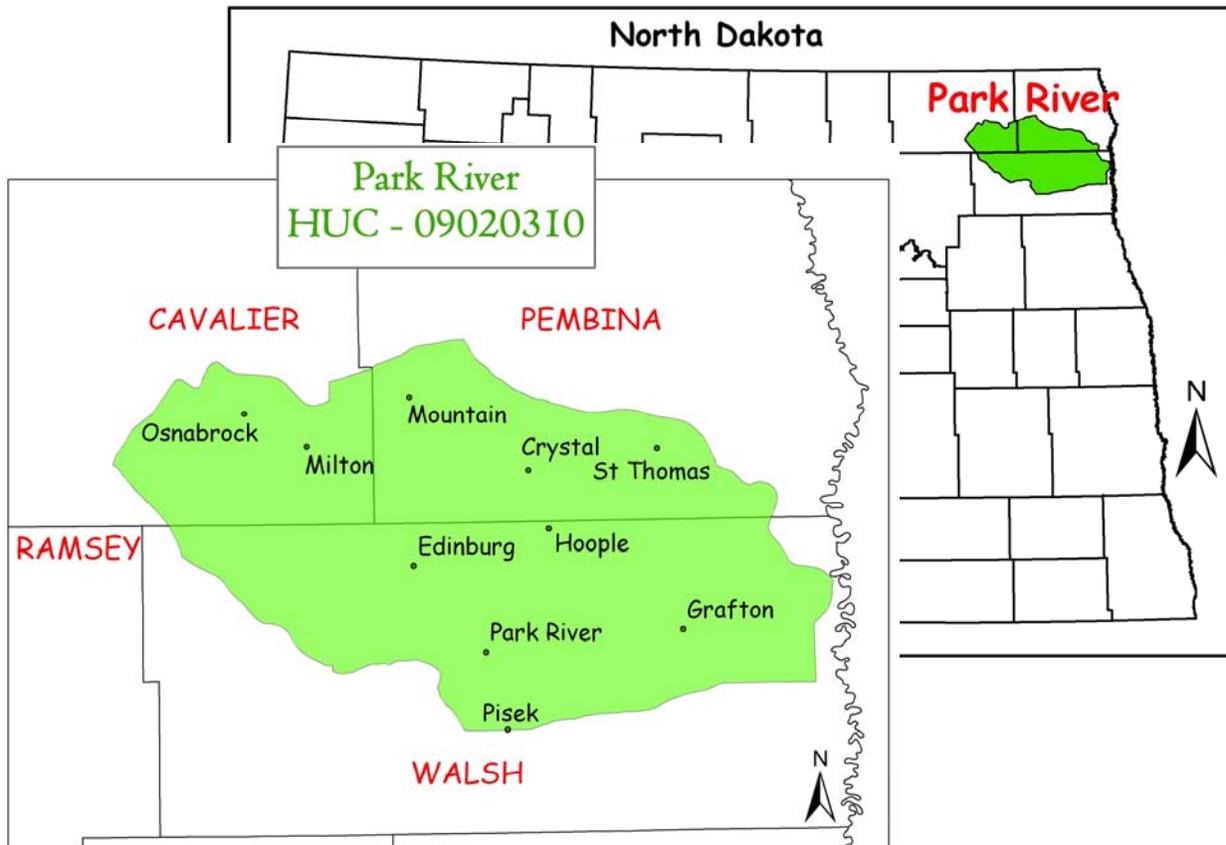


### Introduction

The Park River 8-Digit Hydrologic Unit Code (HUC) (09020310) sub-basin is approximately 681,100 acres covering parts of 3 counties (Cavalier, Pembina, and Walsh) in the Souris-Red-Rainy Region – Red Sub-Region. Of the 680,910 acres, Walsh County contains 56%, Pembina 27%, and Cavalier 17%. There are approximately 620 farms in the sub-basin.



This sub-basin encompasses a wide variety of commodities ranging from soybeans, potatoes, canola, barley, wheat, corn, sugarbeets, and dry edible beans. Some livestock, primarily beef cattle, are found along the escarpment area and river valley.

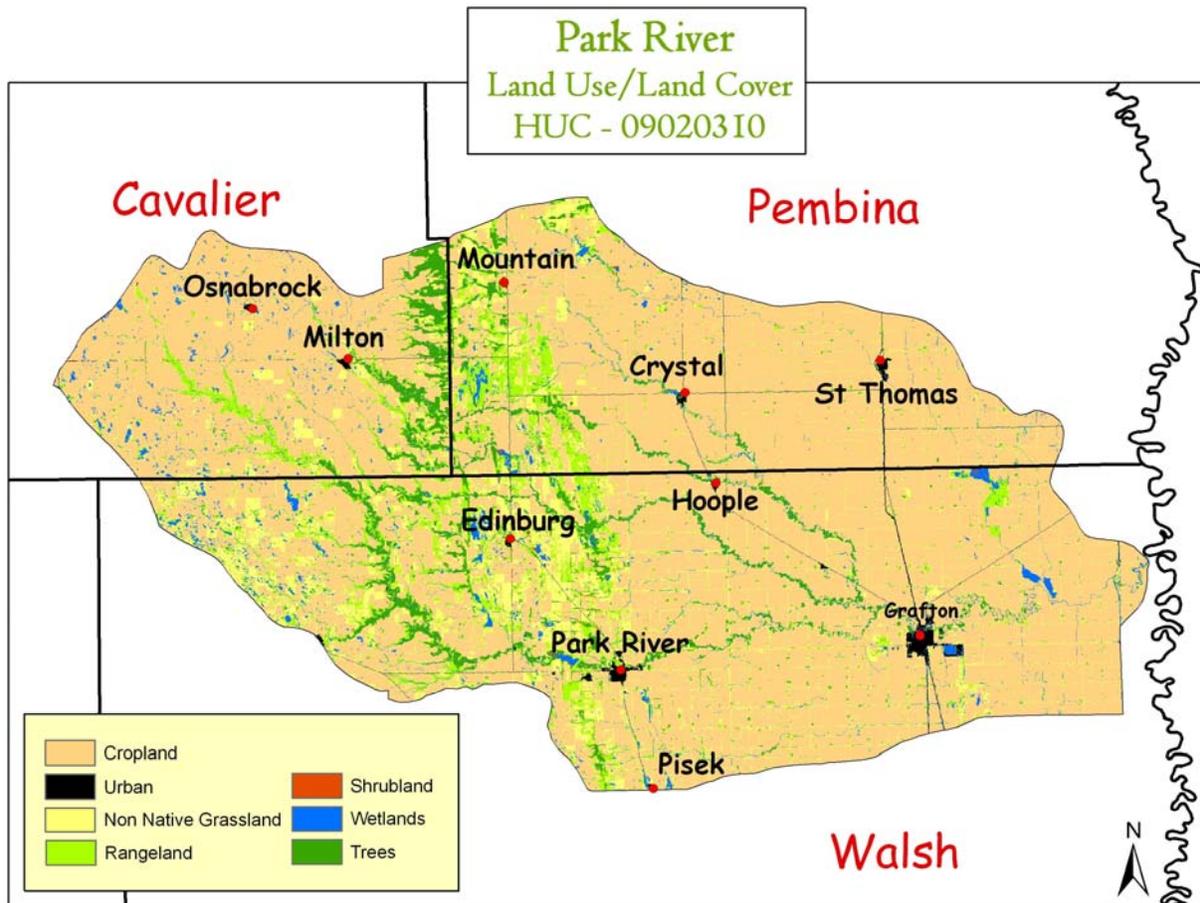
Conservation assistance is provided by three NRCS service centers and two Resource Conservation & Development offices.

### Physical Description

The following table and map show land cover / land use within the sub-basin.

Land Cover/ Land Use ( <i>National Resources Inventory [NRI]</i> ) <sup>1</sup>	Acres	Percent of HUC
Forestland	34,300	5%
Cropland	544,400	80%
Conservation Reserve Program (CRP) Land <sup>2 a</sup>	11,600	2%
Tame Grass/Hayland	15,100	2%
Pastureland	2,300	*
Rangeland	28,800	4%
Urban/Farmstead/ Transportation Land/ Minor Lands **	41,800	6%
Water/Wetlands	1,900	*
Federal Lands	900	*
<b>North Dakota HUC Totals</b> <sup>b</sup>	<b>681,100</b>	<b>100% *</b>
<p><i>* Less than one percent of total acres. See below for special considerations.</i>  <i>** Minor land includes farmsteads, windbreaks, marshland, etc.</i>  <i>a: Estimate from Farm Service Agency records and include CRP/CREP.</i>  <i>b: Totals may not add due to rounding and small unknown acreages.</i></p>		
<b>Irrigated Land</b> <i>(Farm Services Agency)<sup>3</sup></i>	425	<1%

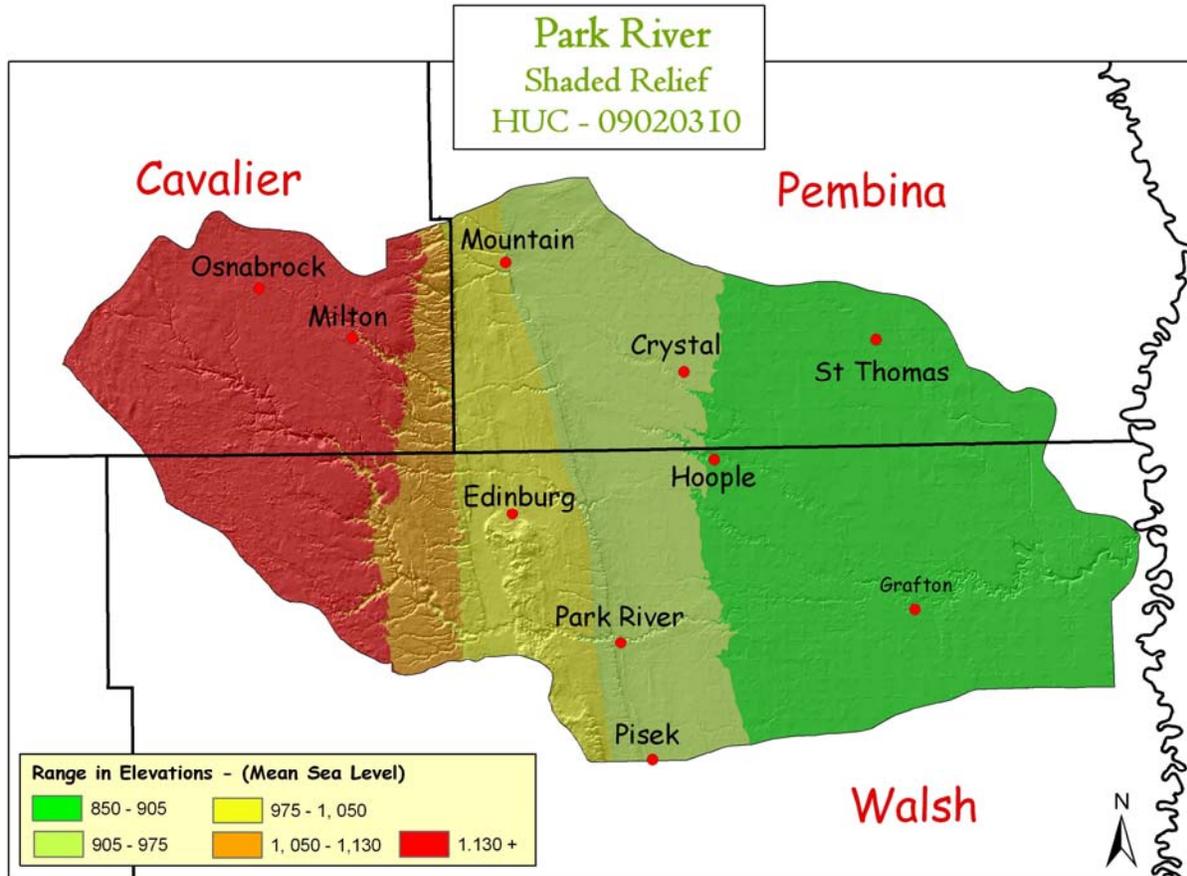
### Physical Description – Continued



The above map was developed from U.S. Geologic Survey's (USGS) ND Gap Analysis Program data.<sup>4</sup>

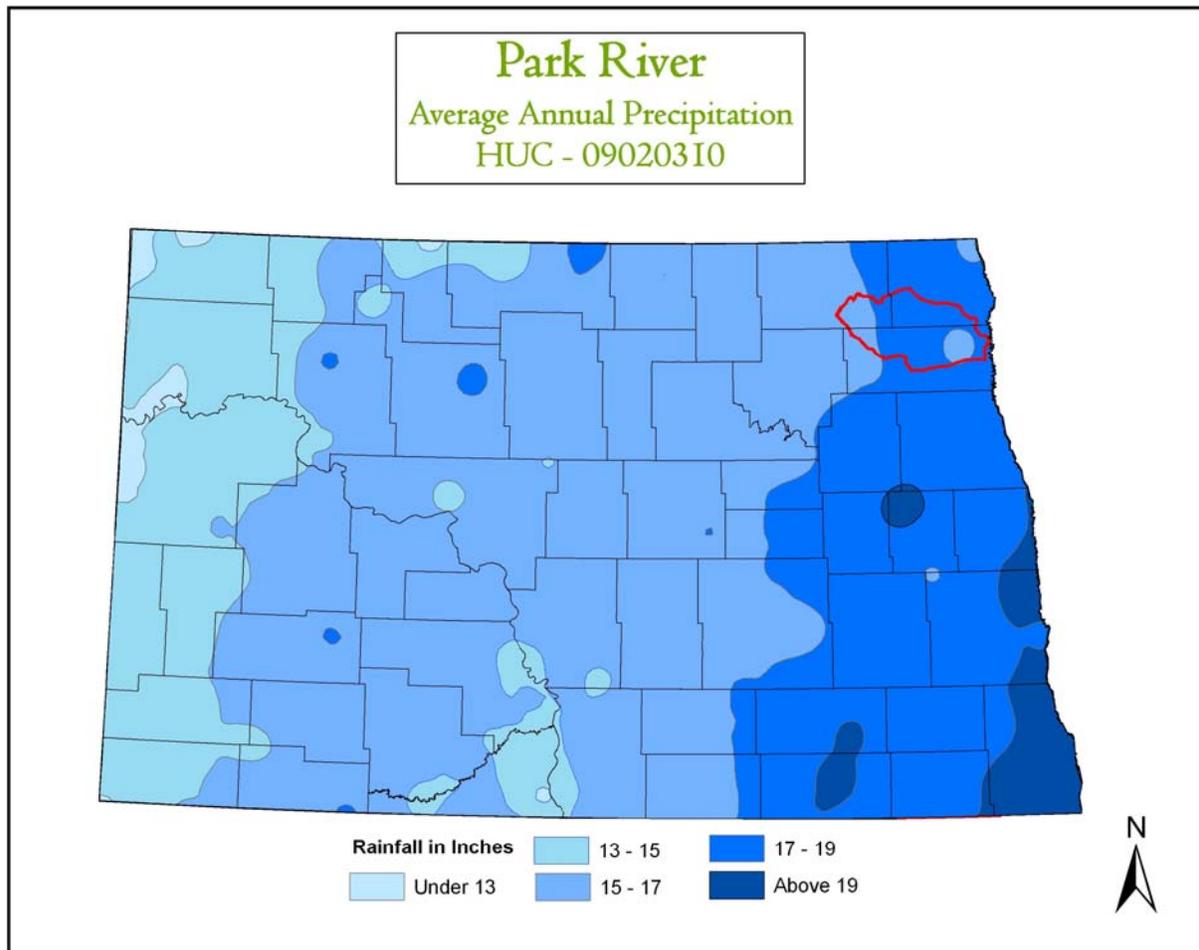
### Physical Description – Continued

The sub-basin is part of the Souris-Red-Rainy River Region - Red River Sub-Region. All drainage patterns flow to the east ending at the Red River, which flows north into Canada. The following map shows the relief for the sub-basin.<sup>5</sup>



### Physical Description – Continued

The following map is a plot of 1961-1990 annual average precipitation contours from National Oceanic and Atmospheric Administration (NOAA) Cooperative stations and (where appropriate) USDA-NRCS Snow pack Telemetry (SNOTEL) Stations. Christopher Daly used the PRISM (Parameter-elevation Regressions on Independent Slopes Model) model to generate the gridded estimates from which this map was derived: the modeled grid was approximately 4x4 km latitude/longitude, and was resampled to 2x2 km using a Gaussian filter. Mapping was performed by Jenny Weisberg and Nathaniel DeYoung. Funding was provided by USDA-NRCS National Water and Climate Center. (4/20/98)



### Physical Description – Continued

The North Dakota Department of Health collects water quality data on major water bodies. The following table shows the total miles of streams and acres of lakes/reservoirs within the sub-basin and also the miles and acres that have a water quality limitation. The second part of the table shows the livestock numbers, feeding operations, and permitted operations. Also included is the livestock numbers for all cattle, beef cows, dairy cows, hogs and pigs, and sheep and lambs. The livestock numbers were extrapolated from 2002 Agricultural Census county data to 8-digit HUC's.

		Units	North Dakota <sup>6</sup>	Park River Sub-basin <sup>7</sup>	Park River as percent of North Dakota	Impaired Water Quality (303d) <sup>8</sup>	Percent Impaired* Park River
<b>Water Quality Data</b>	Total – Major Water bodies						
	Rivers/Streams	Miles	56,687	987	1.7	95.2	9.6
	Lakes/Reservoirs	Acres	434,658	321	0.1	194	60.4

*\*Percent of Total Miles and acres in HUC*

<b>Animal Feeding Facilities – North Dakota Department of Health Permit<sup>9</sup></b>					
Animal Type	Dairy	Beef	Swine	Other	Total
Number of Animal Feeding Operations	0	1	1	0	2
Number of Animals	0	130	800	0	930
<b>Number of State Permitted Operations</b>					

<b>Livestock Numbers (rounded to nearest 100)<sup>10</sup></b>					
	Cattle and Calves	Beef Cows	Dairy Cows	Hogs and Pigs	Sheep and Lambs
North Dakota	1,873,200	982,300	34,500	138,800	114,000
Park River	8,400	4,100	100	2,100	700
Park River as a percent of North Dakota	0.4%	0.4%	0.3%	1.5%	0.6%

### Physical Description – Continued

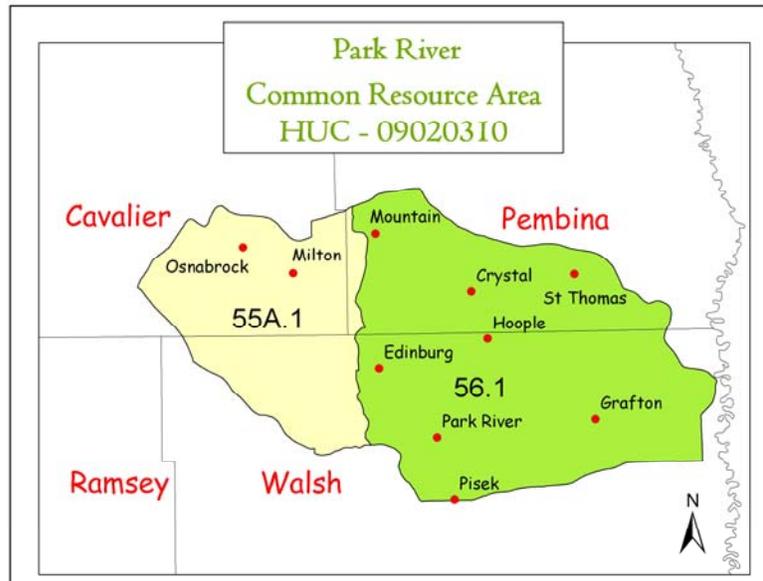
Common Resource Areas (CRAs) are geographical areas where resource concerns, problems, or treatments are similar. Landscape conditions, soil, climate, human considerations, and other natural resource information were used to determine the geographic boundaries. CRAs are subsets of Major Land Resource Areas. The following map<sup>11</sup> shows the CRAs for Park River sub-basin with the descriptions below.

#### **55A.1 - Northern Black**

**Glaciated Drift Plain:** The Northern Black Glaciated Drift Plain is a nearly level to undulating landscape composed of glacial till and lacustrine sediments. Temporary and seasonal wetlands are numerous throughout the area. Agriculture is limited by a very short growing season and the coldest January temperatures in Northern Plains.

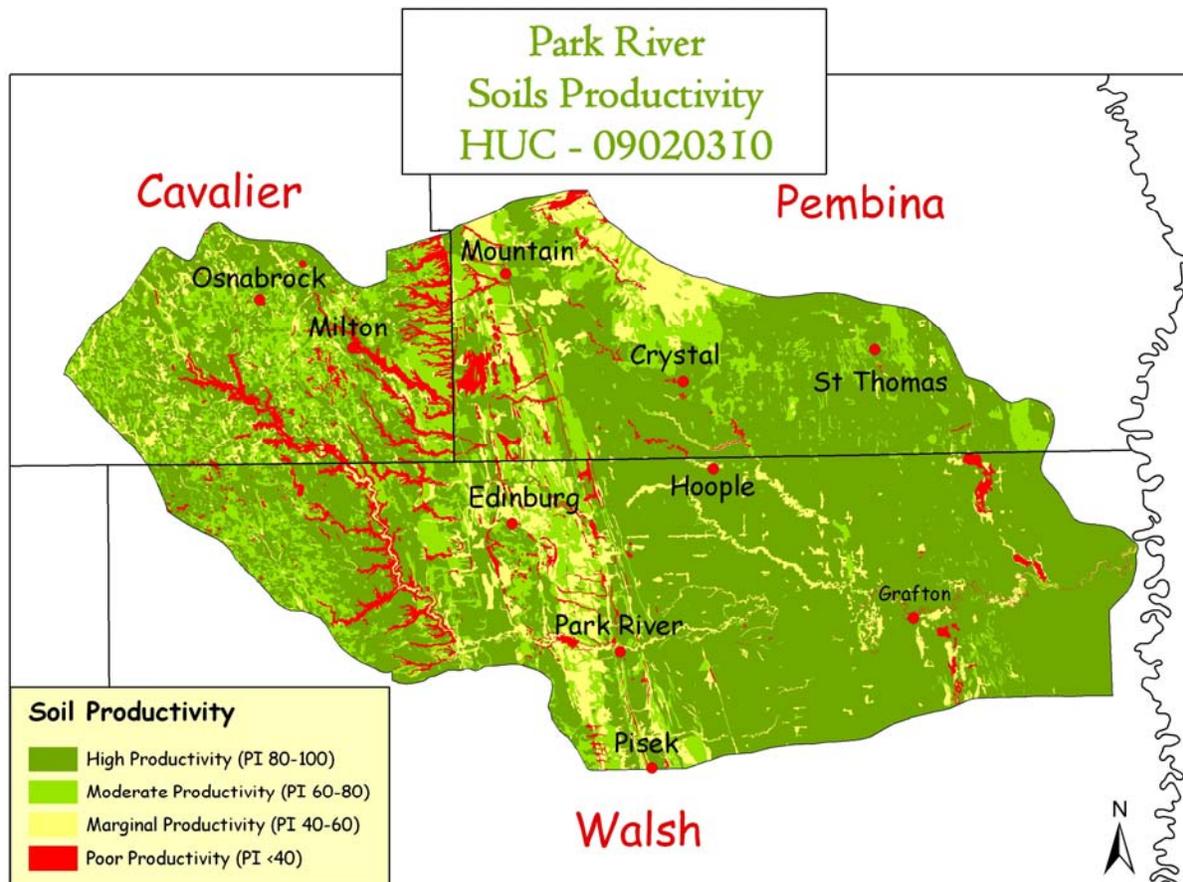
**56.1 – Red River Valley:** The Red River Valley (Glaciated Lake Agassiz) is an extremely flat landscape composed of thick lacustrine sediments.

Soils range from silty to clayey in texture. Most soils have a high water table and are very productive. Saline soils exist in places. Most areas are farmed with main crops being small grain, sugar beets, and soybeans. The native vegetation was tall grass prairie. Primary resource concerns are soil erosion and deposition by wind.



### Soil Productivity <sup>12</sup>

The Park River sub-basin has three distinct soil productivity regions. The Edinburg escarpment divides the sub-basin's upland glaciated prairies from the glacial lake plain. Both the uplands and lake plain are high to very high in productivity, while the escarpment area has marginal cropland and is typically designated as pastureland or wildlife land.



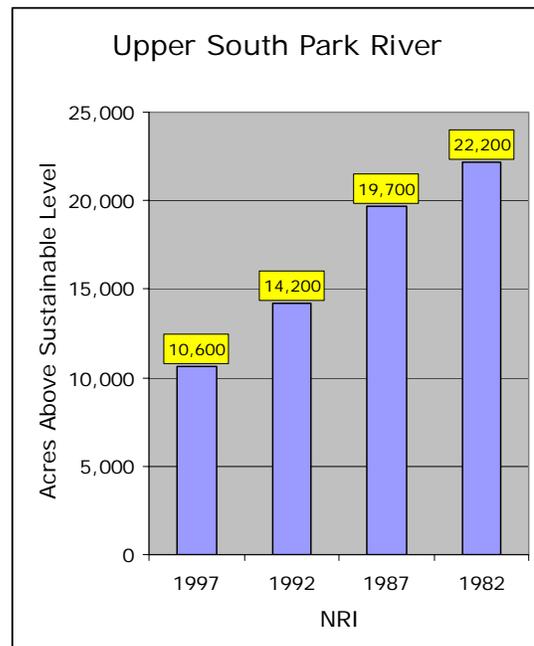
### Common Land Unit

The entire sub-basin has the common land unit digitized by Farm Services Agency (FSA).

### Resource Concerns

One of the goals of NRCS is to look at an area to help quantify the types and amounts of resources that may be of concern. This helps in identifying priority areas for the types and amounts of assistance to be given to a particular watershed.

- ❖ The HEL cropland acreage experiencing erosion rates above sustainable levels decreased to 10,600 acres in 1997, as compared to 22,200 acres in 1982.
- ❖ NRI estimates indicate 7,100 acres of the sub basin agricultural lands has wind erosion rates above a sustainable level in 1997.
- ❖ NRI estimates indicate that there was a 10 percent reduction from 1987 to 1997 in the amount of Highly Erodible Land (HEL) being farmed.
- ❖ Through NRCS programs many farmers and ranchers have applied conservation practices to reduce the effects of erosion. As a result, erosion rates on cultivated cropland were 1.2 tons/acre/year in 1997.
- ❖ Conservation practices that can be used to address these water quality issues include erosion control, nutrient and pest management, grazing management, and riparian buffers.



The following table shows the different projects, plans, studies, and assessments conducted within the sub-basin.

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects		NRCS Watershed Plans, Studies & Assessments	
Name	Status	Name	Status
North Salt Lake	Completed	Cart Creek Assessment	ongoing
Middle Branch Park River	Dam #5 scheduled for completion 2007		
NDDH TMDLs		Soil Conservation District Assessments and Studies	
Number Listed		Name	Status
Lakes/Reservoirs - 1	Streams - 6	Cart Creek Assessment	ongoing
EPA 319 Watershed Projects			
Name		Status	
Red River Riparian Project		Ongoing	

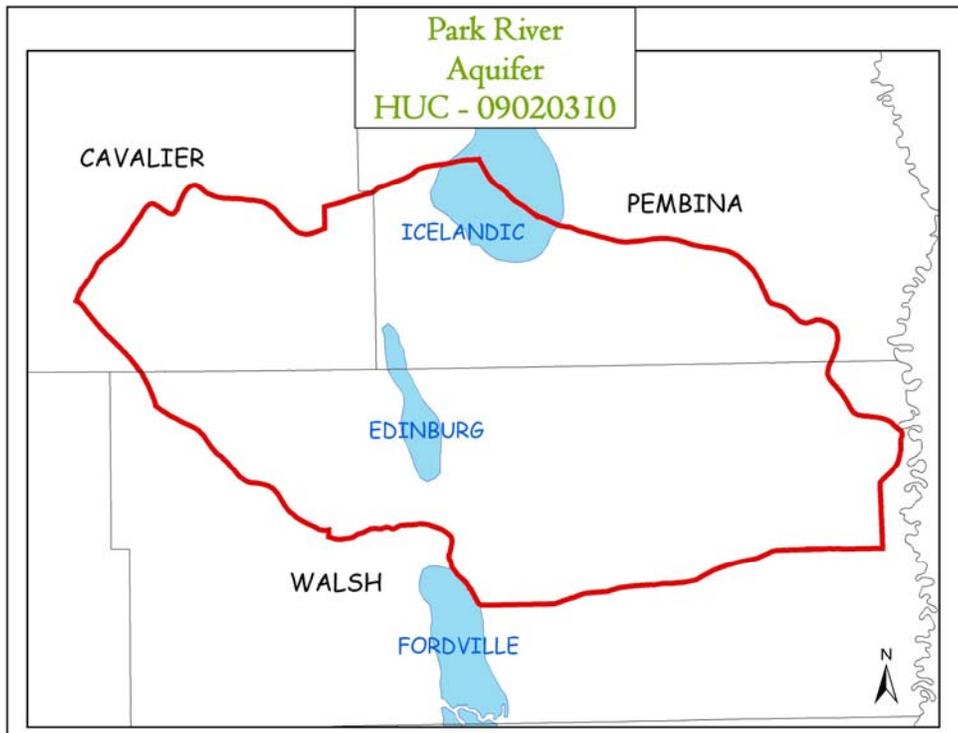
### Resource Concerns - Continued

#### Soil

- Controlling erosion not only sustains the long-term productivity of the land, but also affects the amount of soil, pesticides, fertilizer, and other organic material that move into the basin's waters.
- Sandy soils on glacial lake beach lines/ridges still require conservation practices to control excessive soil erosion.
- Soil health, especially compaction on silty and clayey soils.
- Soil erosion and low organic matter remain resource concerns.
- Windbreak plantings, reduced tillage systems, and improved cropping systems are still needed.
- Low organic matter levels due to moderate to heavy tillage systems and low residue producing crops

#### Water

- **Aquifers**<sup>13</sup> - There are portions of three glacial drift aquifers (Icelandic, Edinburg, and Fordville) located below the Park River sub-basin. The Edinburg and Icelandic aquifers are the source of water for the North Valley Water Users.



**Resource Concerns - Continued**

**Water (cont)**

- **Wellhead Protection Areas<sup>14</sup>** – there is one protection area located in the sub-basin. It is designated to protect the rural water supply in Pembina and Walsh County.
- Three of the stream sections on the 303(d) list in hydrologic unit code 09020310 are listed for copper, selenium, and lead. The other three were for biological indicators.
- Conservation practices that can be used to address these water quality issues include filters and buffers along natural and man-made water courses, grazing management, stream bank erosion control, nutrient and Ag waste management.
- There are three shallow aquifers (Icelandic, Edinburg, and Fordville) that are considered sensitive to nitrate and pesticide leaching.
- Lack of adequate riparian buffer width and health are impacting water quality and stream health.
- Spring flooding occurs nearly every year affecting transportation infrastructure and crop seeding dates.
- Summer flooding does occasionally occur and impacts crop production.

**Air**

- Visibility is reduced during winter months from blowing snow.
- Visibility is sometimes reduced during March and April from blowing soil.
- Increased wind speeds due to tree/shelterbelt removal.

**Plants**

- Major concerns are controlling invasive weeds, especially along legal drains and in riparian areas along the river.
- Maintaining good pasture condition is sometimes difficult due to stocking rates and season of use.
- Conventional tillage systems are still utilized, especially with potatoes, dry beans, and sugar beets.
- Noxious weeds and poor range condition reduce productivity for livestock and wildlife.
- The private, non-industrial forestland is associated with small woodlots or rural home sites which are not actively managed for timber production.

**Animals**

- Animals that are threatened and endangered can be seen in the following table of threatened and endangered species.

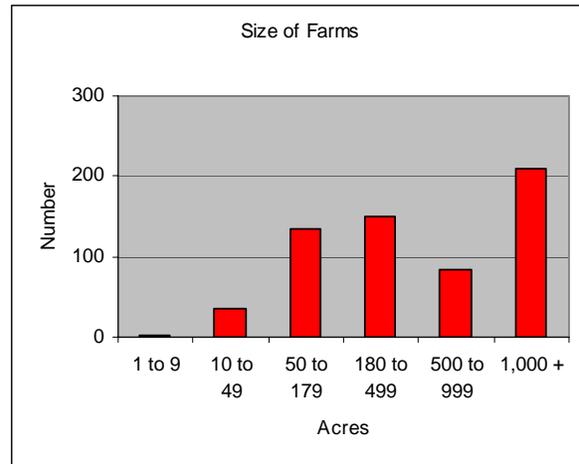
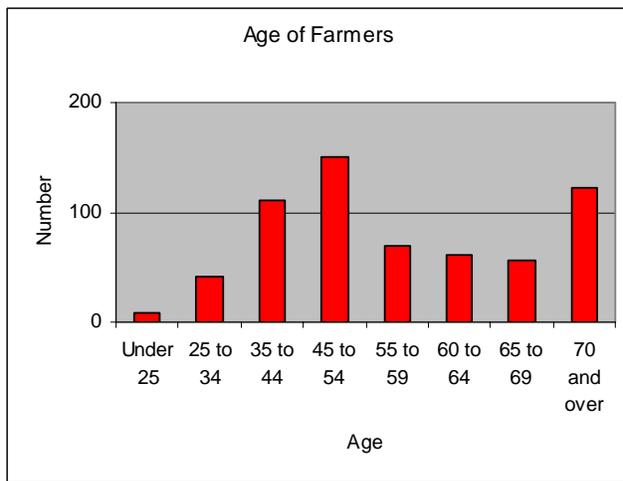
Federally Listed Threatened And Endangered Species			
Species Category	Threatened	Endangered	Candidate
Mammals	None	Grey Wolf	None
Birds	Bald Eagle	Whooping Crane	None
Fish	None	None	None
Invertebrates	None	None	None
Plants	None	None	None
Critical Habitat – None			

### Census and Social Data<sup>15</sup>

**Number of Farms: 620**

**Number of Operators:**

- Average Age: 55
- Full-Time Operators: 70%
- Part-Time Operators: 30%



### **Estimated Level of Willingness and Ability to Participate in Conservation:**

**MODERATE**

### **Limited Resource and Beginning Farmer**

Less than 4% of the operators are minority producers. Limited Resource Farmers are also estimated at less than 4%. Although rather low percentages, these facts point to the potential need for special technical assistance targeted to reach people who (1) may lack experience with government farm programs, (2) have good stewardship intentions but lack management skills, and (3) lack the time to visit an NRCS field office and seek assistance.

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# Park River 09020310

## *8-Digit Hydrologic Unit Profile*

August 2006

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### **References**

- <sup>1</sup> USDA-NRCS, NRI data.
- <sup>2</sup> USDA-Farm Services Agency, Common Land Unit GIS data layer, 2005.
- <sup>3</sup> USDA-Farm Services Agency, Common Land Unit GIS data layer, 2005.
- <sup>4</sup> USDI-US Geologic Services, ND GAP analysis data, 2005.
- <sup>5</sup> USDA-NRCS, Natural Resources Planning Staff, 30 meter Relief Data GIS data layer, 2002.
- <sup>6</sup> ND Department of Health, Environmental Health Section, Water Quality Division, National Hydrography GIS layers, June 2006.
- <sup>7</sup> ND Department of Health, Environmental Health Section, Water Quality Division, National Hydrography GIS layers, June 2006.
- <sup>8</sup> ND Department of Health, Environmental Health Section, Water Quality Division, List of Section 303(d) TMDL Waters for the Red River Basin in North Dakota, 2006.
- <sup>9</sup> ND Department of Health, Environmental Health Section, Water Quality Division, Animal Feeding Operations Program data, 2006.
- <sup>10</sup> 2002 Census of Agriculture, North Dakota, State and County Data Volume 1, Geographic Area Series Part 34, U.S. Department of Agriculture, National Agricultural Statistics Service, June 2004. (county data was prorated to HUC by the percent of a HUC in a county)
- <sup>11</sup> USDA-NRCS, Natural Resources Planning Staff, Common Resource Area GIS data layer, 2004.
- <sup>12</sup> USDA-NRCS, Natural Resources Planning Staff, Soils Productivity GIS data layer, 2006.
- <sup>13</sup> ND Department of Health, Environmental Health Section, Water Quality Division, Ambient Ground Water Monitoring Program data, 1997.
- <sup>14</sup> ND Department of Health, Environmental Health Section, Water Quality Division, Source Water Protection Program data, 2003.
- <sup>15</sup> 2002 Census of Agriculture, North Dakota, State and County Data Volume 1, Geographic Area Series Part 34, U.S. Department of Agriculture, National Agricultural Statistics Service, June 2004. (county data was prorated to HUC by the percent of a HUC in a county)