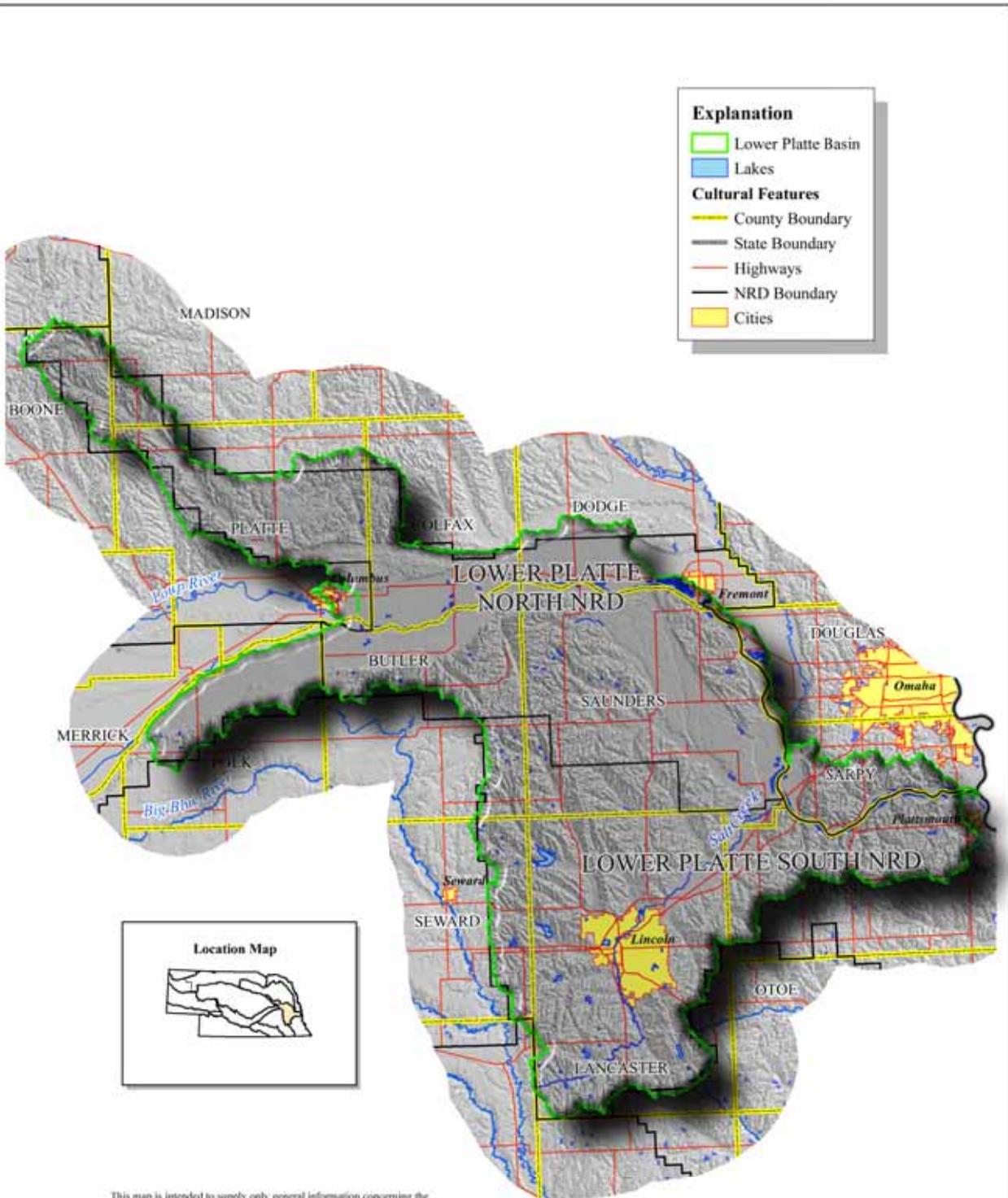




Planning and Assistance Division

GENERAL BASIN MAP LOWER PLATTE RIVER BASIN

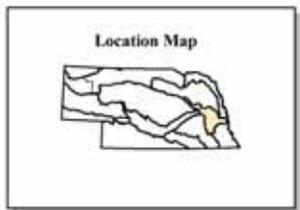


Explanation

- Lower Platte Basin
- Lakes

Cultural Features

- County Boundary
- State Boundary
- Highways
- NRD Boundary
- Cities



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Figure LP-1.

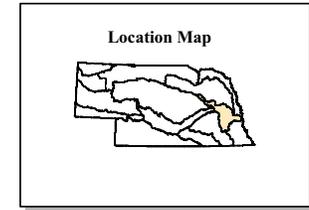
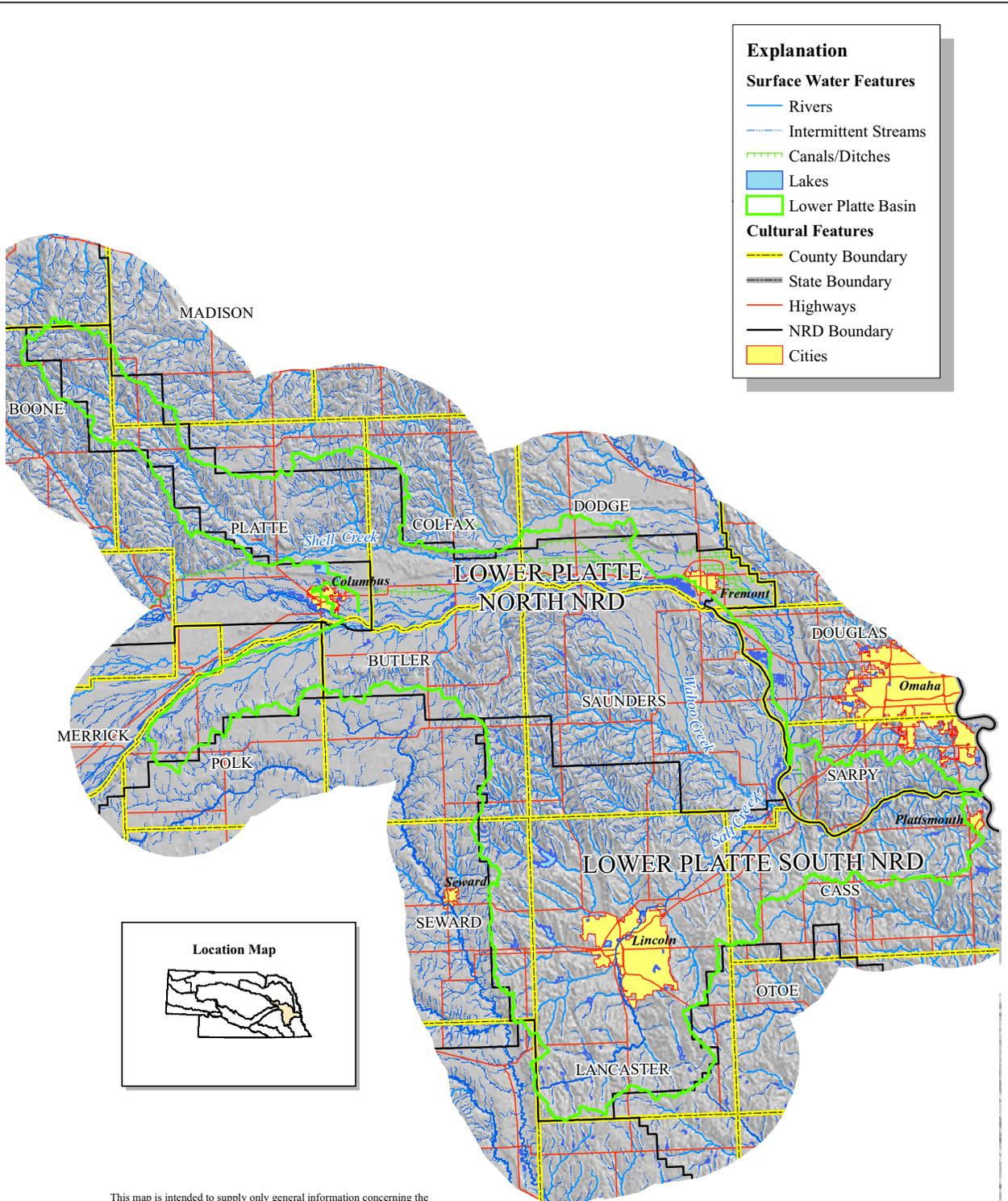
Base map produced by Josh Lear, February 4, 2005
 Base map approved February 4, 2005
 General basin map produced by Shuhai Zheng, October 11, 2005.



General Surface Water Features LOWER PLATTE RIVER BASIN



Planning and Assistance Division



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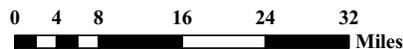


Figure LP-2.

Base map produced by Josh Lear, February 4, 2005
Base map approved February 4, 2005
General surface water features map produced by Shuhai Zheng, October 11, 2005.

Figure LP-3. Annual Precipitation at Columbus, Nebraska.

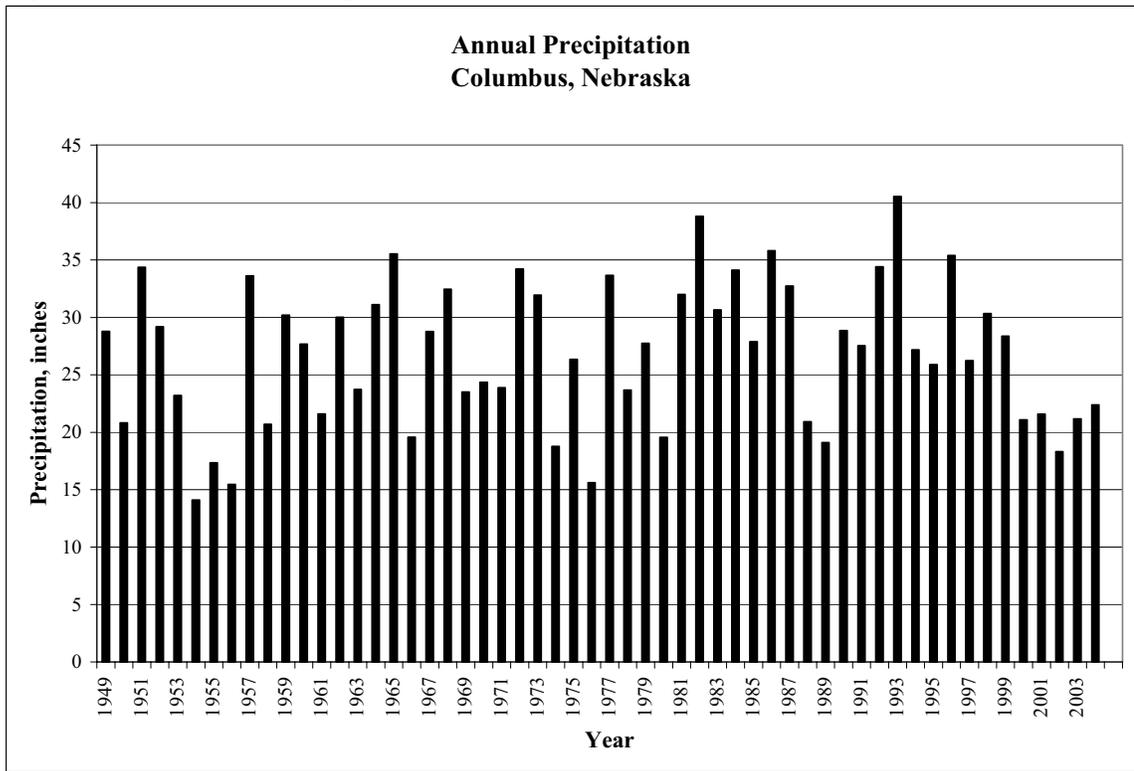
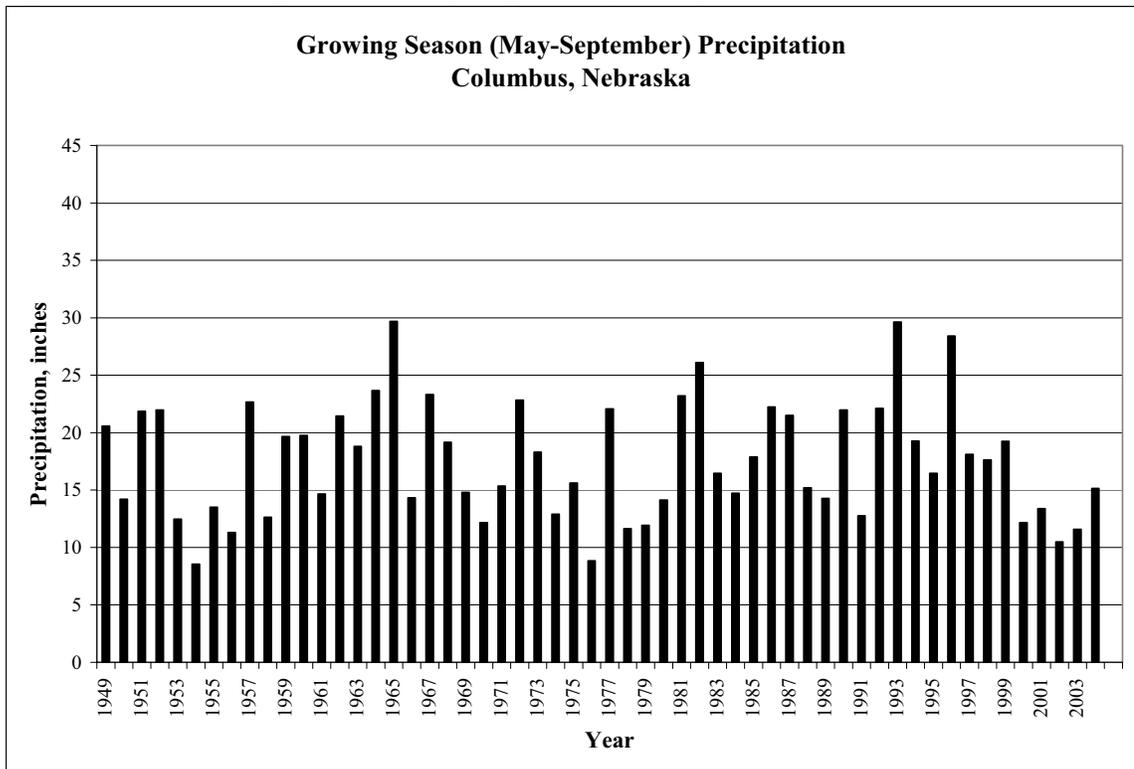


Figure LP-4. Growing Season (May-September) Precipitation at Columbus, Nebraska.



Source: High Plains Climate Center

Figure LP-5. Annual Precipitation at Fremont, Nebraska.

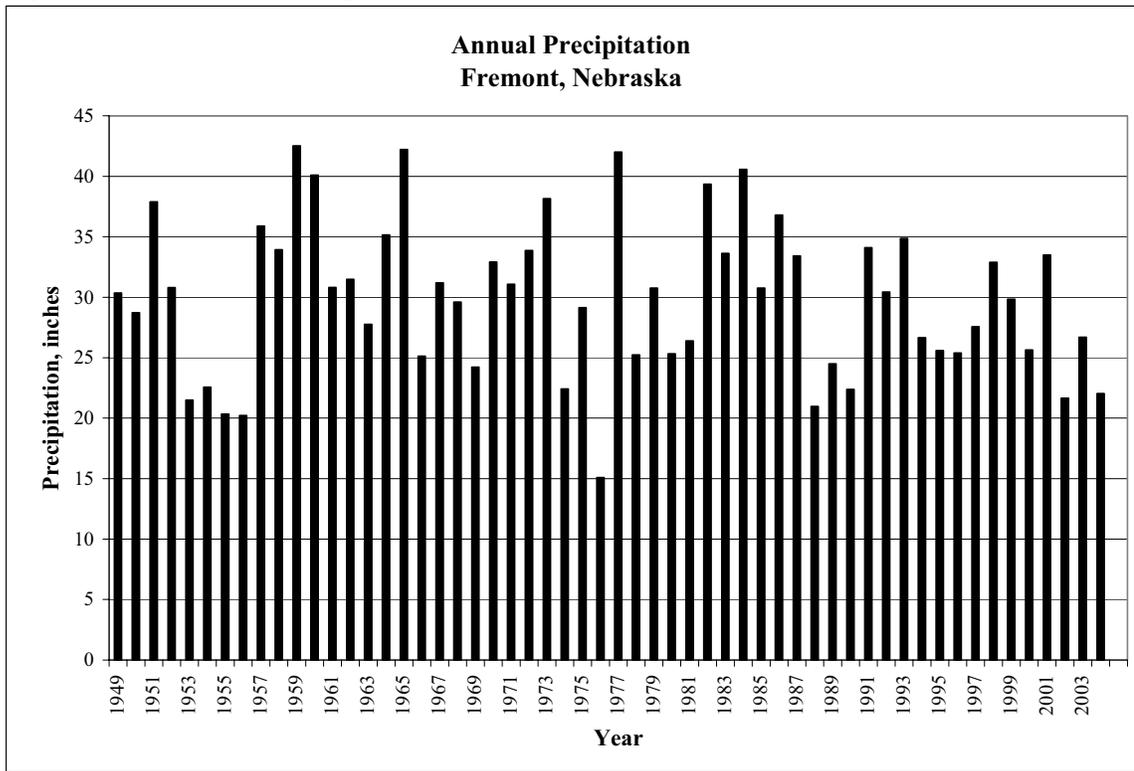
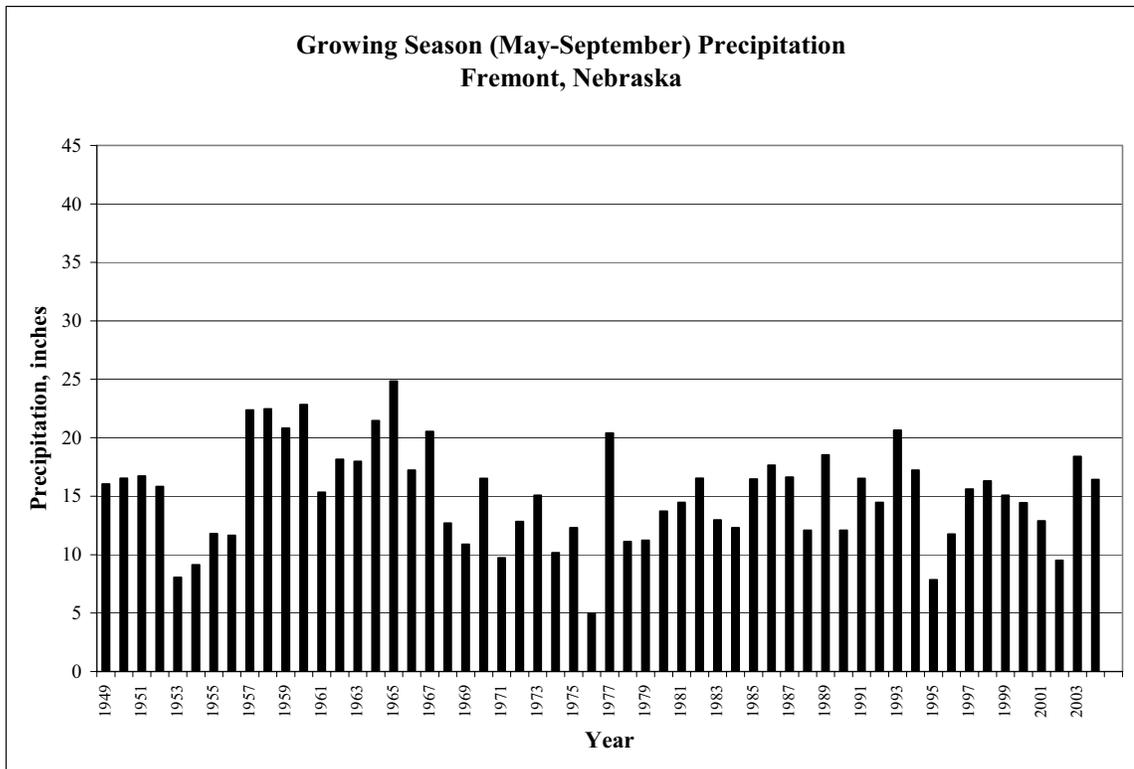


Figure LP-6. Growing Season (May-September) Precipitation at Fremont, Nebraska.



Source: High Plains Climate Center

Figure LP-7. Annual Precipitation at Lincoln, Nebraska.

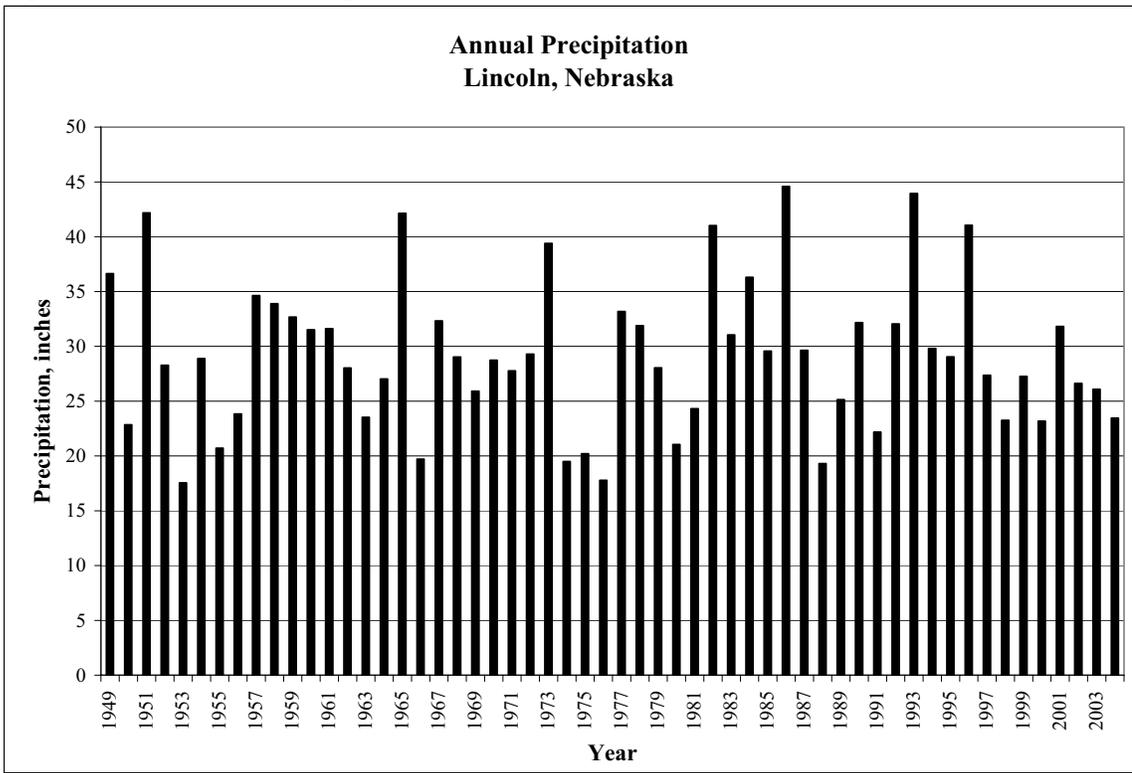
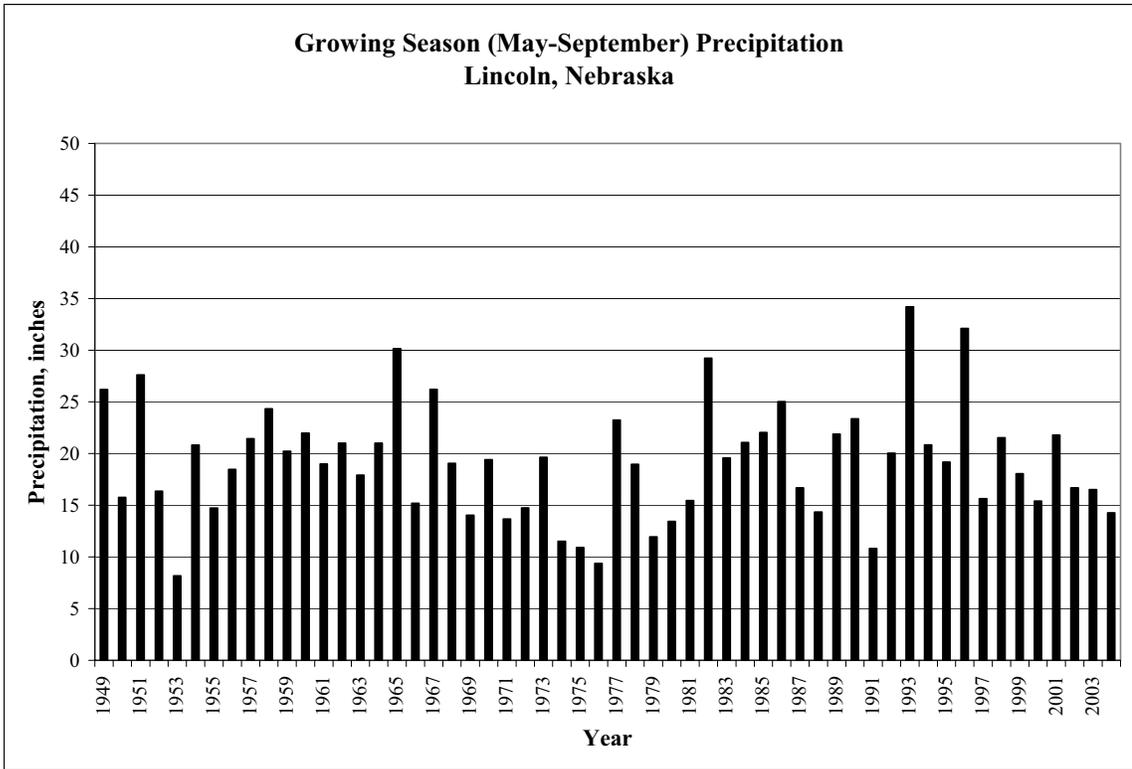


Figure LP-8. Growing Season (May-September) Precipitation at Lincoln, Nebraska.



Source: High Plains Climate Center

Figure LP-9. Annual Precipitation at Plattsmouth, Nebraska.

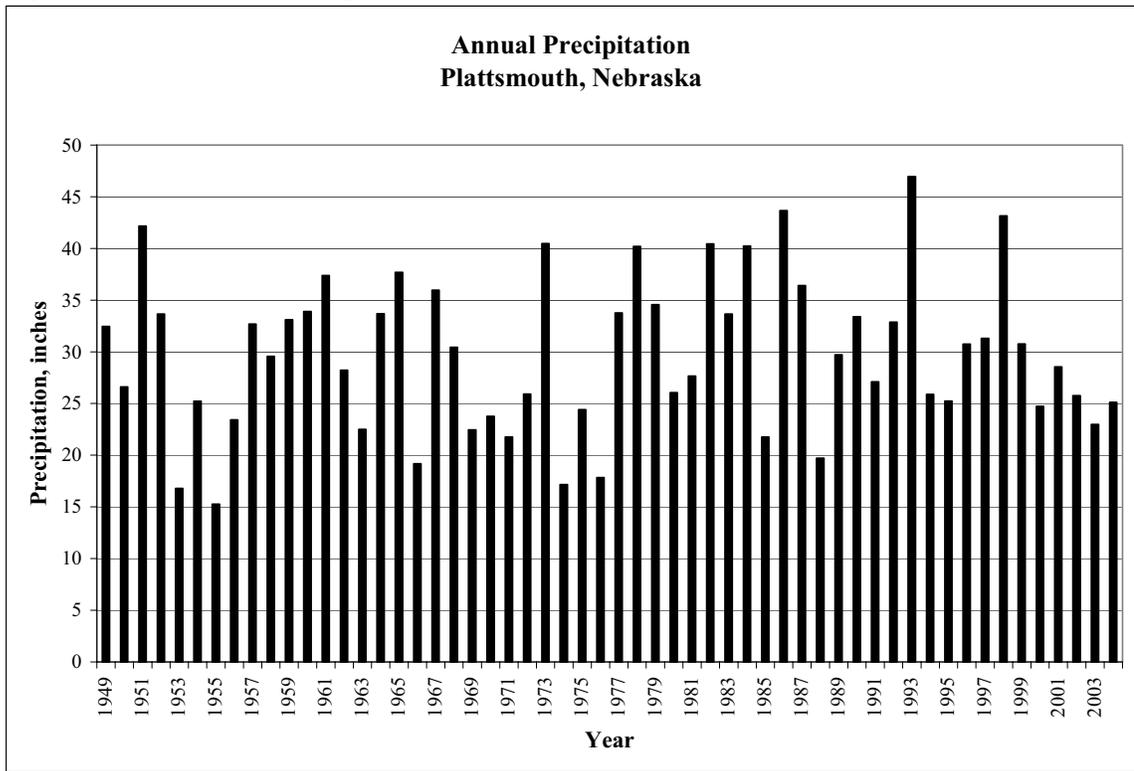
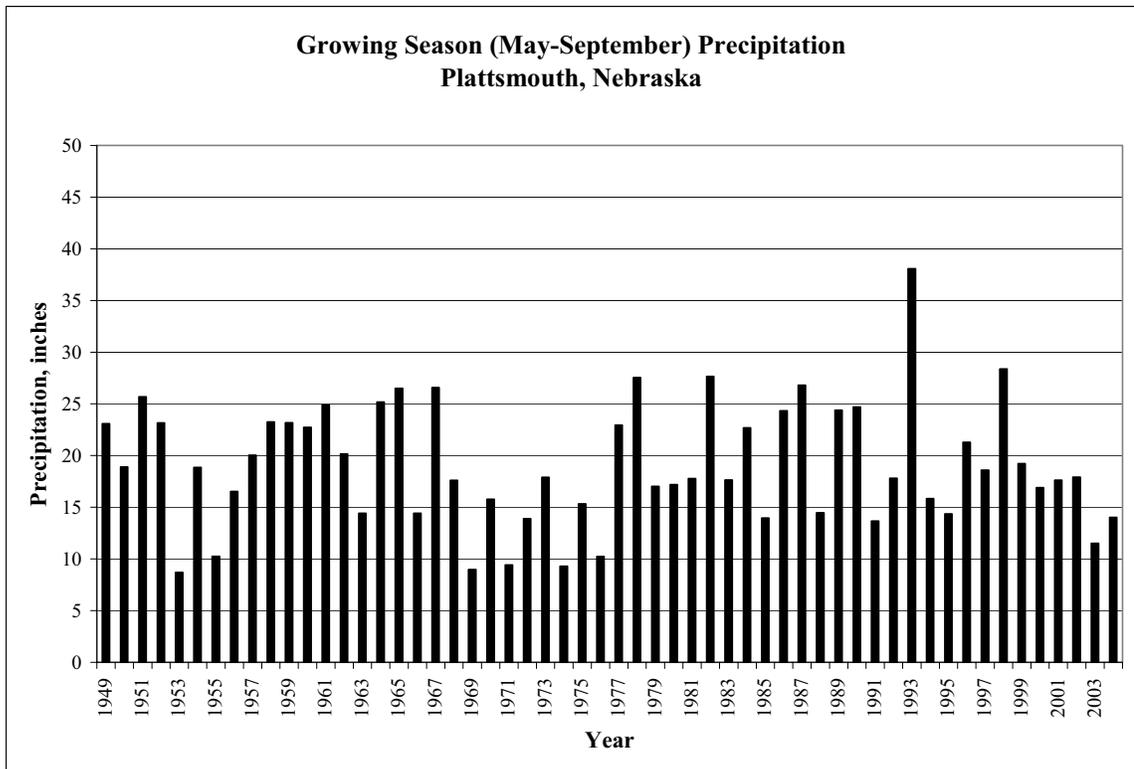


Figure LP-10. Growing Season (May-September) Precipitation at Plattsmouth, Nebraska.



Source: High Plains Climate Center

Figure LP-11. Annual Precipitation at Schuyler, Nebraska.

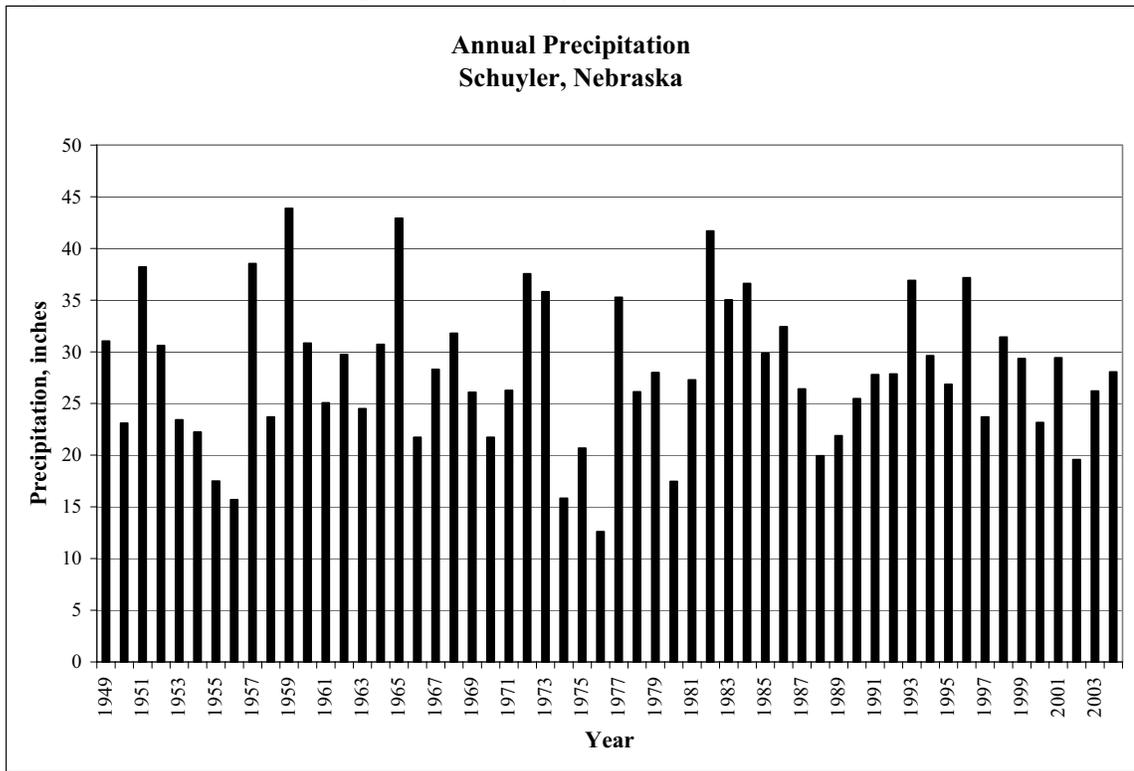
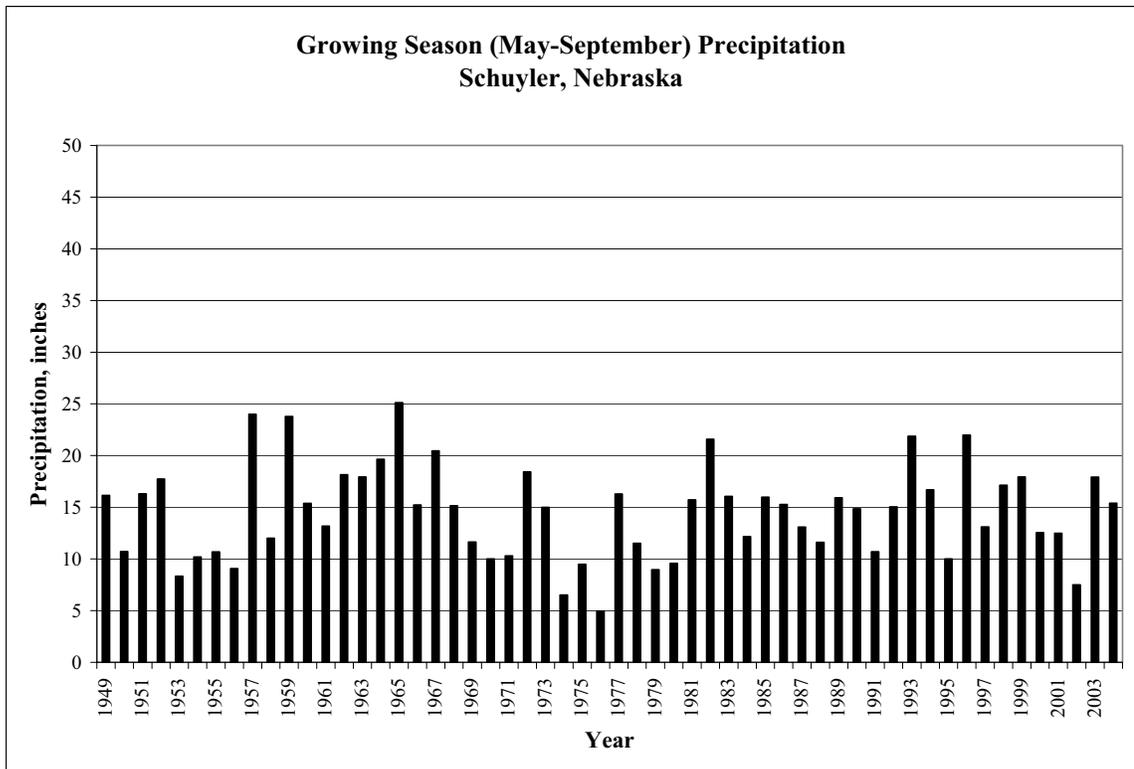


Figure LP-12. Growing Season (May-September) Precipitation at Schuyler, Nebraska.



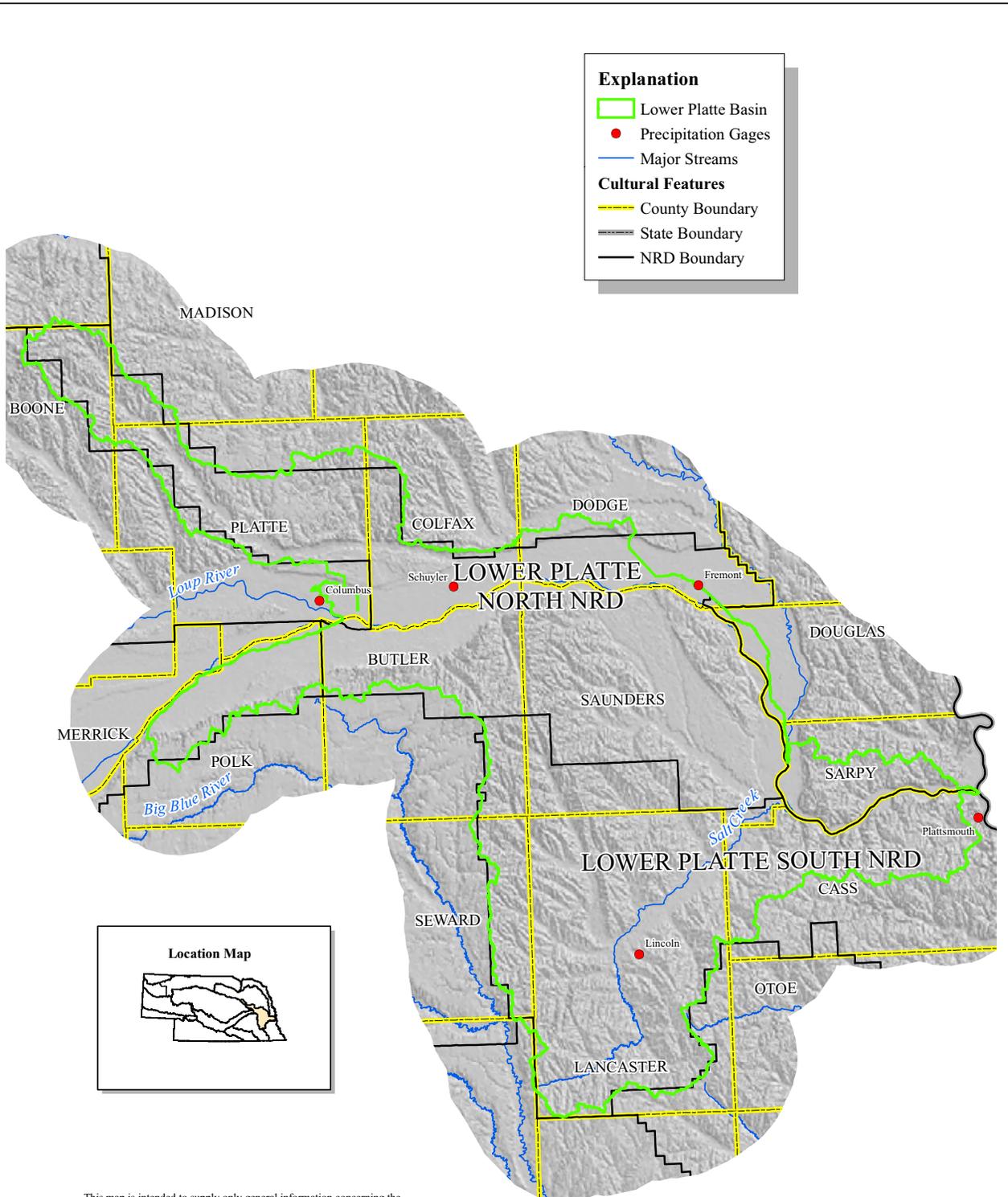
Source: High Plains Climate Center



Precipitation Gages LOWER PLATTE RIVER BASIN



Planning and Assistance Division

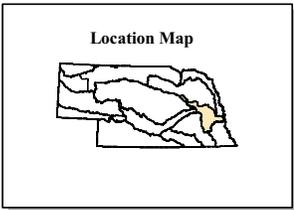


Explanation

- Lower Platte Basin
- Precipitation Gages
- Major Streams

Cultural Features

- County Boundary
- State Boundary
- NRD Boundary



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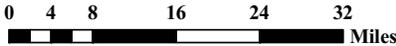


Figure LP-13.

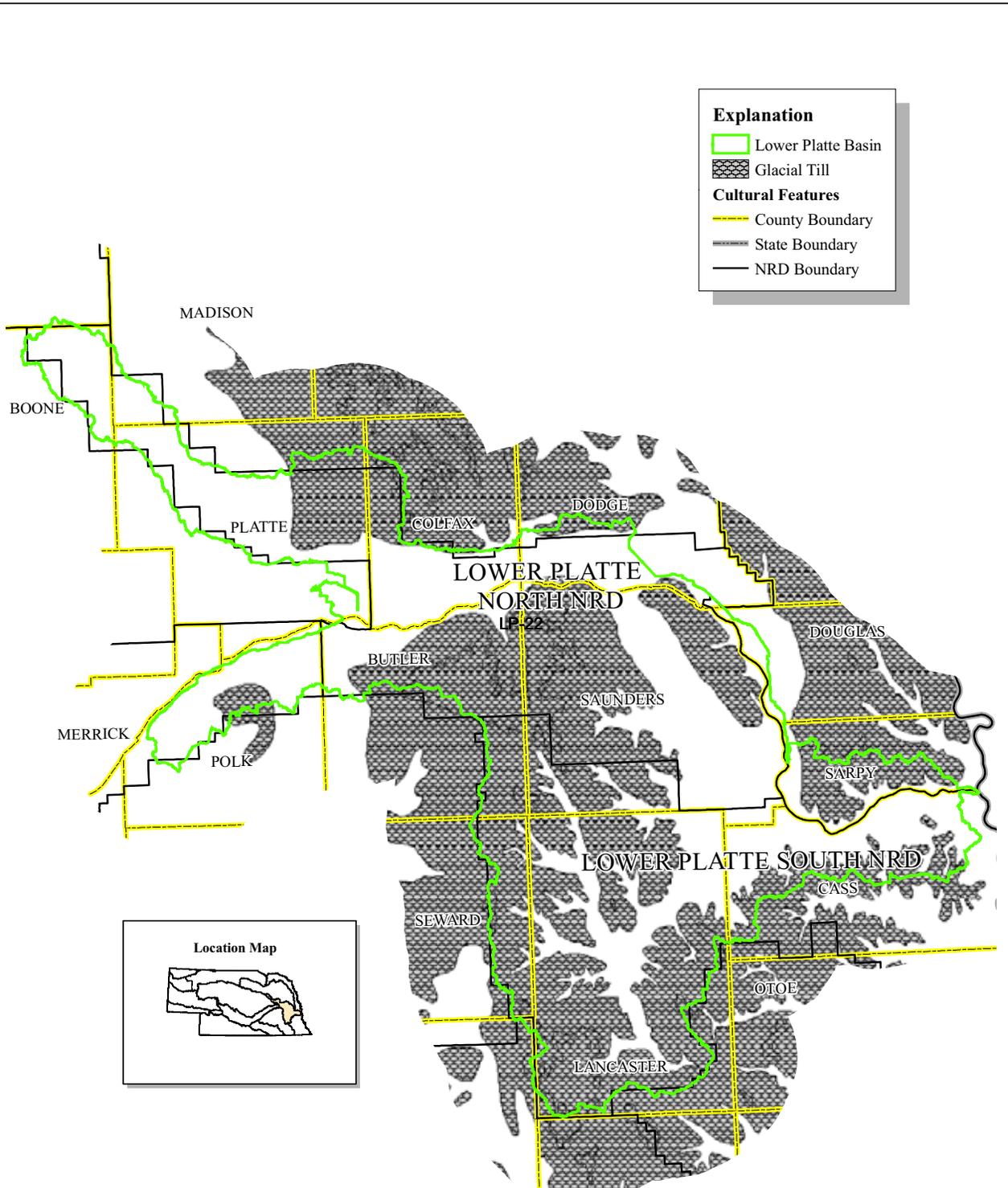
Base map produced by Josh Lear, February 4, 2005
 Base map approved February 4, 2005
 Precipitation gages map produced by Jeff Shafer, October 19, 2005.



Glacial Till LOWER PLATTE RIVER BASIN

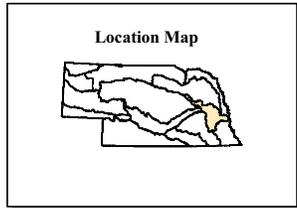


Planning and Assistance Division



Explanation

- Lower Platte Basin
- Glacial Till
- County Boundary
- State Boundary
- NRD Boundary



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Glacial till information provided by the UNL Conservation and Survey Division: <http://csd.unl.edu/general/gis-datasets.asp>.

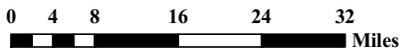


Figure LP-14.

Base map produced by Josh Lear, February 4, 2005
 Base map approved February 4, 2005
 Glacial till map produced by Kevin J. Schwartman, October 12, 2005

Table LP-1. – Aquifers in unconsolidated surficial deposits (modified from Druliner and Mason, 2001; LPSNRD, 1995)

System	Hydrogeologic unit	Character and description	Maximum thickness, in feet	Hydrogeologic characteristics
Quaternary	Platte River Aquifer	Alluvial sand, gravel and silt deposited within incised bedrock valley of the Platte River.	70	Unconfined and hydraulically connected with the Platte River. Yields 900 to 2000 gal/min of water to wells.
	Missouri River Aquifer	Alluvial sand, gravel and silt deposited within incised bedrock valley of the Missouri River.	80	Unconfined to semi-confined and hydraulically connected with the Missouri River. Wells generally yield 300 to 700 gal/min, and locally yield as much as 1,500 gal/min.
	Paleovalley Alluvial Aquifers	Fluvial silt, sand, gravel and clay deposits within bedrock valleys. Commonly underlying thick fine-grained deposits of glacial till and loess.	275	Semi-confined to confined alluvial aquifers. May yield 400 to 1,200 gal/min of water to wells.
	Loess	Silt with a little very fine sand and clay deposited as wind-blown dust.	unknown	May provide small amounts of water to shallow stock or domestic wells.
	Till	Ice deposited silty, sandy clay with some gravel, pebble, and cobbles.	unknown	Relatively impermeable but may contain small perched ground water or sand deposits that yield water to small capacity wells.

Table LP-2. – Characteristics of bedrock aquifers (modified from Druliner and Mason, 2001; LPSNRD, 1995; Sniegocki, 1955)

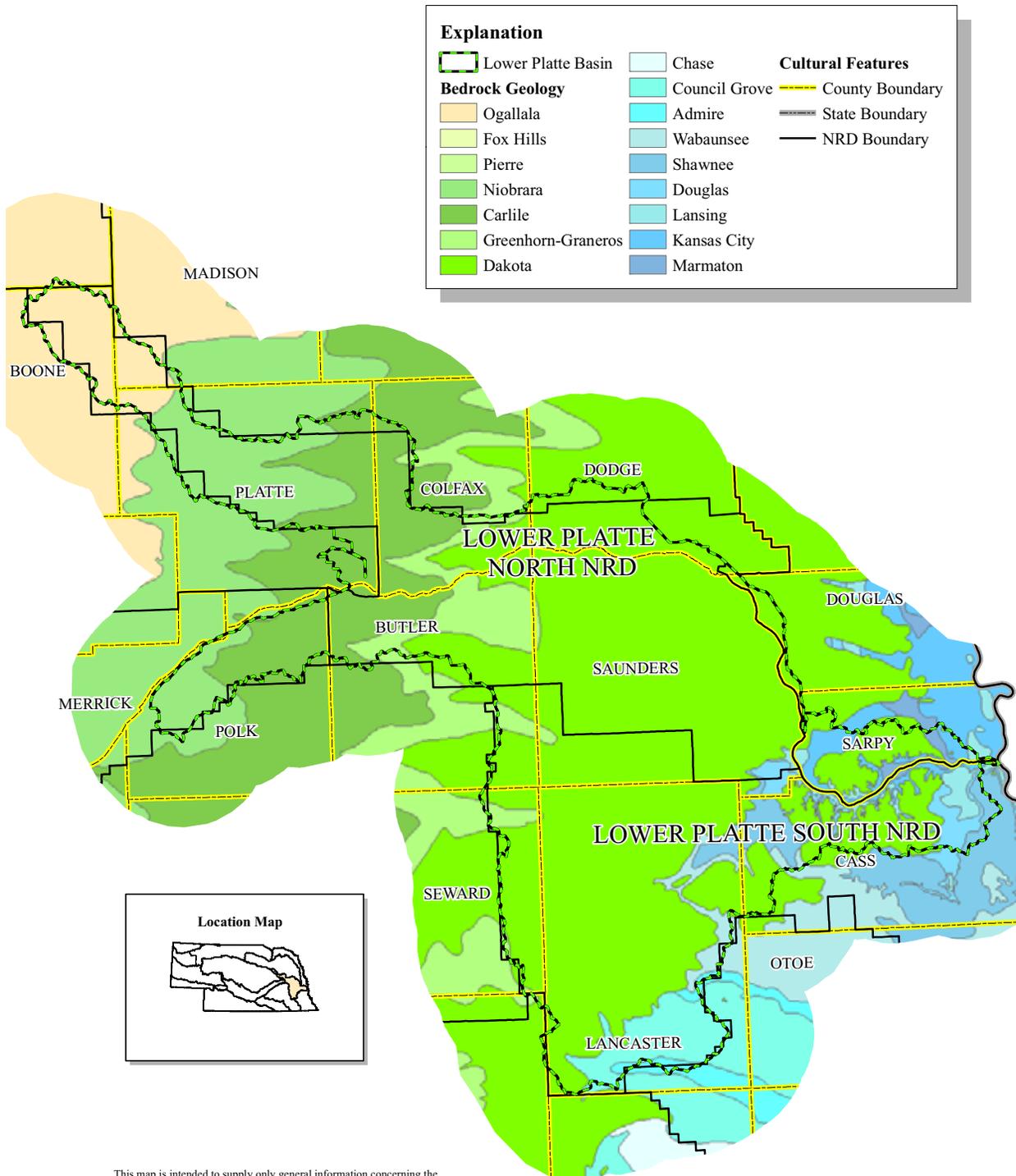
System	Hydrogeologic unit	Character and description	Maximum thickness, in feet	Hydrogeologic characteristics
Tertiary	Ogallala Group	Gravel, sand, silt, clay, with some lime-cemented beds.	0-200	Widespread aquifer in Nebraska, but not an important source of water in the Lower Platte River Basin.
Cretaceous	Dakota Sandstone	Massive to crossbedded friable sandstone interbedded with clayey to slightly sandy shales. Sandstone may contain ironstone or siderite concretions and chert pebbles.	<140	Unconfined or semi-confined aquifer. Wells can yield 50 to 750 gal/min of water to wells. Water is of variable quality. Used as a primary water source only when other sources are not available.
Permian and Pennsylvanian Undifferentiated	Undifferentiated shale, limestone and sandstone	Shales interbedded with limestone and sandstone. Shales may be laminated clayey, sandy, calcareous, fossiliferous and may contain gypsum. Limestone may be massive, geodal, fossiliferous or contain chert. Sandstone is generally thin bedded and may contain coal.	<1000	Not a major aquifer. Fractured limestone may yield 20 to 50 gal/min of water to wells. Yield may be increased by locally thick sandstone or if hydrologically connected to overlying unconsolidated sand and gravel deposits.



Bedrock Geology LOWER PLATTE RIVER BASIN



Planning and Assistance Division



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Bedrock geology information provided by the UNL Conservation and Survey Division: <http://csd.unl.edu/general/gis-datasets.asp>.

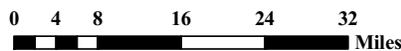


Figure LP-15.

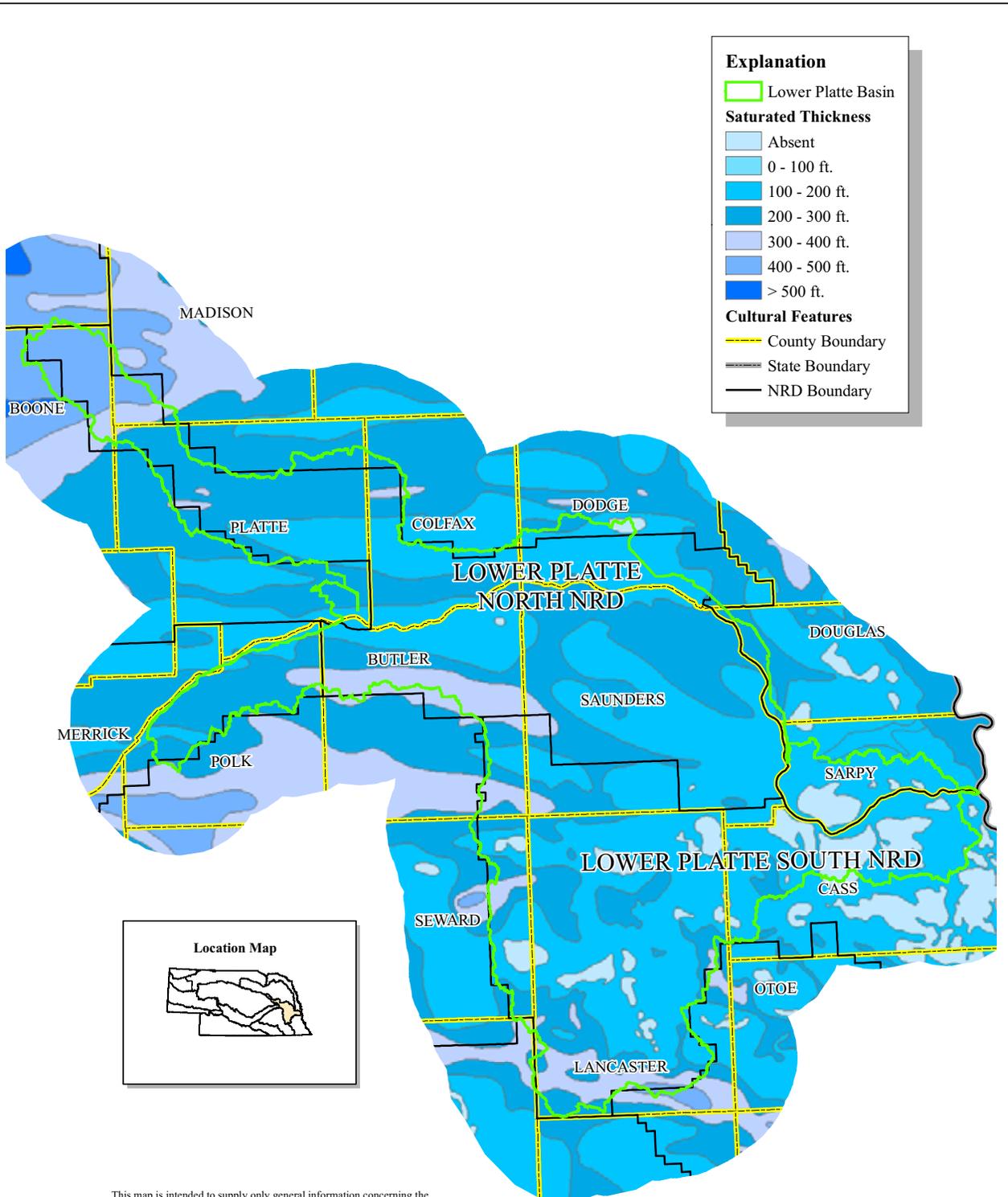
Base map produced by Josh Lear, February 4, 2005
Base map approved February 4, 2005
Bedrock geology map produced by Kevin J. Schwartzman, October 1, 2005



Saturated Thickness LOWER PLATTE RIVER BASIN



Planning and Assistance Division



Explanation

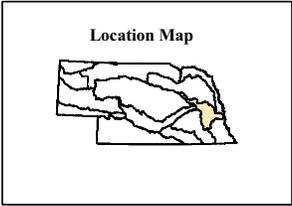
- Lower Platte Basin

Saturated Thickness

- Absent
- 0 - 100 ft.
- 100 - 200 ft.
- 200 - 300 ft.
- 300 - 400 ft.
- 400 - 500 ft.
- > 500 ft.

Cultural Features

- County Boundary
- State Boundary
- NRD Boundary



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Saturated thickness information provided by the UNL Conservation and Survey Division: <http://csd.unl.edu/general/gis-datasets.asp>.

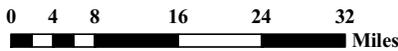


Figure LP-16.

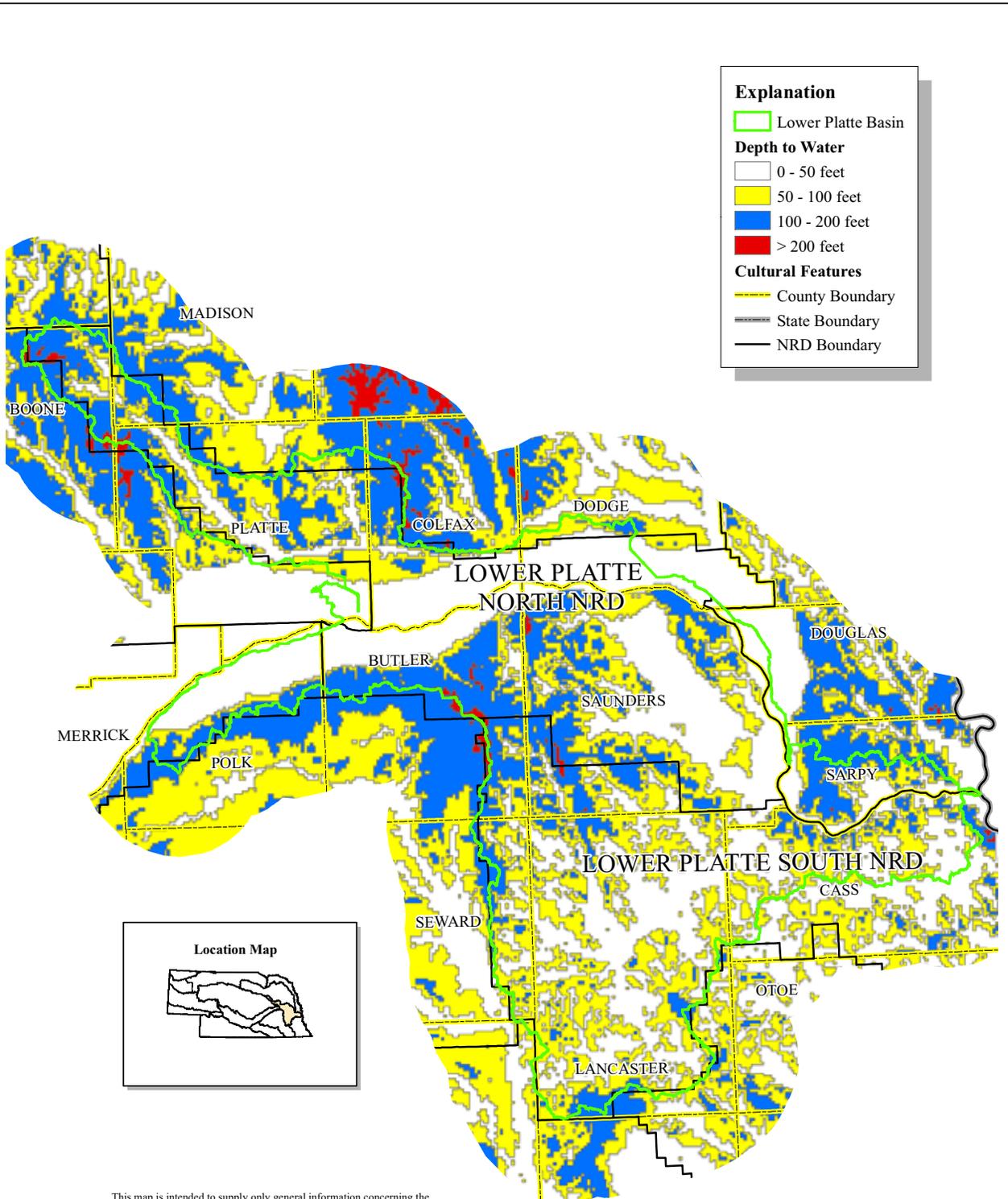
Base map produced by Josh Lear, February 4, 2005
 Base map approved February 4, 2005
 Saturated thickness map produced by Kevin J. Schwartman, October 12, 2005



Depth to Water LOWER PLATTE RIVER BASIN



Planning and Assistance Division



Explanation

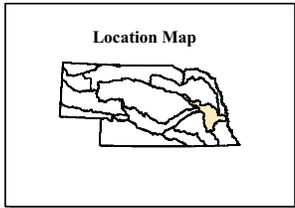
- Lower Platte Basin

Depth to Water

- 0 - 50 feet
- 50 - 100 feet
- 100 - 200 feet
- > 200 feet

Cultural Features

- County Boundary
- State Boundary
- NRD Boundary



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Depth to water information provided by the UNL Conservation and Survey Division: <http://csd.unl.edu/general/gis-datasets.asp>.

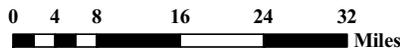


Figure LP-17.

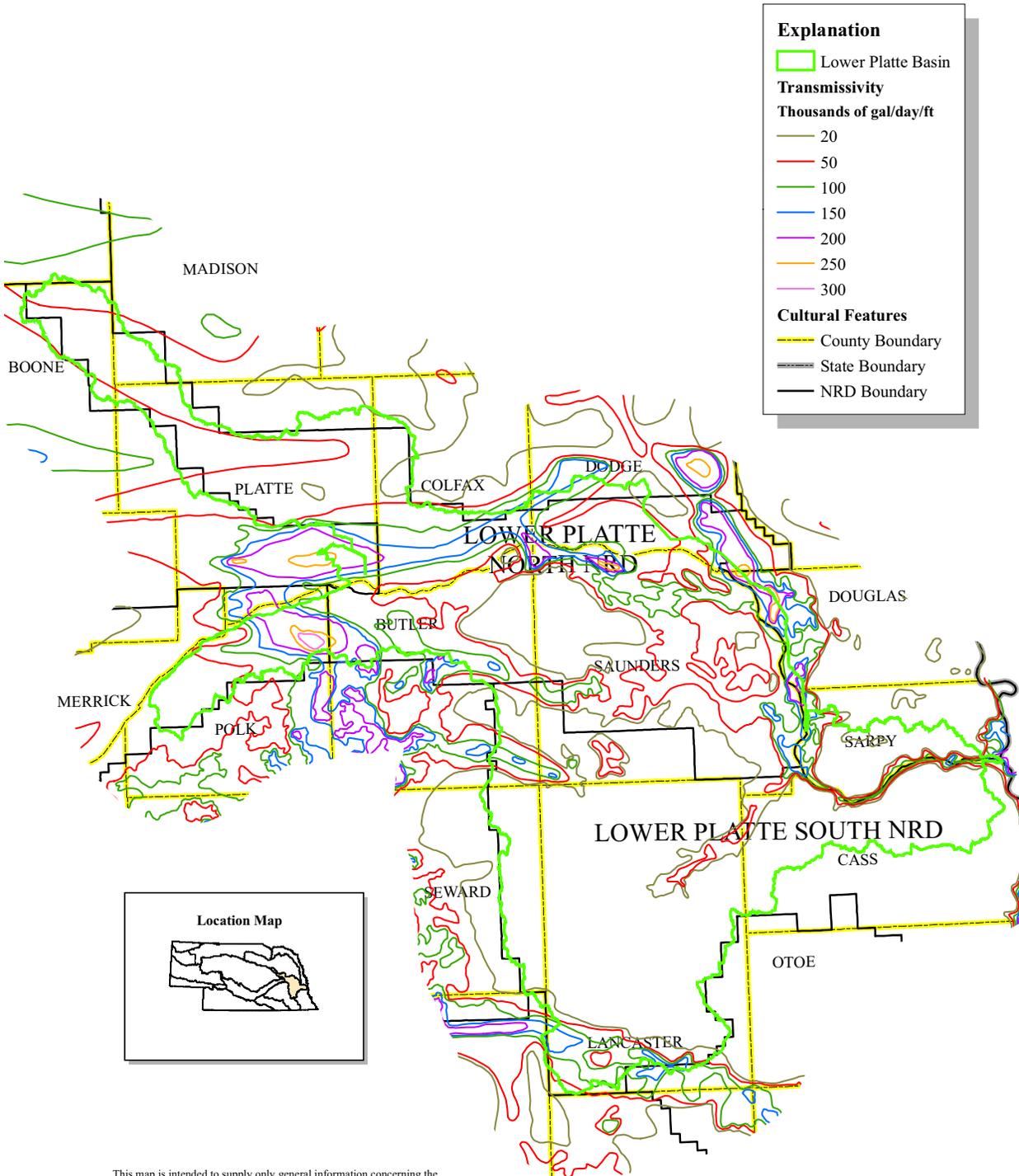
Base map produced by Josh Lear, February 4, 2005
Base map approved February 4, 2005
Depth to water map produced by Kevin J. Schwartman, October 12, 2005



Transmissivity LOWER PLATTE RIVER BASIN



Planning and Assistance Division



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Transmissivity information provided by the UNL Conservation and Survey Division in: Summerside, S., Olafsen-Lackey, S., Goeke, J., and Myers, W., 2005, Mapping of Aquifer Properties – Transmissivity and Specific Yield – for Selected River Basins in Central and Eastern Nebraska.

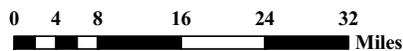


Figure LP-18.

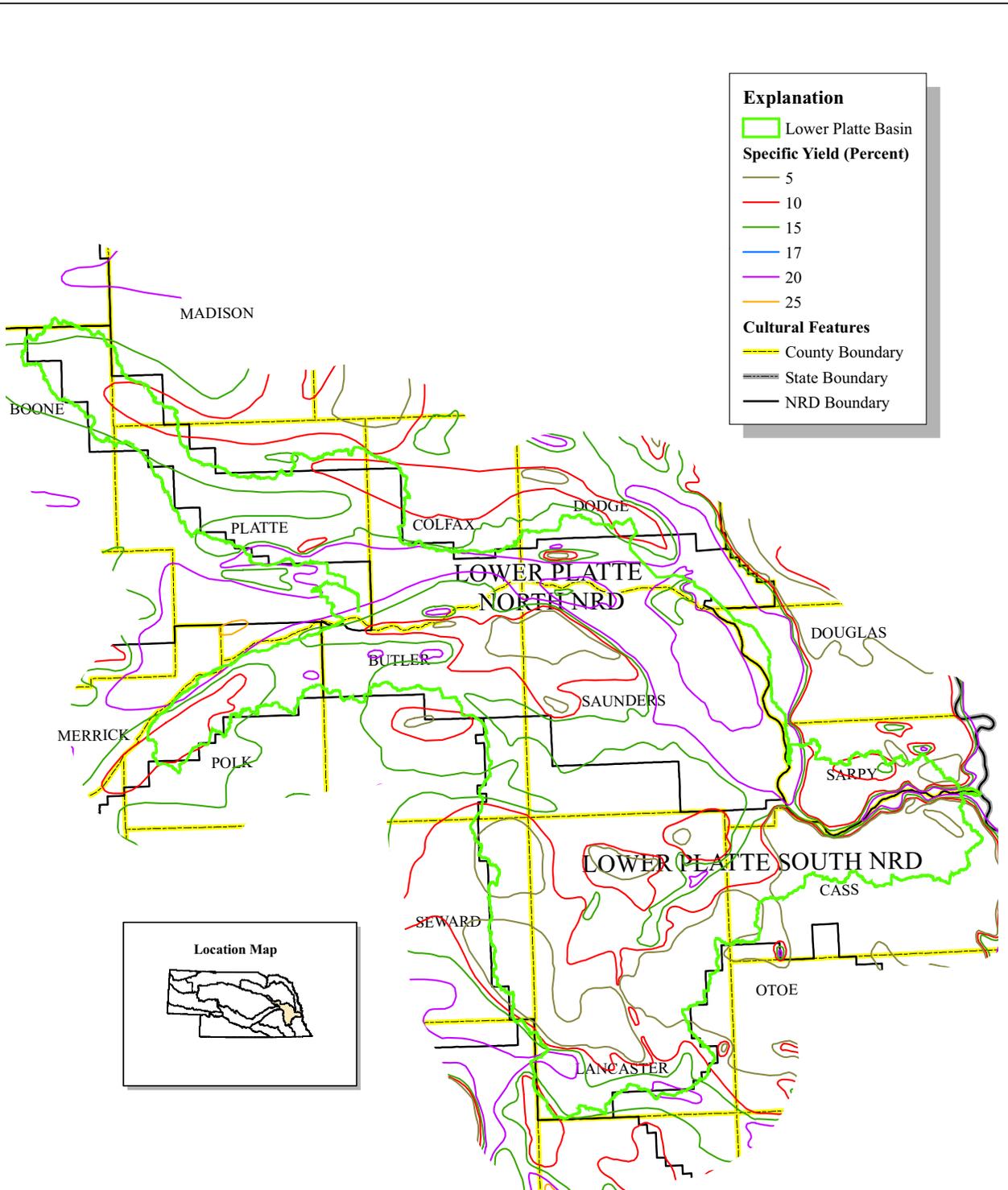
Base map produced by Josh Lear, February 4, 2005
Base map approved February 4, 2005
Transmissivity map produced by Kevin J. Schwartman, October 12, 2005



Specific Yield LOWER PLATTE RIVER BASIN



Planning and Assistance Division



Explanation

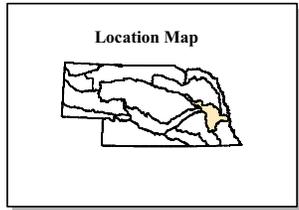
Lower Platte Basin

Specific Yield (Percent)

- 5
- 10
- 15
- 17
- 20
- 25

Cultural Features

- County Boundary
- State Boundary
- NRD Boundary



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Specific yield information provided by the UNL Conservation and Survey Division in: Summerside, S., Olafsen-Lackey, S., Goeke, J., and Myers, W., 2005, Mapping of Aquifer Properties – Transmissivity and Specific Yield – for Selected River Basins in Central and Eastern Nebraska.

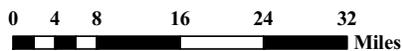


Figure LP-19.

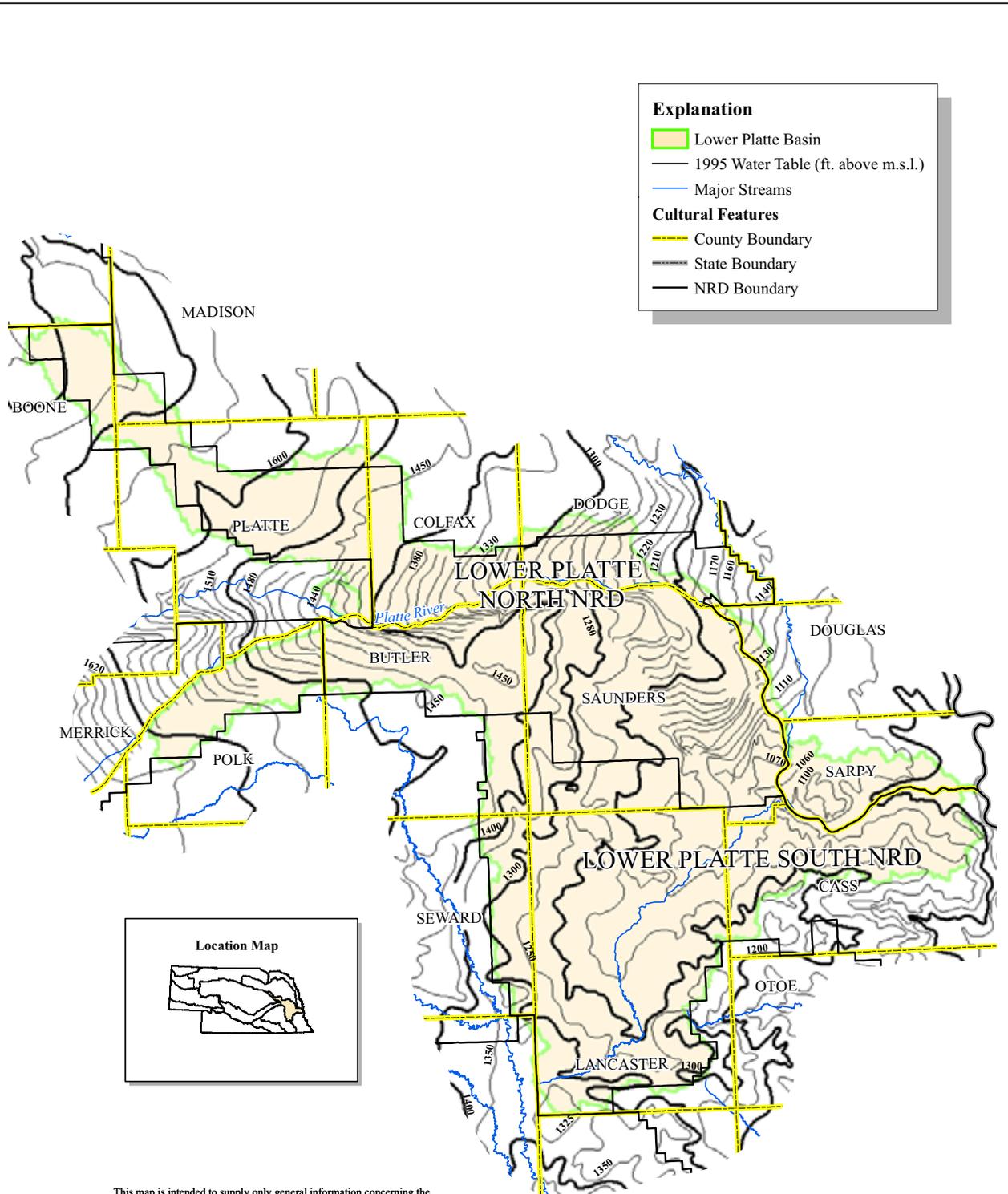
Base map produced by Josh Lear, February 4, 2005
Base map approved February 4, 2005
Specific yield map produced by Kevin J. Schwartzman, October 12, 2005



1995 Ground Water Table LOWER PLATTE RIVER BASIN



Planning and Assistance Division

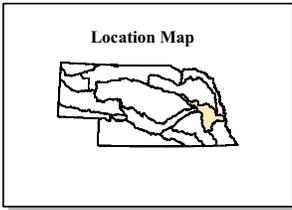


Explanation

- Lower Platte Basin
- 1995 Water Table (ft. above m.s.l.)
- Major Streams

Cultural Features

- County Boundary
- State Boundary
- NRD Boundary



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Water table information provided by the UNL Conservation and Survey Division: <http://csd.unl.edu/general/gis-datasets.asp>.

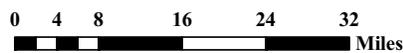


Figure LP-20.

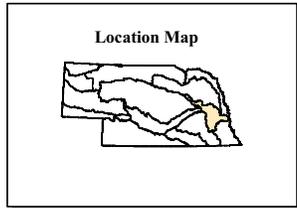
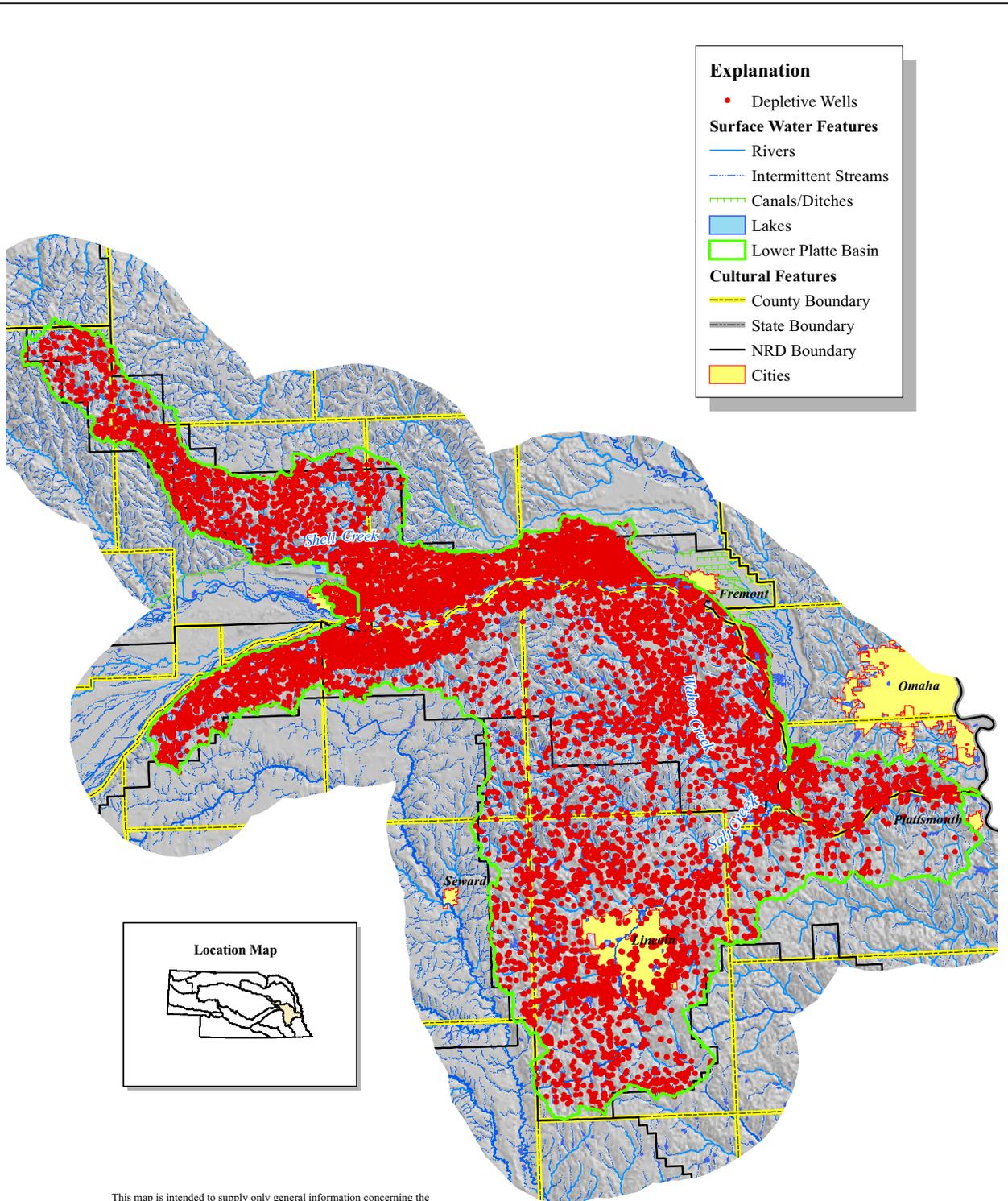
Base map produced by Josh Lear, February 4, 2005
 Base map approved February 4, 2005
 Water table map produced by Kevin J. Schwartzman, October 12, 2005



Depletive Ground Water Wells LOWER PLATTE RIVER BASIN



Planning and Assistance Division



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Depletive well information is from the DNR Registered Ground Water Well Database, as of October 1, 2005, and includes wells used for aquaculture, commercial, domestic, irrigation, public water supply, dewatering, stock and others except wells for non-consumptive uses.



Figure LP-21.

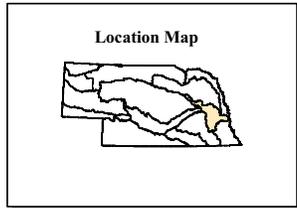
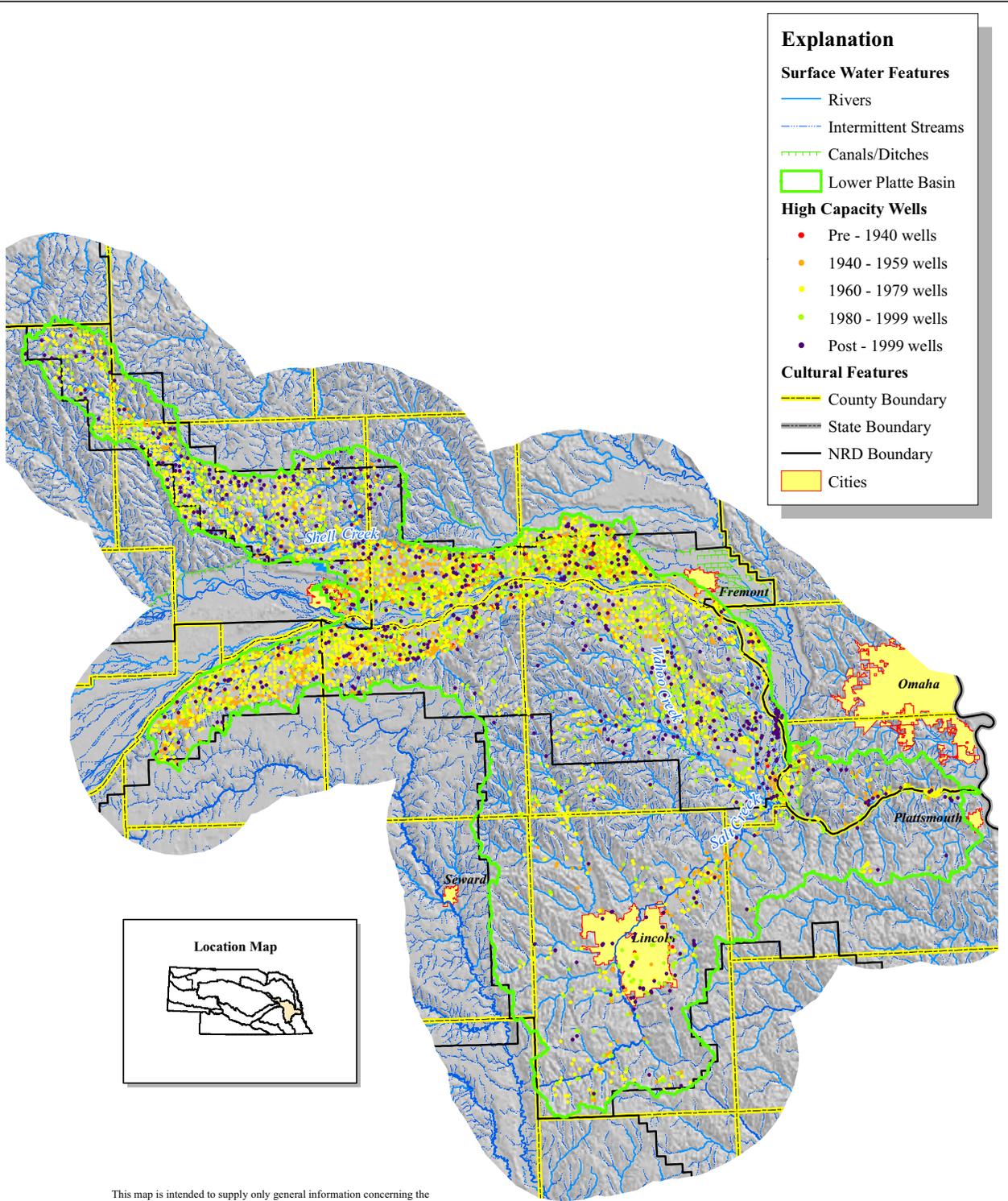
Base map produced by Josh Lear, February 4, 2005
Base map approved February 4, 2005
Depletive ground water wells map produced by Shuhai Zheng, October 12, 2005.



High Capacity Wells by Completion Date LOWER PLATTE RIVER BASIN



Planning and Assistance Division



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High capacity well information is from the DNR Registered Ground Water Well Database, as of October 1, 2005 and includes depleitive wells with registered pumping rates equal to or greater than 50 gpm.

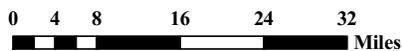
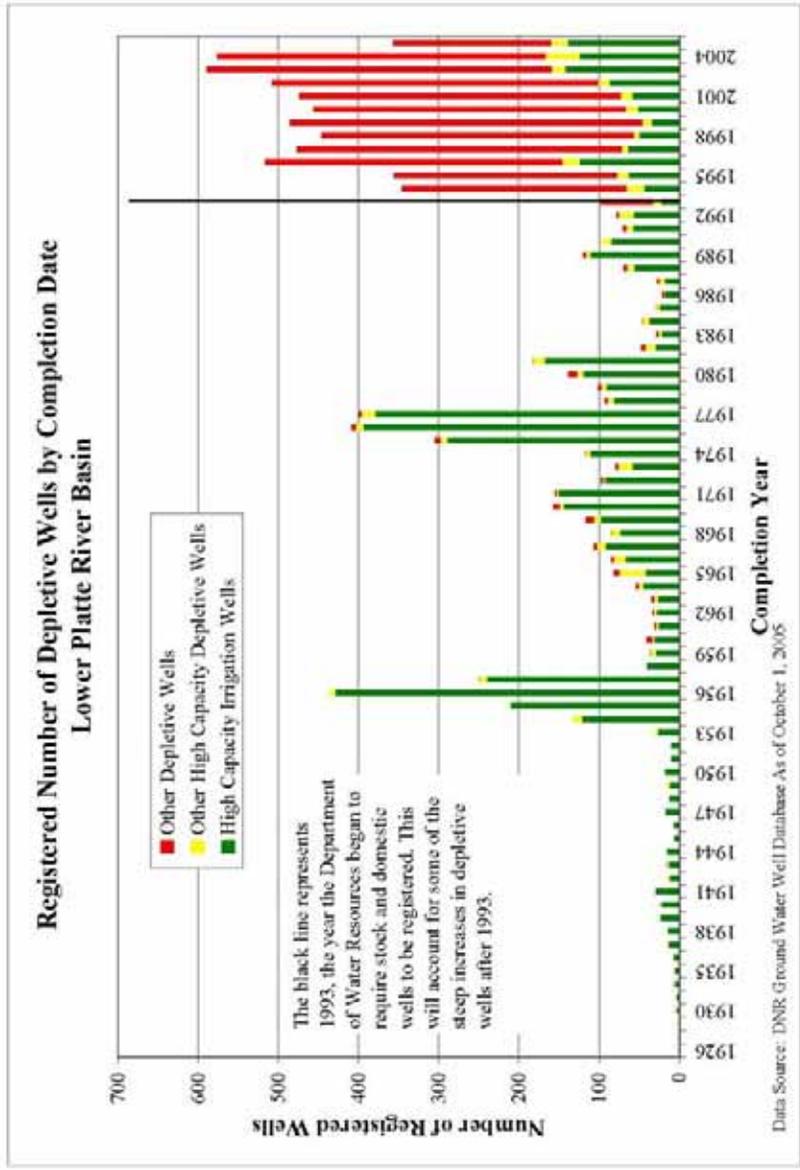


Figure LP-22.

Base map produced by Josh Lear, February 4, 2005
Base map approved February 4, 2005
High capacity wells map produced by Shuhai Zheng, November 10, 2005.



By Shuhai Zheng, 10/1/2005

Figure I.P-23

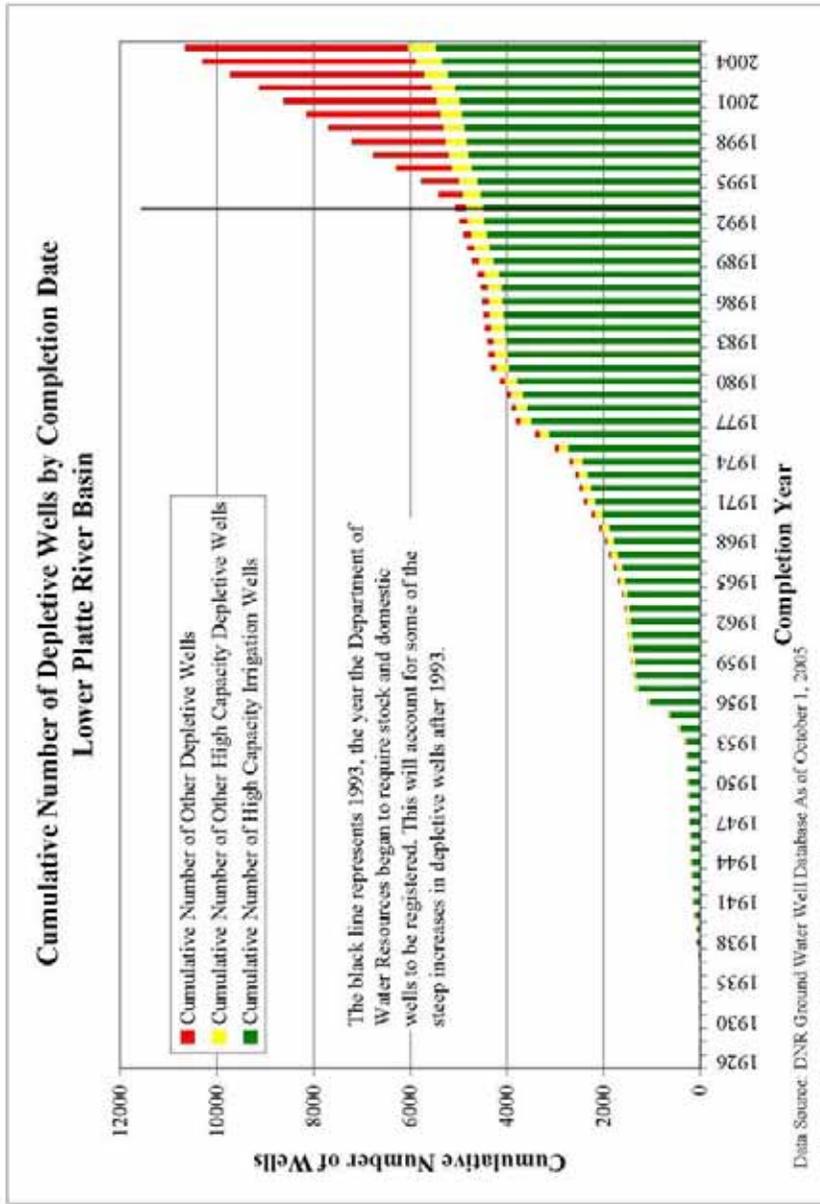


Figure LP-24

By Shuhai Zheng, 10/1/2005

Table LP-3. Average Irrigated Acreage 1950-2003 for Counties Fully or Partially in the Lower Platte River Basin

County Name	Percent of County in Lower Platte Basin	Estimated Average Irrigated Acreage by County									
		1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2003				
Antelope	<1	3140	14709	89076	160910	184990	213225				
Boone	13	10299	25671	63326	111210	141590	164400				
Butler	51	8458	29408	65290	94590	106100	112225				
Cass	47	499	768	2265	4070	2720	1950				
Collfax	43	6048	16812	31426	59530	59970	63850				
Dodge	22	6865	19554	51683	80740	93890	104050				
Douglas	6	825	2188	7555	12830	12640	9850				
Lancaster	86	980	4445	9841	13600	12650	12925				
Madison	6	2219	8494	37086	70420	86440	102150				
Merrick	<1	47192	78962	119629	145480	162730	173650				
Platte	46	10651	31718	77881	127710	161700	188775				
Polk	33	19512	58246	99470	113480	138180	151225				
Saline	1	6762	27831	56187	70740	80140	89875				
Sarpy	51	816	981	3597	5390	6690	6375				
Saunders	100	1969	6444	30276	60380	80570	99075				
Seward	19	9461	35109	75057	97440	114280	123375				
Total		135695	361340	819645	1228520	1445280	1616975				
% Change from Previous 10 Years			166.29%	126.83%	49.88%	17.64%	11.88%				

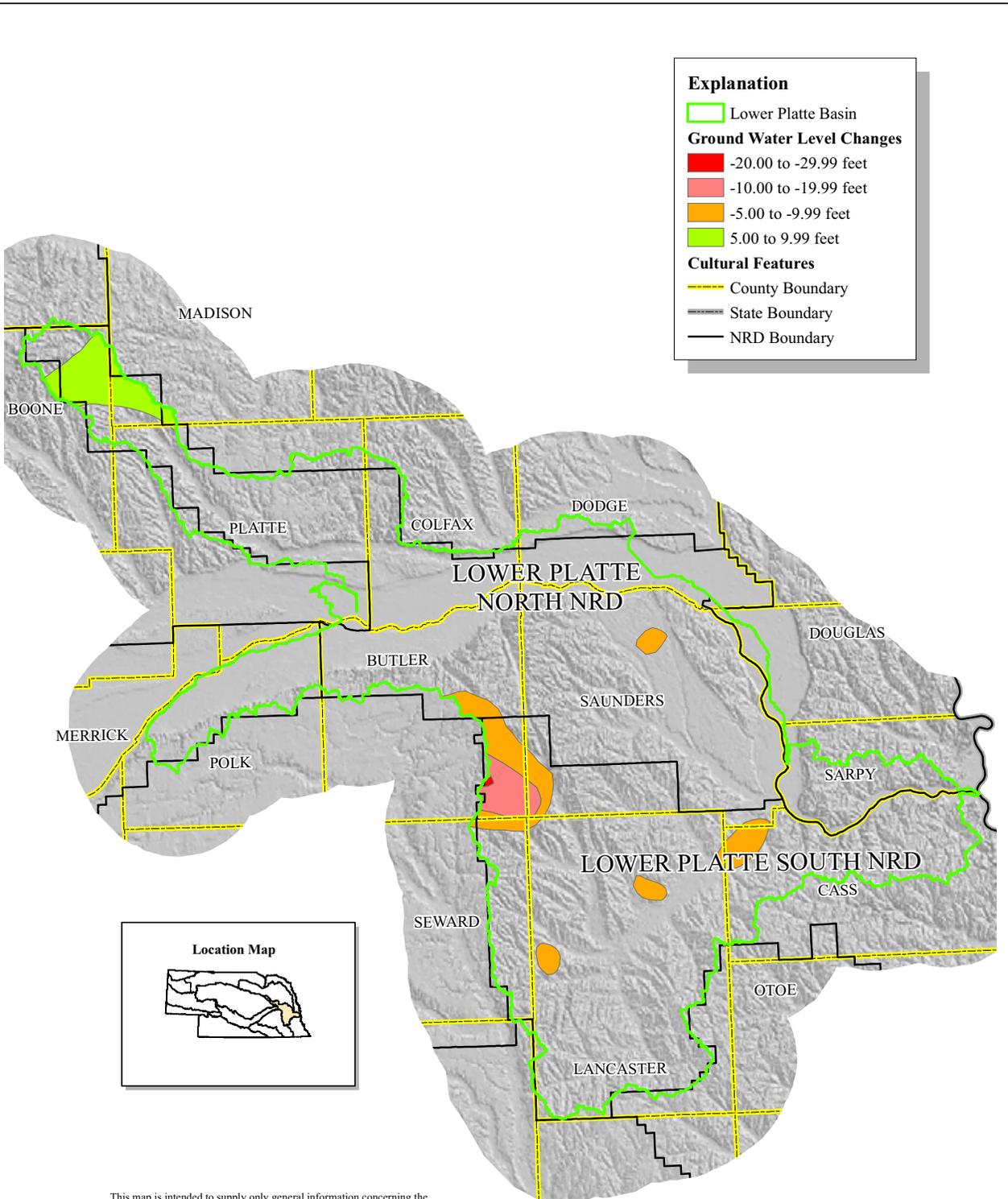
* The percentage is the percentage of the county area which is in the Lower Platte Basin. It does not necessarily represent the percentage of irrigated county acreage in the Lower Platte River Basin.

Data Source: <http://www.usda.gov/nass/>, National Agricultural Statistics Service, U.S. Department of Agriculture



Planning and Assistance Division

Ground Water Level Changes Predevelopment to Spring 2005 LOWER PLATTE RIVER BASIN



Explanation

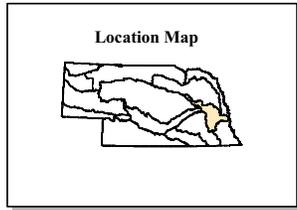
- Lower Platte Basin

Ground Water Level Changes

- 20.00 to -29.99 feet
- 10.00 to -19.99 feet
- 5.00 to -9.99 feet
- 5.00 to 9.99 feet

Cultural Features

- County Boundary
- State Boundary
- NRD Boundary



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Ground water level changes information provided by the UNL Conservation and Survey Division: <http://csd.unl.edu/general/gis-datasets.asp>.

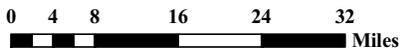


Figure LP-25.

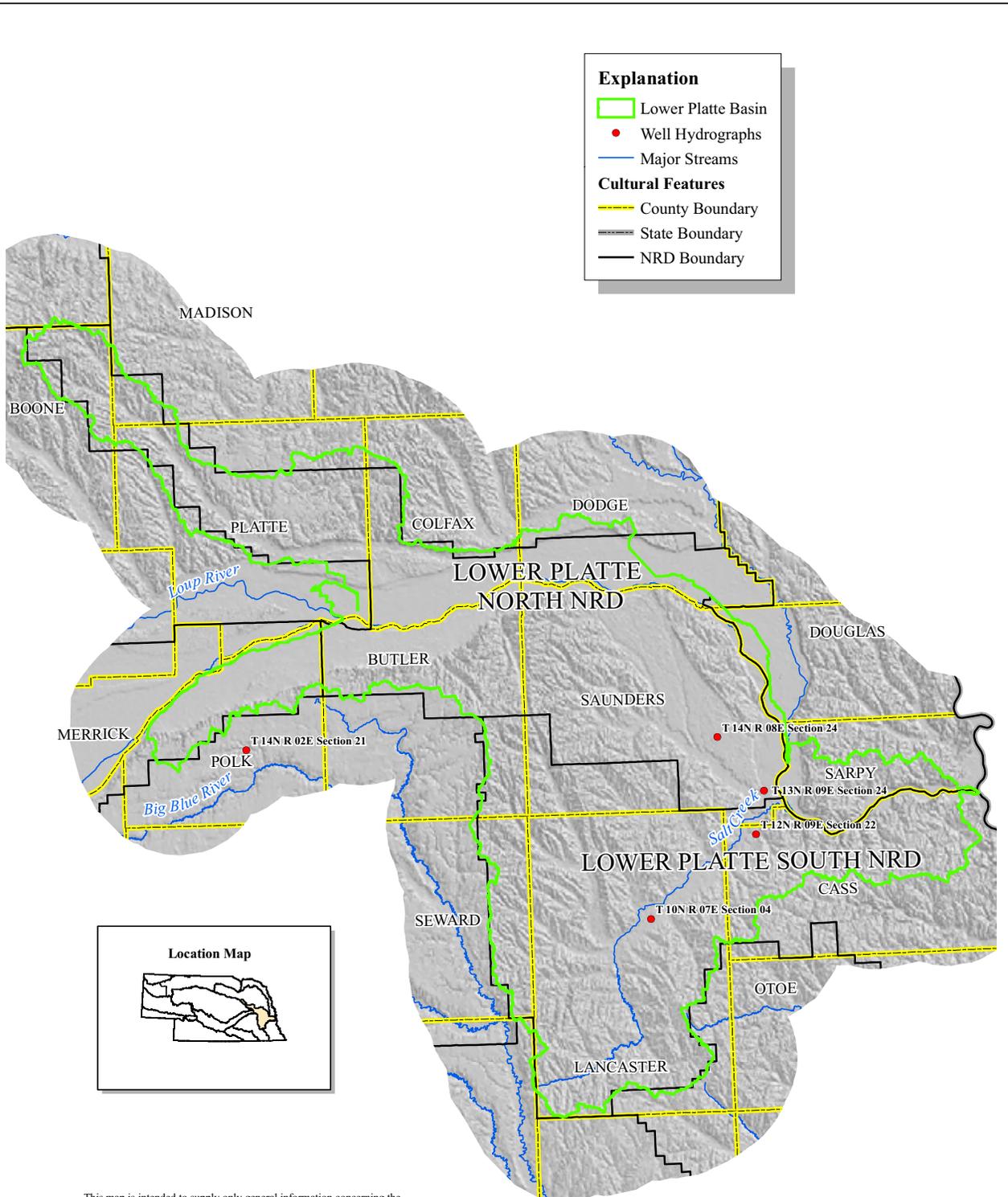
Base map produced by Josh Lear, February 4, 2005
Base map approved February 4, 2005
Ground water level changes added by Shuhai Zheng, October 13, 2005.



Ground Water Hydrograph Locations LOWER PLATTE RIVER BASIN



Planning and Assistance Division

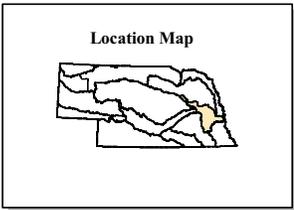


Explanation

- Lower Platte Basin
- Well Hydrographs
- Major Streams

Cultural Features

- County Boundary
- State Boundary
- NRD Boundary



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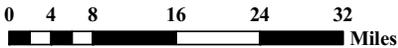
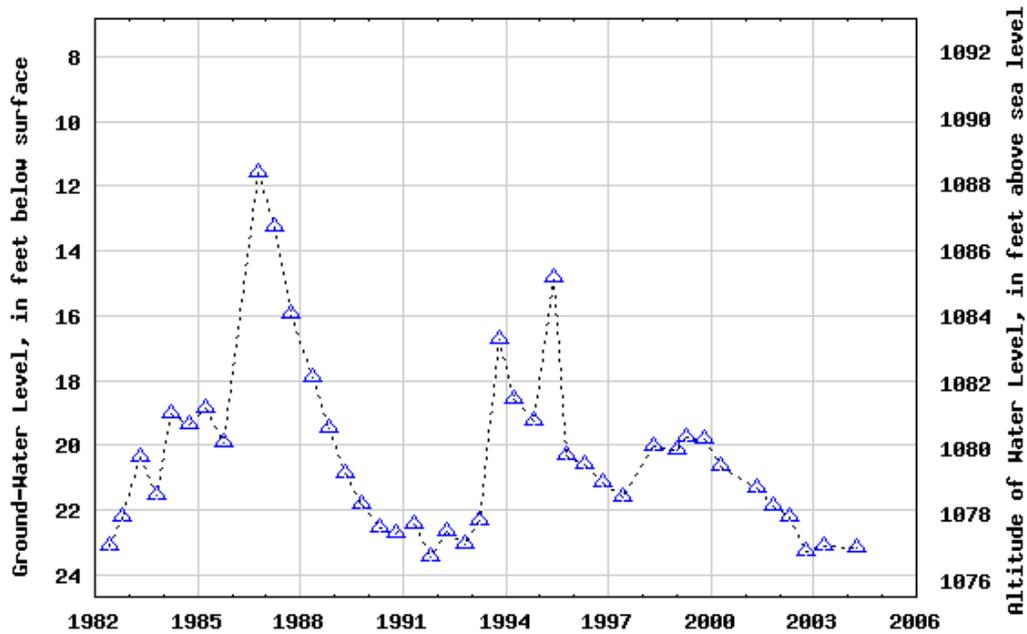


Figure LP-26.

Base map produced by Josh Lear, February 4, 2005
 Base map approved February 4, 2005
 Ground water hydrograph map produced by Kevin J. Schwartman, November 1, 2005.



USGS 410002096232301 12N 9E22AA 1



Provisional Data Subject to Revision

Cass County, Nebraska

Hydrologic Unit Code 10200203

Latitude 41°00'02", Longitude 96°23'23" NAD27

Land-surface elevation 1,100.00 feet above sea level NGVD29

The depth of the well is 93.0 feet below land surface. This well is

completed in the QUATERNARY SAND AND GRAVEL

DEPOSITS (112SDGV) local aquifer just above the CRETACEOUS

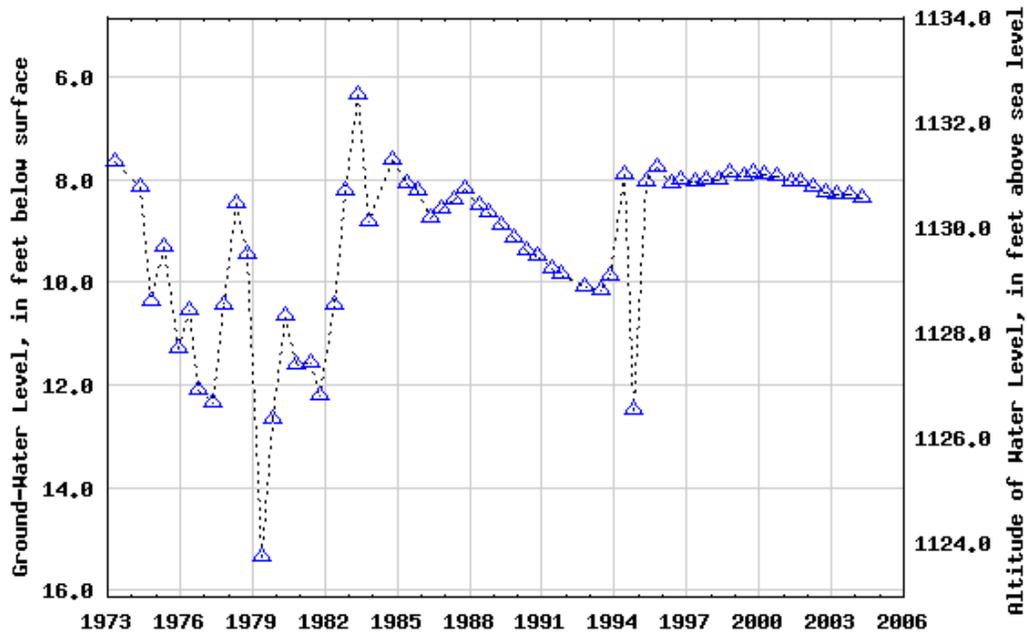
DAKOTA GROUP regional aquifer.

Figure LP-27

(T 12N R 09E Section 22)



USGS 405205096383201 10N 7E 4BBCD1



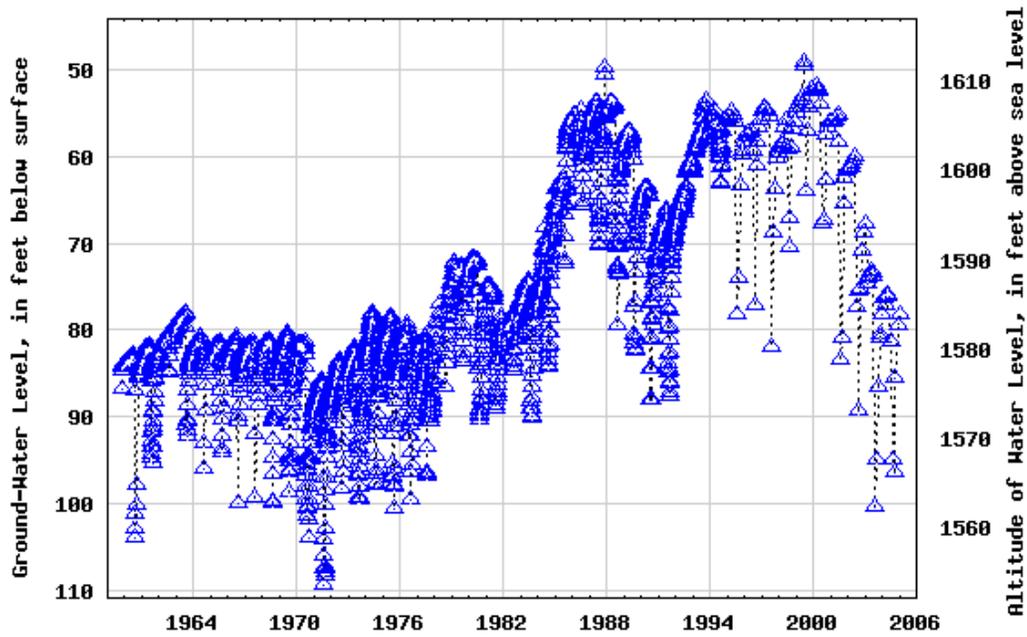
Provisional Data Subject to Revision

Lancaster County, Nebraska
Hydrologic Unit Code 10200203
Latitude 40°52'05", Longitude 96°38'32" NAD27
Land-surface elevation 1,138.98 feet above sea level NGVD29
The depth of the well is 33.0 feet below land surface.
This well is completed in the QUATERNARY SAND AND GRAVEL DEPOSITS, UNDIFFERENTIATED (110SDGV) local aquifer.

Figure LP-28

(T 10N R 07E Section 04)

USGS 411012097325201 14N 2W21DB 1



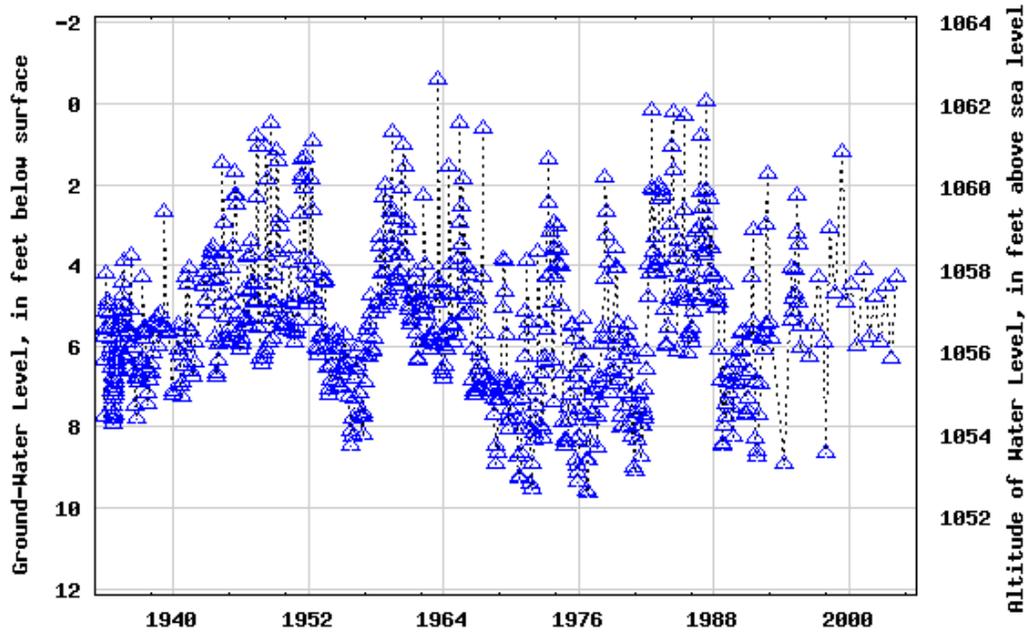
Provisional Data Subject to Revision

Polk County, Nebraska
 Hydrologic Unit Code 10270201
 Latitude 41°10'12", Longitude 97°32'52" NAD27
 Land-surface elevation 1,662.00 feet above sea level NGVD29
 The depth of the well is 180 feet below land surface.
 This well is completed in the QUATERNARY SAND AND GRAVEL DEPOSITS (112SDGV) local aquifer.

Figure LP-29 (T 14N R 02W Section 21)



USGS 410426096220401 13N 9E24CCCC1



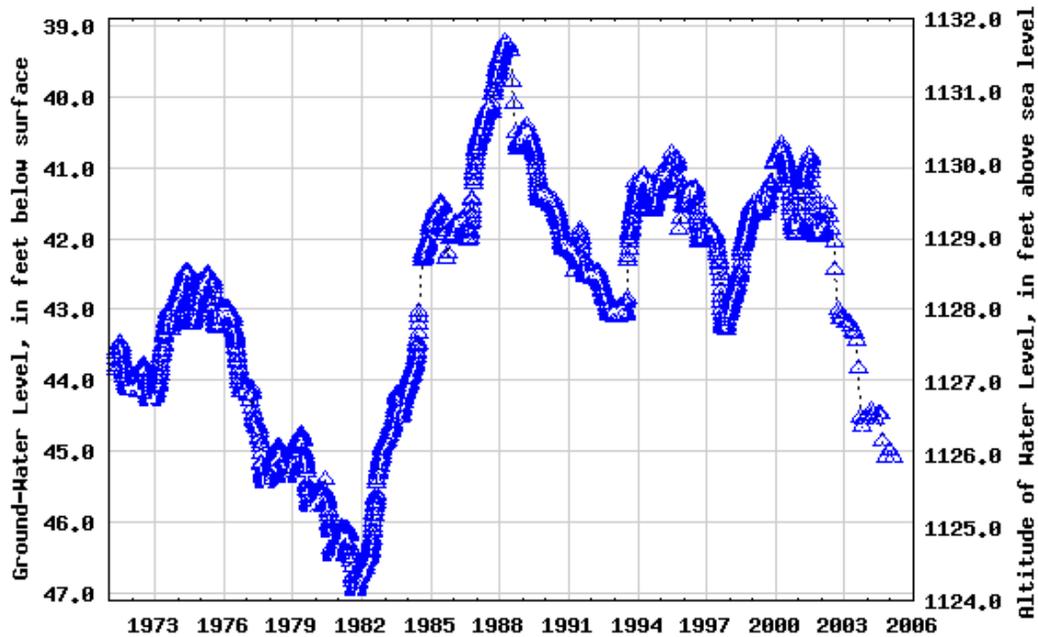
Provisional Data Subject to Revision

Saunders County, Nebraska
Hydrologic Unit Code 10200203
Latitude 41°04'28", Longitude 96°22'04" NAD27
Land-surface elevation 1,062.13 feet above sea level NGVD29
The depth of the well is 12.00 feet below land surface.
This well is completed in the QUATERNARY SAND AND GRAVEL DEPOSITS (112SDGV) local aquifer.

Figure LP-30 (T 13N R 09E Section 24)



USGS 411005096281502 14N 8E24ACD 2



Provisional Data Subject to Revision

Saunders County, Nebraska
Hydrologic Unit Code 10200203
Latitude 41°10'05", Longitude 96°28'15" NAD27
Land-surface elevation 1,171. feet above sea level NGVD29
The depth of the well is 80.0 feet below land surface.
This well is completed in the QUATERNARY SAND AND GRAVEL DEPOSITS (112SDGV) local aquifer.

Figure LP-31 (T 14N R 08E Section 24)

Figure LP-32. Annual Flows, Shell Creek near Columbus.

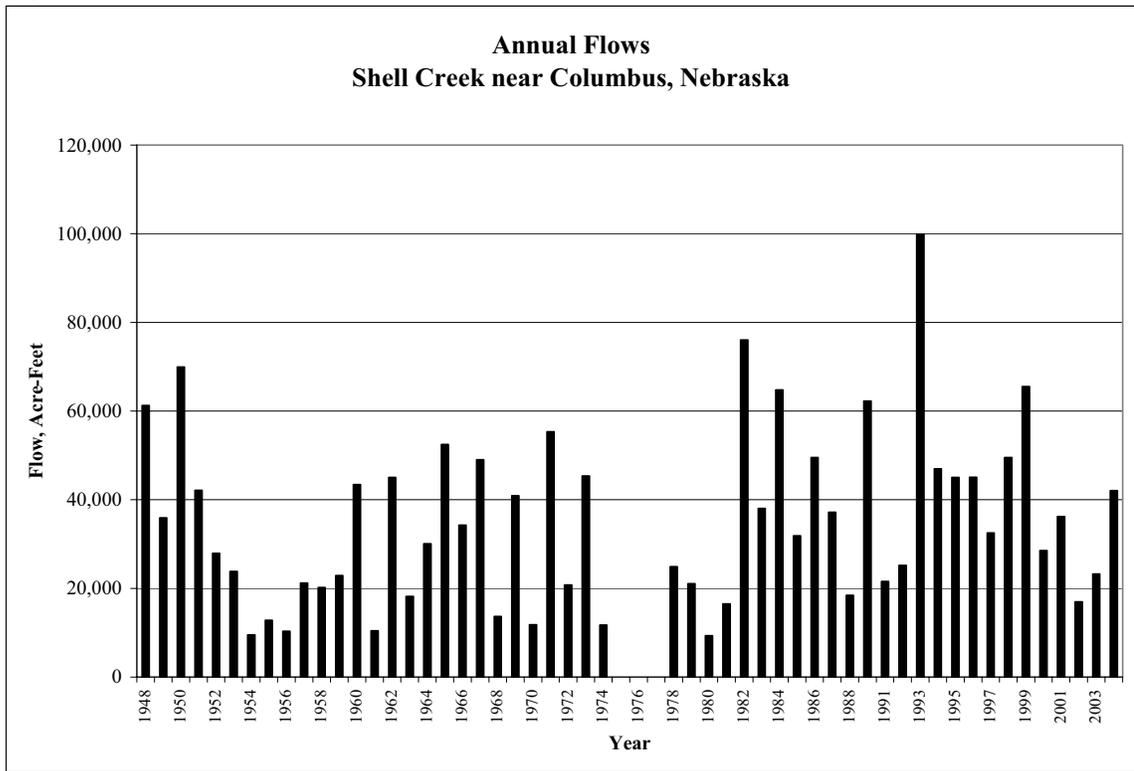
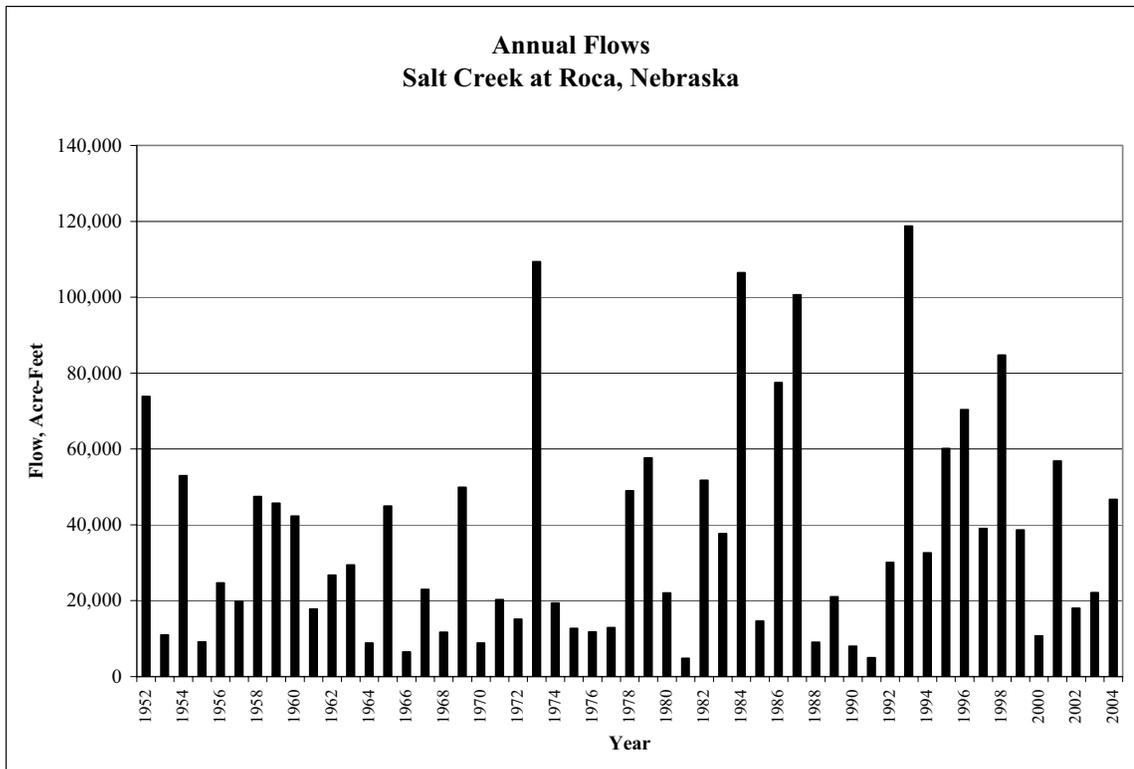


Figure LP-33. Annual Flows, Salt Creek at Roca.



Data from: US Geological Survey and NE Department of Natural Resources

Figure LP-34. Annual Flows, Salt Creek at Lincoln.

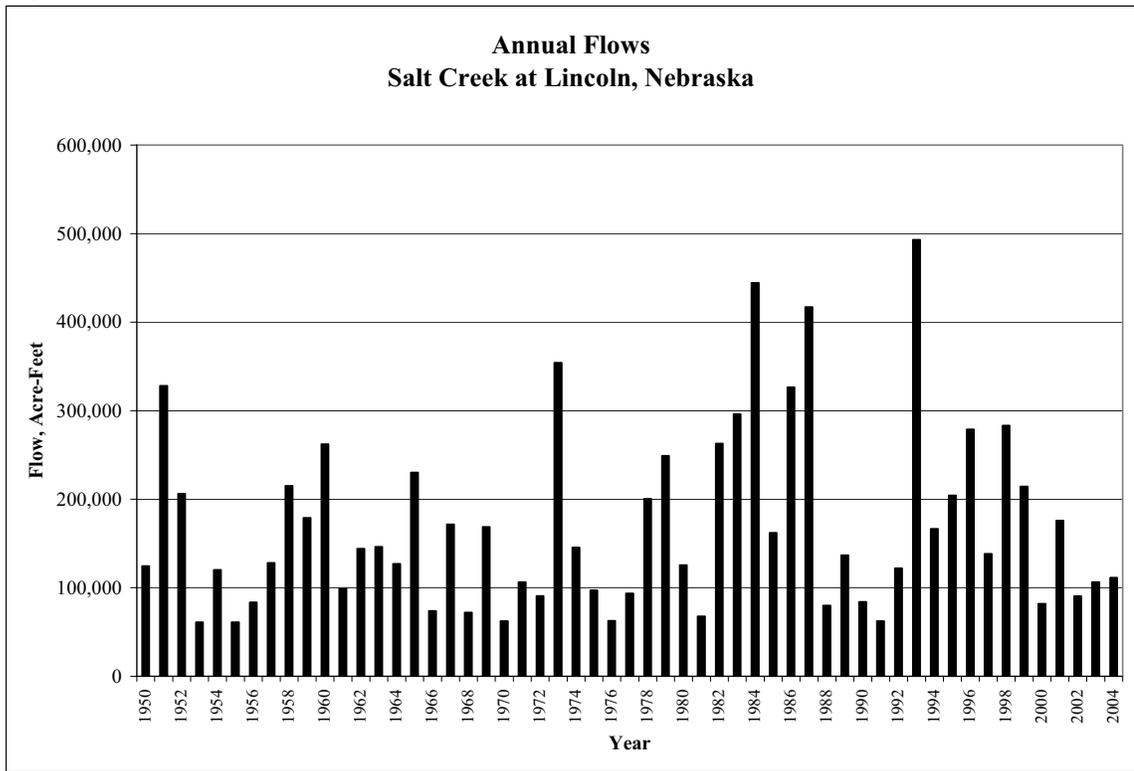
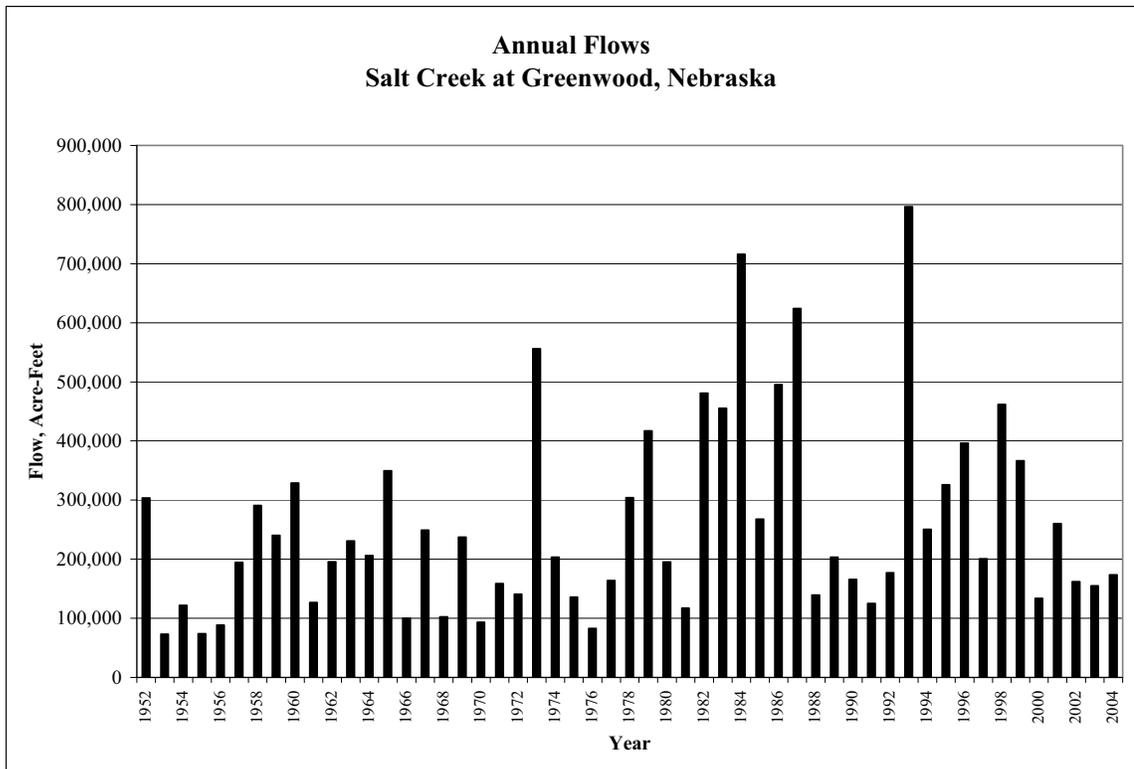


Figure LP-35. Annual Flows, Salt Creek at Greenwood.



Data from: US Geological Survey and NE Department of Natural Resources

Figure LP-36. Annual Flows, Little Salt Creek near Lincoln.

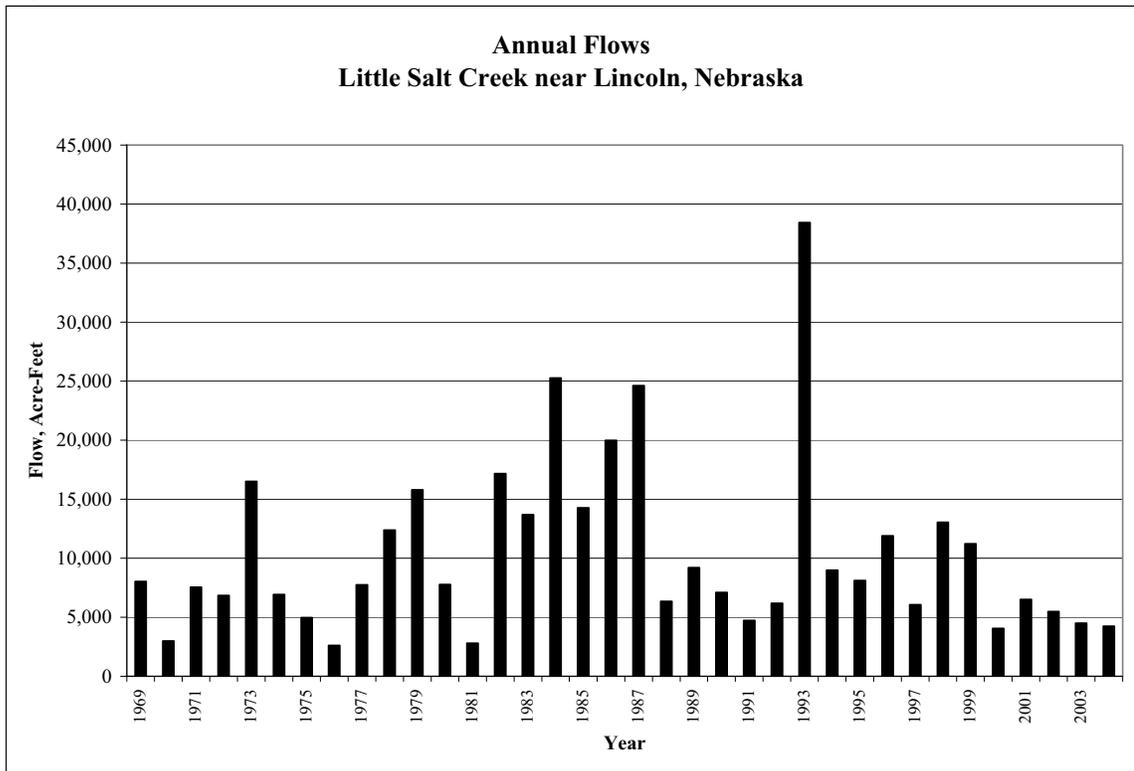
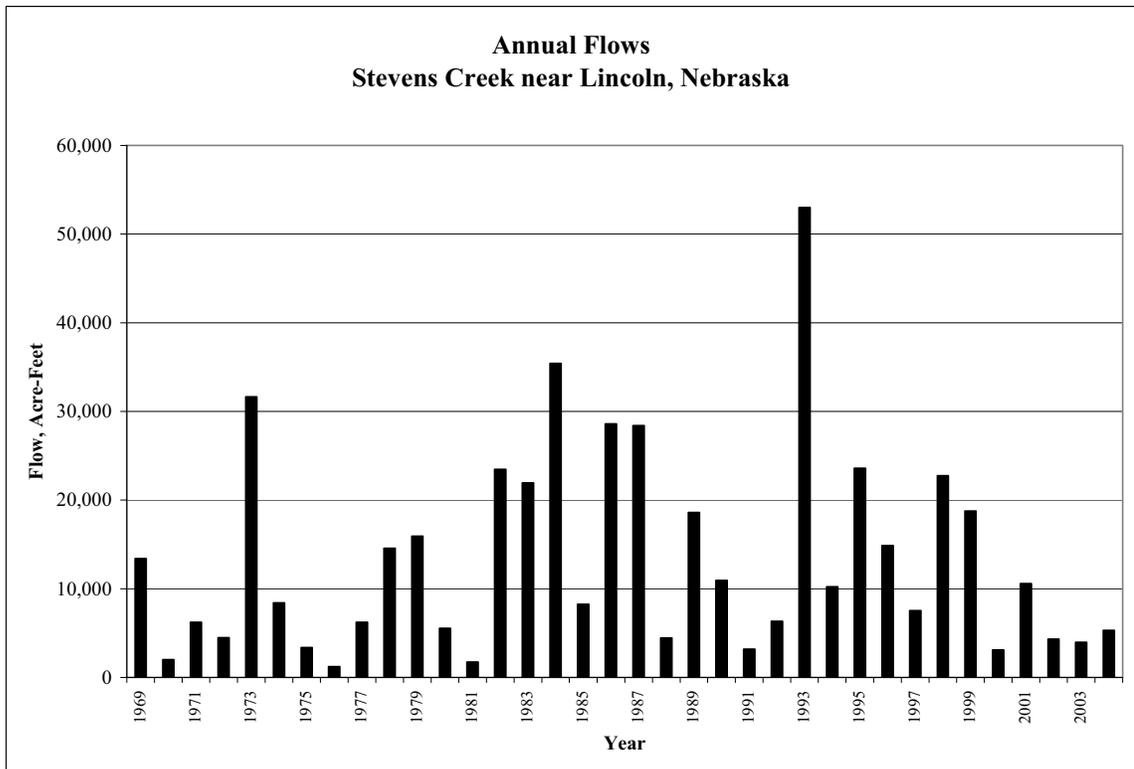


Figure LP-37. Annual Flows, Stevens Creek near Lincoln.



Data from: US Geological Survey and NE Department of Natural Resources

Figure LP-38. Annual Flows, Rock Creek near Ceresco.

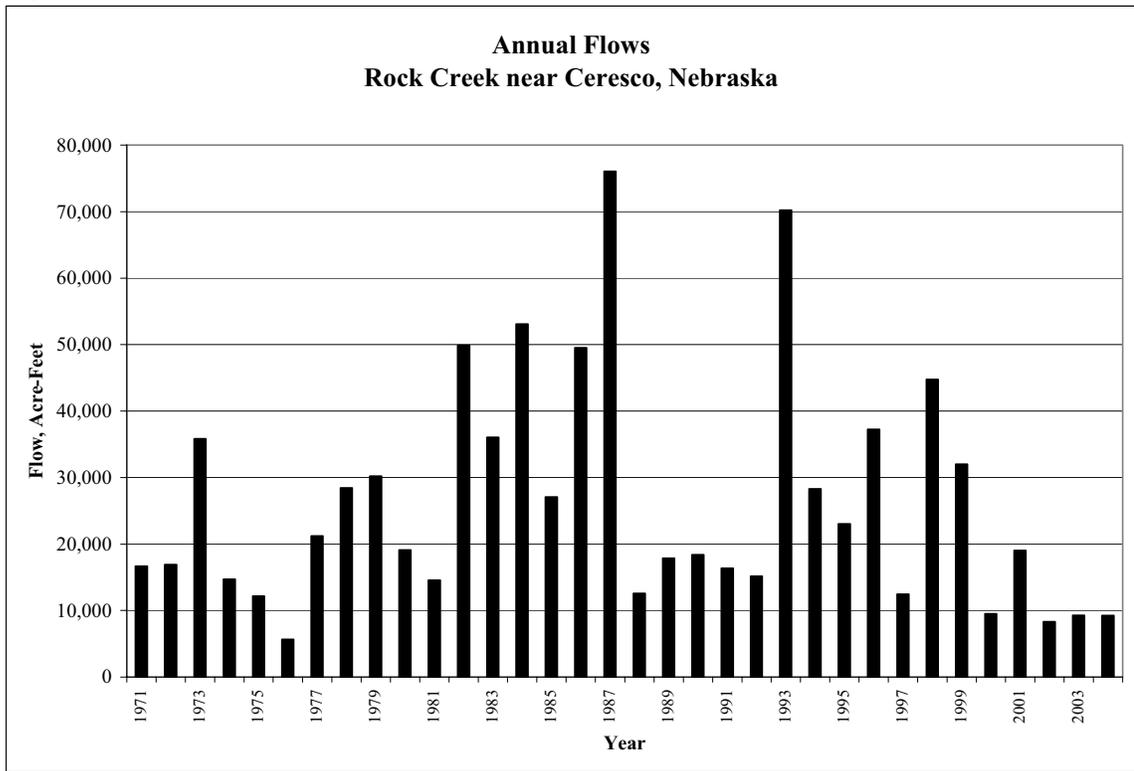
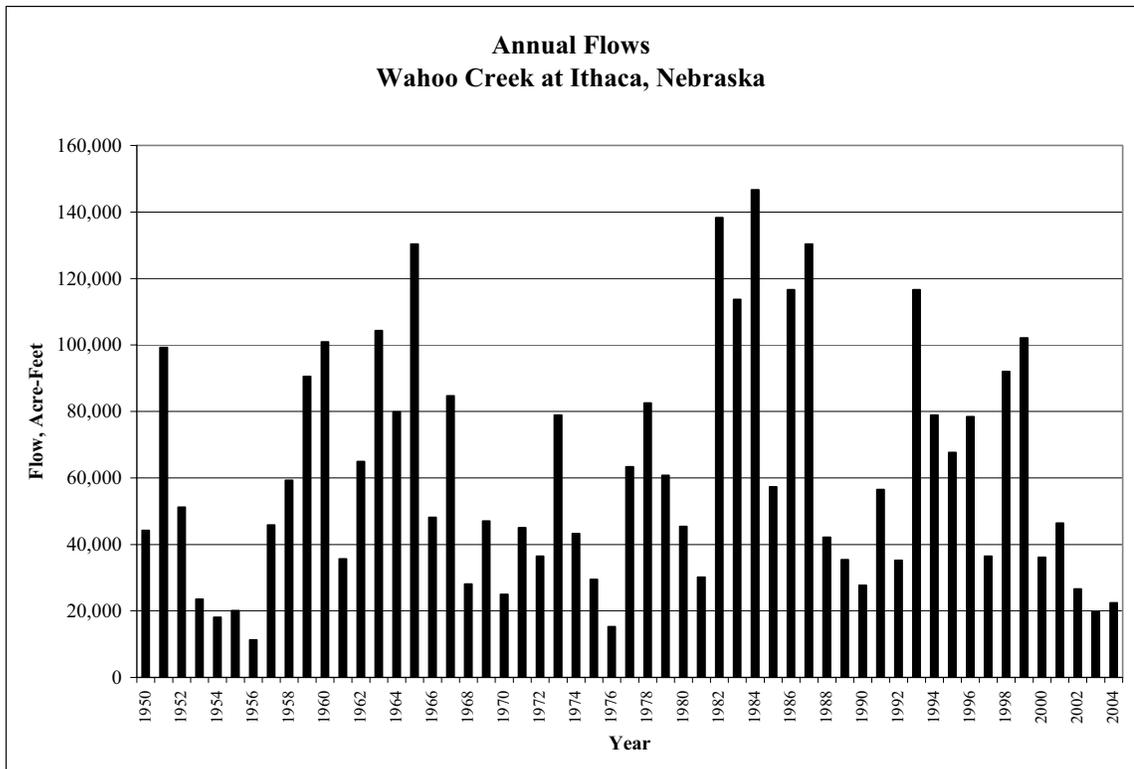


Figure LP-39. Annual Flows, Wahoo Creek at Ithaca.



Data from: US Geological Survey and NE Department of Natural Resources

Figure LP-40. Annual Flows, Platte River at North Bend.

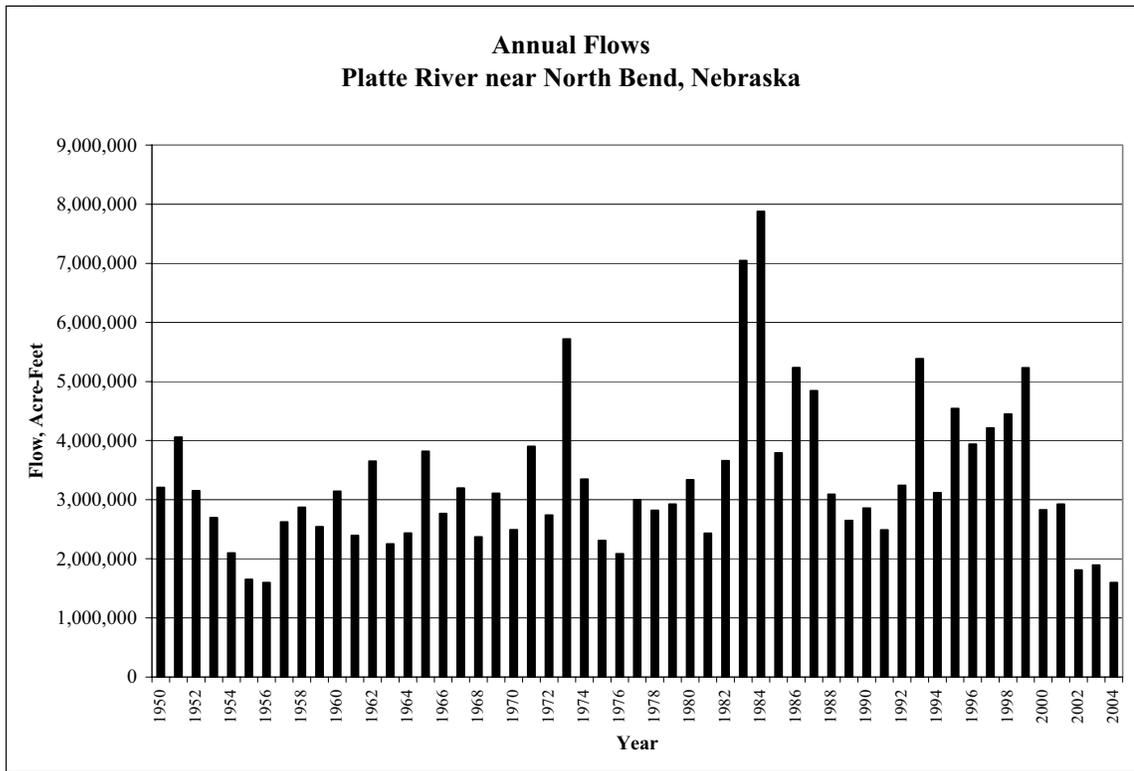
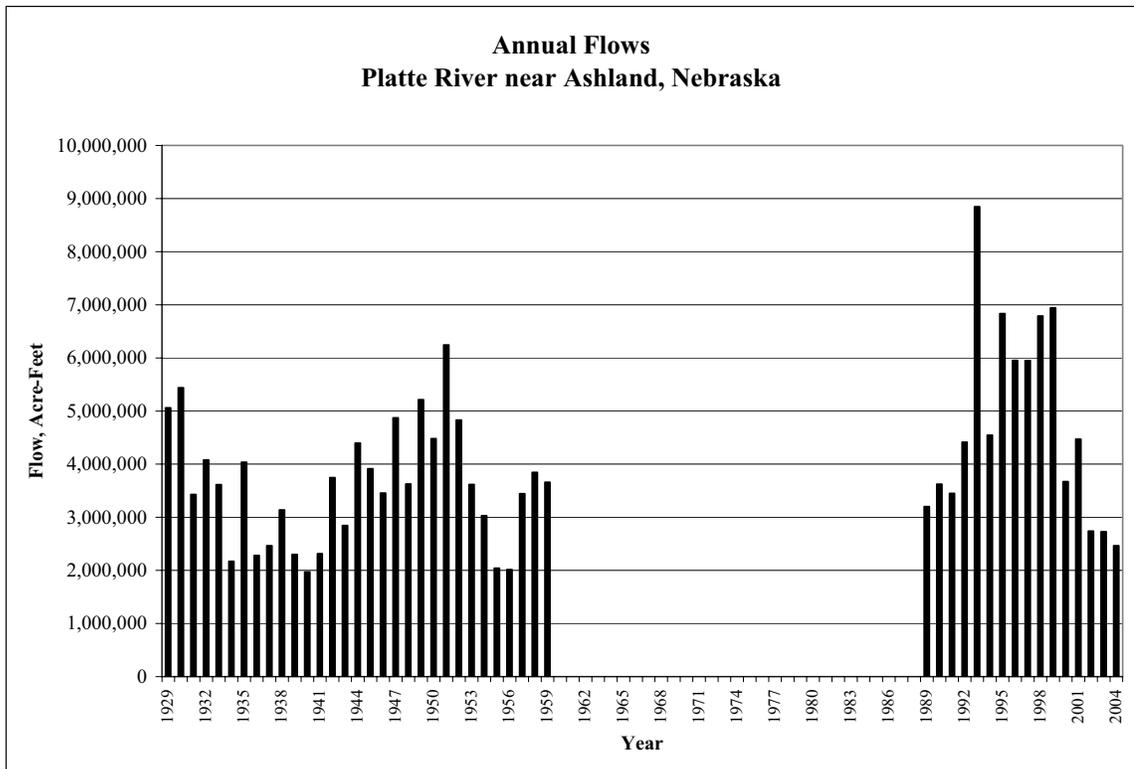
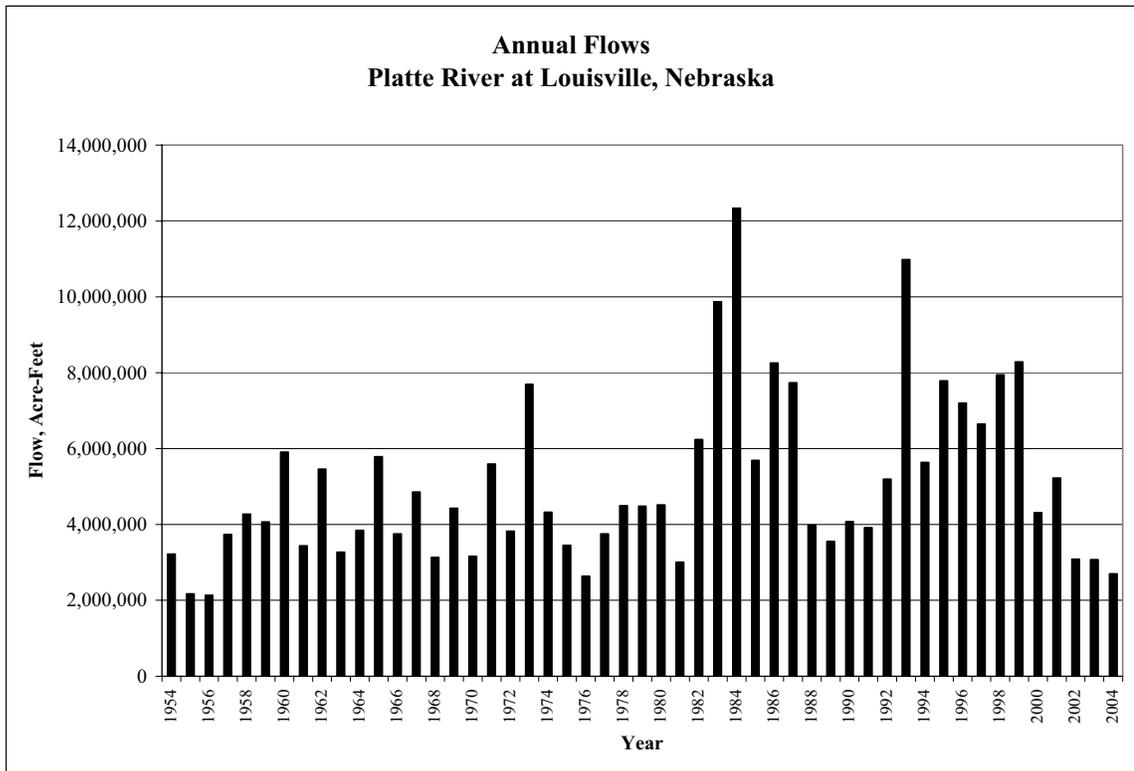


Figure LP-41. Annual Flows, Platte River near Ashland.



Data from: US Geological Survey and NE Department of Natural Resources

Figure LP-42. Annual Flows, Platte River at Louisville.



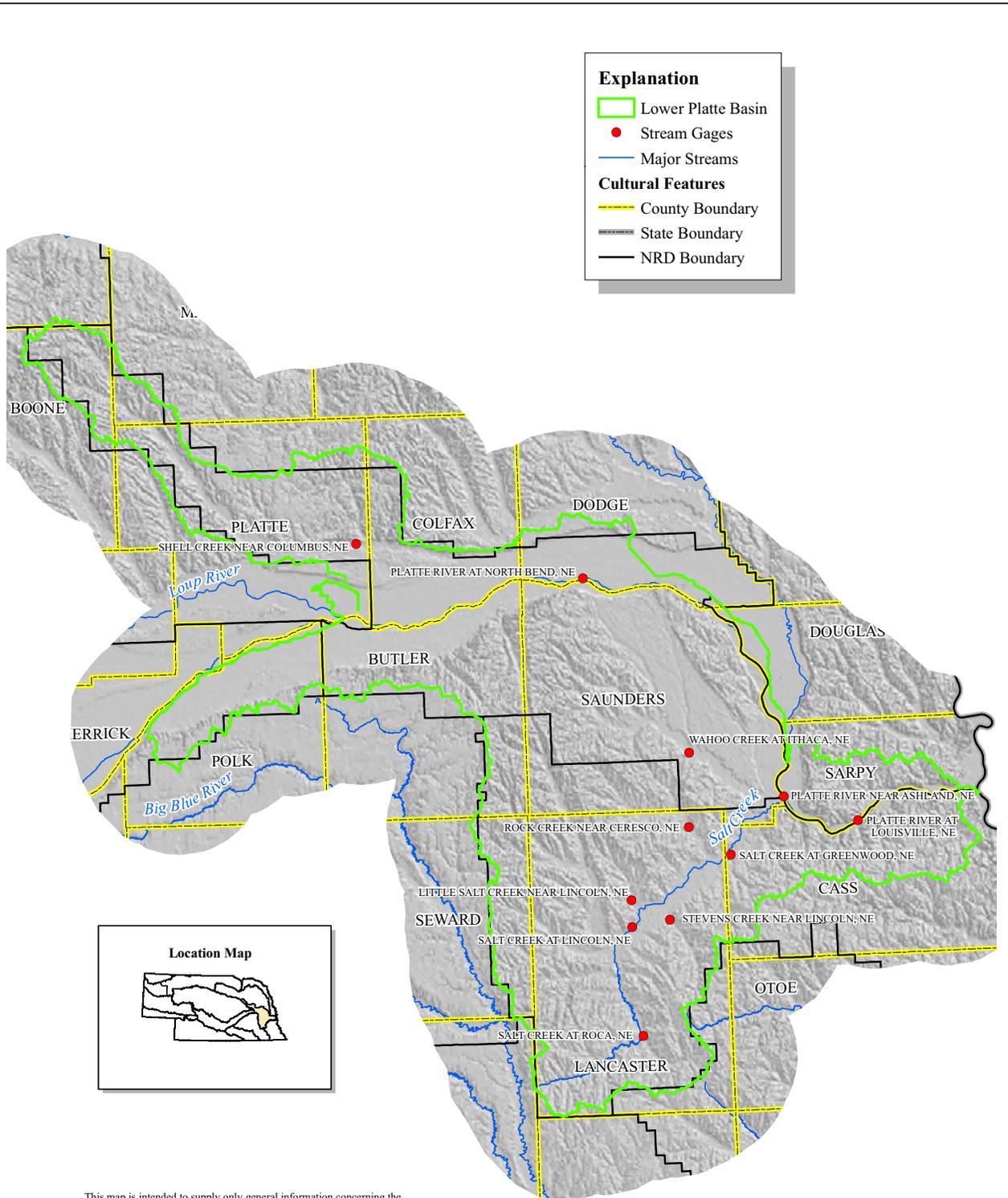
Data from: US Geological Survey and NE Department of Natural Resources



Stream Gages LOWER PLATTE RIVER BASIN



Planning and Assistance Division



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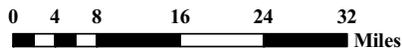
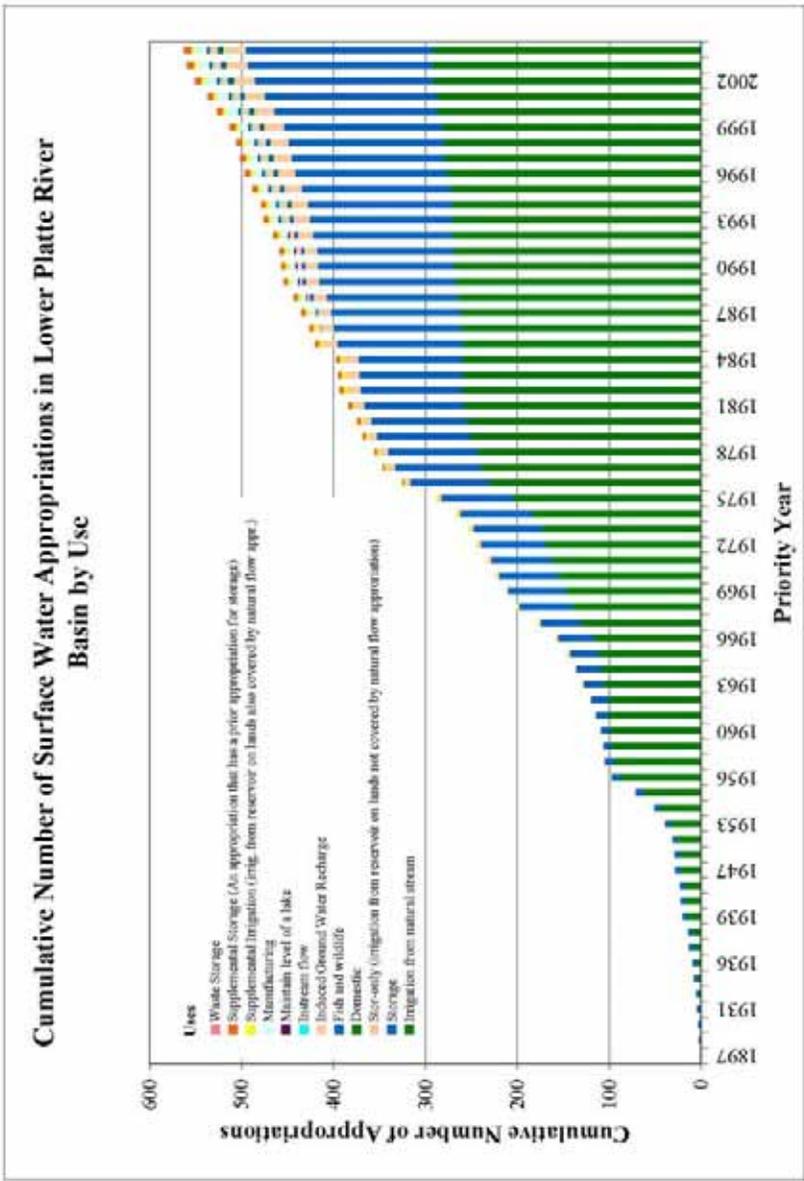


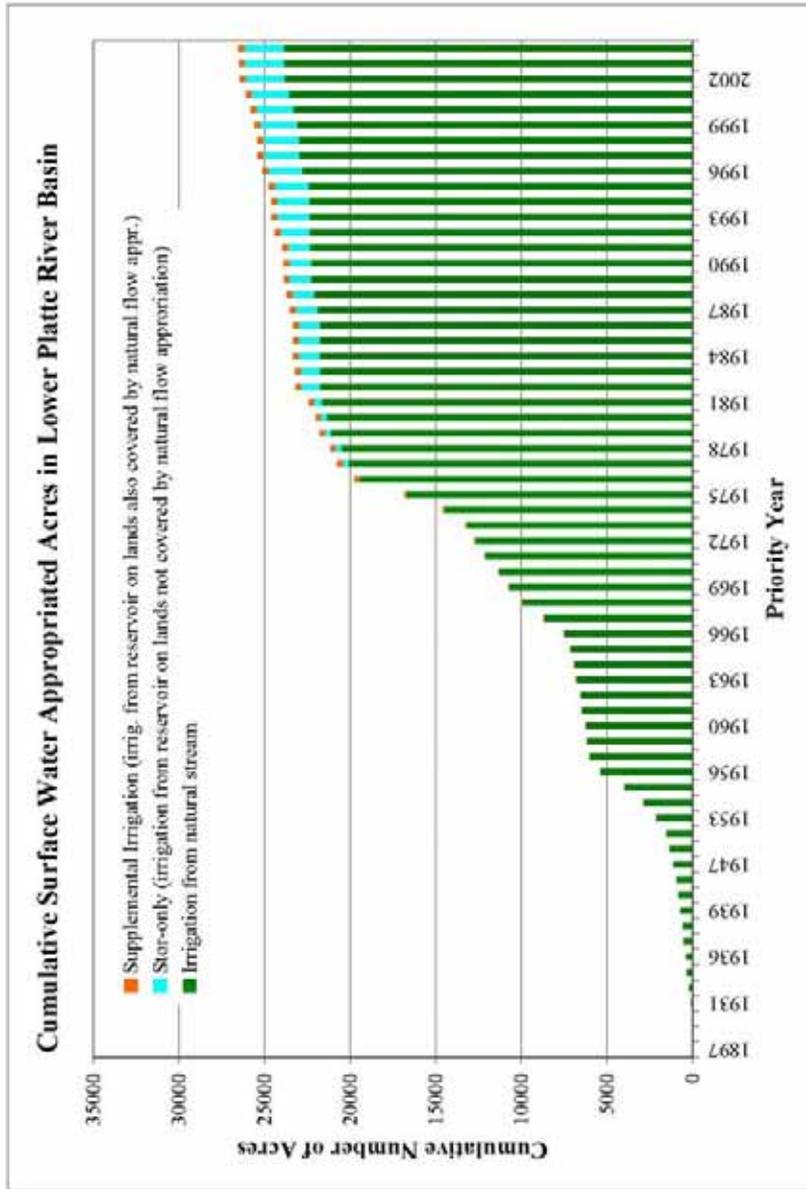
Figure LP-43.

Base map produced by Josh Lear, February 4, 2005
Base map approved February 4, 2005
Stream gages map produced by Jeff Shafer, October 19, 2005.



Source: DNR Surface Water Rights Database
Figure LP-44

11/23/2005 by Shuhai Zheng



Source: DNR Surface Water Rights Database
Figure LP-45

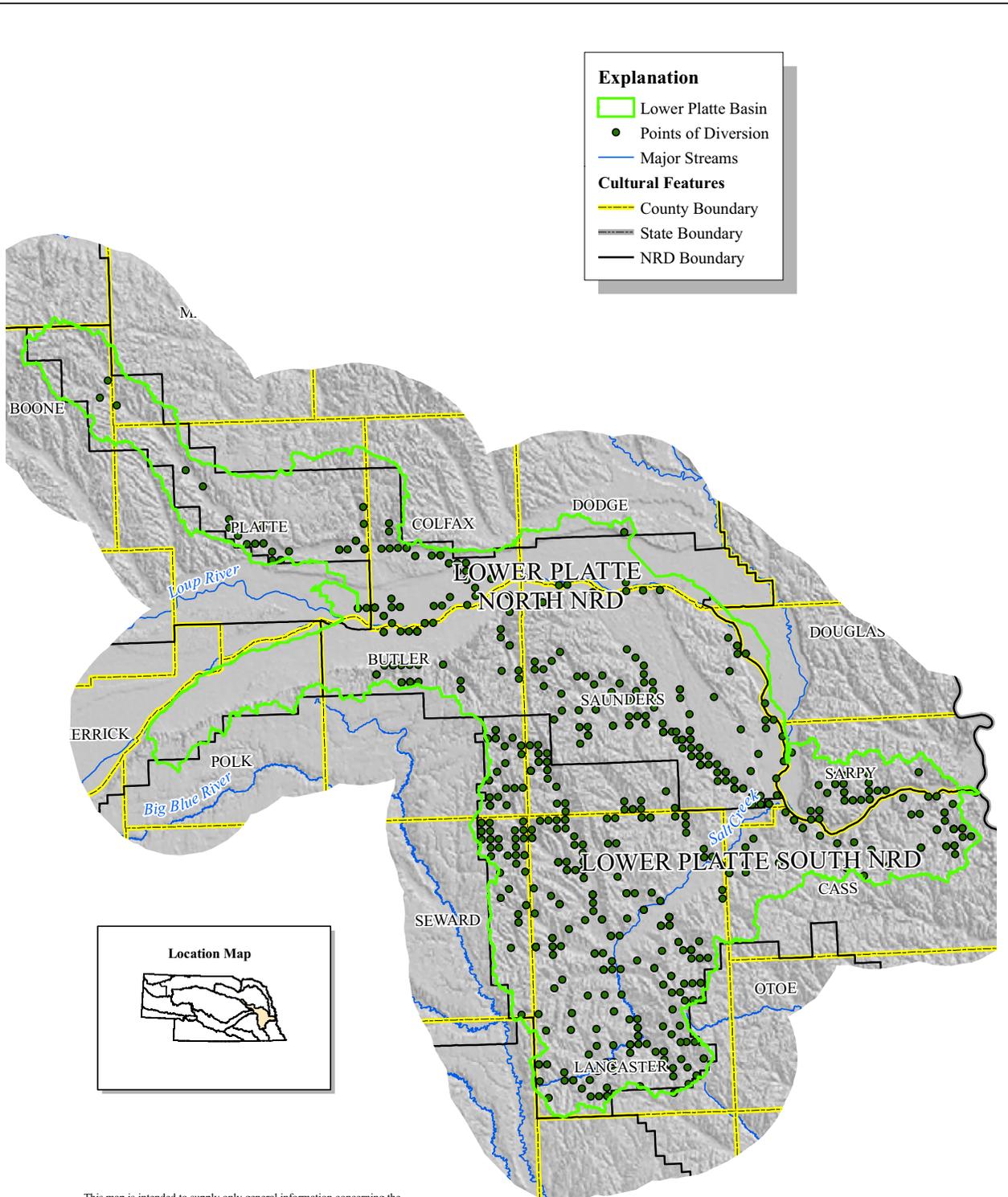
10/1/2005 by Shuhai Zheng



Surface Water Points of Diversion LOWER PLATTE RIVER BASIN



Planning and Assistance Division

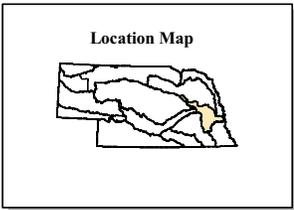


Explanation

- Lower Platte Basin
- Points of Diversion
- Major Streams

Cultural Features

- County Boundary
- State Boundary
- NRD Boundary



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Points of diversions were derived from legal descriptions in the DNR Water Rights Database, as of October 1, 2005, and were plotted to the nearest one-mile section center on this map.

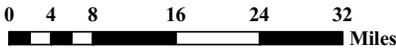


Figure LP-46.

Base map produced by Josh Lear, February 4, 2005
 Base map approved February 4, 2005
 Points of diversion map produced by Shuhai Zheng, October 11, 2005.

Map of Geographic Area within which Surface Water and Ground Water Are Hydrologically Connected For Purposes of the Determination of Fully Appropriated



**NEBRASKA DEPARTMENT OF NATURAL RESOURCES
LOWER PLATTE RIVER BASIN**



Planning and Assistance Division

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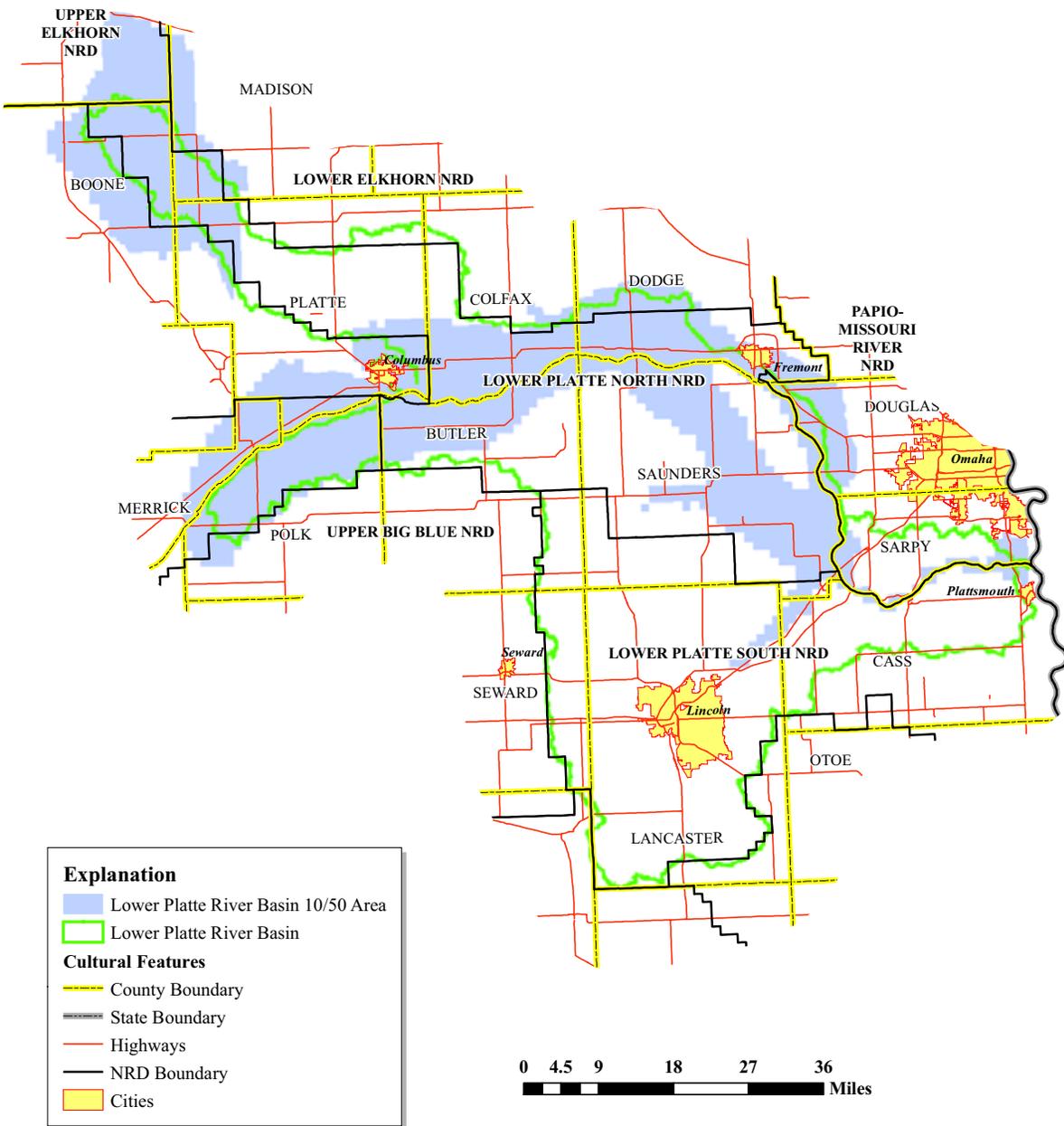
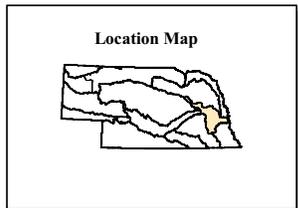
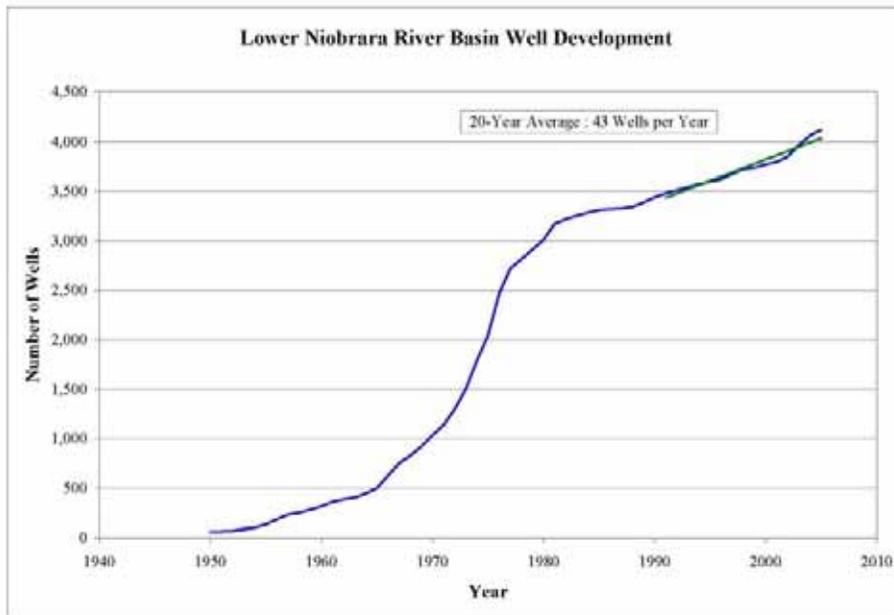


Figure LP-47.

Figure LP-48 Historic High Capacity Well Development in the Lower Platte River Basin.



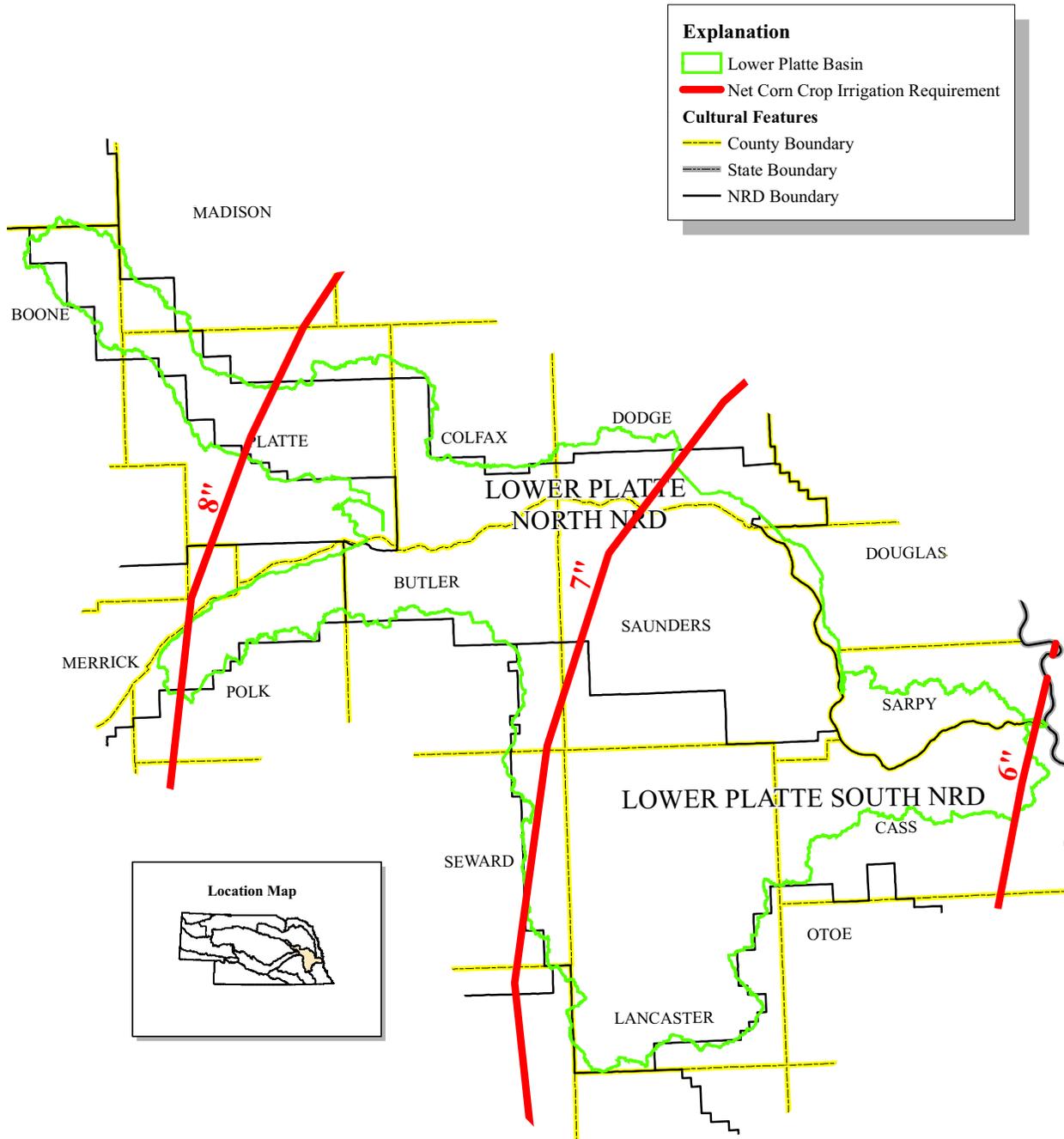
Source: DNR Registered Ground Water Well Database



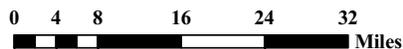
Net Corn Crop Irrigation Requirement LOWER PLATTE RIVER BASIN



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Source: Martin, 2005; Appendix C

Figure LP-49.

Base map produced by Josh Lear, February 4, 2005
Base map approved February 4, 2005
Corn crop irrigation requirement map produced by Kevin J. Schwartman, December 7, 2005

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