

Nebraska

Department of Natural Resources

Data Bank Historical Development

Land and Water Resources Data

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Head, Data Bank

Revised October 2003

Nebraska Natural Resources Data Bank

Created by Nebraska Unicameral in 1969

Laws 1969, LB 384

Data Bank is administered by the State of Nebraska, Department of Natural Resources. The purpose of the Data Bank is to acquire, develop, store, process and manage natural resources data relating to soil, land and water resources of the state, and make the information available to government agencies and the general public in a user-friendly and timely manner.

Nebraska Natural Resources Data Bank

Technical Advisory Committee Established:

Laws 1969, LB 384

The Technical Advisory Committee will assist in the coordination and dissemination of the resources of the data bank.

Laws 1998, LB 924- The committee shall report, assist, and advise the Chief Information Officer and provide assistance as requested by the NITC to support the technical panel.

Nebraska Natural Resources Data Bank

Technical Advisory Committee - Membership Appointed by Governor

- Governor's Policy Research Office
- Department of Administrative Services
- Department of Agriculture
- Department of Environmental Quality
- Department of Health
- Game & Parks Commission
- Conservation & Survey Division, UNL
- Natural Resources Conservation Service, USDA
- U. S. Geological Survey

Nebraska Natural Resources Data Bank

VISION

Empower the decision-makers/ data-users with (real-time) reliable information relating to natural resources data with proper displaying and processing tools for efficient planning and effective management of Nebraska's land and water resources.

Nebraska Natural Resources Data Bank

MISSION

Provide an integrated Natural Resources Information System for the State of Nebraska and an easy online access to Data Bank information (and services) to decision-makers, data users and to the citizens using e-government portal and innovative technologies in a most responsive, efficient and cost-effective manner.

Nebraska Natural Resources Data Bank

Historical Development

Nebraska Natural Resources Data Bank

Data in the Beginning

Federal Data (1970-75)

- Stream Flow/ Peak Flow
- Climatic
- Groundwater Levels
- Water Quality

State Data (1975-80)

- Well registration
- Surface water rights
- Canal diversions
- Reservoir storage
- Dams inventory

It benefited agencies by having an electronic mechanism to share data.

Nebraska Natural Resources Data Bank

Early Years of Data Access

Strictly mainframe computers housed at UN-L

Direct connection to UN-L mainframe from Agency
was added later

Remote Terminal connectivity started around 1977

Nebraska Natural Resources Data Bank

New Data Bases

Continued to be Developed

1980's

- Agricultural Crops
- Census data
- Soils Surveys (2-acre cells)
- Land use (8-acre cells)
- Nebraska Resources Inventory

1990's

- Topography (Tiger line files)
- Hydrologic units
- Wetlands Inventory
- STATSGO Soils

2000's

- Digital Elevation Models
- Digital Ortho-photo Quadrangles
- National Hydrographic Database

Nebraska Natural Resources Data Bank

Migrated to DEC Workstations

(Early 1990's)

- Establish Agency GIS Network
- Provide LAN/ WAN support to Agency, NRDs and other state agencies
- Store, process and manage Data Bank Information Resources
- Produce Interpretative Maps
- Develop GIS Standards and Metadata
- Scan, digitize and develop Geo-spatial Coverages
- Develop GIS Applications

Nebraska Natural Resources Data Bank

Geographic Information System (Introduced 1989)

- PC and related software development
provided Agency the tools to process geographic data (using GRASS, MIPS GIS Systems)
- GIS software enabled spatial data processing and full color mapping
- Increased demands for geo-spatial coverages, GIS applications and mapping
- Agency tried several new GIS software packages and found it needed more computing power, data storage and GIS capabilities

Nebraska Natural Resources Data Bank

ARC/INFO GIS System (Introduced 1991)

- Evaluated various GIS software packages for UNIX based platforms like Arc/Info, - ERDAS, MGE (Intergraph)
- Arc/Info software was found to fit the needs of the agency
- Arc/Info helped the agency become workstation oriented
- Acquired DEC Workstations to implement Arc/Info

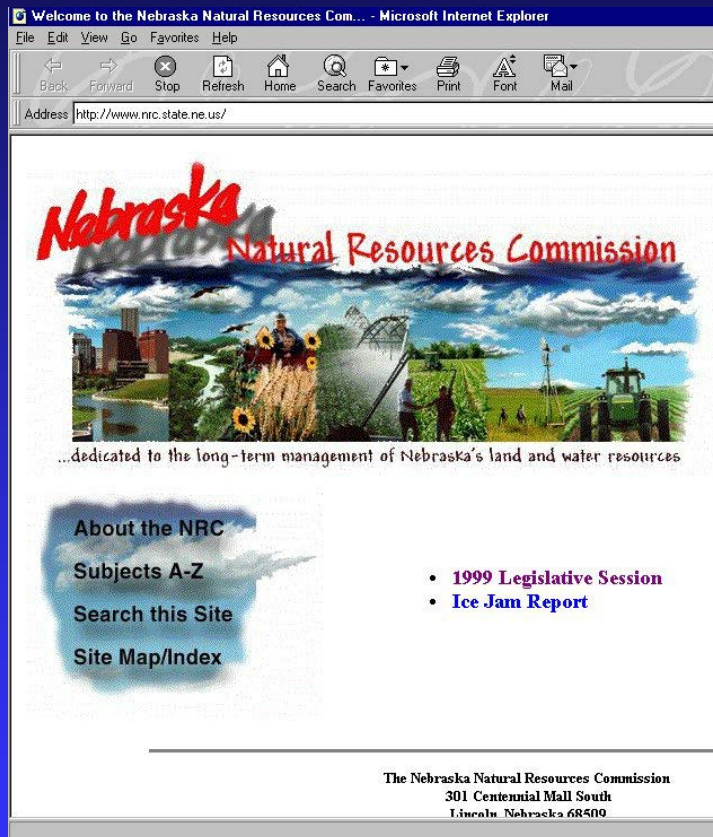
Nebraska Natural Resources Data Bank

Migrated to SUN Workstations
And LINUX Servers (Mid 1990's)

- Develop and manage Agency Web Site
- Provide LAN/ WAN support to Agency and other agencies connected to DNR Network
- Store, process and manage natural resources databases
- Develop National Framework and State priority databases
- Develop and maintain Metadata Clearinghouse
- Develop and enhance GIS Applications

Nebraska Natural Resources Data Bank

Wide World Web (1994)



Agency established it's first homepage on the web

Development of web site allowed agency to make all Data Bank resources available over the web

- Published databases over the web
- Easy access to data and no user accounts

Department of Natural Resources
Data Bank

Database
Development
1996-1999

Completed Statewide
Digital Elevation Models:
30-Meter resolution
Digital Ortho-photo Quadrangles:
1993 NAPP

Nebraska Department of Natural Resources Data Bank

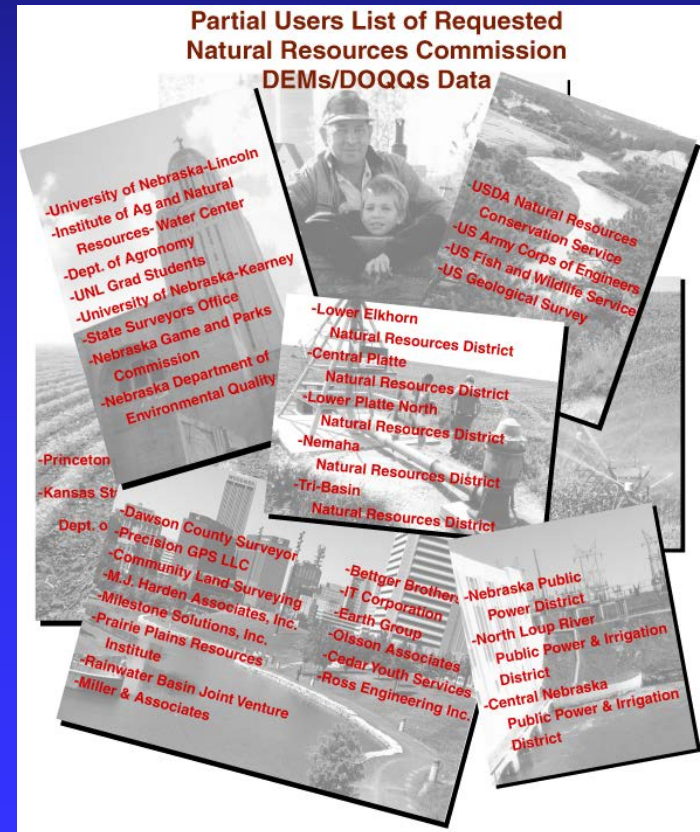
User Demand: Revise DEMs/DOQs

Data requests for natural resources information and
DEMs/ DOQs continue to increase

Applications:

- Used as Base Maps
- Soil surveys
 - Recompilation
- Floodplain delineations
- Background Imagery
- Farm and ranch planning
- Numerous other

Applications



Nebraska Department of Natural Resources Data Bank

Database Development

1996-2003

Cooperative Agencies

DNR CSD NRCS

Digitization of

County Soil Surveys

National SSURGO Standards

July 1, 2000

Nebraska Department of Natural Resources

Was formed with the merger of
the Department of Water
Resources and the Nebraska
Natural Resources Commission

Data Bank

Nebraska Natural Resources Information System

Nebraska Department of Natural Resources Data Bank

Database Revision

2000 - 2003

Digital Elevation Models:

10-Meter Resolution

Digital Ortho-photo Quadrangles:

1999 NAPP

Nebraska Natural Resources Data Bank

Migrated to WINDOWS Workstations

(Early 2000's)

- Enhance and Administer Agency Web site
- Publish Data over the Internet
- Provide Secured Network Support to Agency
- Consolidate Web and FTP Servers
- Store, process and manage Relational and Spatial databases
- Produce Internet Map Server Applications
- Develop and administer Enterprise-wide Natural Resources Data Clearinghouse
- Develop and enhance GIS Applications

Data Bank Activities

- Automation and On-line Registration of Water Wells
- Automation of Surface Water Rights Database
- Integration of Surface water and Groundwater Data Records
- Enhance Public Land Survey System
 - Section Corners Database

Data Bank Activities

Enhance Internet Map Server Applications

- Dynamic Display of GIS Coverages over the Web
- Create Enterprise Geo-spatial Data and Metadata Clearinghouse
- Manage Databases using ArcSDE and SQL Data Base Management systems
- Process and Disseminate map outputs over the Web

Nebraska Natural Resources Data Bank

Recent

Accomplishments

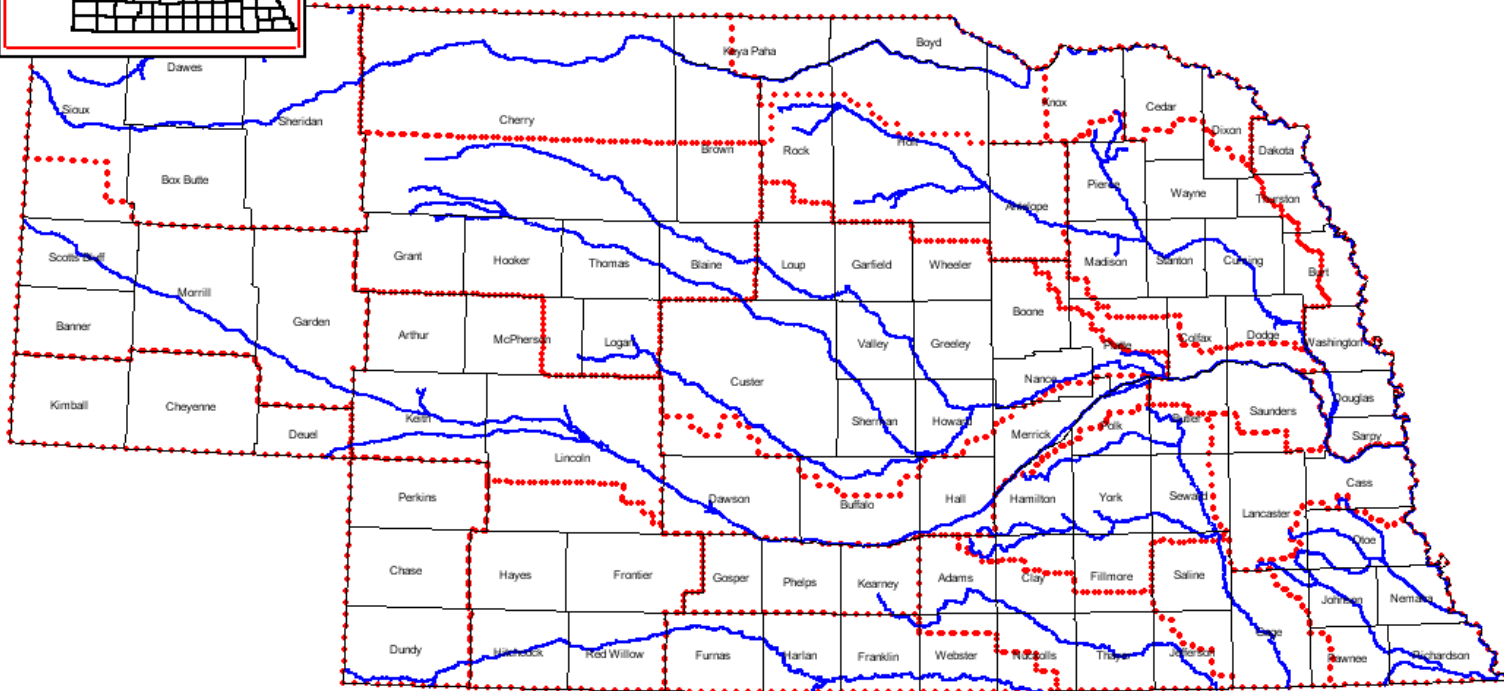
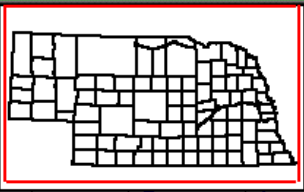
Internet Map Server
Applications

Internet Map Server Applications

- Automation of Well Registration Database
- Shaded Relief Map - Digital Elevation Models (DEMs)
- Compressed Digital Orthophoto Quadrangles (COQs)
- County SSURGO Maps
- County and NRD Maps of 2000 Census Population
- Changes in Groundwater Levels
- Observation Stations Location Map (Weather, Stream Flow, Water Quality)
- Watershed NHD Maps
- Natural Resources/Metadata Clearinghouse

Nebraska Map Interactive

Nebraska Map Interactive



Nebraska Dept. of Natural Resources

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Layers

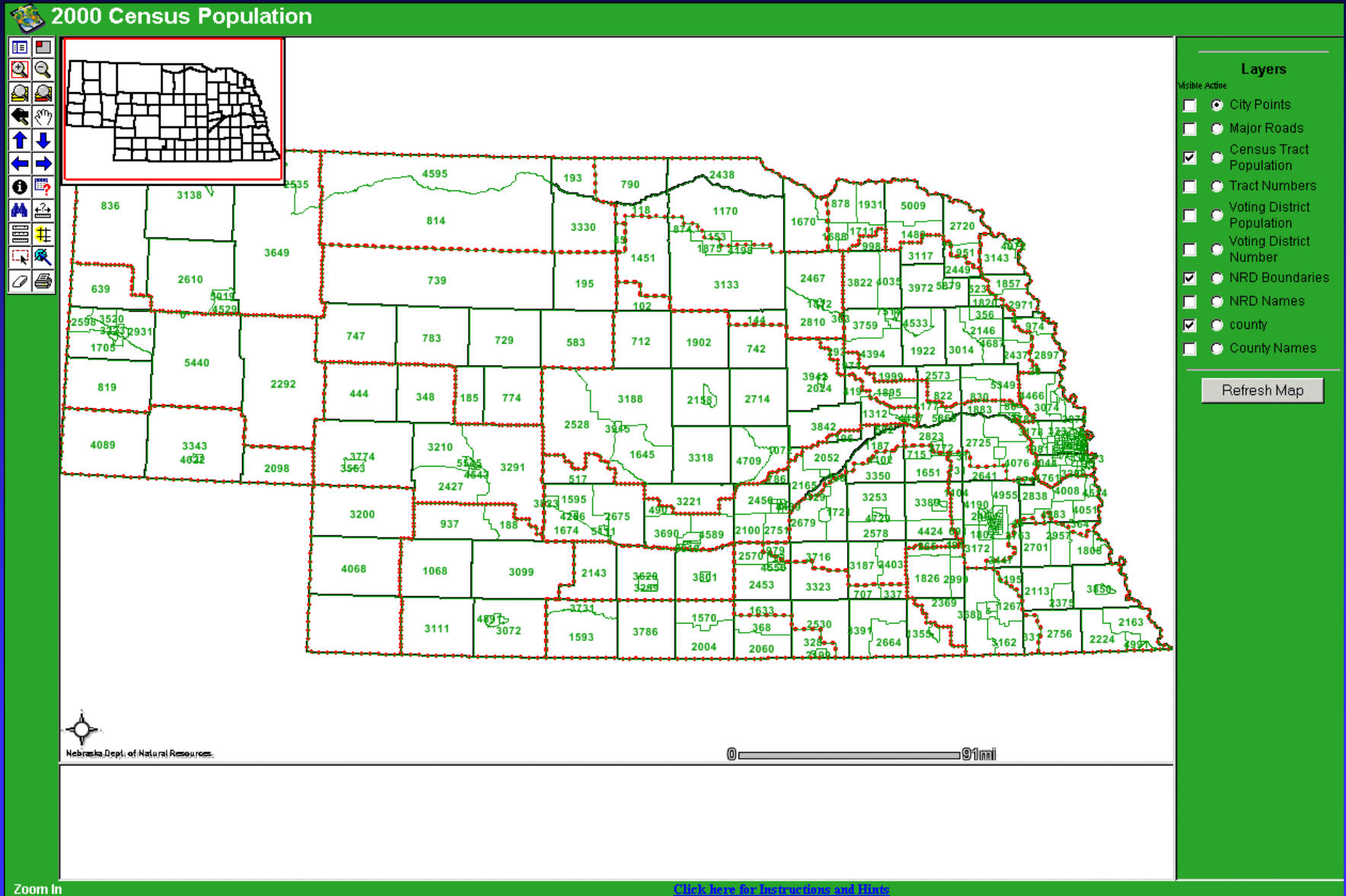
Visible Active

- ☐ Cities
- ☒ county
- ☐ Major Highways
- ☐ All Roads
- ☒ Major Streams
- ☐ Quad (DEM)
- ☐ Quad Row Column
- ☐ Quarter Quad (DOQQ)
- ☐ Township - Range
- ☒ NRD Bounds
- ☐ Registered Wells
- ☐ Zip Code

Refresh Map

Note: Nebraska Map Interactive allows anyone with an Internet connection and a Web browser to use dynamic mapping applications. You choose the layers you want displayed, "Refresh" the map, then click on the map to zoom in. As you zoom in more layers become available for use on the map. Zoom in as much as you wish. Features are labeled in a manner appropriate to the scale of the map. It can also be used to identify registered wells, Digital Elevation Models (DEM) and/or Digital Orthophoto Quarter Quads (DOQQ). For more information click "Instructions and Hints" link below.

2000 Census Population



Nebraska Department of Natural Resources

Web Site Enhancement

Nebraska Natural Resources Information System

Home Page



The Nebraska Department of Natural Resources is dedicated to the sustainable use and proper management of the state's natural resources.

Agency Overview

Administration
Surface Water
Ground Water
Data Bank
Field Offices
Planning & Assistance
Floodplain & Dam Safety
Resource Mgt Funds



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[Search This Site!](#) [Organizational Chart](#) [Staff Directory](#) [Freq Used Sites](#)

What's New/Updates

Select a topic or news item...



Go!

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Email: webmaster@dnr.state.ne.us

Outside Links Disclaimer!

Data Bank

[Text Version](#)



Welcome to the Data Bank

The Natural Resources Data Bank, statutorily created in 1969, is administered by the Department of Natural Resources. The purpose of the Data Bank is to develop, store, process and manage natural resources data relating to land and water resources of the State, and make the information available to government agencies and the general public in a user-friendly and timely manner.

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DATA ACCESS

- [Spatial/GIS Databases](#)
- [Relational/Tabular Databases](#)
- [Metadata](#)
- [Nebraska Natural Resources Data Clearinghouse](#) NEW
- [Download Agency Forms](#)
 - [Surface Water Forms](#)
 - [Groundwater Forms](#)
 - [Resource Development Fund Forms](#)

DATA BANK FEE SCHEDULE

TECHNICAL ADVISORY COMMITTEE MEETINGS

ABOUT THE DATA BANK

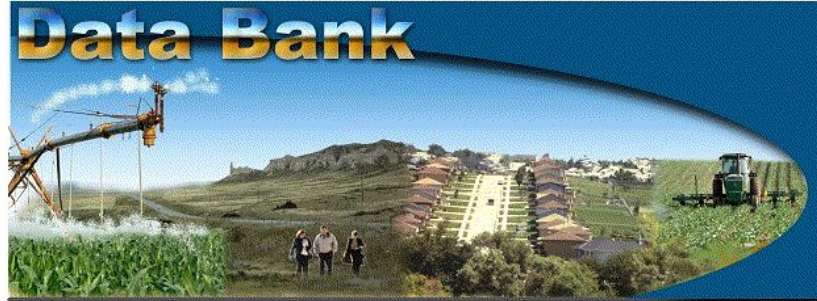
- [Data Bank Legislation](#)
- [Data Bank Objectives and Goals](#)
- [Data Bank History](#)
- [Data Bank Accomplishments](#)
- [Data Bases Disseminated over the Web](#)
- [DNR Comprehensive IT Plan - 2000](#)
- [DNR Comprehensive IT Plan - 2002](#)

USER REQUESTS

COMMENTS AND SUGGESTIONS

WEB STATISTICS

Spatial Databases



Data Bank

SPATIAL/ GIS DATABASES

- Census Data
- Dams Inventory
- Digital Elevation Models (DEM)
- Digital Orthophoto Quadrangles (DOQ)
 - Compressed Digital Orthophoto Quadrangles (COQ)
 - Other Rectified Digital Imagery
 - 2002-High Resolution Ortho - Lancaster/Lincoln
- DRASTIC Database - Groundwater Vulnerability to Contamination
- Groundwater Levels
- Hydrologic Units
- Landsat TM Data
- Land Use (8 acre cell)
 - Soil Loss "C" Factor (8 acre cell)
 - Soil Loss "P" Factor (8 acre cell)
- National Hydrography Dataset **NEW**
- National Wetlands Inventory
- Political Boundary Databases
- Public Land Survey System(PLSS)-Township Section Points
- Registered Groundwater Wells
- Soils Data
- TIGER Files - 2000

[Link to Scanned USGS Topographic Maps - DRGs](#)

[Nebraska Natural Resources Data Clearinghouse](#) to browse data by area or theme. **NEW**

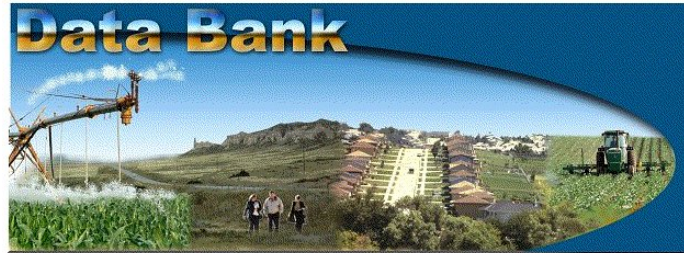
[Nebraska Interactive Map](#) to selectively overlay coverages on DOQQ's.

[GIS Processing Site](#) to retrieve data in user format. **IMPROVED**

[User Request](#)

[Comments and Suggestions](#)

Relational Databases



Data Bank

RELATIONAL/TABULAR DATABASES

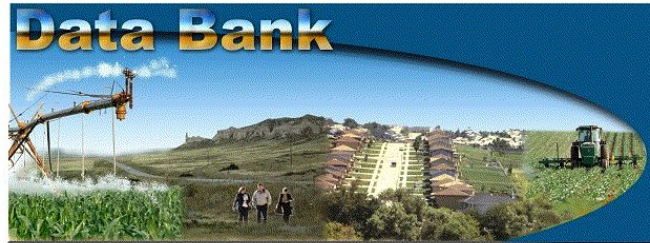
- Agricultural Crops
 - Crop Statistics
- Demographic Data
 - Decennial Census
 - Population Estimates
- Groundwater Data
 - Groundwater Levels
 - Groundwater Quality
 - Quality-Assessed Agrichemical Contaminant Database
 - Registered Groundwater Wells
- Surface Water Data
 - Dams Inventory
 - Peak Flow
 - Reservoir Storage
 - Stream and Canal Flows
 - Stream Flow (from USGS)
 - DNR Stream Gaging
 - Surface Water Rights
 - Surface Water Quality
- Weather (Climatic) Data
 - Daily Stations
 - Evaporation
 - Precipitation (Rainfall)
 - Snowfall
 - Temperature - Ambient (Min and Max)
 - Hourly Stations
 - Precipitation (Rainfall)
 - Solar Radiation
 - Weather Events
 - Weather (Extended) Data (Relative Humidity, Wind Speed, etc.)
- Pre-processed Databases
 - Center Pivots Data
 - Nebraska Riverine Ice Status Reports
 - Soil Mapping Units - Alphabetical Listing - Statewide
 - Soil Mapping Units Interpretative Records

Nebraska Natural Resources Data Clearinghouse NEW

- Links to National Databases
 - National Map Unit Interpretation Records (MUIR) Database
 - Nebraska National Resources Inventory
 - Soil Series Description
 - U.S. Geological Survey-Nebraska

User Requests
Comments & Suggestions

Metadata



Data Bank

METADATA

Nebraska GIS Technical Standards

- Metadata Standards
- Data Conversion Standards
- GPS Data Capture Standards
- Geodetic Reference Standards
- General Information - Technical Standards

Spatial/GIS Databases Metadata

- Center Pivots Coverage
- City Boundary Coverage
- City Points Coverage
- Nebraska County Boundary Coverage
- DEM Coverage-10m
- DEM Coverage-30m
- Quadrangle Polygons
- Quadrangle Points
- Quarter-Quadrangle Polygons
- Quarter-Quadrangle Points
- Peak Flow Stations - USGS
- Reservoir Storage
- River Basin Coverage
- Soil Surveys Coverage
- Soil Loss (P Factor) Coverage
- Soil Loss (C Factor) Coverage
- Section Corners Point Coverage
- Section Corners Polygon Coverage
- Soil Survey Geographic (SSURGO) Database
- STATSGO Data Coverage
- Major Streams Coverage
- Stream & Canal Gaging Stations - DNR
- Stream Flow Stations - USGS
- U S Census TIGER Line Files Coverage
- Tagged Vector Contours Coverage
- Township and Range Polygon Coverage
- Township and Range Point Coverage
- Registered Groundwater Wells Coverage - Revised 01/02
- Water Divisions - DNR
- National Wetland Inventory Coverage

Relational/Tabular Databases Metadata

- Dams Inventory Database
- Evaporation Database
- Precipitation (Rainfall) Database
- Reservoir Storage Database
- Snowfall Database
- Temperature Database

Nebraska Natural Resources Data Clearinghouse to browse data by area or theme. [NEW / Metadata Clearinghouse](#)

User Requests

Nebraska Natural Resources Data Bank

Recent Accomplishments

- Developed Soil Mapping Units Interpretative Records Database
- Automated Registration of Water Wells over the Internet
- Developed Natural Resources Data Clearinghouse
- Consolidated Web Servers to WINDOWS and FTP Servers to LINUX Environment
- Enhanced network security by installing Firewall and Anti-SPAM Solutions
- Automated processing of Surface Water Rights database
- Created interactive electronic Business Forms

Soil Mapping Units Interpretative Records (MUIR) Data Base Retrieval

Information Source: Natural Resources and Conservation Service, USDA Data Base through December 1998

To retrieve MUIR data, select one of following options:

- ☒ [Soil Mapping Units](#)
- ☐ [Chemical Properties of Soils](#)
- ☐ [Physical Properties of Soils](#)
- ☐ [Soil Features](#)
- ☐ [Water Features](#)
- ☐ [Crop Yield Potential](#)
- ☐ [Forest Interpretations](#)
- ☐ [Engineering Index Properties: Table 1](#)
- ☐ [Engineering Index Properties: Table 2](#)
- ☐ [Wildlife Habitat Report](#)
- ☐ [Erosion Prediction](#)
- ☐ [Plant Composition](#)
- ☐ [Range Production Potential](#)
- ☐ [Woodland Management](#)
- ☐ [Total Acres by County](#)

[Metadata](#)

Nebraska Natural Resources Data Bank

Ongoing Developments

- On-Line Registration of Water Wells
- Interactive Mapping over the Web
- Dynamic Dissemination of GIS and Tabular databases over the Internet
- Revision of DEMs and DOQs
- Completion of statewide *SSURGO* Soils database
- Expansion of *Enterprise-wide Geo-Spatial Data Clearinghouse*
- *Automation of Business Forms*

Nebraska Natural Resources Data Bank

Future Plans

Enhancement of Databases

- Develop Enterprise-wide Spatial Data Access and Service Center
- Develop Second generation of color infra-red DEMs & DOQs
- *Integrate Databases: Well Registration, Water Rights, Groundwater Levels etc*
- *Develop new databases: Stream-reach, Roads, Hydrographic, Land Use, PLSS, Cadastral*
- *Enhance Interactive Mapping (ArcSDE) applications over the Internet*

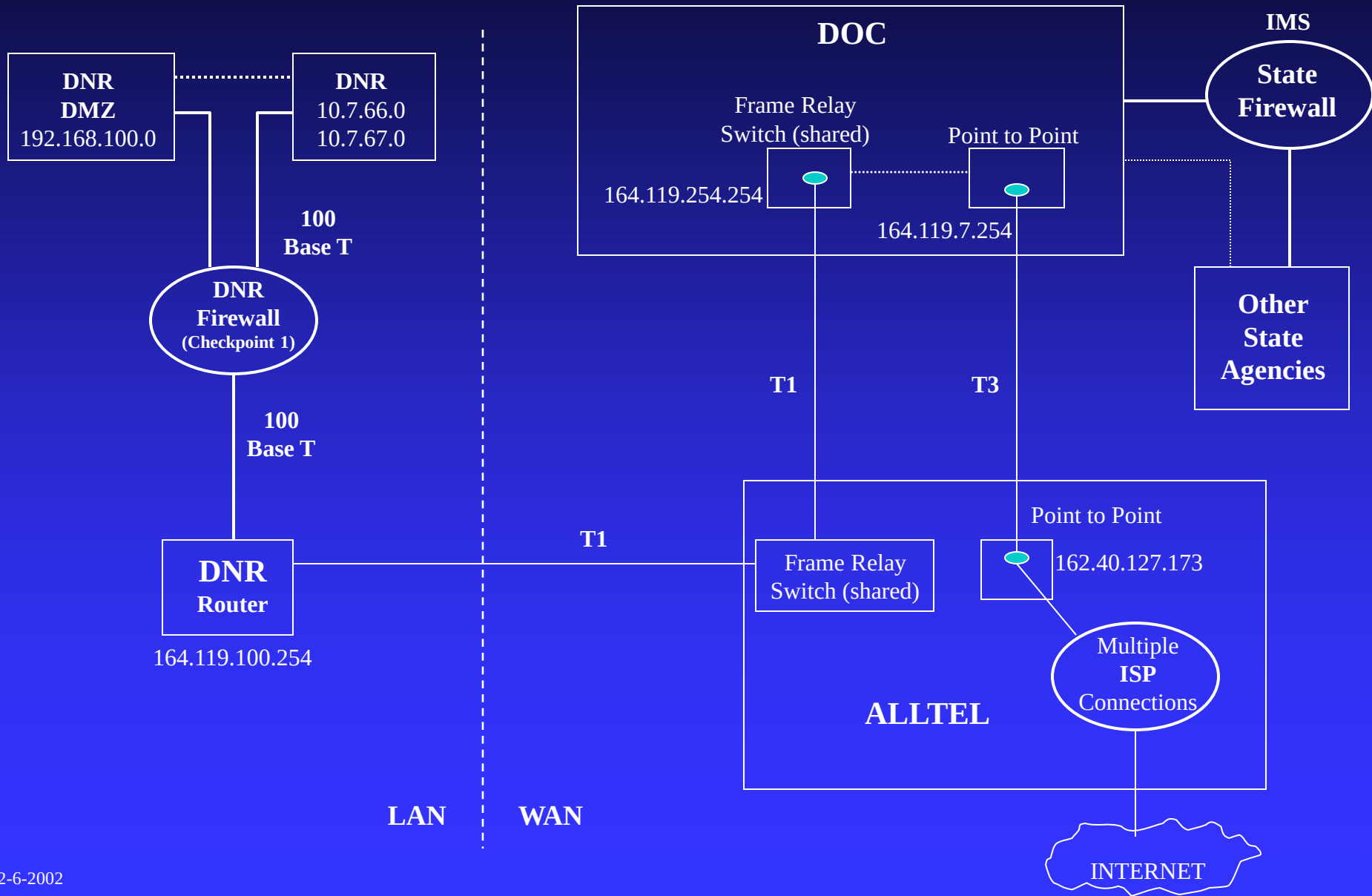
Nebraska Natural Resources Data Bank

IT Activities

IT Activities

- Provide PC and Network Support to Agency
- Evaluate, procure and inventory computer hardware and software for the Agency
- Install, repair, upgrade and maintain computer equipment, all PCs and peripherals
- Support, manage and Update UNIX, LINUX, and Windows Operating Systems
- Enhance Network Security using firewall, SPAM, and anti-virus solutions
- Administer and maintain Servers and Desktops
- Provide System Security, Recovery and Backup of data files and enterprise software

Nebraska Department of Natural Resources Network Connectivity



Nebraska Department of Natural Resources

Network Security Guidelines

- Identify devices that should not be reachable from the Internet.
- Identify needed Internet services, and turn off unneeded services at the host.
- Fix vulnerabilities and submit documentation.
- Filter traffic at the Firewall.
- Register IP addresses for servers.
- Implement security patches and virus protection measures for PCs, workstations and servers.
- Explore automated vulnerability remediation software.
- Report incidents to IT manager, CIO and Agency Head.
- Adopt enterprise-wide state network security standards.

Nebraska Department of Natural Resources

October 2003

Data Bank

Nebraska Natural Resources Information System