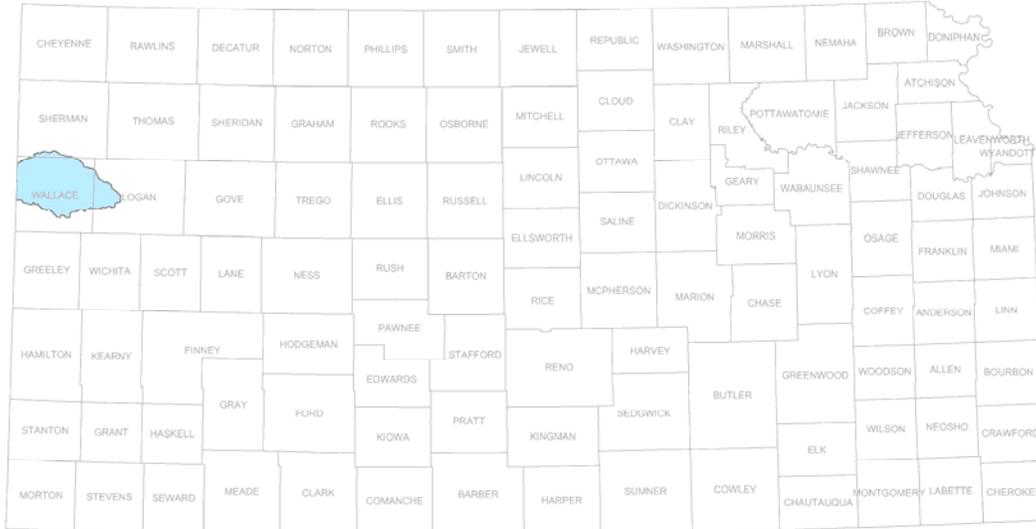


KANSAS

Rapid Watershed Assessment

Smoky Hill Headwaters Watershed Hydrologic Unit Code – 10260001



December 2007

Produced by:

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Natural Resources Conservation Service
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Resource Profile

1.0 Purpose

This rapid watershed assessment (RWA) organizes resource information into one document that local conservationists, units of government, and others can use to identify existing resource conditions and conservation opportunities. This will enable the user to direct technical and financial resources to the local needs in the watershed. This RWA provides a brief description of the Smoky Hill Headwaters sub-basin's natural resources, resource concerns, conservation needs, and ability to resolve natural resource issues and concerns.

2.0 Introduction

The Smoky Hill Headwaters Hydrologic Unit Code (HUC) sub-basin is comprised of 461,701 acres in northwest Kansas and includes the counties of Sherman, Wallace, and Logan. According to the National Land Cover Data (NLCD), approximately 22 percent of the sub-basin is in grain and row crop; 76 percent is in grassland, pasture, and hay; and the rest is in other various land uses. This sub-basin drains into the Kansas River as it flows from west to east through the state of Kansas.

Relief Map



Resource concerns are numerous in the sub-basin. They include, but are not limited to, soil erosion, soil condition, inadequate water quantity for irrigation and livestock, deteriorated surface water quality, and deteriorating plant conditions. Economic issues such as the high capital costs of crop production/farm operation and the high level of management required to operate a farm may delay the acceptance and implementation of conservation on agricultural lands in the sub-basin.

It is estimated that there are 350 farms with an average size of 1,573 acres in the Smoky Hill Headwaters sub-basin.

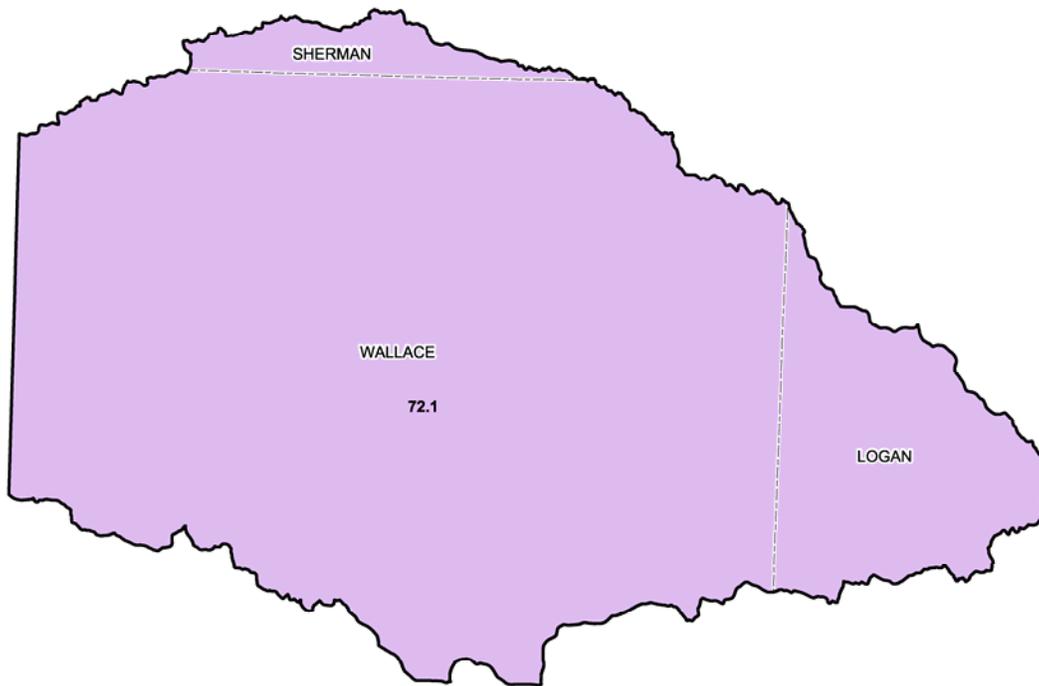
Three Natural Resources Conservation Service (NRCS) field offices, 3 county conservation districts, and the Western Prairie Resource Conservation and Development (RC&D) area provide conservation assistance in the sub-basin.

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3.0 Physical Description

The physical description of the Smoky Hill Headwaters sub-basin provides detailed information so that the user can better understand the natural resources associated with this geographical land unit.

3.1 Common Resource Area (CRA) Map⁴¹

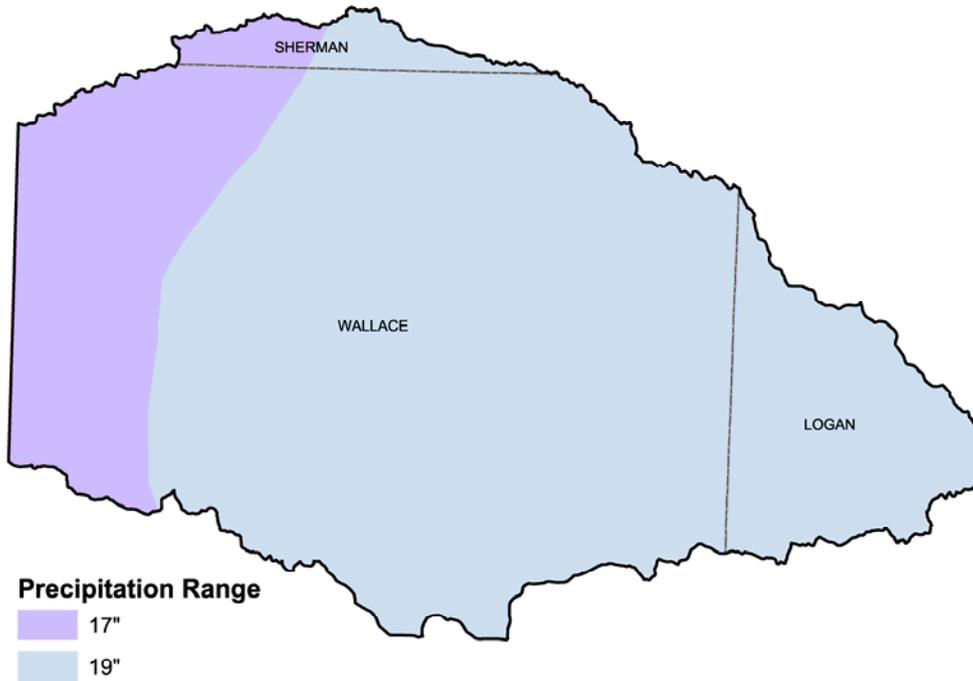


72.1 – Central High Tableland: The Central High Tableland CRA is broad, level to gently rolling, loess mantled tableland. Local relief is measured in tens of feet on the tableland and steep slopes border major river valleys. Soils are deep on the ridge-tops and moderately deep to shallow on the side-slopes. Presettlement vegetation was short grass prairies. Nearly all of this area is in cropland, dryland small grain crops, irrigated corn, and grain sorghum.

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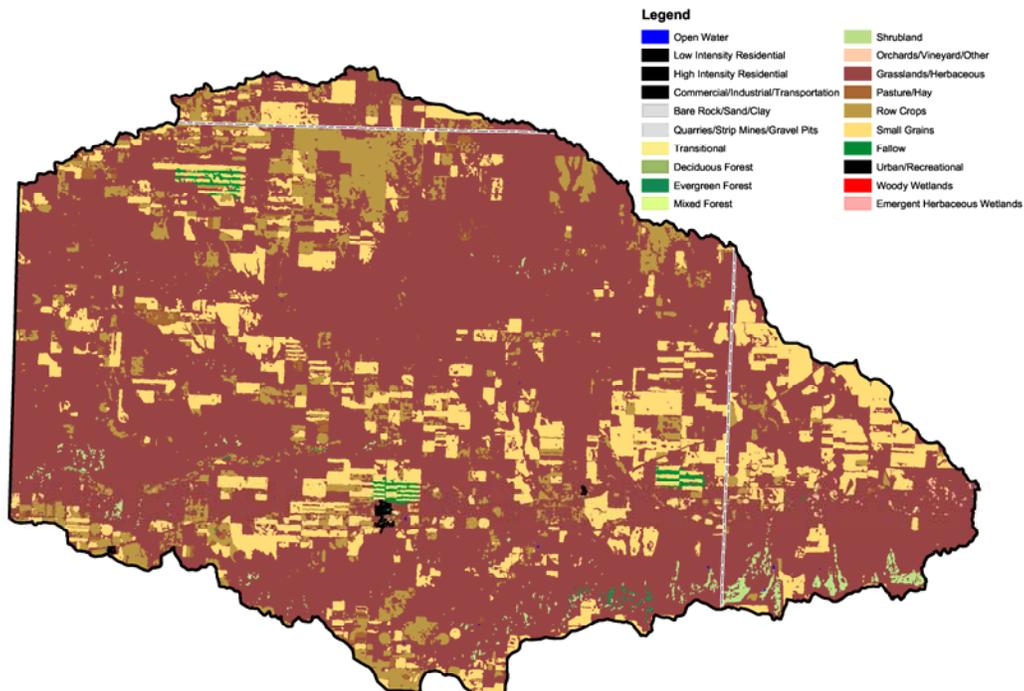
3.2 Precipitation Map²

The map below depicts the average precipitation occurring within the sub-basin.



3.3 Land Use and Land Cover Distribution Map³

The map below represents the distribution of land cover and land use as defined by the NLCD.



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3.3.1 Land Use and Land Cover Summary Table⁴³

Land Cover/Land Use	Ownership						Totals	%
	Public		Private		Tribal			
	Acres	%	Acres	%	Acres	%		
Open Water			27	*			27	*
Low Intensity Residential			382	*			382	*
High Intensity Residential			37	*			37	*
Commercial/Industrial/ Transportation			92	*			92	*
Deciduous Forest			82	*			82	*
Evergreen Forest			350	*			350	*
Shrubland			3,097	1			3,097	1
Grasslands/Herbaceous			348,008	75			348,008	75
Pasture/Hay			4,060	1			4,060	1
Row Crops			37,110	8			37,110	8
Small Grains			66,519	14			66,519	14
Fallow			1,802	*			1,802	*
Emergent Herbaceous Wetlands			136	*			136	*
HUC Totals^a			461,701	100			461,701	100

*Less than 1 percent of total acres

^aTotals are approximate due to rounding and small unknown acreages

Special Considerations for This 8-Digit HUC:

- Small grains and row crops are the predominant commodities grown in rotation on 22 percent of the watershed (approximately 103,629 acres)
- Grasslands/Herbaceous and Pasture/Hay make up approximately 76 percent of the watershed (approximately 352,068 acres)
- Forest makes up less than 1 percent of the watershed (approximately 432 acres)
- Urban land comprises less than 1 percent of the watershed (approximately 511 acres)

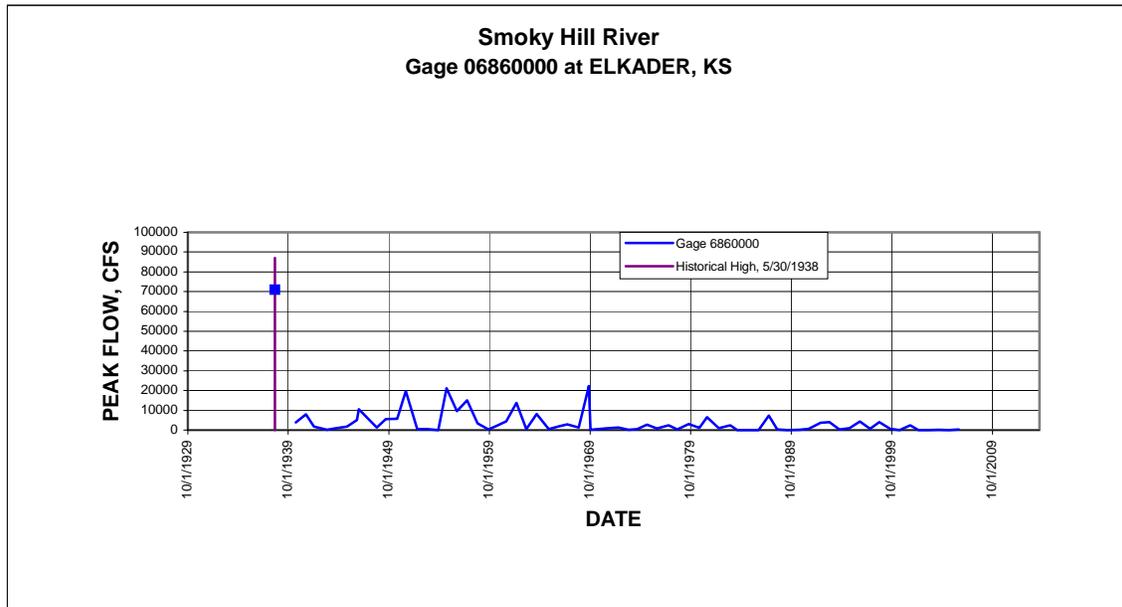
Irrigated Lands ⁴⁴	Percent of Cropland	Percent of HUC
Pressure	<9	<5
Gravity	<2	<1

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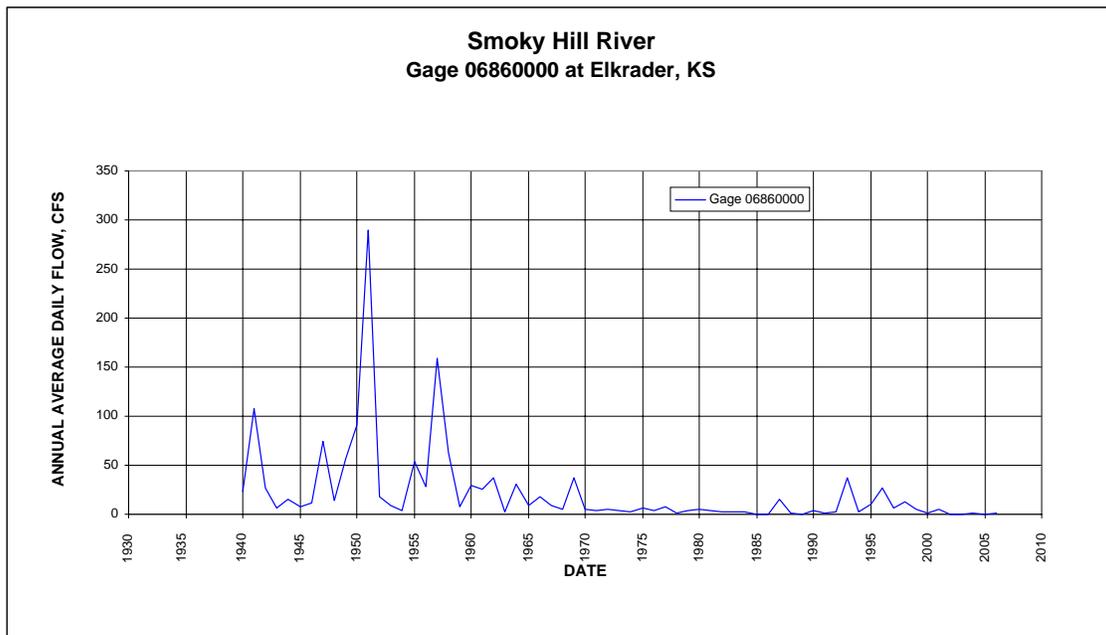
3.4 Stream Flow Data⁴⁵

Stream flow data has been collected since the early 1940s. No known U.S. Geological Survey (USGS) stream gage stations are located within the sub-basin. Data below represents data collected in the upper reach of the Upper Smoky HUC, which is just downstream of this HUC.

Annual Peak Flow



Annual Average Discharge



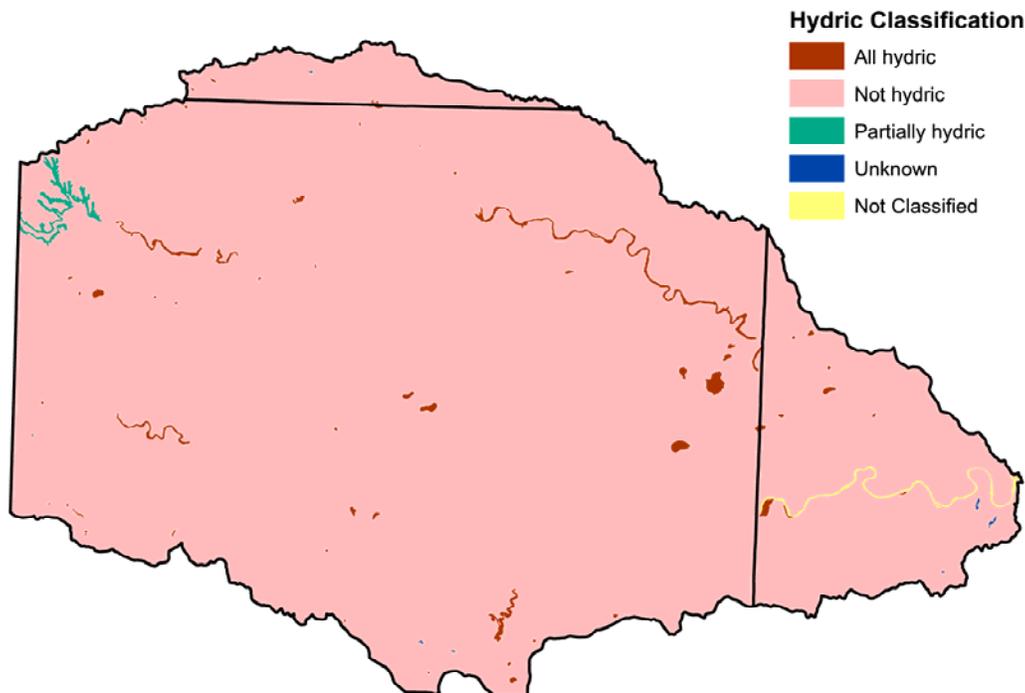
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3.5 Other Physical Descriptions

Stream Data ^{/6}	Total Miles of Streams in HUC Major (24K Hydro GIS Layer)	139 miles	
		ACRES	PERCENT
Land Cover/Use ^{/3} Based on a 100-foot stretch on both sides of all streams in the 24K Hydro GIS Layer	Open Water	20	0
	Low Intensity Residential	18	0
	High Intensity Residential	0	0
	Commercial/Industrial/Transportation	3	0
	Deciduous Forest	7	0
	Evergreen Forest	56	0
	Shrubland	380	1
	Grasslands/Herbaceous	27,482	85
	Pasture/Hay	276	1
	Row Crops	2,297	7
	Small Grains	1,764	5
	Fallow	103	0
	Emergent Herbaceous Wetlands	5	0
Total Acres of 100-foot Stream Buffers	32,411	100	

3.6 Hydric Soils^{/11}

Hydric soils are soils that are sufficiently wet in the upper part of the soil profile to develop anaerobic conditions during the growing season. These soils can include wetland areas that may provide benefits for aquifer recharge, floodwater-holding capacity, habitat for numerous species of terrestrial and aquatic organisms, and a diversity of plants. These areas may be protected at the federal level.



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3.6.1 Hydric Soils Summary

Hydric Classification	Acres	Percent
Not Classified	627	*
All Hydric	3,369	1
Not Hydric	456,476	99
Partially Hydric	1,168	*
Unknown	61	*
Total	461,701	100

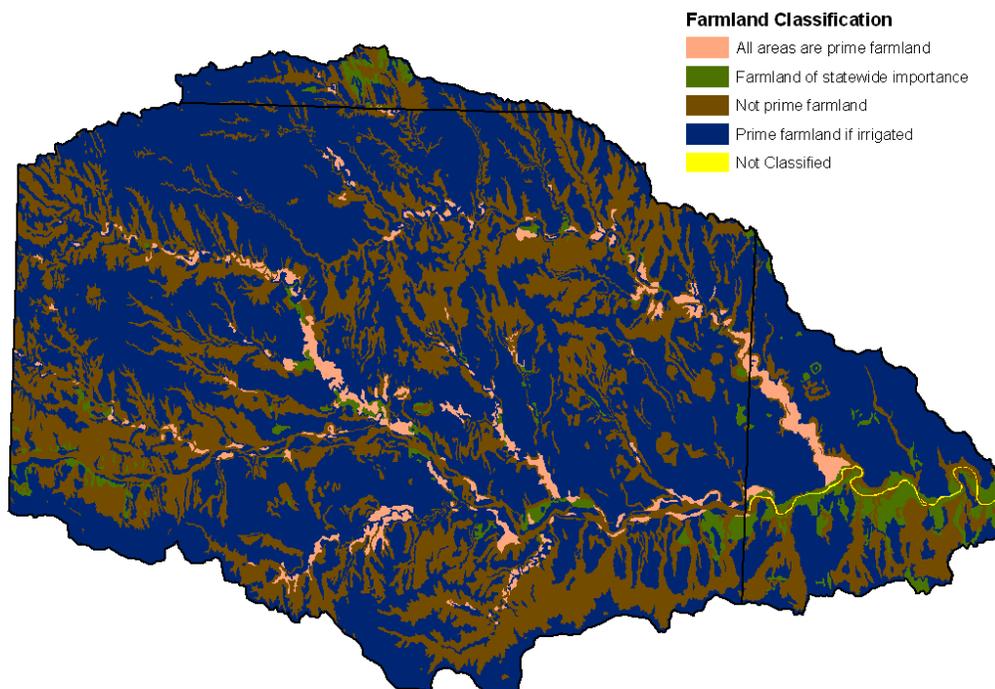
**Less than 1 percent of total acres*

3.7 Farmland Classification⁴¹¹

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. It has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management.

Unique farmland is land other than prime farmland used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce economically sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods.

Farmland of statewide importance, or of local importance, is land other than prime farmland or unique farmland but is also highly productive. Criteria for defining and delineating these lands are determined by the appropriate state or local agencies in cooperation with USDA.



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3.7.1 Farmland Classification Summary

Farmland Classification	Acres	Percent
All areas are prime farmland	13,926	3
Farmland of statewide importance	13,804	3
Not prime farmland	151,520	33
Prime farmland if irrigated	281,833	61
Not classified	617	<1
Total	461,701	100

4.0 Resource Concerns

Resource concerns are issues related to the natural environment. Natural resources include soil, water, air, plants, animals, and humans (SWAPA+H). Local conservationists identified major resource issues by land use that affect the Smoky Hill Headwaters sub-basin.

4.1 Summary of Resource Concerns

Resource Concerns/Issues by Land Use								
SWAPA +H Concerns	Specific Resource Concern/Issue	Pasture/Hay	Grain Crops	Row Crops	Grazed Range	Forest	Wildlife	Urban
		Soil Erosion	Sheet and Rill		X	X		
	Wind		X	X				
	Ephemeral Gully		X	X				
Soil Condition	Organic Matter Depletion		X	X				
	Rangeland Site Stability				X			
	Contaminants: Commercial Fertilizer - N		X	X				
	Contaminants: Commercial Fertilizer - P		X	X				
	Contaminants: Commercial Fertilizer - K		X	X				
Water Quantity	Inefficient Water Use on Irrigated Land		X	X				
	Aquifer Overdraft		X	X				
Water Quality, Groundwater	Harmful Levels of Pesticides		X	X				
	Excessive Nutrients and Organics		X	X				
Water Quality, Surface	Harmful Levels of Pesticides	X	X	X				
	Excessive Nutrients and Organics	X	X	X				
Plant Condition	Productivity, Health and Vigor				X			
	Noxious and Invasive Plants		X	X				
Animal: Domestic	Inadequate Quantities and Quality of Feed and Forage				X			
	Inadequate Shelter				X			
	Inadequate Stock Water				X			

Grain and Row Crops

- Residue, nutrient, and pest management; vegetative practices; and structural practices are necessary to control erosion, protect water quality, and improve soil conditions.
- Misapplication of irrigation leads to inefficient water use on irrigated lands.
- Over application of nutrients and organics has created surface water quality concerns.
- Wind, sheet and rill, and ephemeral gully erosion are concerns in part due to lack of residue and/or needed erosion control methods on cropland.

Pasture and Hay

- Harmful levels of pesticides and excessive nutrients and organics lead to increased potential of pollutants in runoff.

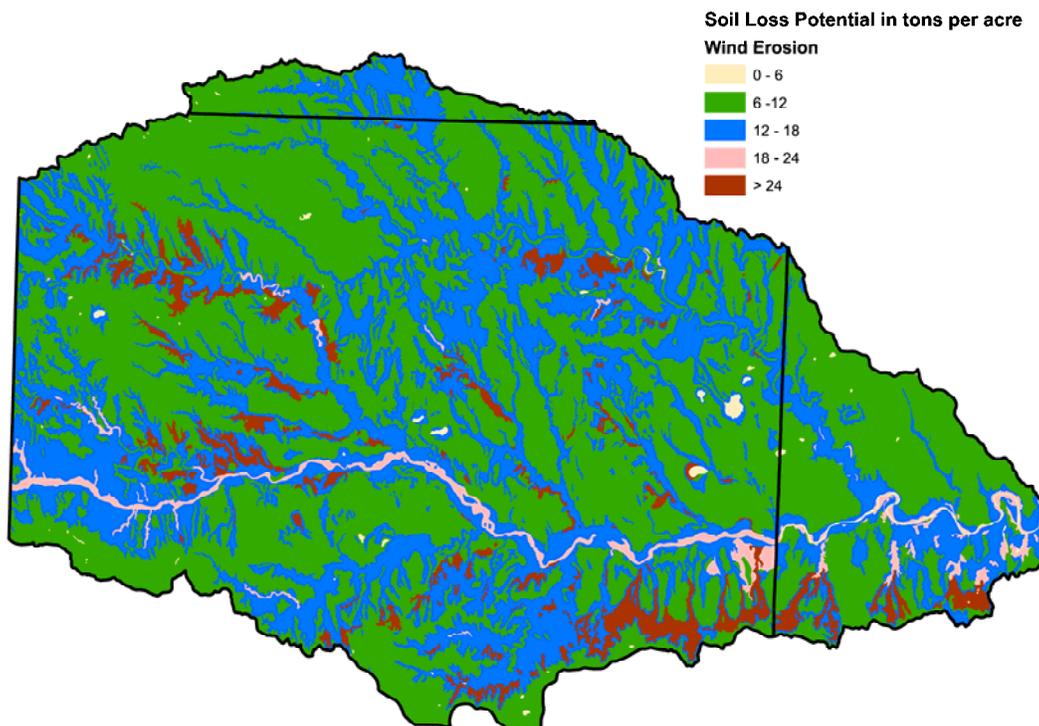
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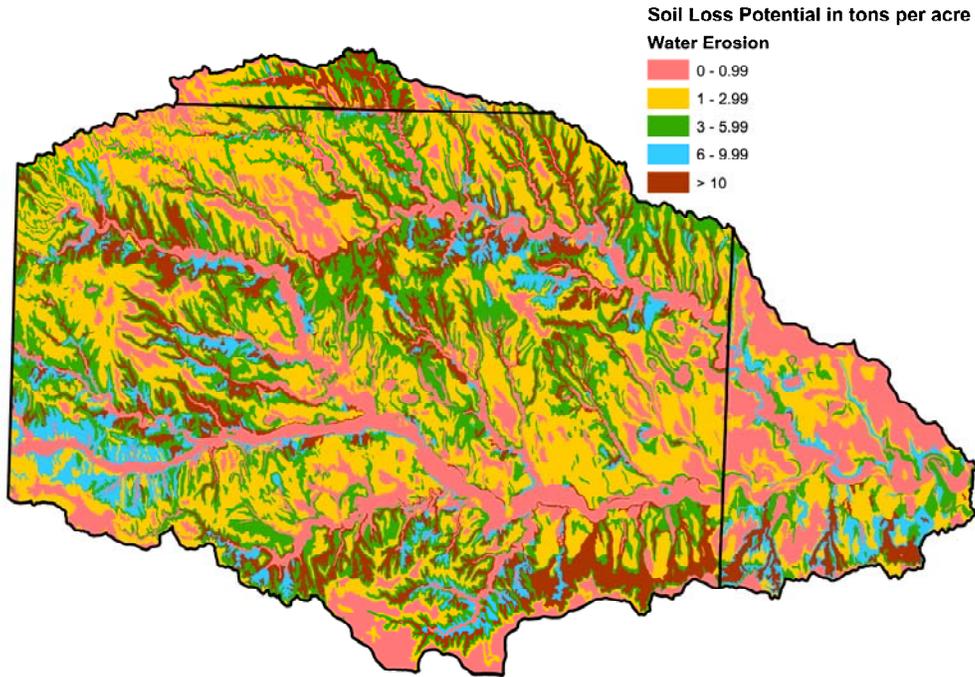
Grazed Range

- Rangeland is commonly over-utilized, affected by timing of grazing and invasive weeds; affecting productivity, health and vigor and animal performance.
- Over-utilization of the resource has lead to invasive plants entering the resource.
- Inadequate feeds and forage, water supply, and shelter for livestock affects grazing distribution and health and condition of the animal and depletes the resources.

4.2 Potential Soil Loss⁴

Soil loss through wind and water erosion is critical to consider for dealing with air and water quality issues. As an airborne particulate, soil particles can be a major contributor to air quality concerns. Soil loss through water erosion causes water quality impairments as pollutants are attached to soil colloids and are transported into the stream systems. Wind and water erosion have been identified as concerns in the watershed. The following maps developed with the Soil Survey Geographic (SSURGO) Database display soil loss potential within the Smoky Hill Headwaters sub-basin.





4.3 Water Quality Conditions

The Kansas Department of Health and Environment (KDHE) is responsible for monitoring water quality conditions in the state of Kansas. This section has been provided by KDHE. For up-to-date water quality condition information, visit the KDHE Web site at http://www.kdheks.gov/nps/watershed_condition.htm.

4.3.1 Confined Animal Feeding Operations (CAFO)

In Kansas, confined animal feeding operations (CAFOs) with an animal unit capacity of 300 or more must register with the KDHE. Waste disposal practices and the wastewater effluent quality of these registered CAFOs are closely monitored by the KDHE to determine the need for runoff control practices or structure in order to protect the waters of the state of Kansas. Because of this monitoring, registered CAFOs are not considered a significant threat to water resources within the watershed. A portion of the state's livestock population exists on small, unregistered farms. These small, unregistered livestock operations may contribute a significant source of fecal coliform bacteria and nutrients, depending on the presence and condition of waste management systems and proximity to water resources.

Animal Type	Dairy	Feedlot	Poultry	Swine	Truck-wash	Other
No. of Permitted Farms	0	3	0	0	0	0
No. of Permitted Animal Units	0	7850	0	0	0	0

Note: All animal units based upon federal animal units as of 10/01/07

4.3.2 Public Water Supply Systems

In the state of Kansas, a public water supply system is defined by Kansas Statutes Annotated (K.S.A.) 65-162a and Kansas Administrative Regulations (K.A.R.) 28-15a-2 as a "system for delivery to the public of piped water for human consumption that has at least 10 service connections or regularly

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serves at least 25 individuals daily at least 60 days out of the year." These systems are regulated by the state to assure the citizenry safe and pathogen-free drinking water. The KDHE oversees more than 1,042 statewide public water supply systems including municipalities, rural water districts, and privately owned systems. These systems may serve a small community of several families to a city of more than 300,000 persons.

There are two active public water supply sites located within the HUC 8 10260001 watershed. The High Plains Aquifer, which underlies the northwestern and southern portion of the watershed, and the Dakota Aquifer, which underlies the entire watershed, are the sources for the two active wells. While alluvial aquifers of the Smoky Hill River and its tributaries are present, they do not account for the source of any public water supply sites. Surface water conditions are affected by low priority issues with fluorine, selenium, and sulfates.

Source Water Assessment: The 1996 amendments to the Safe Drinking Water Act required each state to develop a Source Water Assessment Program (SWAP). Additionally, each state was required to develop a Source Water Assessment (SWA) for each public water supply that treats and distributes raw source water. In Kansas, there are approximately 763 public water supplies that required SWAs. A SWA includes the following: delineation of the SWA area, inventory of potential contaminant sources, and susceptibility analysis. The SWA must also be made available to the public. KDHE's Watershed Management Section has implemented the Kansas SWAP plan, and all SWAs are completed.

The Safe Drinking Water Act did not require protection planning to be part of the SWAP process. On a voluntary basis, KDHE encourages public water supplies and their surrounding communities to use the SWAs as the foundation for future protection planning efforts. Source water protection information will be posted on this site as it is compiled. To obtain a copy of SWAs in this watershed, please visit <http://www.kdheks.gov/nps/swap/SWreports.html>.

4.3.3 Designated Uses

According to the Kansas Surface Water Register, the most *common* designated uses for streams and rivers in this watershed include expected aquatic life use, primary and secondary contact recreation, domestic water supply, food procurement, industrial water supply, groundwater recharge, irrigation water supply, and livestock water supply.

Designated Uses - Streams								
Stream Name	AL	CR	DS	FP	GR	IW	IR	LW
Capper Draw	S	b						
Coon Creek	S	b						
Depperschmidt Draw	S	b						
Eagletail Creek	S	b						
Goose Creek	E	b						
Lake Creek	E	b						
Lake Creek, S Fork	E	b						
Pond Creek	S	b						
Rose Creek	S	b						
Smoky Hill River	S	b	X	X	X	X	X	X
Smoky Hill River	E	b	X	X	X	X	X	X
Smoky Hill River	E	b	X	X	X	X	X	X
Smoky Hill River	S	b	X	X	X	X	X	X
Smoky Hill River	E	b	X	X	X	X	X	X
Smoky Hill River	E	b	X	X	X	X	X	X
Unnamed Stream	E	b						

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Designated Uses - Streams								
Stream Name	AL	CR	DS	FP	GR	IW	IR	LW
Willow Creek	S	b						

AL = Aquatic Life Support	FP = Food Procurement	IW = Industrial Water Supply
CR = Contact Recreation	GR = Groundwater Recharge	LW = Livestock Water Supply
DS = Domestic Water Supply	IR = Irrigation Water Supply	
<p>E = Expected Aquatic Life Use Water S = Special Aquatic Life Use Water A = Primary contact recreation stream segment is a designated public swimming area B = Primary contact recreation stream segment is by law or written permission of the landowner open to and accessible by the public C = Primary contact recreation stream segment is not open to and accessible by the public under Kansas law a = Secondary contact recreation stream segment is by law or written permission of the landowner open and accessible by the public b = Secondary contact recreation stream segment is not open to and accessible by the public under Kansas law X = Referenced stream segment is assigned the indicated designated use O = Referenced stream segment does not support the indicated designated use</p>		

4.3.4 Total Maximum Daily Loads

Total Maximum Daily Loads (TMDLs) are limits on the amount of pollutant entering a stream or lake, while still attaining water quality standards. The water quality standards identify the designated uses of streams, lakes, and wetlands and the level of water quality necessary to support these uses fully. The process of developing TMDLs in Kansas determines:

1. The pollutants causing water quality impairments.
2. The magnitude of the impairment relative to applicable water quality standards.
3. The overall level of pollution reduction needed to attain achievement of water quality standards.
4. The allocation of pollutant loads to be distributed among point and non-point sources in the watershed affecting the water quality limited water body.
5. Suggested corrective actions and management practices to be implemented in order to achieve the load allocations, TMDLs, and water quality standards
6. The monitoring and evaluation strategies needed to assess the impact of corrective actions in achieving TMDLs and water quality standards.
7. Provisions for future revision of TMDLs based on those evaluations.

The following table shows the percentage of stream miles within HUC 8 10260001 that are listed on the 303d list. Section 303(d) of the Clean Water Act requires states to identify and list all water bodies where state water quality standards are not being met. Thereafter, TMDLs comprising quantitative objectives and strategies have been developed for these impaired waters within the watershed in order to achieve their water quality standards.

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Stream Data <i>*Percent of Total Miles of Streams in HUC</i>	303d/TMDL Listed Streams (DEQ)	210	93%
--	--------------------------------	-----	-----

2006 Impaired Waters with TMDLs			
Stream Segment	Stream/Watershed/Lake with TMDL	Priority for TMDL Implementation	Impairments
	Smoky Hill River Watershed including Capper Draw, Coon Creek, Eagletail Creek, Goose Creek, Lake Creek, South Fork Lake Creek, Pond Creek, Rose Creek, and Deppenschmidt Draw	Low Low	Fluoride Sulfate

2006 Impaired Waters needing TMDLs	
Impaired Stream/Lake	Impairment
Willow Creek	Dissolved Oxygen

For additional TMDL information or to download the TMDL report, please visit <http://www.kdheks.gov/tmdl/index.htm>.

Impairment definitions:

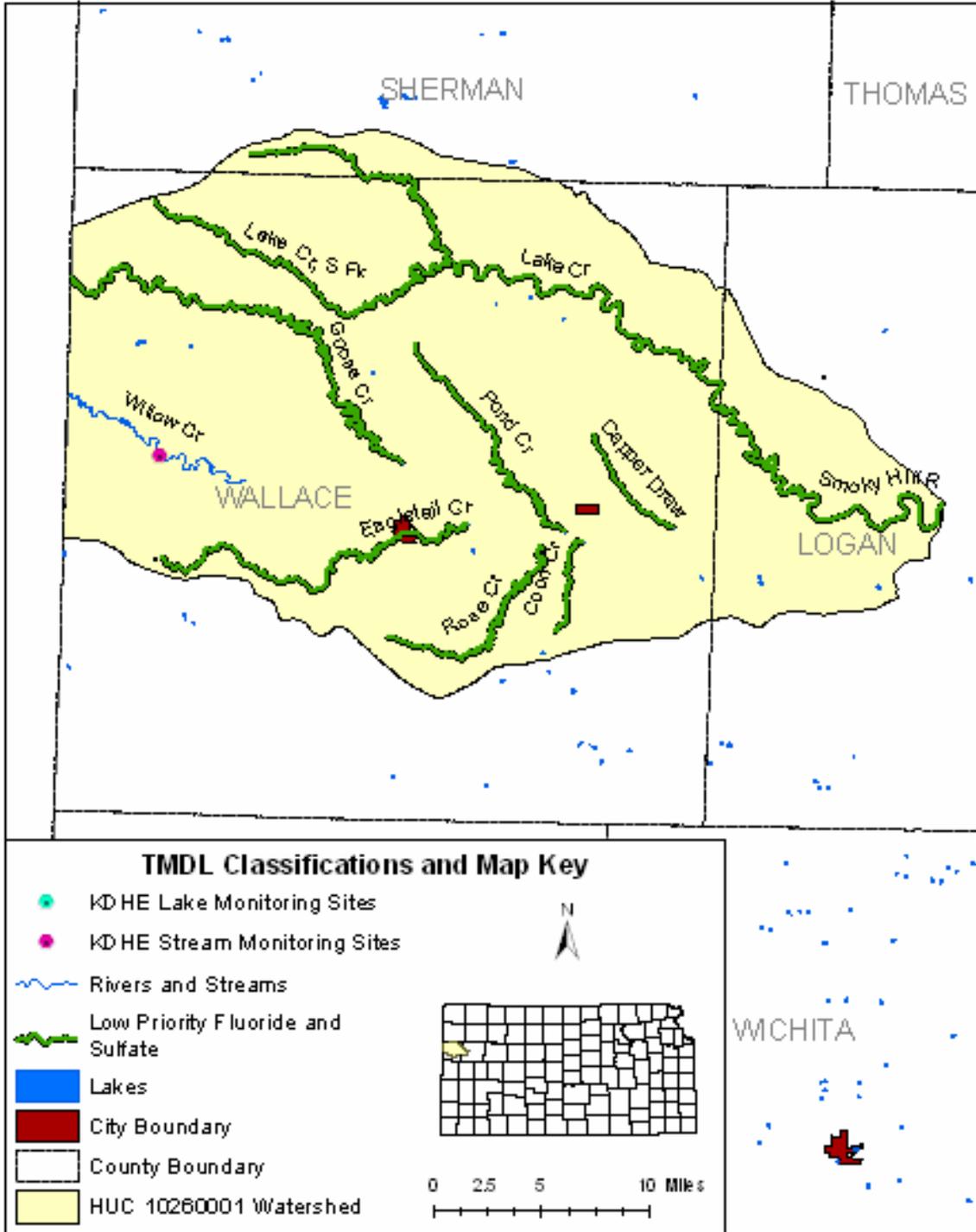
Dissolved Oxygen: Refers to the amount of oxygen available to aquatic life within the water column. State water quality standards require a stream or lake to have at least 5 mg/L of dissolved oxygen.

Fluoride: An inorganic material often used to prevent dental cavities and osteoporosis. However, fluorine can be toxic at concentrations exceeding 8 mg/L.

Sulfate: A naturally occurring mineral that can cause taste and odor problems in drinking water. Sulfates are dissolved into groundwater as the water moves through various sulfur containing rock formations.

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HUC 10260001 Watershed 2007 TMDLs



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4.4 Threatened and Endangered Species Status¹⁷

The Endangered Species Act provides protection to animals that are experiencing a decline in population, or nearing extinction. The table below lists species of concern and their federal and state designation(s).

LISTED THREATENED AND ENDANGERED SPECIES			
Species Common Name (<i>Scientific name</i>)	Threatened (T), Endangered (E), Candidate (C), Species in Need of Conservation (SINC)	Designated Critical Habitat (Y)es/(N)o	Listing: Federal (F), State (S)
Animals, Vertebrates - Fishes			
Topeka Shiner (<i>Notropis topeka</i>)	T	Y	F
Plains Minnow (<i>Hybognathus placitus</i>)	SINC	N	S
Brassy Minnow (<i>Hybognathus hankinsoni</i>)	SINC	N	S
River Shiner (<i>Notropis blennioides</i>)	SINC	N	S
Animals, Vertebrate – Birds			
Bald Eagle (<i>Haliaeetus leucocephalus</i>)*	T	N	S
Black Tern (<i>Chlidonias niger</i>)	SINC	N	S
Bobolink (<i>Dolichonyx oryzivorus</i>)	SINC	N	S
Cerulean Warbler (<i>Dendroica cerulea</i>)	SINC	N	S
Chihuahuan Raven (<i>Corvus cryptoleucus</i>)	SINC	N	S
Ferruginous Hawk (<i>Buteo regalis</i>)	SINC	N	S
Golden Eagle (<i>Aquila chrysaetos</i>)	SINC	N	S
Least Tern (<i>Sterna antillarum</i>)	E	N	F
Long-Billed Curlew (<i>Numenius americanus</i>)	SINC	N	S
Mountain Plover (<i>Charadrius montanus</i>)	SINC	N	S
Peregrine Falcon (<i>Falco peregrinus</i>)	E	N	S
Piping Plover (<i>Charadrius melodus</i>)	T	N	F/S
Short-Eared Owl (<i>Asio flammeus</i>)	SINC	N	S
Snowy Plover (<i>Charadrius alexandrinus</i>)	T	N	S
White-faced Ibis (<i>Plegadis chihi</i>)	T	N	S
Whip-Poor-Will (<i>Caprimulgus vociferous</i>)	SINC	N	S
Whooping Crane (<i>Grus Americana</i>)	E	N	F/S
Animals, Vertebrate – Reptiles			
Eastern Hognose Snake (<i>Heterodon platirhinos</i>)	SINC	N	S
Western Hognose Snake (<i>Heterodon nasicus</i>)	SINC	N	S
Animals, Vertebrate – Mammals			
Black-footed Ferret (<i>Mustela nigripes</i>)	E	N	F/S
Eastern Spotted Skunk (<i>Spilogale putorius interrupta</i>)	T	N	S
Animals, Invertebrate – Amphibians			
Western Green Toad (<i>Bufo debilis insidiosus</i>)	T	Y	S
*The Bald Eagle has been de-listed nationally (2007) but remains as a state listed species. The Bald Eagle remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.			

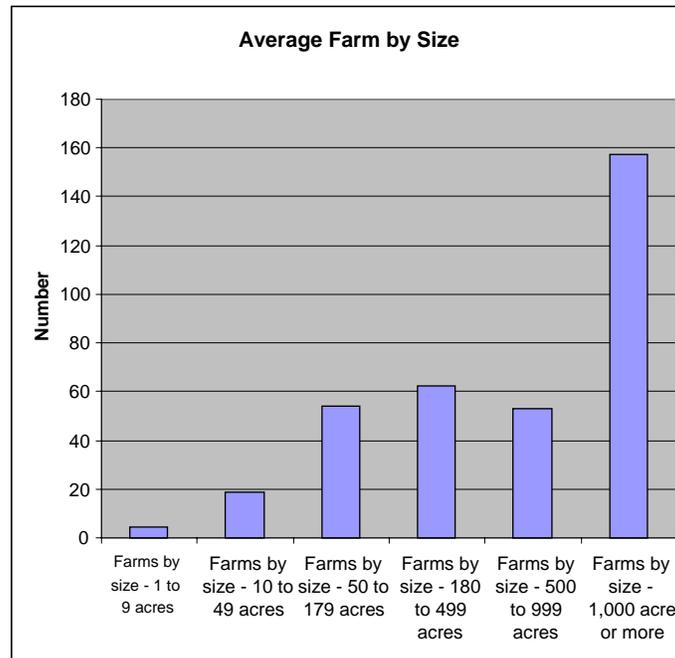
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5.0 Census and Social Data (2002)⁴⁸

Average Number of Farms: 350

- Average Farm Size (acres): **1,573**

Principal Operator by Primary Occupation: 244



5.1 Estimated Level of Willingness and Ability to Participate in Conservation⁴⁹

The Smoky Hill Headwaters sub-basin exhibits a fair likelihood of full participation in the first 5 years of the project with considerable adjustments in technical and financial assistance, and conservation marketing. Management skills and a combination of educational assistance and technical assistance should be increased to improve the participation rate. On average, there are concerns with the availability of technical assistance in the sub-basin. The existing information and education delivery system does not appear to be adequate; modifications will be needed in order to improve effectiveness. Existing financial incentives need to be expanded or increased to achieve successful participation rates in a reasonable amount of time.

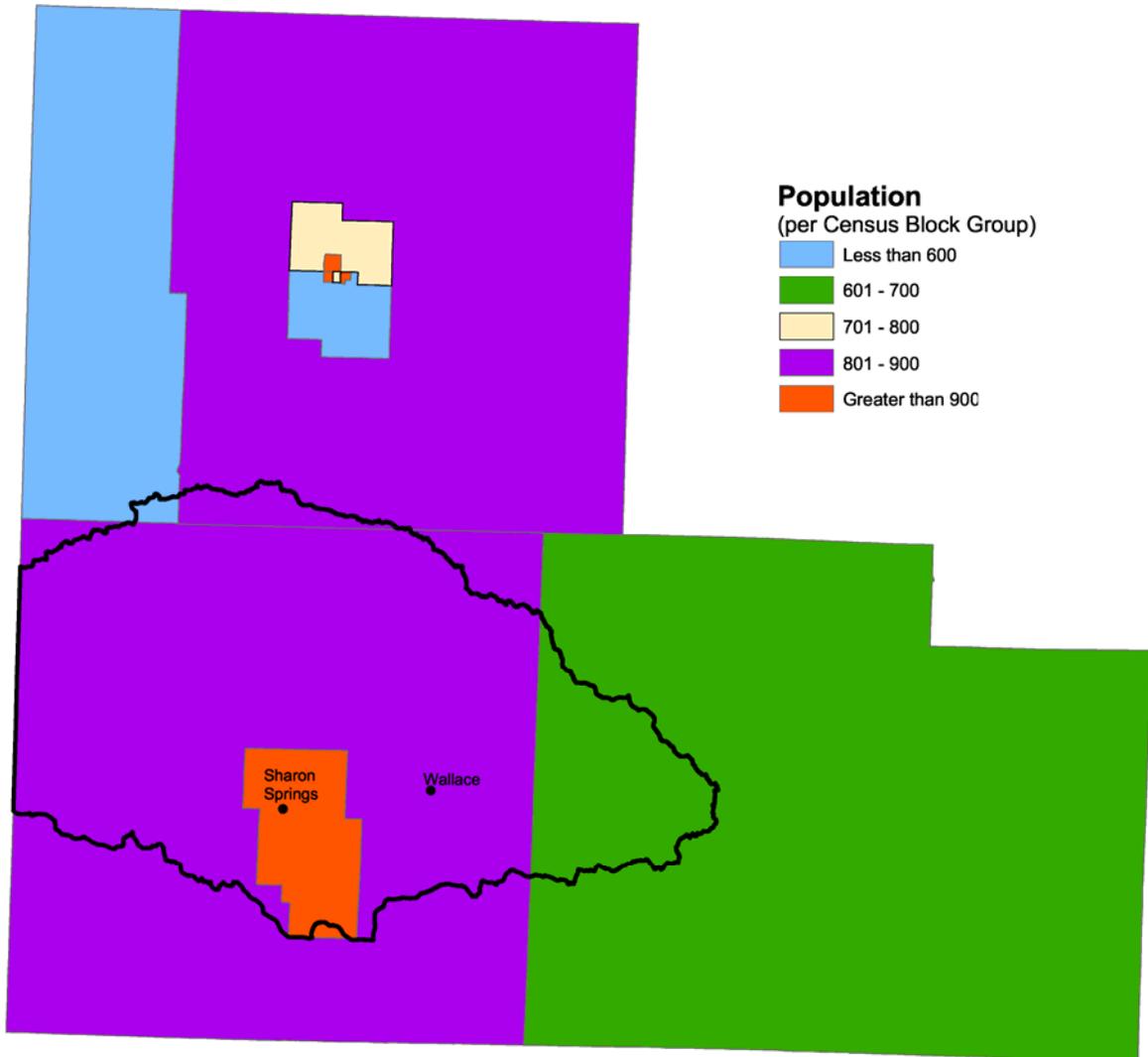
5.2 Evaluation of Social Capital⁴⁰

Social capital is defined as bonds of trust that arise between people interacting in everyday life. Local conservationists developed a summary of social capital for this sub-basin and concluded the following.

Collectively, communities in the Smoky Hill Headwaters sub-basin are reported to be somewhat effective at solving problems. Typically small communities are willing to assist their neighbors by pooling their resources to overcome adversity. Dry climatic conditions over the past decade have affected the community economic capital and led to a decreased state of social well-being, which decreases the community's ability to address local resource concerns.

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5.3 Population Distribution Map (2000) ⁴⁸



6.0 Conservation Progress

Conservation on the land is defined by the progress made by local landowners and operators addressing resource issues. Progress is typically accomplished through private, local, state, and federal funds. This data is current through the date the RWA was published. For up-to-date NRCS Performance Results System (PRS) information, visit <http://ias.sc.egov.usda.gov/prsreport2006/>.

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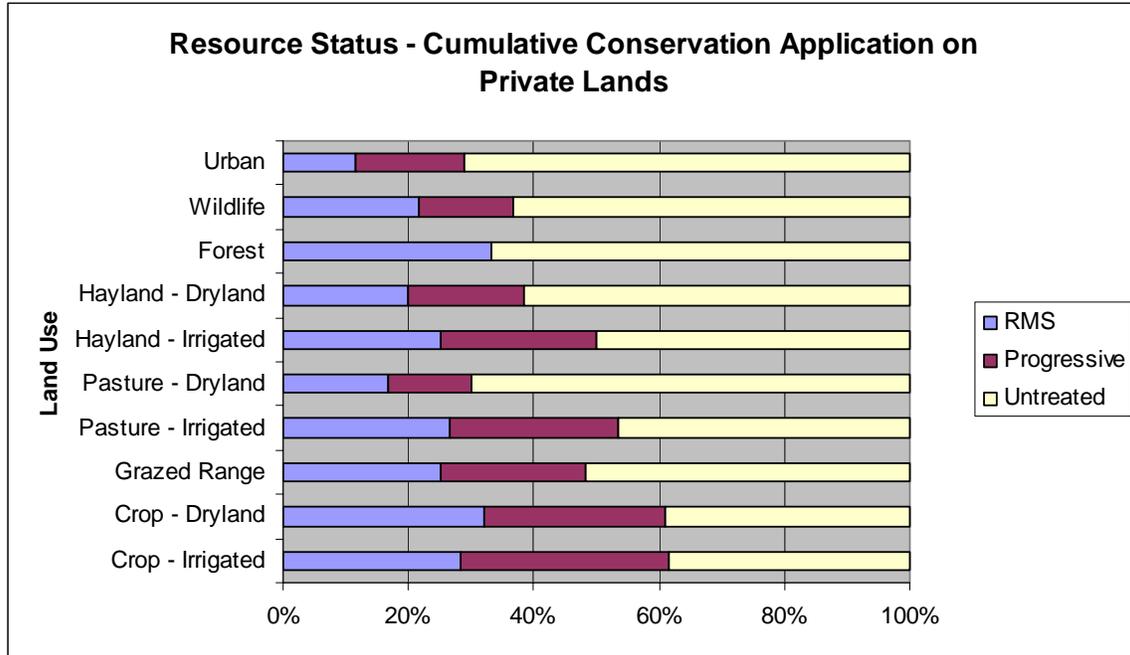
6.1 Reported Conservation Progress (Fiscal Years [FY] 2002–2007)

PRS Data	FY02	FY03	FY04	FY05	FY06	FY07	Avg/Year	Total
Total Conservation Systems Planned (Ac)	25,076	13,212	N/A	29,898	18,408	5,409	18,401	92,003
Total Conservation Systems Applied (Ac)	22,926	13,265	N/A	25,856	22,328	11,450	19,165	95,825
Conservation Treatment (Units/Acres)								
Brush Management (ac)			136				23	136
Conservation Crop Rotation (ac)			58	2,531	443	325	560	3,357
Contour Farming (ac)			102	155	325		97	582
Cover Crop (ac)			166	161	2,700	544	595	3,571
Diversion (ft)			3,502	2,900	2,611		1,502	9,013
Forage Harvest Management (ac)			1,052	35	35	271	232	1,393
Grassed Waterway (ac)	27	21	9				10	57
Irrigation System, Sprinkler (no)			1	1	103		18	105
Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic (ft)				1,168	1,582		458	2,750
Irrigation Water Management (ac)	196		22	13	406	299	156	936
Nutrient Management (ac)			188		73	224	81	485
Pasture and Hay Planting (ac)					306		51	306
Pest Management (ac)	1,752	31	363	638	868		609	3,652
Pipeline (ft)			16,695	34,148	2,776	2,498	9,353	56,117
Prescribed Burning (ac)			163		496	129	131	788
Prescribed Grazing (ac)	13,175	8,167	2,413	17,720	17,185	8848	11,251	67,508
Range Planting (ac)				44	41		14	85
Residue Management, Mulch Till (ac)				155		128	47	283
Residue Management, No-Till/Strip Till (ac)			58				10	58
Residue Management, Seasonal (ac)				2,376	118	42	423	2,536
Restoration and Management of Rare and Declining Habitats (ac)			344	316	2,429	528	603	3,617
Strip-cropping (ac)				1,399			233	1,399
Terrace (ft)			32,898	24,838	33,519		15,209	91,255
Upland Wildlife Habitat Management (ac)	15,129	2,974	564	393	1,765	341	3,528	21,166
Use Exclusion (ac)			1,771	4,297	845		1,152	6,913
Watering Facility (no)			4	10	4	1	3	19
Wetland Restoration (ac)				23			4	23
Wetland Wildlife Habitat Management (ac)					23		4	23

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6.2 Cumulative Conservation Status

Conservation plans developed and applied from 1995 to 2007 are projected in the following chart.



- Resource Management Systems (RMS) are conservation systems developed to address all identified resource concerns on a land unit or farm
- Progress over the last 10 years has been focused on:
 - Nutrient and pest management on cropland
 - Erosion control on cropland
 - Irrigation management and water use on cropland
- Pasture and range producers typically have not worked with NRCS, creating an opportunity for assistance

NOTE: Estimates are based on information received from local conservationists in the watershed.

6.3 Other Watershed Projects

Watershed Projects, Plans, Studies, and Assessments
319 Projects, KDHE TMDL Plans ⁴⁶ , Watershed Restoration and Protection Strategy (WRAPS) Plans
Cedar Bluff Reservoir WRAPS Project

6.4 Lands Removed from Production through Farm Bill Programs¹⁴

Conservation Reserve Program (CRP)^a: **56,610 acres**

Wetlands Reserve Program (WRP): **47 acres**

^aData from 2006 Farm Service Agency, CRP information

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7.0 Footnotes/Bibliography

All data is provided "as is." There are no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use for general planning purposes only.

1. Common Resource Area Map – Information available online at: <http://efotg.nrcs.usda.gov/treemenuFS.aspx>; select Section I, E. Maps, 2. Common Resource Area Maps.
2. Precipitation Map – U.S. Department of Agriculture, National Weather and Climate Service. Online reference information available at <http://datagateway.nrcs.usda.gov/>.
3. National Land Cover Data - Originator: U.S. Geological Survey (USGS); Information available online at <http://landcover.usgs.gov/natl/landcover.php>.
4. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. More information available at <http://www.nrcs.usda.gov/technical/NRI/>.
5. Kansas stream flow data available from the U.S. Department of the Interior, U.S. Geological Survey online at <http://waterdata.usgs.gov/ks/nwis/rt>.
6. Kansas Department of Health and Environment, Total Maximum Daily Loads (TMDL) Strategies, <http://www.kdheks.gov/tmdl/>.
7. U.S. Fish and Wildlife Service, Mountain-Prairie Endangered Species List, Kansas (January 2005) http://ecos.fws.gov/tess_public/SpeciesReport.do?lead=6&listingType=L. The Kansas Department of Wildlife and Parks, Threatened and Endangered Species, http://www.kdwp.state.ks.us/news/other_services/threatened_and_endangered_species.
8. Data were taken from the 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available.
9. Conservation participation was estimated using NRCS Social Sciences Technical Note 1801, Guide for Estimating Participation in Conservation, 2004. Four categories of indicators were evaluated: personal characteristics, farm structural characteristics, perceptions of conservation, and community context. Estimates are based on information received from local conservationists in the watershed.
10. Social capital is an indicator of the community's ability and willingness to work together to solve problems. A high amount of social capital helps a community to be physically healthy, socially progressive, and economically vigorous. A low amount of social capital typically results in community conflict, lack of trust and respect, and unsuccessful attempts to solve problems. The evaluation is based on NRCS Technical Report Release 4.1, March, 2002: Adding up Social Capital: an Investment in Communities. Local conservationists provided information to measure social capital.
11. Natural Resources Conservation Service, Kansas online information at <http://www.ks.nrcs.usda.gov/programs/pl566/>.

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Footnotes/Bibliography (continued)

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12. Natural Resources Conservation Service, Web Soil Survey can be located on-line at <http://websoilsurvey.nrcs.usda.gov/app/>.
13. Kansas Department of Health and Environment, Bureau of Water, Watershed Management Section, <http://www.kdheks.gov/nps/wraps/index.htm>.
14. Natural Resources Conservation Service, Kansas, Program Information is located at <http://www.ks.nrcs.usda.gov/programs/>.

8.0 Additional On-line Resources

1. U.S. Environmental Protection Agency, EnviroMapper for Water, http://map8.epa.gov/scripts/esrimap.dll?name=NHDMapper&Cmd=ZoomInByCat&qc=3&th=6&lc=00010200000110_0000&fipsCode=10260001.
2. U.S. Environmental Protection Agency Surf Your Watershed at http://cfpub.epa.gov/surf/huc.cfm?huc_code=10260001.