

Steve Gaul  
Nebraska  
Department of Natural Resources

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**Nebraska Issues  
Related to  
Integrated Management  
of  
Surface Water and  
Groundwater**

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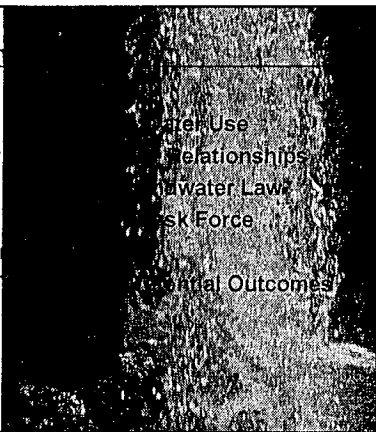
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**Will examine**

Historical and  
Surface Water  
Surface Water  
The Nebraska  
Water Transfer  
Water Policy T



Water Use  
Relationships  
Water Law  
Risk Force  
Final Outcomes

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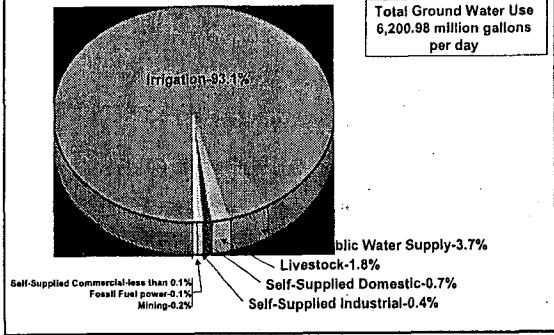
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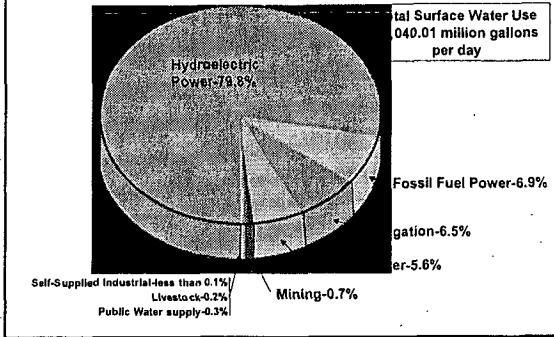
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### Estimated Ground-Water Use in Nebraska, 1995



### Estimated Surface-Water Use in Nebraska, 1995



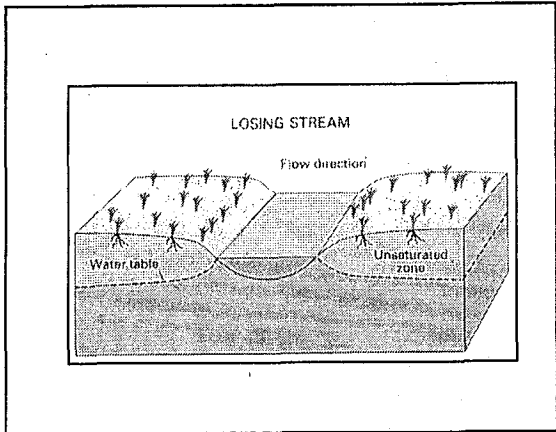
### Estimated Acres Irrigated in Nebraska



Year	Surface Water	Groundwater	Total
1850	9,000	—	9,000
1860	12,000	—	12,000
1900	150,000	1,000	150,000
1920	450,000	1,000	450,000
1940	500,000	40,000	540,000
1950	500,000	470,000	1,070,000
1960	850,000	1,650,000	2,500,000
1970	1,000,000	3,000,000	4,000,000
1980	1,000,000	6,200,000	7,200,000
1990	1,000,000	7,000,000	8,000,000
2000			8,150,000

Modified from Dreeszen In Flatwater: A History of Nebraska and its Water






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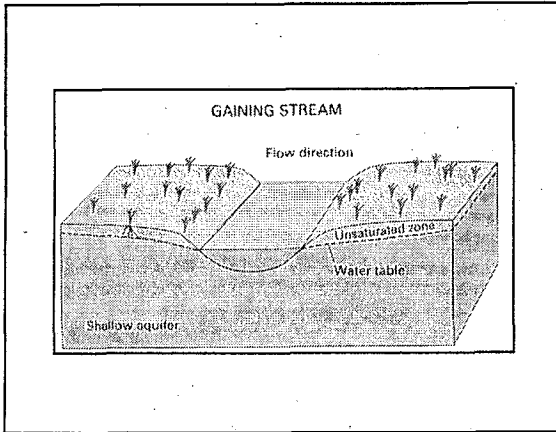
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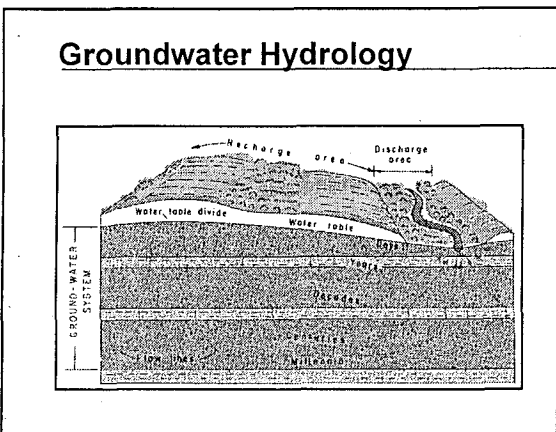
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**Groundwater Hydrology**

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**Surface Water – Groundwater  
Physical Relationships**

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

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**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

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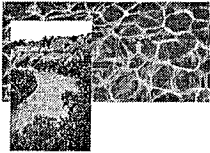
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**Surface Water**

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

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### **Appropriations**

(Permits)

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

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### **Appropriations -**

Approval or Denial



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

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### **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

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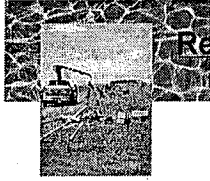
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### Registrations - 1957

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

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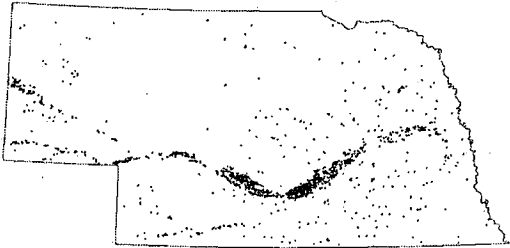
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### Wells Completed in 1940 or Earlier

As Recorded in the Registered Well Database



100 0 100 200 Miles



September 2002

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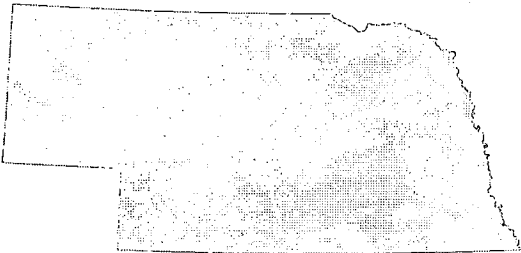
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### Wells Completed in 1980 or Earlier

As Recorded in the Registered Well Database



100 0 100 200 Miles



September 2002

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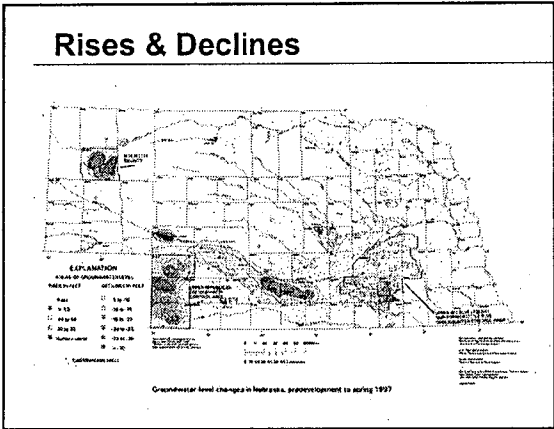
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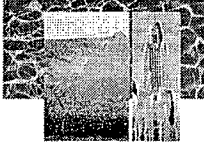
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### History of Groundwater Management and Protection Act

- 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

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### Act Gives NRD's and Others Powers Related to:

- Groundwater Quantity
- Groundwater Quality
- Integrated Management of Hydrologically Connected Groundwater and Surface Water
  - Conflicts Between GW and SW Use
  - Disputes Over Interstate Compacts and Decrees
  - Carrying Out State Contracts or Agreements

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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

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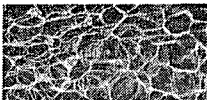
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**Options for Management Area Designation**

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*)

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**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

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

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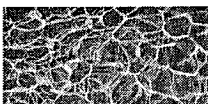
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**Other Important Items**

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

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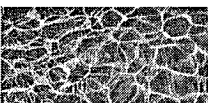
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**Other Important Items**  
*(Continued)*

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

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

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**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

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**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

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Nebraska

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Moratorium on Surface Water Appropriation

Moratorium on New Ground Water Wells

Endangered Species Moratorium

Nebraska Department of Natural Resources  
P.O. Box 9402, Lincoln, NE 68509-0942

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**NEBRASKA**

**LB 1003  
Water Policy  
Task Force**

"The Legislature finds that there are significant issues relating to the laws of Nebraska governing the management and use of Nebraska surface water and ground water."

"The Water Policy Task Force shall discuss the issues described in section 1 of this act and such related issues as it deems appropriate, shall identify options for resolution of such issues, and shall make recommendations to the Legislature and the Governor relating to any water policy changes the task force deems desirable."

The task force shall complete its work within eighteen months.

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**NEBRASKA**

**Water Policy Task Force  
to Address**

- (1) Potential Changes to LB 108 to Address Conjunctive Use Management Issues
- (2) Temporary Water Transfers
- (3) Permanent Water Transfers
- (4) Water Leasing and Bank
- (5) Inequities Between SW Users and Groundwater Users

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### **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 3<sup>rd</sup> parties are considered as is the consistency of the transfer with the public interest.

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### **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 can not 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.

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### **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 3<sup>rd</sup> party interests at reasonable transaction costs

• Defining Public Interest

• How to treat temporary versus permanent transfers

• Limiting transfers to consumptive use

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### **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)

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### **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

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### **Challenges for Integrated Management**

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

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Thank You

Questions ?

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