NEBRASKA’S EXPERIENCES WITH GROUNDWATER AND SURFACE WATER MANAGEMENT

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Colorado Aquifer Management
Groundwater and River Flow Connections
November 28-29, 2012
Mean Annual Precipitation, 1971 - 2000 and Generalized Gaining/Losing Streams

Seasonal changes and human influences can result in variations of gaining and losing streams shown here. Sources: Gaining/Losing Streams, Conservation and Survey Division, School of Natural Resources, UNL (snr.unl.edu/csd). Precipitation, PRISM Group, Oregon State University (www.prismclimate.org).
Saturated Thickness of the Principal Groundwater Reservoir
Time Line

- 1895  Prior Appropriation System
- 1900’s  Reservoir Development
- 1933  Nebraska Supreme Court Decision
  (*Olson v. City of Wahoo*)
  - No waste
  - Reasonable use
  - Correlative rights
- 1957  Minimum Spacing between wells
Cumulative Totals of Irrigation Wells Registered in Nebraska 1910 - 2007

104,379 as of 12/31/07
Density of Registered Irrigation Wells in Nebraska
August 2007

Wells/Sq. Mile

- 0
- 1 - 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10
- 10 - 12
- 12 - 14
- 14 - 16
- > 16

CONSERVATION AND SURVEY DIVISION (http://csd.unl.edu)
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Natural Resources Districts
Time Line

- 1984  Groundwater Management and Protection Act
- 1980s - Conflicts Between Surface Water and 1990s Groundwater Users More Apparent
- 2004  Water Policy Task Force
LB 962

• State in Charge SW – Appropriative Rights
  NRDs in Charge GW = Correlative Rights
• State Annual Determination of Fully Appropriated Basins – need to planj
• By Statute Portion of Platte River Overappropriated
• Determination of FA or OA
  • Temporary moratorium
  • Develop Integrated Management Plan
Sustain a balance between water uses and water supplies so that the economic viability, social and environmental health, safety, and welfare of the river basin, subbasin, or reach can be achieved and maintained for both the near term and the long term;
Integrated Management Plan

• One or more ground water controls authorized for NRD
• One or more surface water controls authorized for adoption by DNR
• Plan to develop information
• Interrelated Water Review Board appointed by Governor
Fully and Overappropriated Areas

Legend
- Blue: Overappropriated Basins
- White: Hydrologically Connected Waters
- Orange: Natural Resource District Boundaries
- Yellow: Fully Appropriated Determination

LB 962- Fully Appropriated and Overappropriated Areas as of September 21, 2011
Pumpkin Creek Decision 2005

- Surface water law of prior appropriation did not apply to ground water
- For surface water user to get restrictions on ground water, the surface water user must show withdrawals of groundwater caused a direct and substantial harm to the surface water user
- LB 962 and found provisions of LB 962 were general and not intended to resolve individual disputes

  ▪ forward-looking and do not require NRDs to remedy past injuries.
Characteristics of long-enduring governing institutions that have managed to sustain the productivity of Common Pool Resources
Design Principles Illustrated by Long-Enduring CPR Institutions

✓ Clearly defined boundaries delineating who has rights to withdraw resource units from the CPR.
✓ Congruence between appropriation and provision rules and local conditions.
✓ Collective-choice arrangements in which most individuals affected by the operation rules can participate in rule making.
Design Principles Illustrated by Long Enduring CPR Institutions

- Monitoring systems in which the monitors are accountable to the appropriators of the resource.
- Graduated sanctions in which the punishment depends on the seriousness of the crime.
- Conflict resolution mechanisms in which appropriators and administrators have quick, low cost access to local venues to resolve the conflict.
Design Principles Illustrated by Long-Enduring CPR Institution

✓ Recognition of the rights to organize at the local level

✓ Nested enterprises in which the governance activities are organized in multiple layers of nested institutions
Ostrom’s Additional Observations

Groups that did not communicate were more likely to overuse the resource

Learning to trust one another is essential

• With trust comes reciprocity and cooperation
• Trust is cumulative over time – when outcomes are good, there is increasing trust.
• Distrust is also cumulative
Assessment of Nebraska’s System Using Ostrom’s Guidelines

- Clearly defined boundaries: Yes
- Congruence between rules and local conditions: Yes
- Monitoring systems monitors are accountable to users of the resource: Yes
- Graduated Sanctions: Yes
Assessment of Nebraska’s System Using Ostrom’s Guidelines

✓ Recognition of the rights to organize at the local level  Yes

✓ Nested enterprises in which the governance activities are organized in multiple layers of nested institutions  Yes
Assessment of Nebraska’s System Using Ostrom’s Guidelines

✓ Most individuals affected can participate in rule making

No

✓ Good communication among ALL stakeholders

No

✓ Easy access to conflict resolution mechanisms

No

✓ Trust

No
Basic Problem
Hobb’s Rule Is Not Being Followed in Nebraska

A water right is a use right and government cannot take the water right for another purpose.