
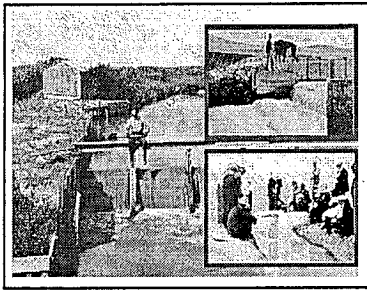
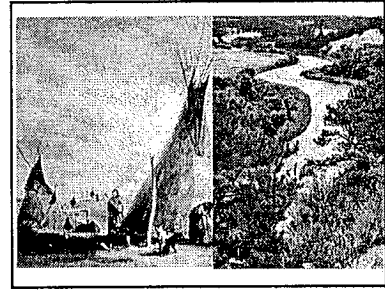
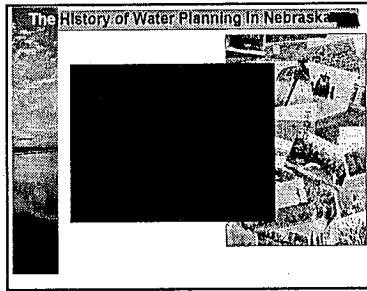
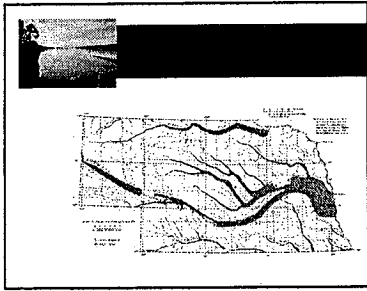
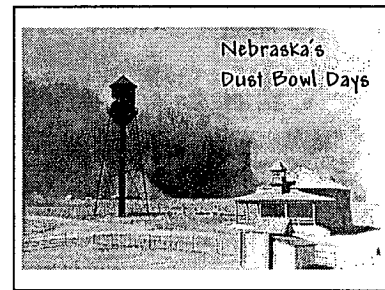
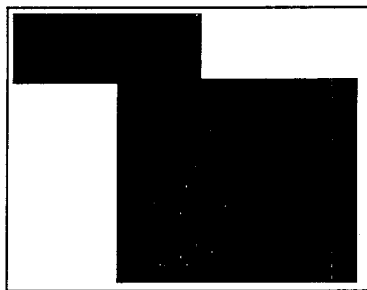
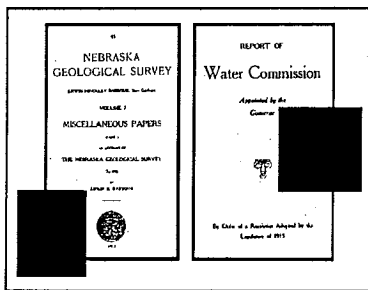
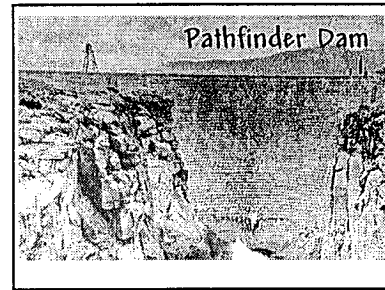


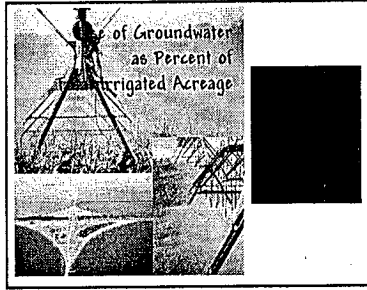
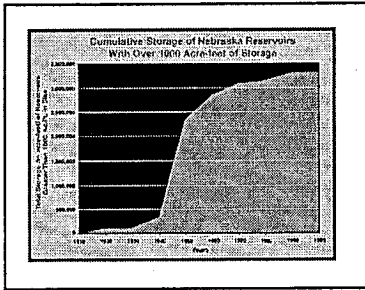
Steve —
There is text in black boxes, view show.



Surface Water

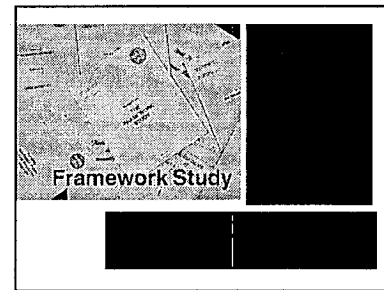
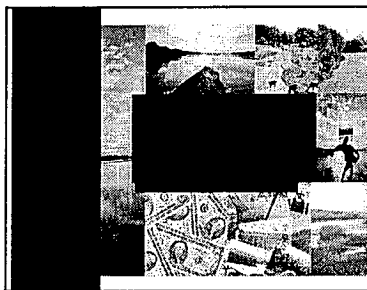
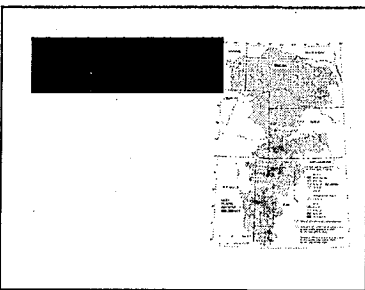
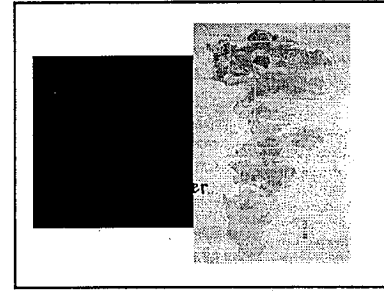
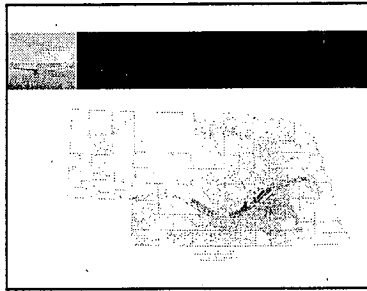
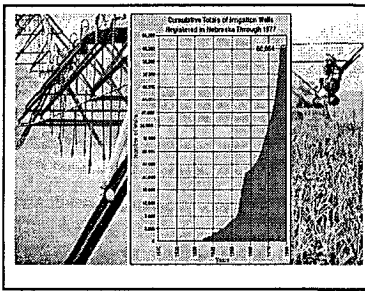
- Water Dedicated to the Public
- Appropriation System - 1895
- Priority
- Preference
- Property Right

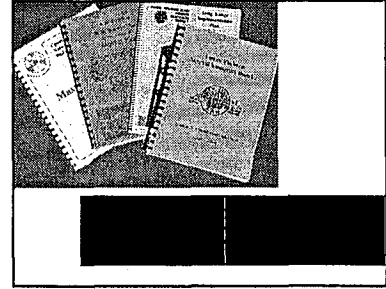
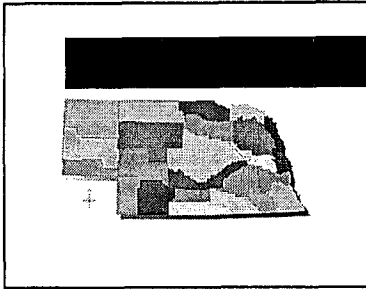
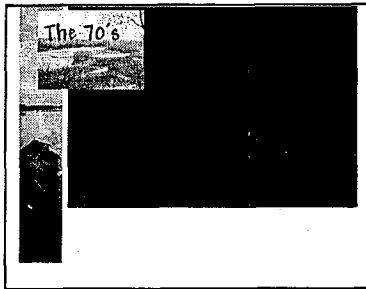
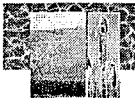




Ground Water

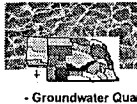
- Belongs to Public
- Landowners Have Right to Make Reasonable and Beneficial Use on Overlying Lands Subject to Correlative Rights of Others and Public Management Policies.
- Preferences




History of Groundwater Management and Protection Act

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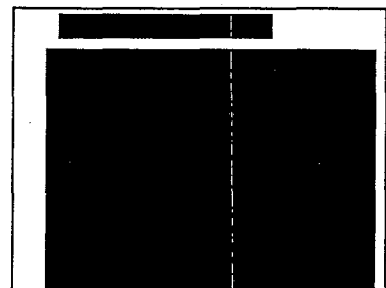
Act Gives NRD's and Others Powers Related to:

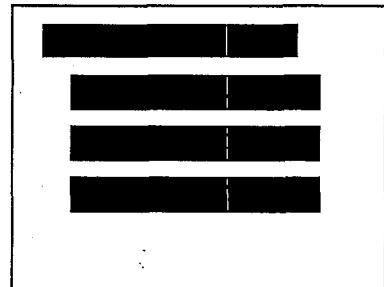
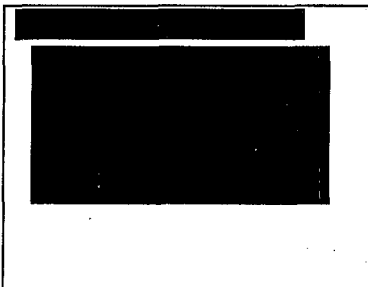
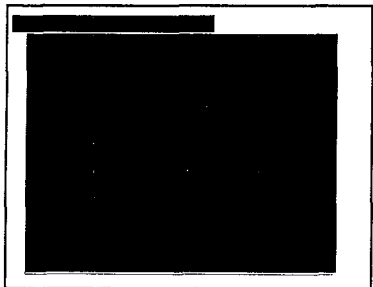
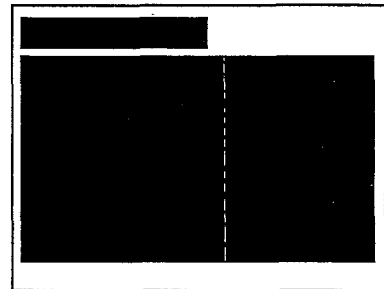
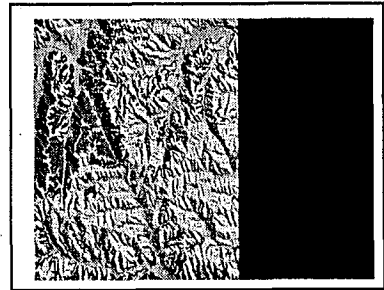
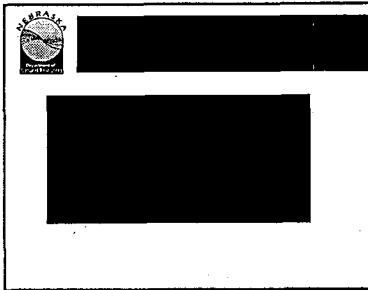
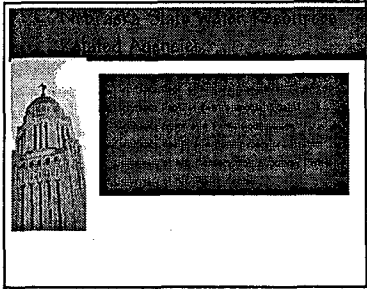
- Groundwater Quantity
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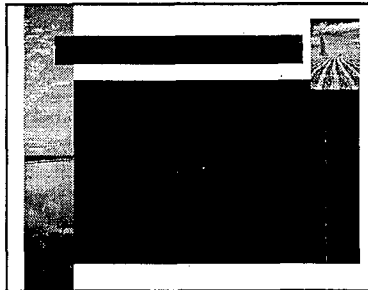
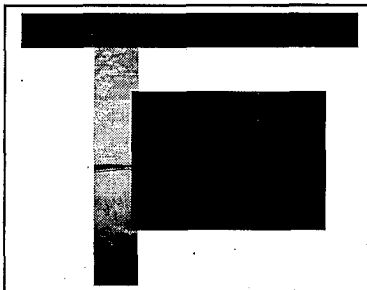
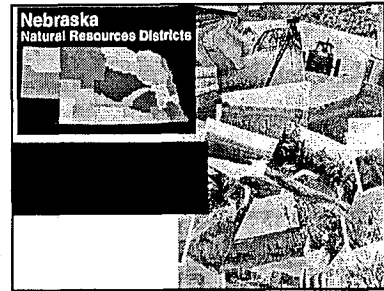
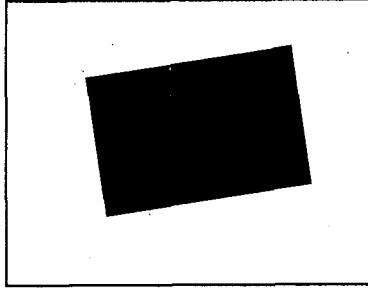
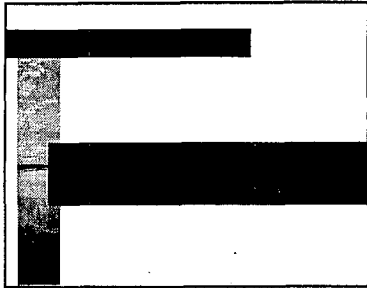


Districts Required to Prepare Groundwater Management Plan that Includes:

- Information About GW Supply
- Discussion of Quantity and/or Quality Problems Experienced/Expected
- Management Objectives with a Proposed GW Reservoir Life Goal
- GW Quality Goals and Solutions
- Proposed Controls





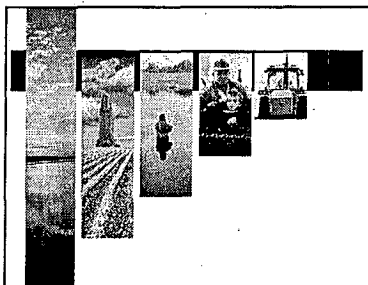


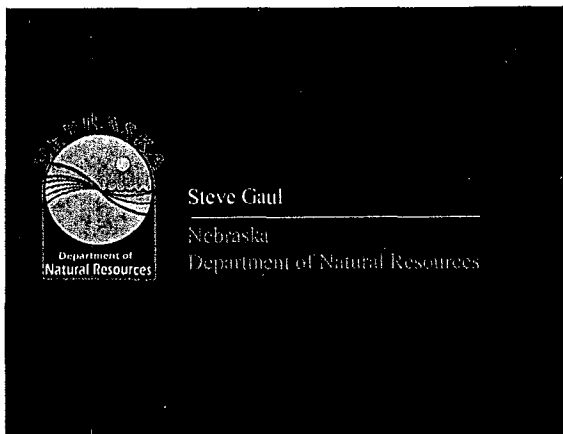
What are Some Difficulties in Public Planning For Natural Resources?

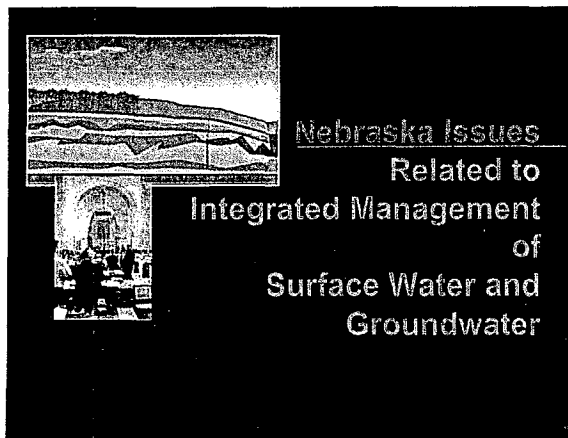
- a) The Complex Nature of the Natural Environment
- b) Conservation Versus Development
- c) Interstate Conflicts
- d) The Lack of Clear Policy on Economic Quantification/Valuation of Environmental Benefits
- e) Judging of Relative Environmental Benefits Between Projects - A Case of Apples and Oranges?
- f) The Lack of Clear Goals and Objectives (Sometimes)
- g) The Large Number of Agencies Involved (Potential for Agency Rivalries and Duplication of Effort)
- h) Representation - Interest Group Values Vs. Societal Values

What are Some Difficulties in Public Planning For Natural Resources?
(continued)

- i) The Large Number of Vested Interests (Adversarial Processes)
- j) The Cost (to Planning a Bureaucratic Frill?)
- k) Fairness to Private Property Owners (What is a taking?)
- l) A Weak Link Between Planning and Implementation
- m) What is Ideal vs. What is Possible
- n) The Use of Planning and Study as a Delaying Tactic
- o) Difficulty in Framing Results - (The Sensational and Disagreement Often Grab Attention. The Truth is Often Clouded Rather Than Simple)







sw & gw law from different roots

NE Wyo

NE KS

Comp agree

IN-state lawsuits

meritorious

sw gw Both followed law but is it equitable?

* Efficient Equitable & Environ Sound

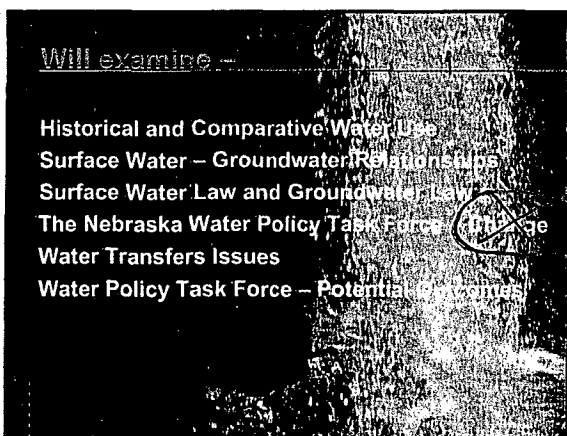


Table 1 -- Top Half-Dozen States in Irrigated Acreage -- 1995

State	Irrigated Acreage Rank	Irrigation Withdrawal Rank	% of Total U.S. Irrigated Acreage	% of Total U.S. Withdrawals That Were From Groundwater
California	1	1	16.2%	37.3%
Idaho	2	2	12.0%	70.5%
Texas	3	4	10.9%	69.1%
Arkansas	4	10	6.1%	83.0%
Colorado	5	3	5.7%	15.8%
Kansas	6	14	5.4%	93.4%

Source: Estimated Use of Water in the United States in 1995 -- U.S. Geological Survey Circular 1200

States to west All Predominant SW
States to west Transfer water to municipal

Total Fresh Water Withdrawals
(All Types -- Not Just Irrigation) -- 1995

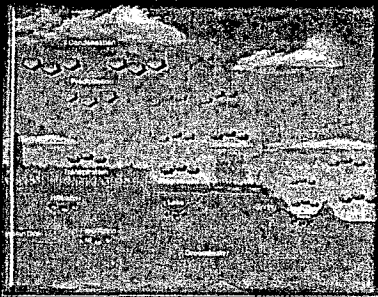


1. California
2. Texas
3. Illinois
4. Idaho
5. Colorado
6. Michigan
7. Nebraska
8. Ohio
9. New York

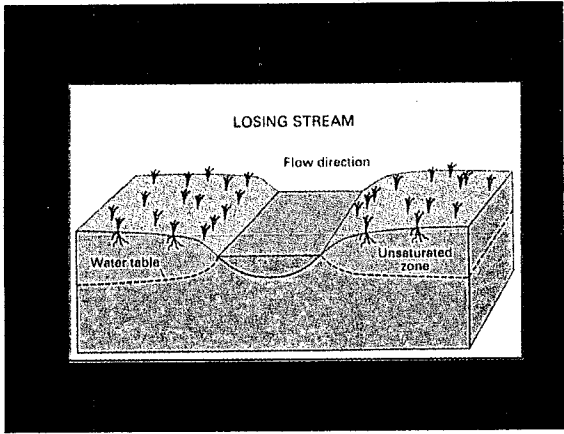
- New York one up higher

Idaho

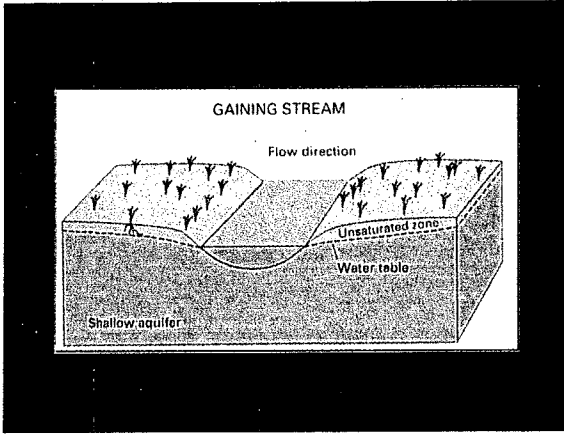
The Hydrologic Cycle



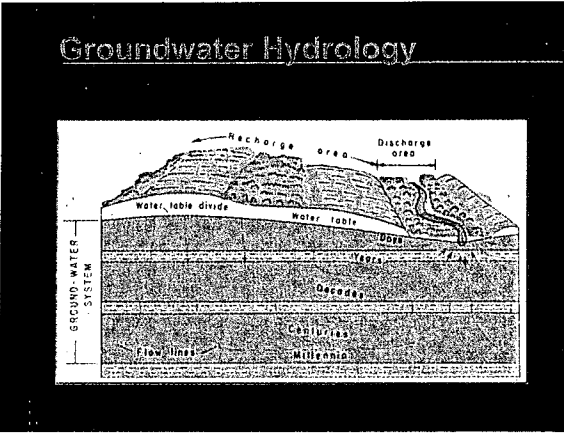
Water Always on Move
Doesn't respect boundaries or form
Some part of water now is over - question where



Intermittent or not



Small hills steady flowing



**Surface Water – Groundwater
Physical Relationships**

- The Water Cycle
- Evaporation Transpiration
- Land Use / Conservation
- Perennial vs. Intermittent Streams
- Gaining vs. Losing Stream

✓ Evaporation / Transpiration Can crops use less
underground storage
vs surface

- native prairie, crops, no till


Surface Water – Groundwater Physical Relationships
(Continued)

- Stream Alluvial Aquifer Relationships
- Alluvial Aquifers / Groundwater as Storage
- Non-alluvial Aquifers
- Lag and Timing of Impacts
- Recharge and Impact of Wet Years
- Subirrigation / Lakes / Wetlands

Leaky Canals As GW Source

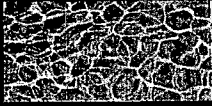
When SW not available drill well that drains SW

Local's Induced Recharge Wellfield



Surface Water

- Water Dedicated to the Public
- Appropriation System - 1895
- Priority
- Preference
- Property Right



Appropriations

(Permits)

- Type
 - Natural Flow
 - Storage
 - Storage Use
 - Natural Lake
 - Wells Within 50 Feet of Stream



Appropriations -

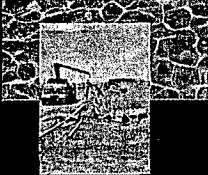
Approval or Denial

- Beneficial Use
- Unappropriated Water
- Public Interest
- Public Welfare



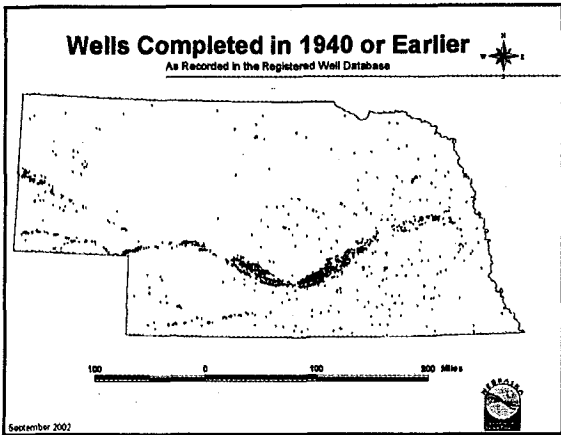
Ground Water

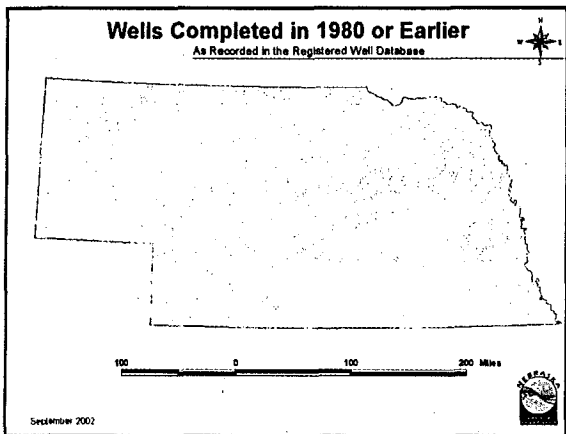
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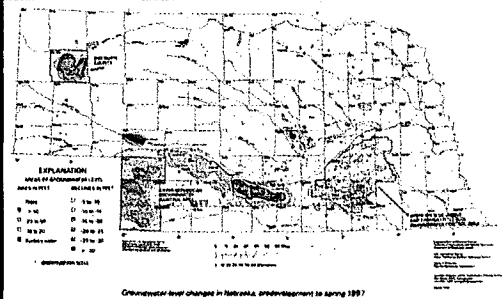
Registrations - 1957

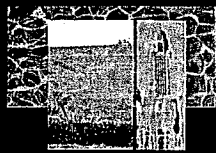
- All Water Wells Drilled After September 9, 1993
- Well Driller is Responsible





Rises & Declines





History of Groundwater Management and Protection Act

- 1975 LB 577 Allowed Control Areas
- 1982 LB 375 Allowed GW Mgt. Areas
After Approval of GW Mgt. Plan
- 1986 LB 894 Special Protection Area Legislation
- 1991 LB 51 Required NRD's to Address GW Quality in Mgt. Plans
- 1996 LB 108 Allowed or can Require Management of SW-GW Relationships - Consolidated Mgt. Authorities

- ① Original Concern - Declining
GW Tables + Running Out - Not SW-GW
- ② Then GW Quality
- ③ Finally Int mgmt (1996)
(note April 86 Study too Early)



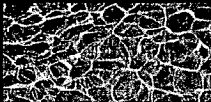
Act Gives NRD's and Others Powers Related to:

- Groundwater Quantity
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- GW Quality Goals and Solutions
- Proposed Controls



Options for Management Area Designation

1. NRD on its Own for:
 - A. Ground Water Quantity
 - B. Ground Water Quality
 - C. Integrated Management
2. NRD With DWR Participation and Assistance for:
 - A. Integrated Management
3. DEQ on its Own for:
 - A. Ground Water Quality (*Old SPA Process*)
4. DWR on its Own for:
 - A. Integrated Management (*Limited to Disputes Over Interstate Compacts and Decrees or Other Formal State Contracts or Agreements*)

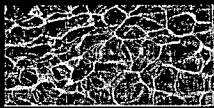


NRD Controls To Address Management Plan Objectives Include

- Allocations of Withdrawals
- Rotation
- Well Spacing
- Metering/Monitoring
- Use of Best Management Practices
- Chemicals/Fertilizer Analysis of Water or Deep Soil
- Mandatory Education
- Moratorium on New Wells
- Other Reasonable Rules and Regulations
- Reduction of Use

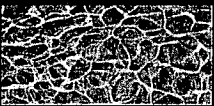


- Public Hearing Requirements
- Some New Wells in Management Areas Must Have a Permit From the NRD Before Drilling



Other Important Items

1. An NRD May Treat GW Users Differently on the Basis of Date of Drilling
 - Only Allowed for Integrated Mgt.
 - Effective Dates Limited
2. NRD May Treat GW Users Differently Based on Different Hydrologic Relationships



Other Important Items

(Continued)

3. Replacement Wells Must be Treated the Same as the Wells they Replace.
4. The SW Appropriations that can be Protected Through LB 108 do not Include Instream Appropriations.
5. Interrelated Water Management Fund



A Two Part Management Area Procedure for Integrated Management may Include an Action Plan for Both Surface Water and Groundwater



Surface Water Portion of Integrated Management Plan

Can Include:

- Increased SW Monitoring and Enforcement
- A Moratorium on New Appropriations
- SW Conservation Requirements
- Other Reasonable Restrictions to SW Users

Integrated Management Issues (General)

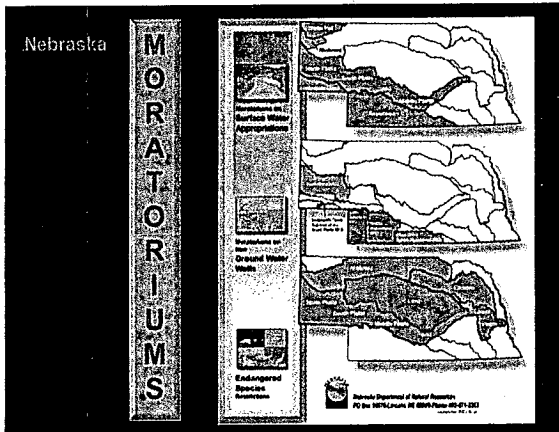
- Interstate Compliance (Decree, Compacts, Agreements)
- What's Happening? (Information and Modeling)
- Groundwater Use Impacts on Surface Water
- Surface Water Use Impacts on Groundwater
- Accounting for Lag (28% over 40 Years?)
- Equity
- Efficiency
- The Environment

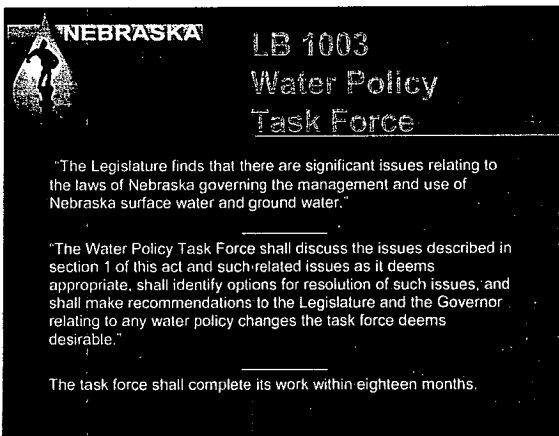
Are NRD's Acting Forcefully & Soon Enough?

Past vs Future

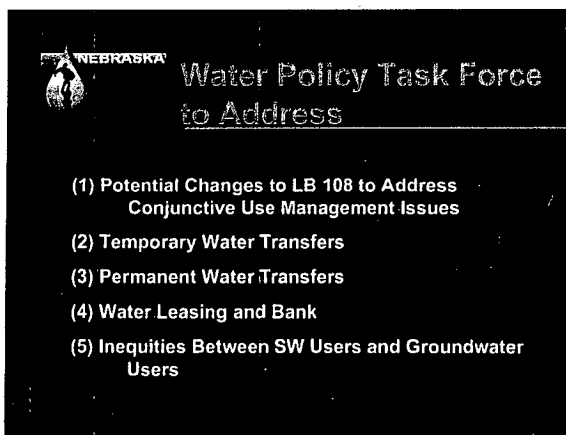
Both acted OK within Law

ONE molecule once per hundred years





49 members - NO University
 only 2 State Agency (DWR AG office)
 5 NRD 4 Power 5 municipal
 3 Ag 2 Res 3 Env 3 AT Large
 20 Irrigator 2 (Unicameral NITRA Com)



Existing Groundwater Transfer Law

• Groundwater can be transferred off the overlying land for in-state domestic, municipal, industrial or agricultural purposes and for essentially any beneficial interstate purpose. However, transfers must not adversely affect any other water user. Affected parties may file objections.

• For some transfers, impacts on other 3rd parties are considered as is the consistency of the transfer with the public interest.

OK

Existing Surface Water Transfer Law

• Although surface water rights attach to the land, transfers are allowed subject to public interest, impacts on other water users, and other requirements

• Surface water rights cannot be transferred to uses in other preference categories. However, a higher preference category use may take water from a senior lower preference user with compensation.

• Interbasin transfers are allowed, but are subject to more limitations than other appropriations. Also, benefits to the state must be equal to or greater than the benefits of denial of the transfer.

Water Transfer Topics / Issues

- Should groundwater transfers be allowed for additional types of use?
- Should transfers of surface water into other preference categories be allowed?
- Is water banking needed or can transfers occur without it?
- How to protect environmental and 3rd party interests at reasonable transaction costs
- How to treat temporary versus permanent transfers
- Limiting transfers to consumptive use

Defining Public Interest

Draft Proactive Integrated Water Management Planning

- NDNR makes annual determination of whether basins/subbasins are overappropriated or soon to be overappropriated
- If overappropriated or soon to be a stay issued on issuing well permits until DNR and NRDs determine whether to declare temporary moratorium
- Within 3 years, with possibility of extensions DNR and NRDs jointly develop an integrated surface water – groundwater management area plan (IMP)

(DRAFT) ✓

IMP will:

- Describe goals & objectives that sustain a balance between water users and consider existing use.
- Include controls
- Comply with interstate agreements

To Extent Possible IMP will:

- Protect property rights of SW users
- Protect Property Rights of GW users
- Minimize adverse impacts on existing users
- Interrelated Water River Board resolved any disputes between NRD and DNR

Challenges for Integrated Management

- Inequities
- Lag Effects
- What is Overappropriated
- Environmental Demands
- Information Development
- Administration
- Funding
- Coordination Between Basins

If you regulate for SW some get all back some none

Thank You

Questions?
