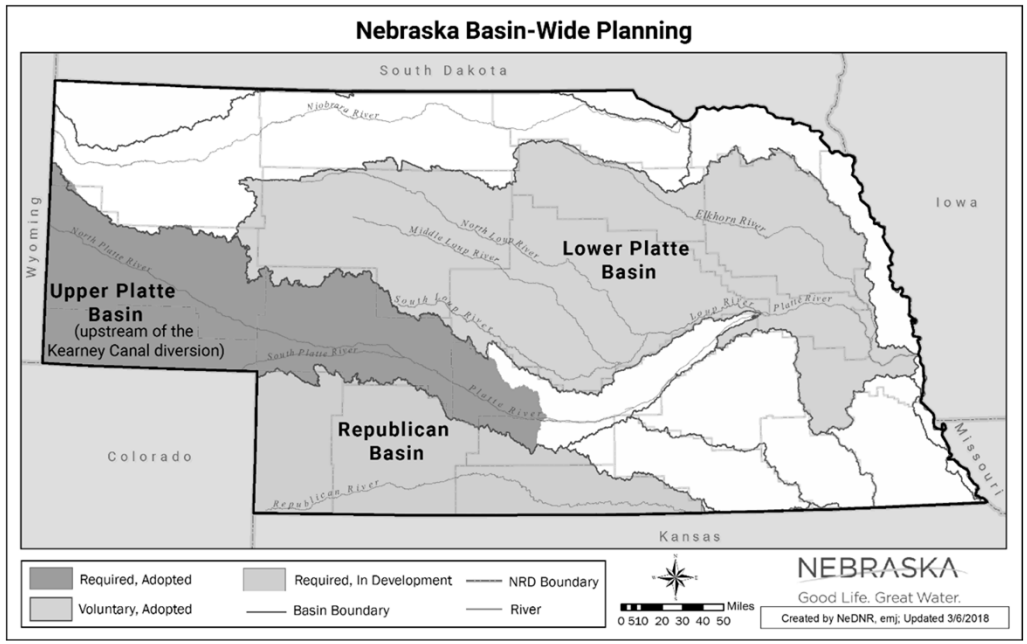


Where is Integrated Water Management Occurring?

Nebraska's water plans: *Integrated Management Plans*

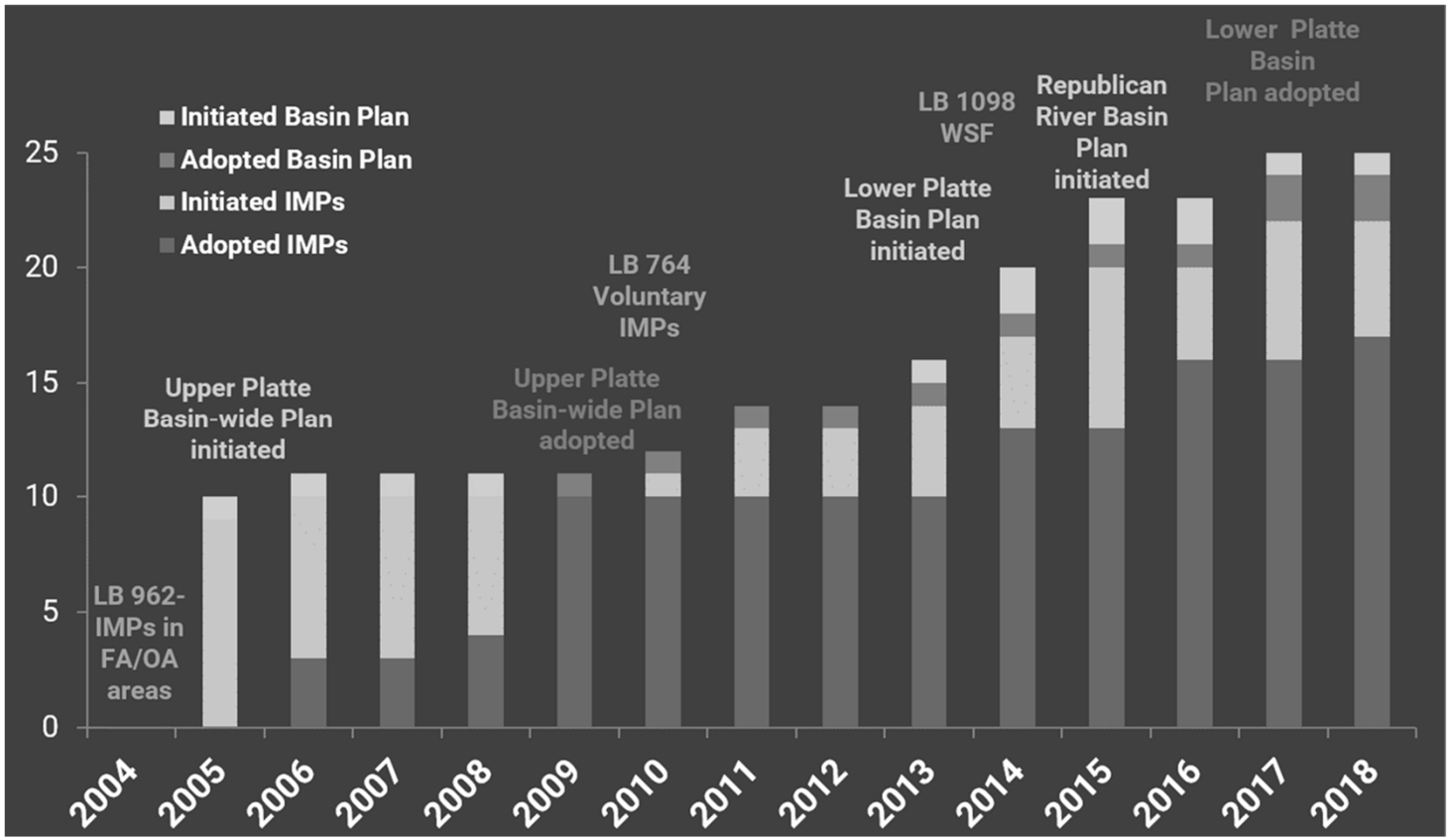


Nebraska's water plans: Basin-wide plans

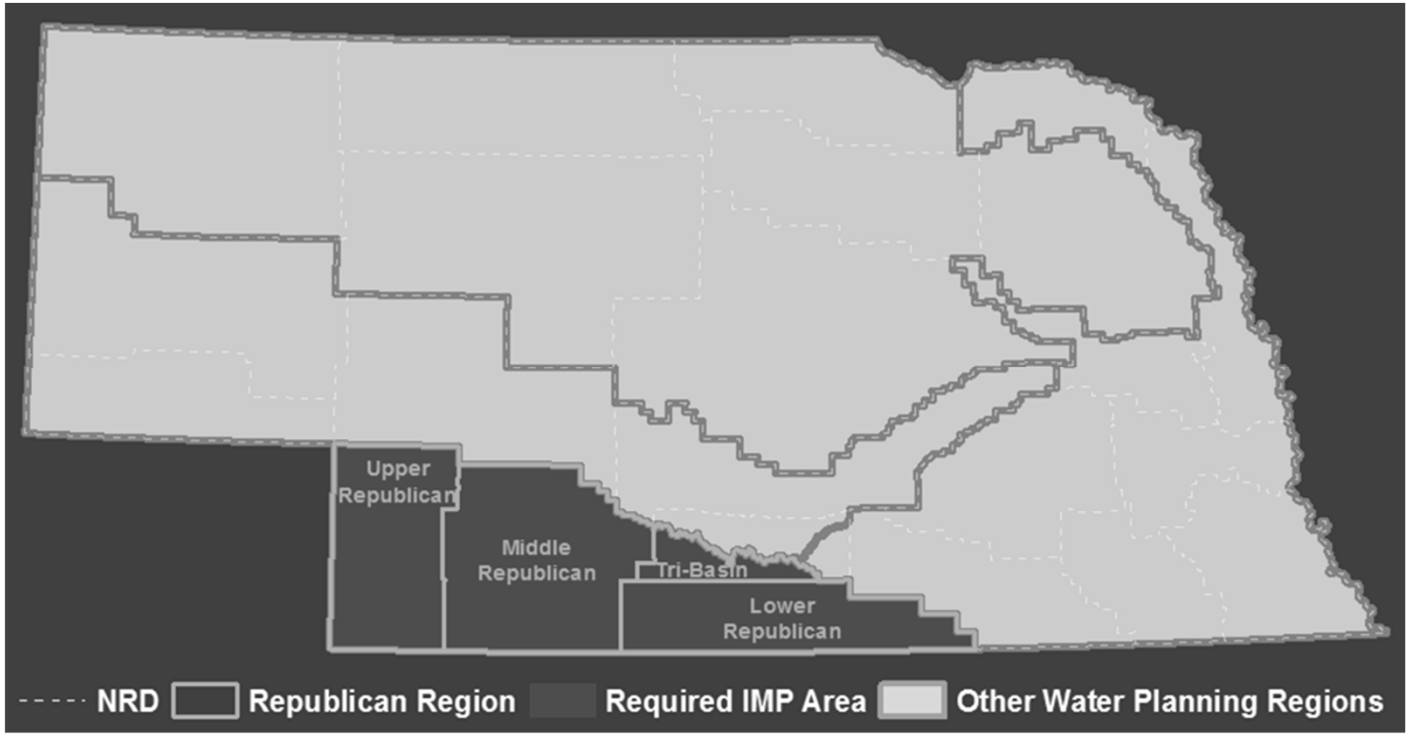


- Creates greater consistency between individual IMPs within a given basin
- For mandatory basin-wide plans, the individual NRD IMPs are required to be consistent with the basin-wide plan
- Voluntary basin-wide plans provide a means to collaborate with other NRDs in a given basin ahead of adopting a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

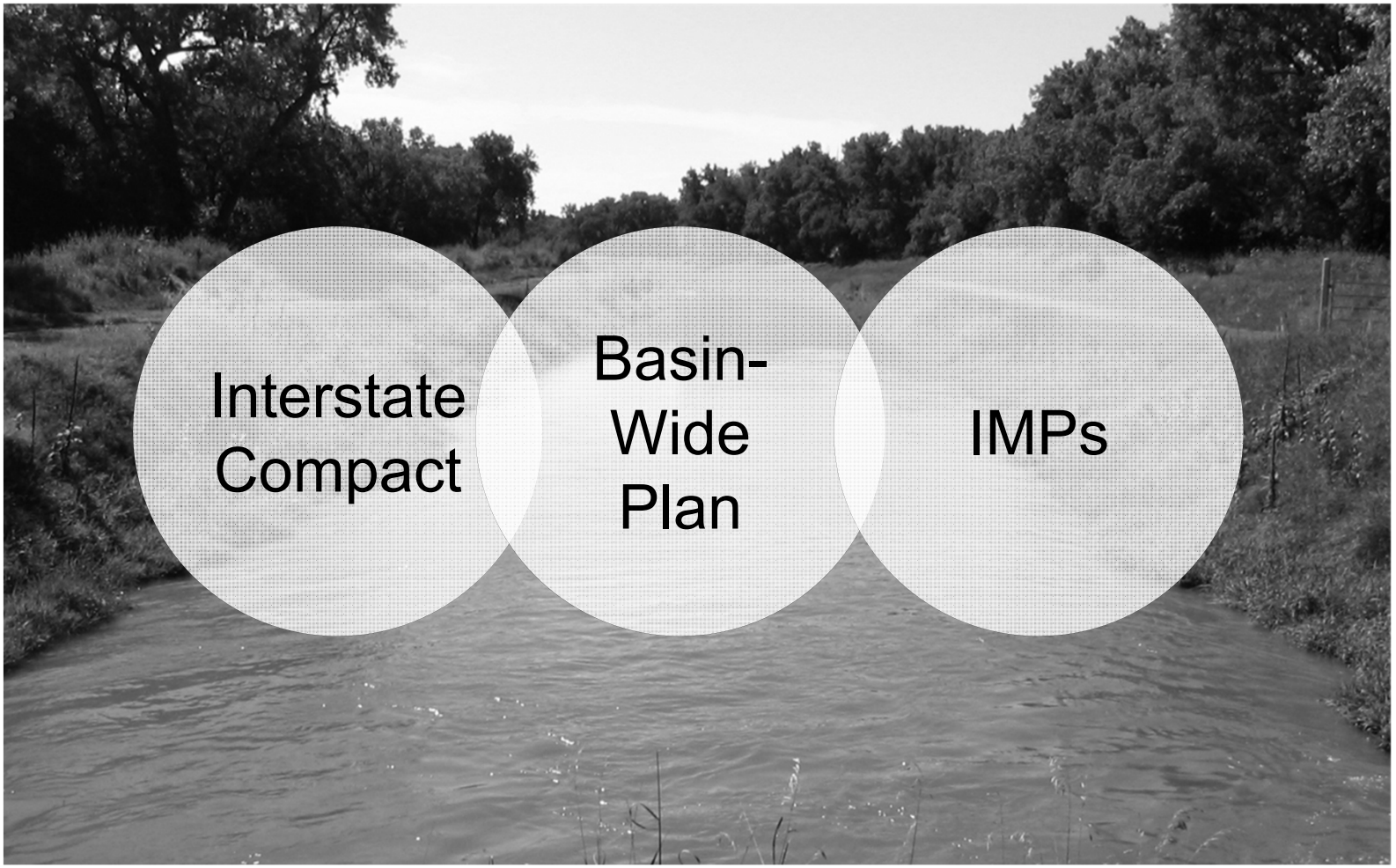
Timeline of Integrated Water Management Planning



How is Integrated Water Management Applied?



Republican River Basin – A Closer Look


Interstate Compact
Basin-Wide Plan
IMPs

Republican River Compact Background

RRCA

- An interstate Compact between Kansas, Colorado, and Nebraska
- To provide for an equitable division of the basin's water among the three states
- Negotiated by the three states and a federal representative (early 1940s)
- Approved by Congress (1942)
- Ratified by each of the three states (1943)

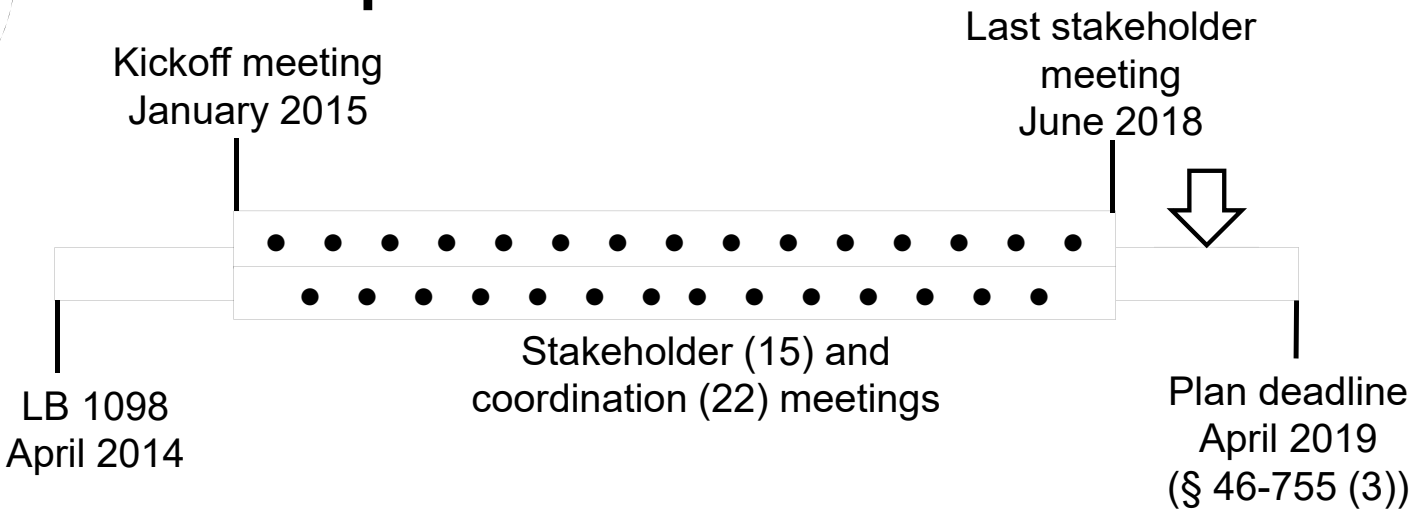
- Final Settlement Stipulation (FSS)
  - To settle a 1998 lawsuit by Kansas to enforce the terms of the Compact
  - Defines how compliance with the Compact's requirements will be determined
  - Signed by the three states in 2002

- Ongoing resolutions to adapt to current situational factors

Basin-Wide Plan

Republican River Basin-Wide Plan

Development Process



- ✓ Stakeholder process and public hearings concluded
- ✓ NeDNR and NRDs exchanged letters agreeing to adopt the plan

What's next?

- Issue orders to adopt the plan
- Begin implementation

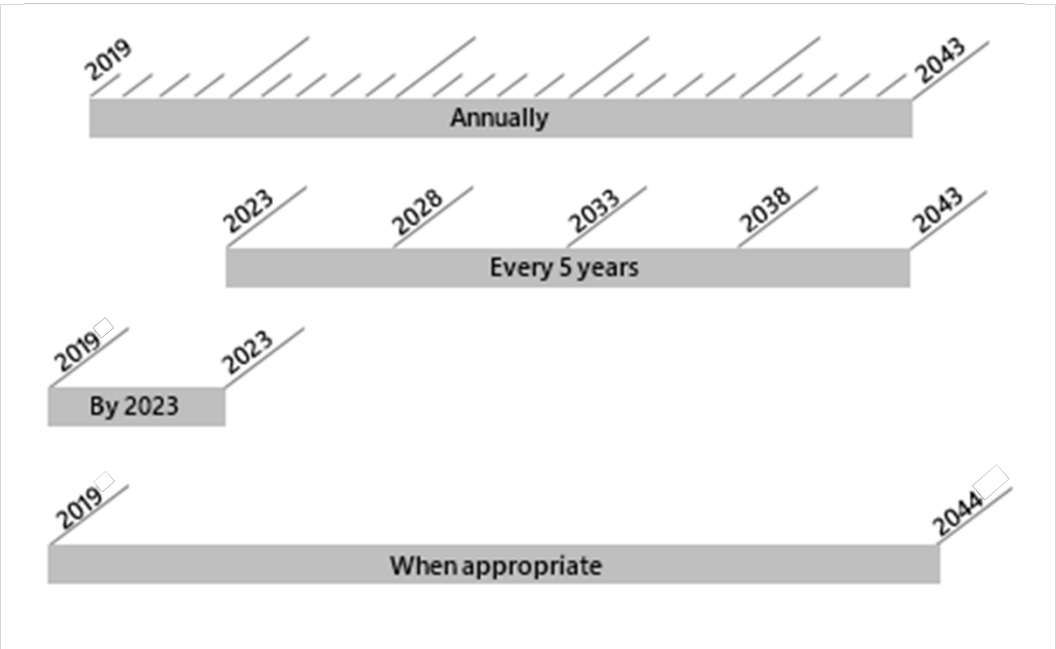
Republican River Basin-Wide Plan
Transparency and Building Trust

- NeDNR facilitation and project management: Emphasized transparency and building trust
  - March 2016 “listening meeting”
  - From this point forward, transparent and clear about how each step of development built upon stakeholder input from the previous meeting
  - Encouraged discussion of issues among various stakeholder interests
  - Stakeholders reported better understanding of other water users’ perspectives as process went on

Republican River Basin-Wide Plan
Goals

1	Maintain Nebraska's compliance with the Republican River Compact and applicable state laws
2	Maximize Nebraska's efficient and beneficial consumptive use of its portion of the water supply, increase certainty for long-range planning of water supplies to reduce the need for regulatory actions, and increase collaborative efforts among water management entities and stakeholders across the Basin
3	Positive public relations, including information sharing, within and outside the Basin
4	When possible, pursue projects that not only benefit water supplies and uses, but also create benefits for fish, wildlife, recreation, and conveyance within the Republican River Basin

Republican River Basin-Wide Plan
Implementation Schedule



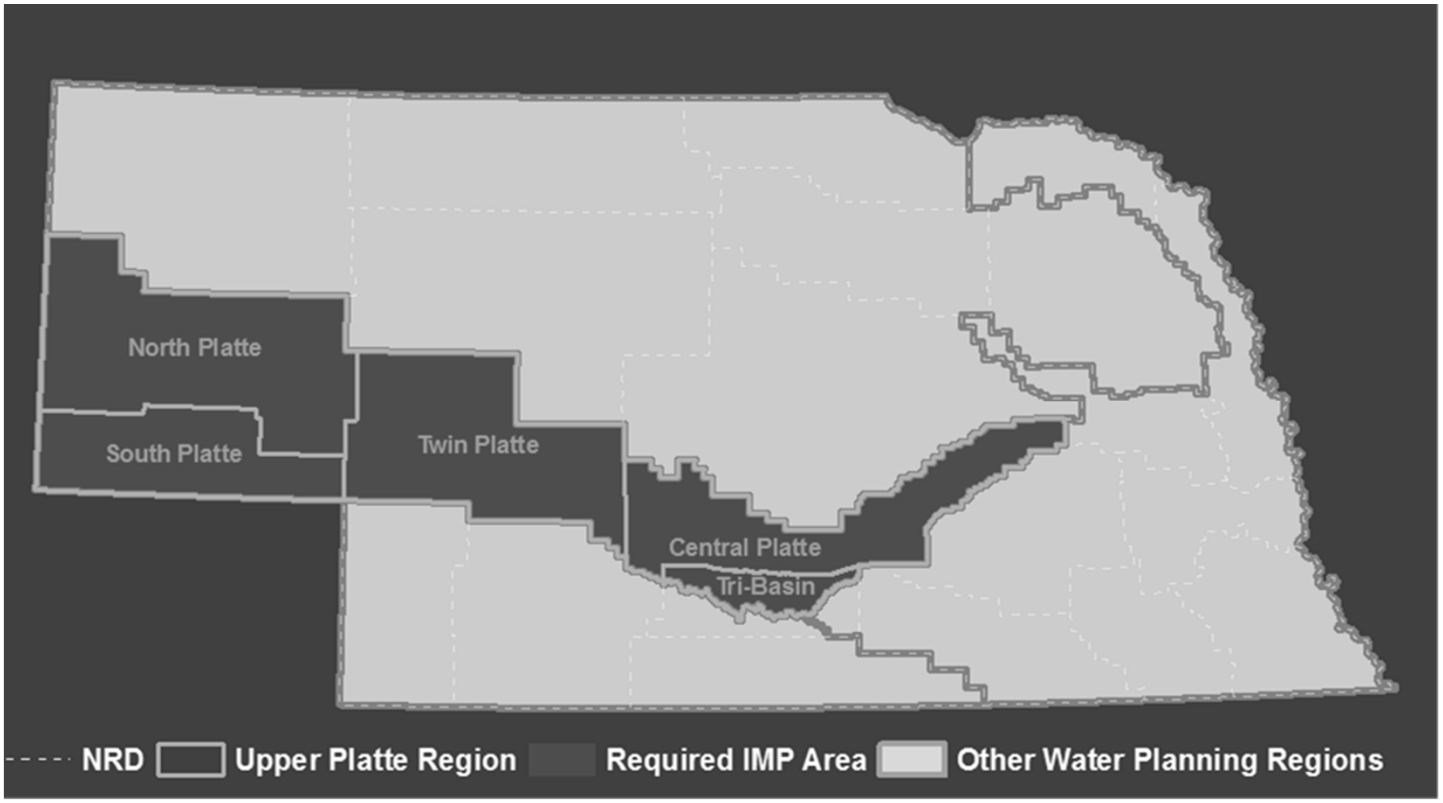
Republican River Basin-Wide Plan
Improved Communication

- Early in the process, 5 ongoing intrastate lawsuits in the basin hampered discussions and limited data sharing
- Resolution of lawsuits +
  NeDNR's emphasis on transparency and trust
- Discussions among various water interests improved considerably as process continued
- No new lawsuits since the process began

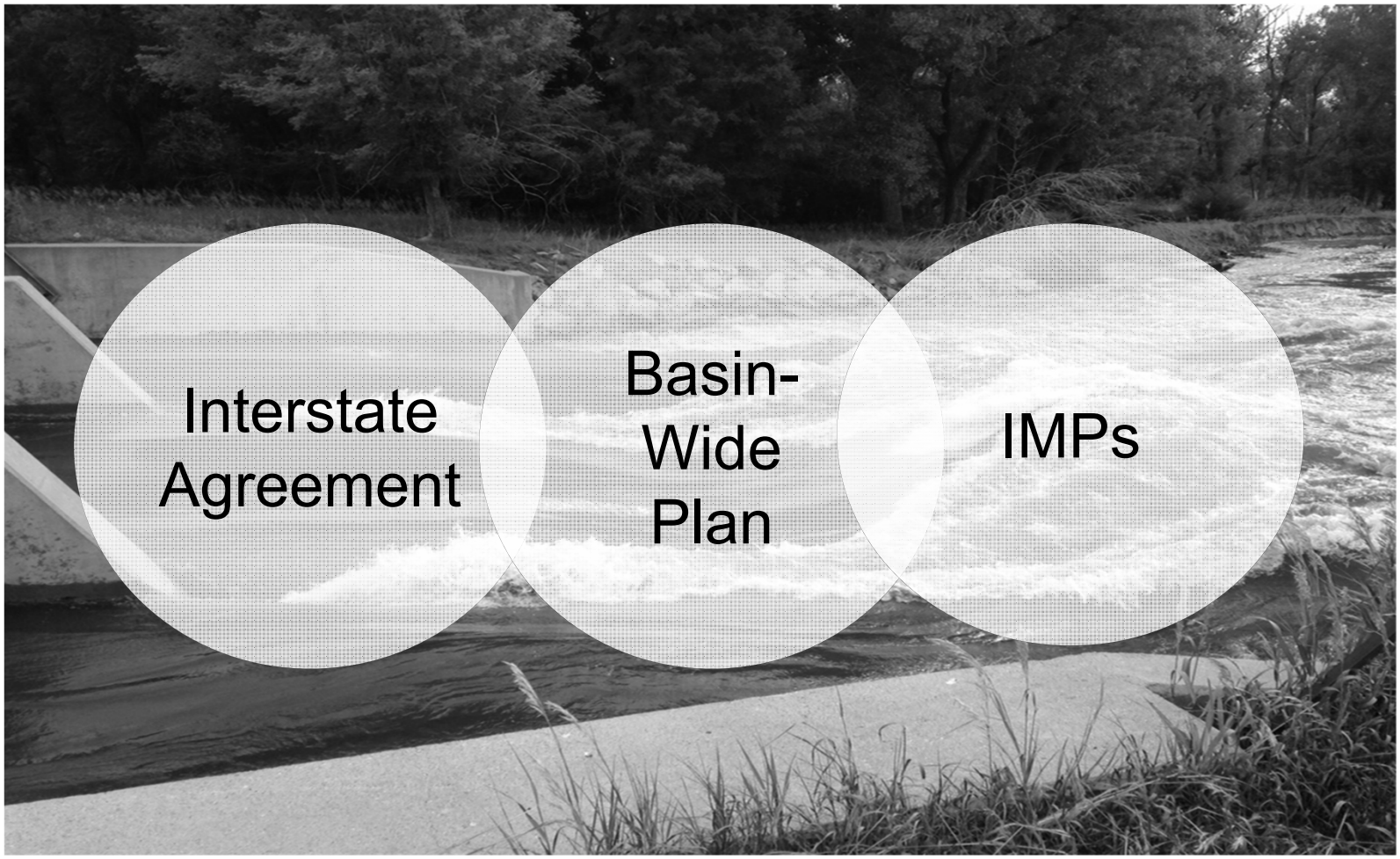
Integrated Management Plans

IMPs

- Allows each NRD to tailor the concepts from the Basin-Wide Plan to the unique climatic, hydrologic, geologic, and economic setting in their area
- Provide the mechanism for State and NRD coordination of Interstate Compact Activities
- Have the flexibility to allow for the creation of an streamflow augmentation project for purposes of Compact Compliance
- Each IMP developed following a stakeholder process
- Adaptive Planning
  - Update for consistency with new Republican River Compact resolutions
  - Update for consistency with basin-wide plan

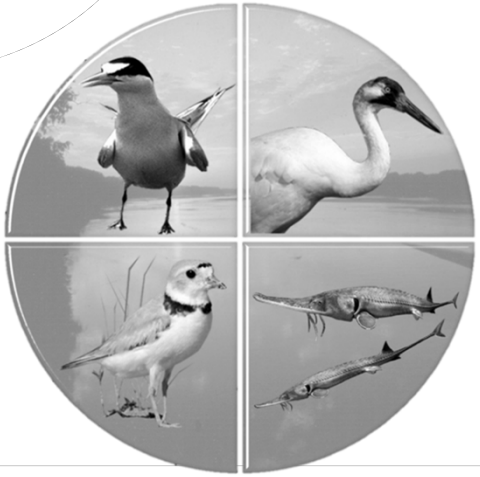


Upper Platte River Basin – A Closer Look


Interstate Agreement
Basin-Wide Plan
IMPs

Platte River Recovery Implementation Program
Background

Interstate Agreement

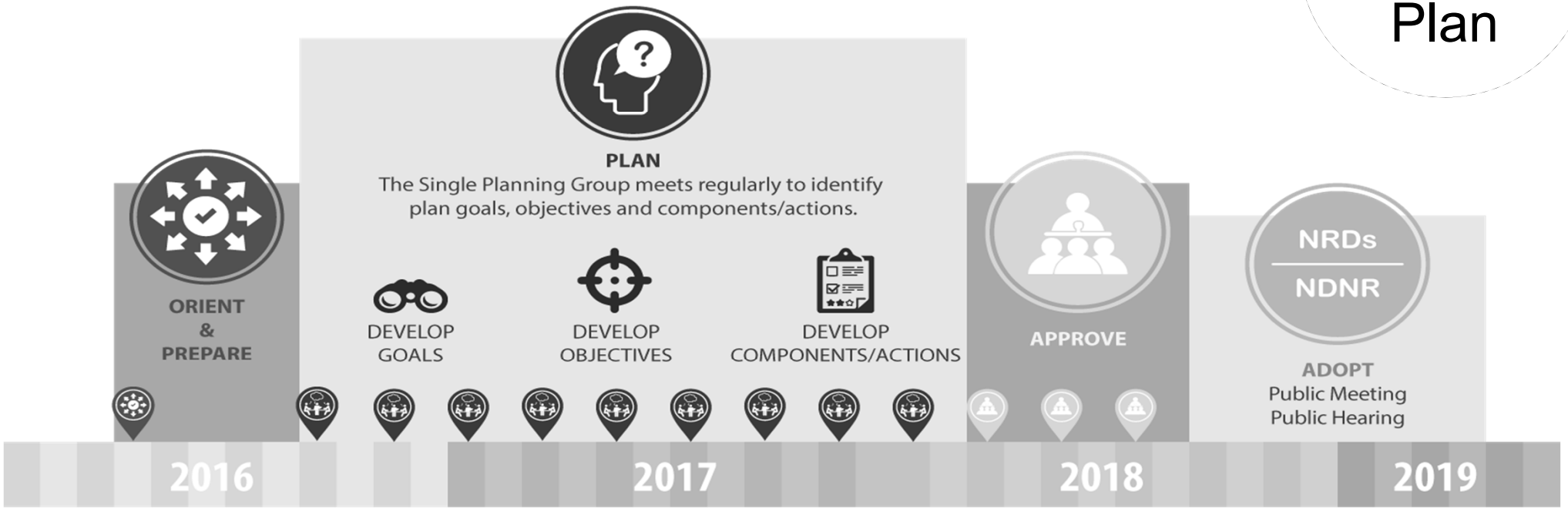


- Agreement among 3 states, two federal agencies, and 5 water users in the Upper Platte Basin
- Formed to carryout Section 7 of the endangered species act
  - Protects species
  - Protects existing water users
  - Allows for new uses with offsets
  - Contains the Nebraska New Depletion Plan

Upper Platte Basin-Wide Plan
Development Process

PROJECT SCHEDULE

Basin-Wide Plan



ajority

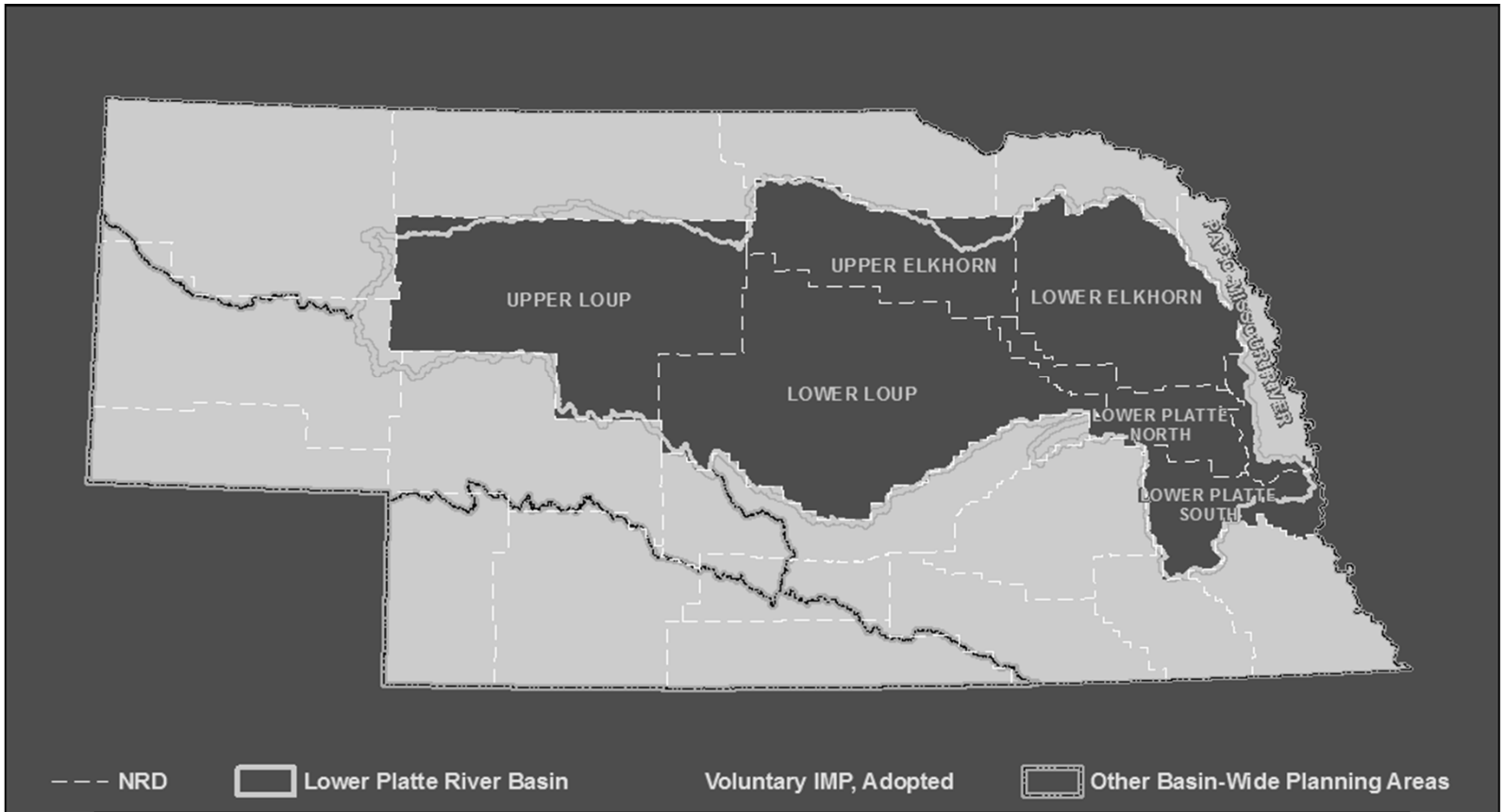
nsensus

Draft Upper Platte Basin-Wide Plan
Goals

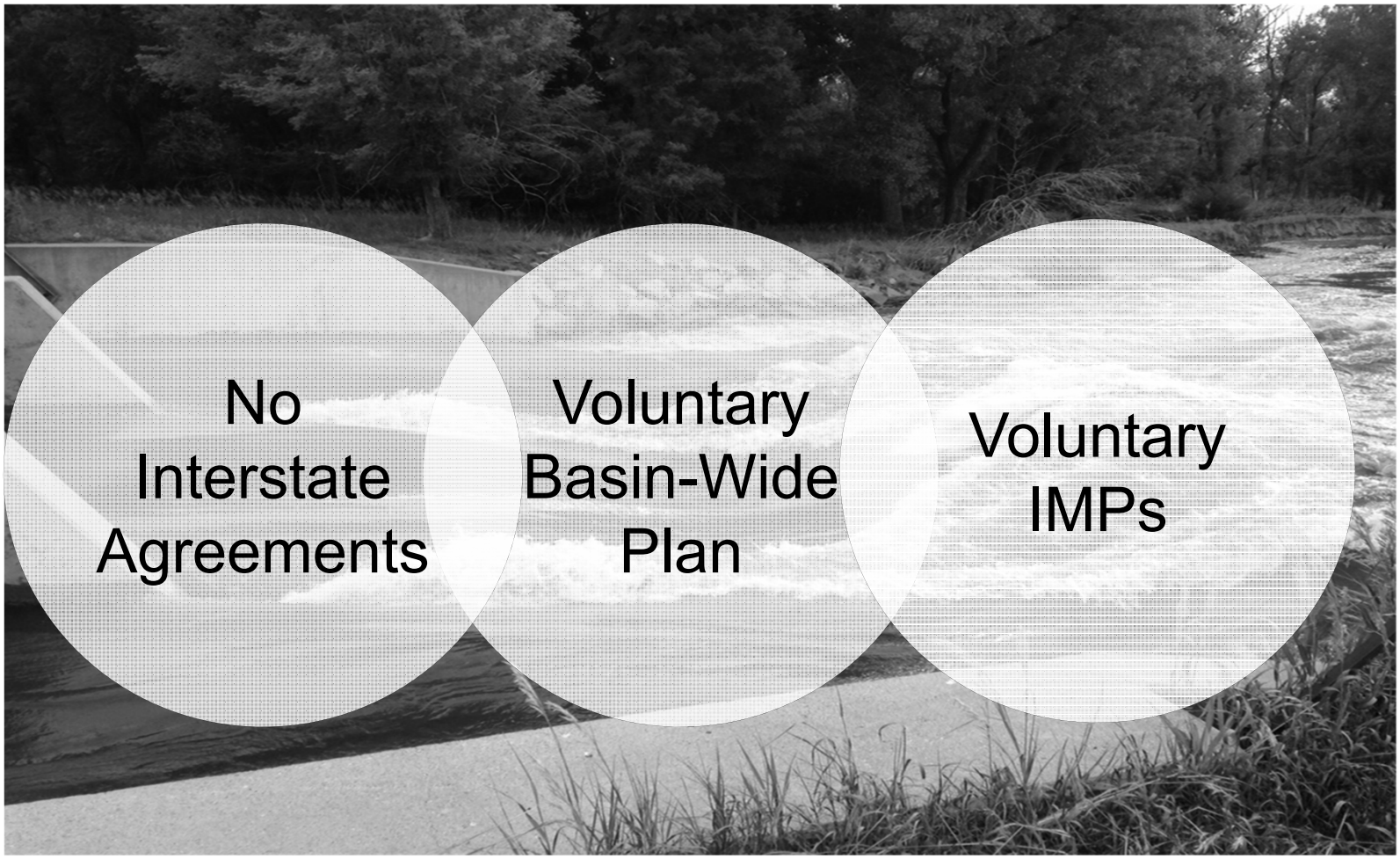
1	Incrementally achieve and sustain a fully appropriated condition while maintaining economic viability, social and environmental health, safety, and welfare of the basin.
2	Prevent or mitigate human-induced reductions in the flow of a river or stream that would cause non-compliance with an interstate compact or decree or other formal state contract or agreement.
3	Partner with municipalities and industries to maximize conservation and water use efficiency.
4	Work cooperatively to identify and investigate disputes between groundwater users and surface water appropriators and, if determined appropriate, implement management solutions to address such issues.
5	Keep the Upper Platte River Basin-Wide Plan current and keep stakeholders informed.

Draft Upper Platte Basin-Wide Plan
Second Increment Themes

- Maintain previous increment mitigation efforts
- Understand economic impacts of supply variability
- Develop a drought contingency plan
- Improve information sharing with stakeholders
- Continue development of conjunctive management projects
  - NRD/Irrigation Canal partnerships to maximize water supplies and utilization

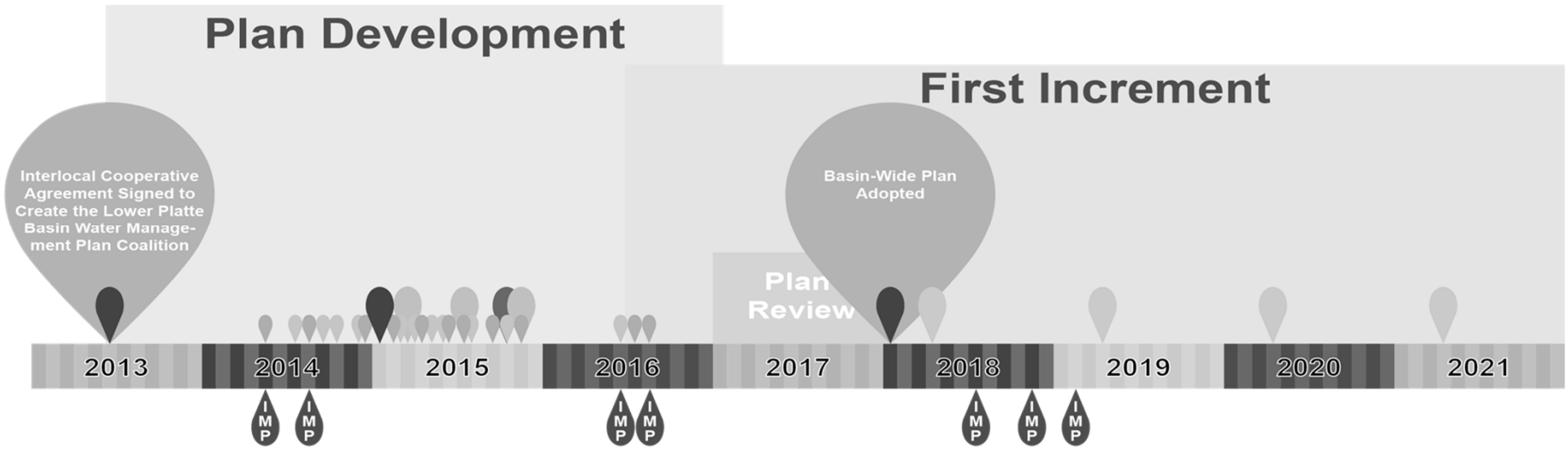


Lower Platte River Basin – A Closer Look


No Interstate Agreements
Voluntary Basin-Wide Plan
Voluntary IMPs

Lower Platte Voluntary Basin-Wide Plan Development Process

Basin-Wide Plan



Lower Platte River Basin-Wide Plan
Goals

1	Develop and maintain a water supply and use inventory based on the best available data and analysis.
2	Implement a water management plan for the Lower Platte River Basin that maintains a balance between current and future water supplies and demands.
3	Develop and implement water use policies and practices that contribute to the protection of existing surface and groundwater uses while allowing for future water development.

Integrated Water Management

- IWM Planning IS:
- Proactive & Adaptable
- Customizable
- Optimizes use of streamflow supply
- Multiple tools & approaches
  - Water budgets, hydrologic models, economic analyses
- Data Intensive
- Time Intensive

- IWM Planning is NOT:
- Static
- One-Size-Fits-All
- Mandatory Restrictions

Successes

Upper Platte Basin Planning

- Platte River Recovery Implementation Program
- Intra-State Goals
  - Achieve and Sustain A Balance
    - Offset Streamflow Depletions
    - Identify Projects to Enhance Water Supply
      - Conjunctive Management Projects
    - Develop Evaluation Methods and Data
- Collaboration over litigation

Republican River Basin Planning

- Compact Compliance
  - 05-06 Non-Compliance
  - Conjunctive Management Projects
- 4 Generations of IMPs
- Investment over litigation
- Improved interstate relations

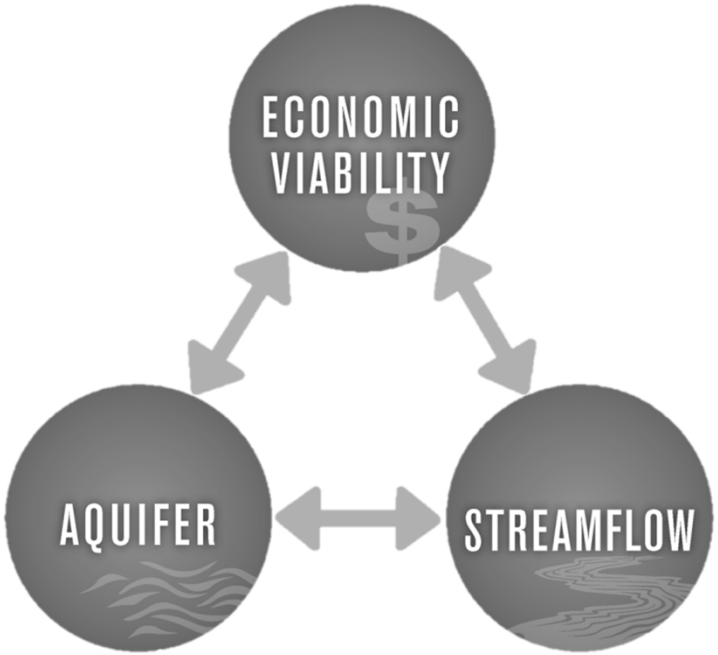
State-wide Planning

- All NRDs participating in IMPs
- Water Sustainability Funds
- Developing sound partnerships
- Continuing to develop and refine the science and data

Future Opportunities and Challenges

Nebraska's water future

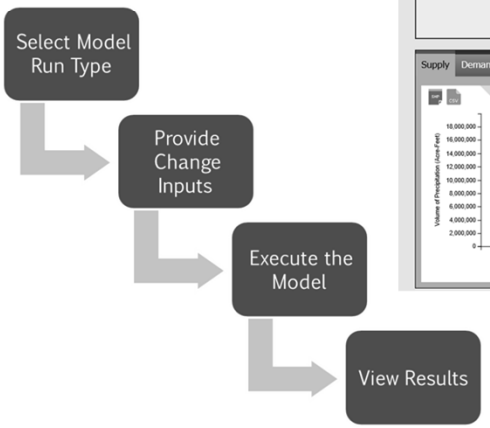
- What does water planning strive to do?
  - Ensure the best available science is used in decision making
  - Engage local stakeholder interest in key policy decisions
  - Develop approaches to provide a framework for sustainability of core management goals
  - Protect existing users of water
  - Work collaboratively with interstate and federal partners
  - Implement innovative water management
  - solutions

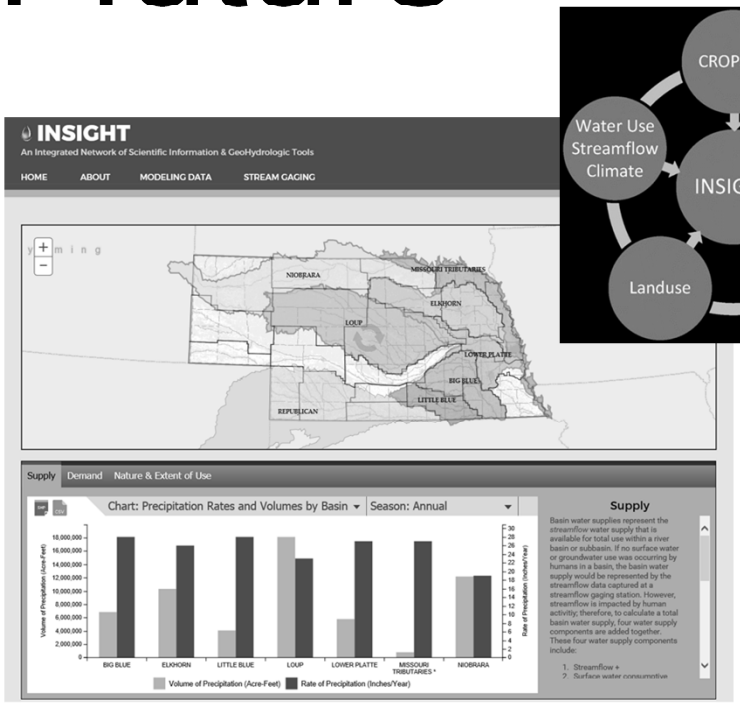


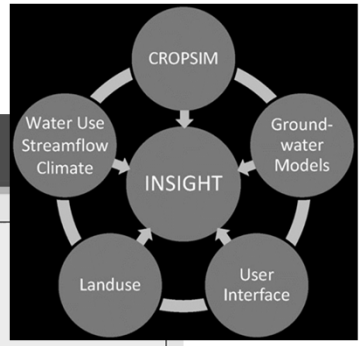
Nebraska’s water future

What does water planning strive to do?

- Develop the best available science
  - Models
  - Data integration
  - Data visualization
  - Applied research







Nebraska's water future

What does water planning strive to do?

- Increase opportunities for public education and engagement
- Ensure tools are available for flexibility to redistribute and/or develop water for future beneficial uses
  - water markets/transfers/incentive programs

Nebraska's water future

- What will water planning strive to do?

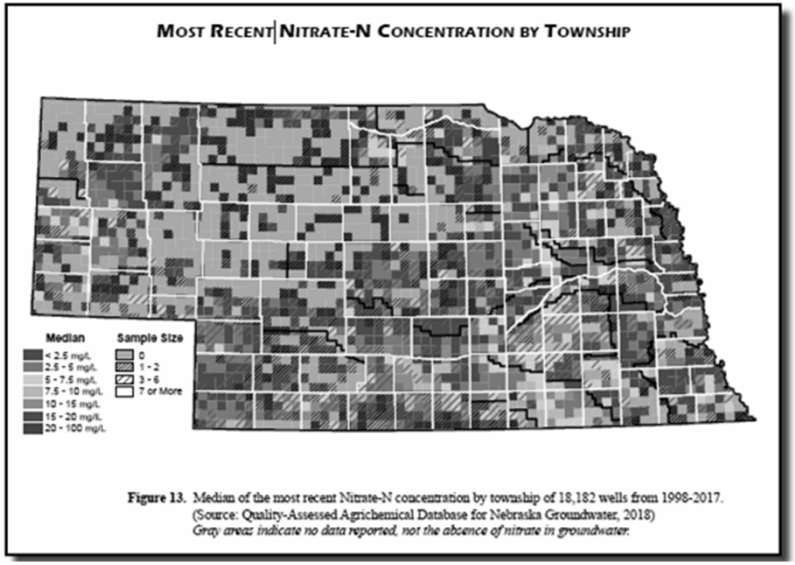
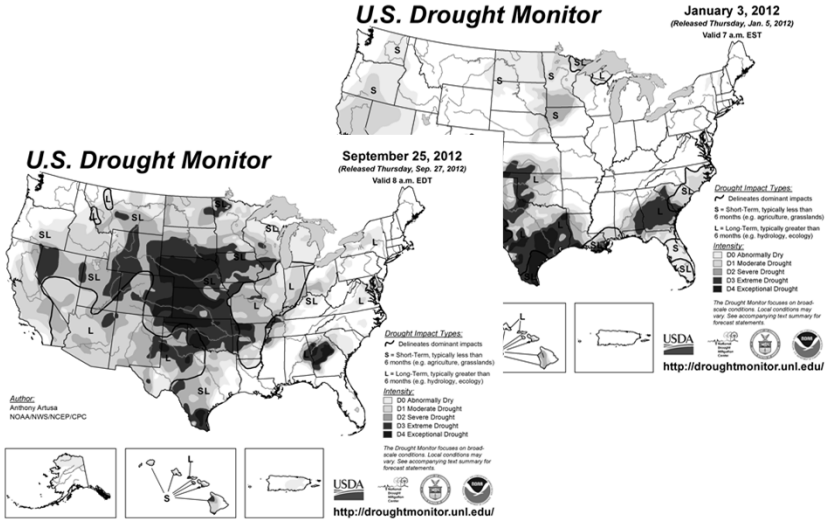


Figure 13. Median of the most recent Nitrate-N concentration by township of 18,182 wells from 1998-2017. (Source: Quality-Assessed Agrichemical Database for Nebraska Groundwater, 2018) *Gray areas indicate no data reported, not the absence of nitrate in groundwater.*

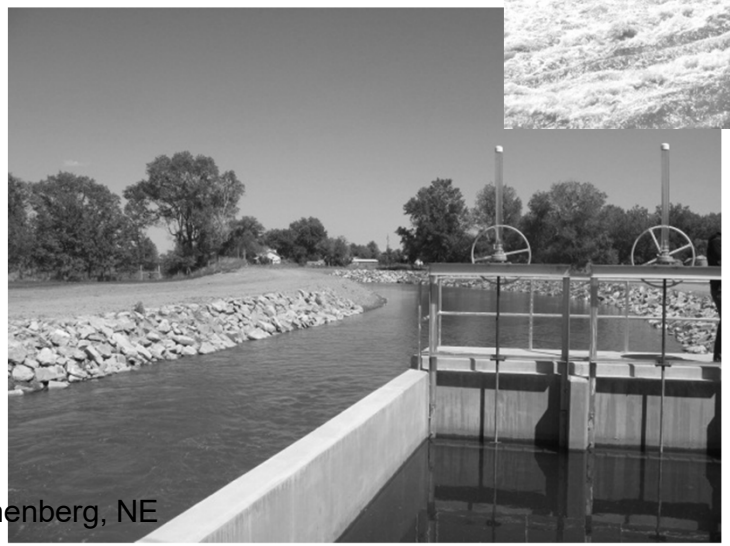
- Integrating planning efforts on water quality and water quantity



- Sharpen focus on drought planning

Nebraska's water future

- What will water planning strive to do?
  - Expand implementation of projects such as conjunctive management/stream augmentation
  - Support producer and water manager level innovation
  - Pilot and implement innovative programs



Cozad Canal, Gothenberg, NE

UNL TAPS
TESTING AG PERFORMANCE SOLUTIONS

Ways to Work with NeDNR

- Internships for undergraduate/graduate students
- Funding and project opportunities to support graduate degrees
- Employment opportunities in technical and planning roles
- Research to support water planning

https://dnr.nebraska.gov/

NeDNR provides unique opportunities to be involved in the science, planning, policy, and public involvement aspects of Nebraska water planning

Questions?

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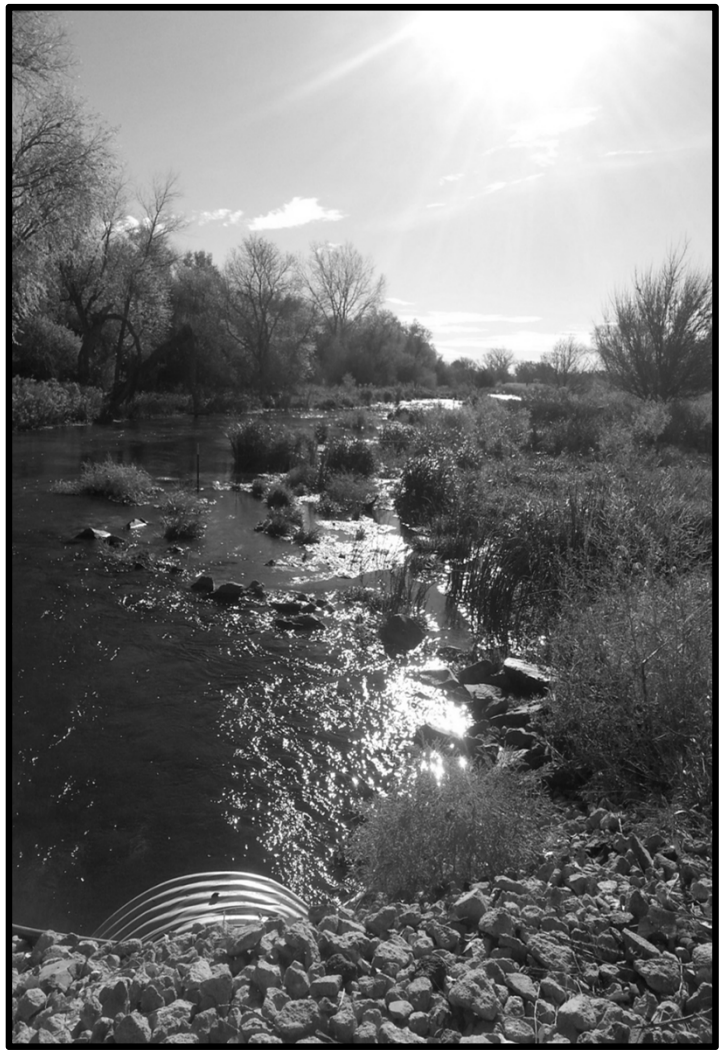

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