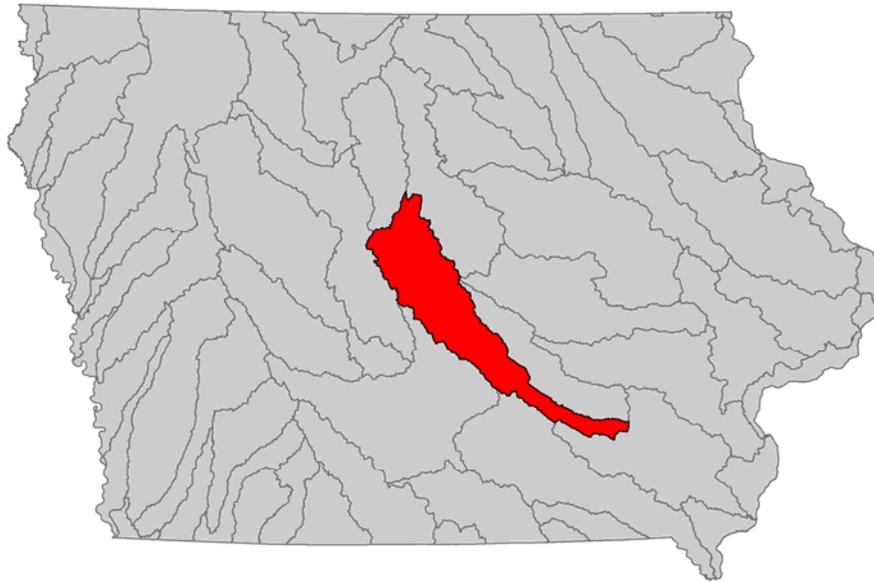


## South Skunk River Watershed Rapid Watershed Assessment



The South Skunk River Rapid Watershed assessment provides initial estimates of where conservation investments would best address the Resource Priorities/Capabilities of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best actions to achieve their goals to conserve soil and water resources.

In the South Skunk River Watershed conservation assistance is available from NRCS service centers in the 13 counties that are part of the watershed (*see appendix for a list of all the service centers by county*). There are also three resource conservation and development (RC&D) offices that cover the South Skunk River Watershed in central Iowa which include: Iowa Heartland in Ankeny, Pathfinders in Fairfield and Prairie Rivers of Iowa in Ames.



| <b>Table of Contents</b>                | <b>Page</b> |
|---|-------------|
| <u>Introduction</u>                     | 3           |
| <u>Physical Description</u>             |             |
| Ownership                               | 4           |
| Land Use/Land Cover                     | 4-5         |
| Common Resource Areas                   | 6           |
| Precipitation                           | 7           |
| Elevation                               | 7           |
| Soils, Landforms and Vegetation         | 8-13        |
| Subsurface Drainage                     | 14-15       |
| Surface Waters Assessment               | 16-17       |
| <u>Resource Priorities/Capabilities</u> |             |
| Surface Waters Assessment               | 18          |
| Impaired Waters                         | 19-21       |
| Water Erosion                           | 22          |
| Animal Feeding Operations               | 23          |
| Environmental Regulation                | 24-25       |
| Major Air Facilities                    | 26          |
| Biofuel Plants                          | 26          |
| Groundwater                             | 27          |
| Fish and Wildlife                       | 28-33       |
| SWAPA + H                               | 34-37       |
| <u>Demographic Census Data</u>          | 38-39       |
| <u>Social Survey</u>                    | 40          |
| <u>Farm Census Data</u>                 | 41          |
| <u>Progress/Status</u>                  | 42-46       |
| <u>Bibliography</u>                     | 47-54       |
| <u>Appendix A</u>                       | 55-57       |
| <u>Assessment Matrices</u>              | 58-75       |
| <u>Assessment Matrix Summary</u>        | 76-79       |



## Introduction

[Back to Contents](#)

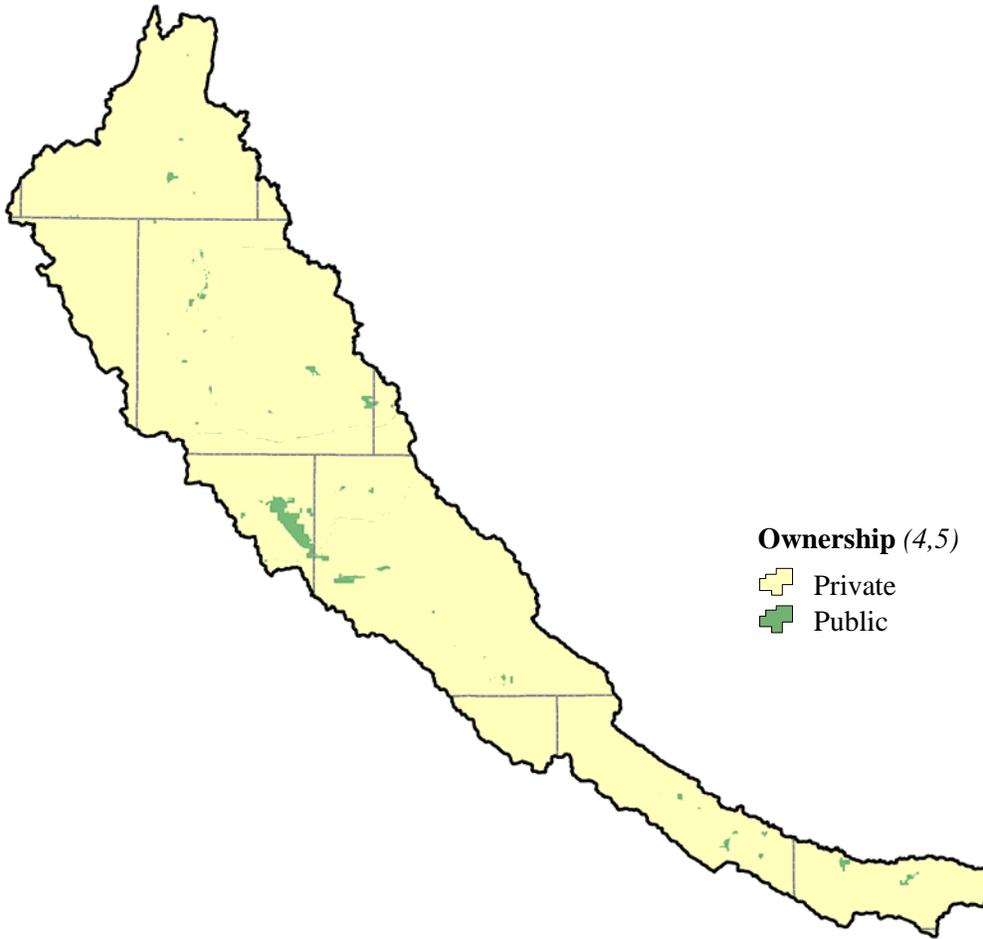
Approximately 60% of the South Skunk River 8-digit hydrologic code (HUC) subbasin is located in the prairie pothole region in the Des Moines Lobe. In the South Skunk River Watershed, the Des Moines Lobe ends in Marshall and Jasper counties and southern portion of the watershed is in the Southern Iowa Drift Plain. The whole watershed covers parts of 13 counties, with most of the area located in Hamilton, Story and Jasper counties. This region of Iowa receives a moderate amount of precipitation and has a humid continental climate. Prior to the installation of subsurface drainage this region had abundant wetlands, many of which were interconnected prairie potholes, specifically in the Des Moines Lobe. Now a large portion of the region is artificially drained in order to support row crop agriculture. Approximately 98% of this watershed is privately owned with almost 65% in corn and soybean production (1). There are also over 170 animal feeding operations (AFO) in the watershed (2).

The South Skunk River Watershed has a drainage area of approximately 1,180,000 acres or 1,844mi<sup>2</sup>. The watershed has over 2,320 miles of streams that support a diversity of fish and wildlife species. Approximately 57 miles of streams in the South Skunk River Watershed in central Iowa is designated as a Protected Water Area by the Iowa DNR (3).





[Back to Contents](#)

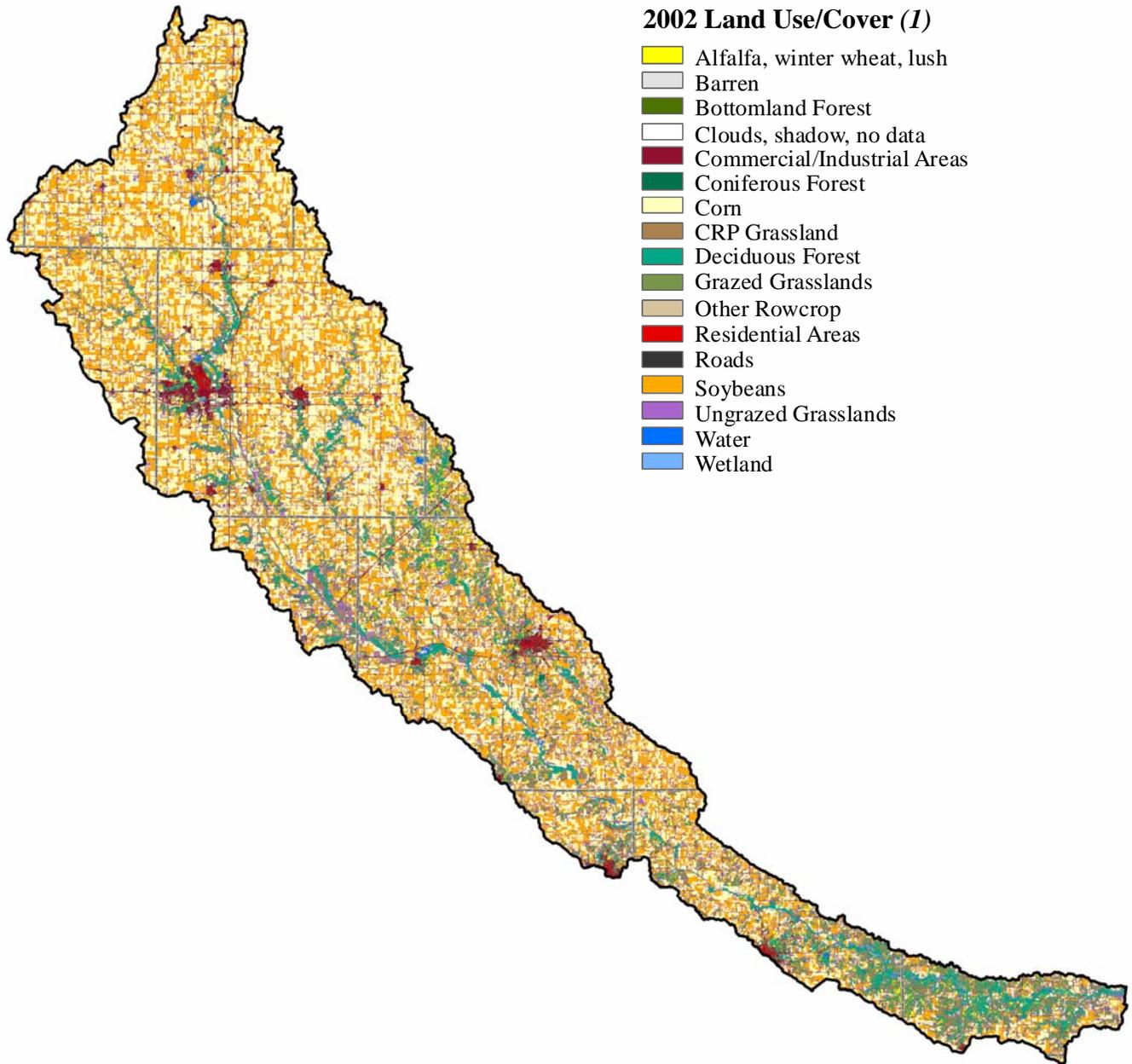


| 2002 Land Use/<br>Land Cover (1) | Ownership - (GAP Stewardship (4) and IA DNR Lands (5)) |           |               |          |                  |            |
|----------------------------------|--|-----------|---------------|----------|------------------|------------|
|                                  | Private  |           | Public        |          | Totals           | %          |
|                                  | Acres  | %         | Acres         | %        |                  |            |
| Forest                           | 60,978   | 5.17      | 4,563         | 0.39     | 65,542           | 5.56       |
| Row Crops                        | 767,519  | 65.10     | 1,310         | 0.11     | 768,829          | 65.21      |
| Grassland/Alfalfa                | 180,550  | 15.31     | 3,880         | 0.33     | 184,430          | 15.64      |
| CRP                              | 38,907   | 3.30      | 2,502         | 0.21     | 41,408           | 3.51       |
| Grazed Grassland                 | 57,789   | 4.90      | 1,444         | 0.12     | 59,233           | 5.02       |
| Developed*                       | 48,281   | 4.09      | 579           | 0.05     | 48,860           | 4.14       |
| Water/Wetland                    | 8,497  | 0.72      | 1,335         | 0.11     | 9,832            | 0.83       |
| Other                            | 892  | 0.08      | 17            | 0.00     | 910              | 0.08       |
| <b>South Skunk HUC Totals</b>    | <b>1,163,413</b>                                       | <b>99</b> | <b>15,630</b> | <b>1</b> | <b>1,179,043</b> | <b>100</b> |

\*: Developed land includes Residential Areas, Roads, and Commercial/Industrial Areas

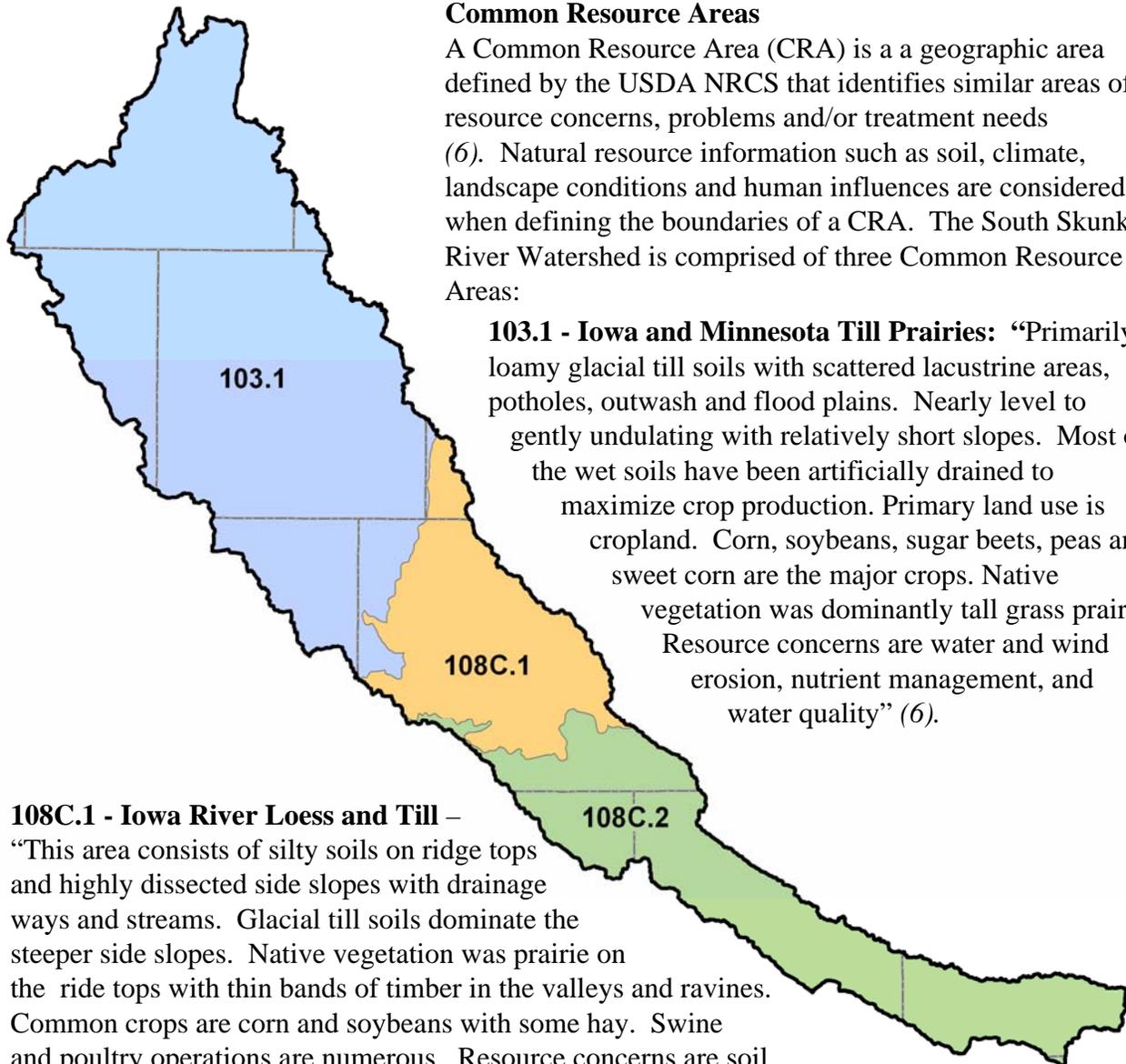
Physical Description

[Back to Contents](#)



## Physical Description

[Back to Contents](#)



### Common Resource Areas

A Common Resource Area (CRA) is a geographic area defined by the USDA NRCS that identifies similar areas of resource concerns, problems and/or treatment needs (6). Natural resource information such as soil, climate, landscape conditions and human influences are considered when defining the boundaries of a CRA. The South Skunk River Watershed is comprised of three Common Resource Areas:

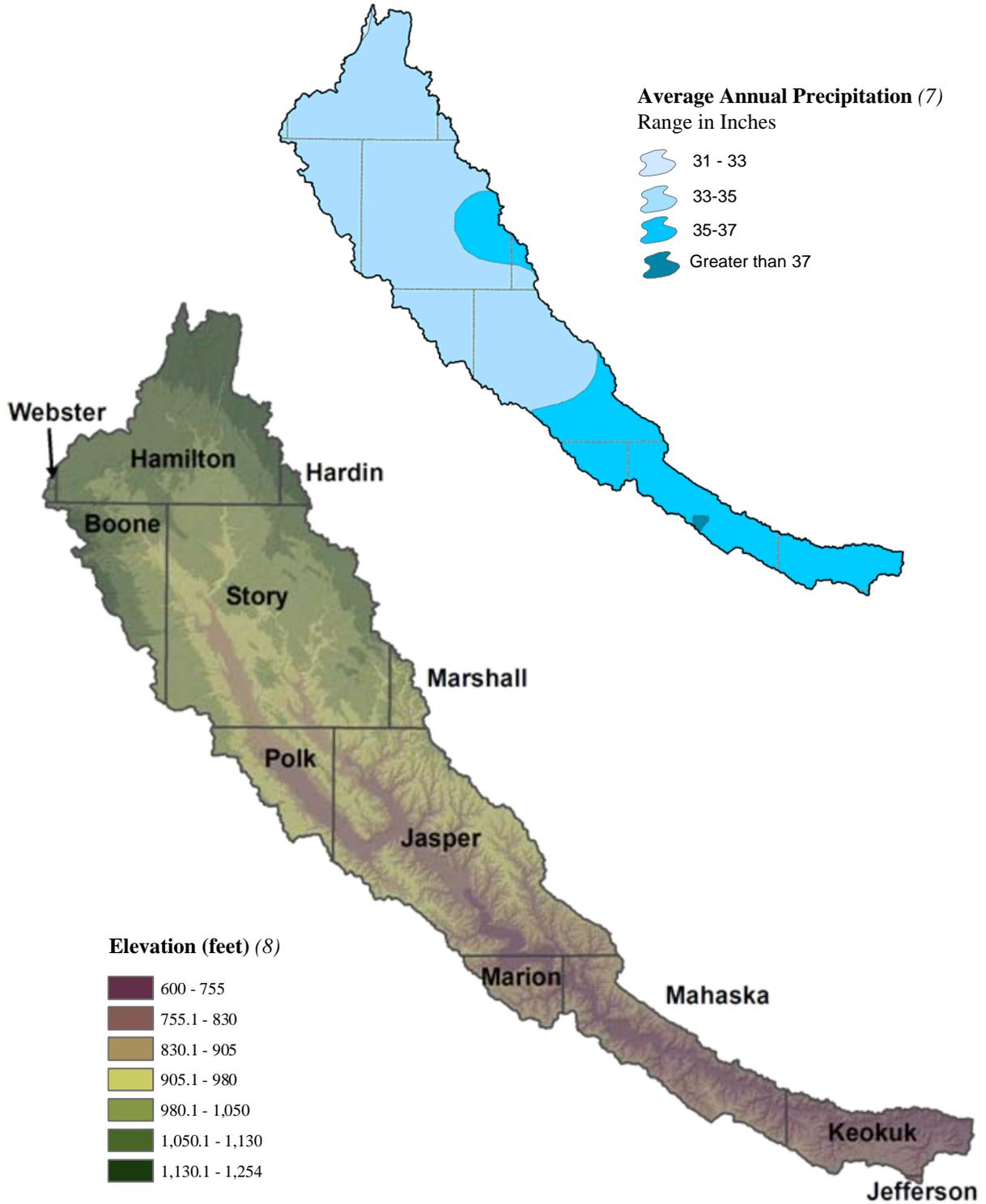
**103.1 - Iowa and Minnesota Till Prairies:** “Primarily loamy glacial till soils with scattered lacustrine areas, potholes, outwash and flood plains. Nearly level to gently undulating with relatively short slopes. Most of the wet soils have been artificially drained to maximize crop production. Primary land use is cropland. Corn, soybeans, sugar beets, peas and sweet corn are the major crops. Native vegetation was dominantly tall grass prairie. Resource concerns are water and wind erosion, nutrient management, and water quality” (6).

**108C.1 - Iowa River Loess and Till –** “This area consists of silty soils on ridge tops and highly dissected side slopes with drainage ways and streams. Glacial till soils dominate the steeper side slopes. Native vegetation was prairie on the ridge tops with thin bands of timber in the valleys and ravines. Common crops are corn and soybeans with some hay. Swine and poultry operations are numerous. Resource concerns are soil erosion, soil quality, nutrient management, water quality and wildlife habitat” (6).

**108C.2 - Des Moines and Skunk River Loess and Till Plains –** “This area consists of gently sloping to steep, silty soils on connected ridge tops and highly dissected side slopes with drainage ways and streams. Glacial till soils dominate the steeper side slopes with paleosols occurring on shoulder slopes that cause side-hill seeps. Native vegetation was mixed prairie with deciduous forest on steeper slopes. Common crops are corn and soybeans with some forage crops. Resource concerns are soil erosion, soil quality, water quality, and nutrient management” (6).

**Physical Description**

[Back to Contents](#)





## Physical Description

[Back to Contents](#)

### Soils, Landforms and Vegetation

The soils in the northern half of the South Skunk River Watershed developed approximately 12,000 - 14,000 years ago with the melting of the Des Moines Lobe glacier. After the ice sheet had retreated the landscape was covered in glacial till, with sand and gravel in the meltwater streams, and clay and peat left from glacial lakes (9). The glacier left behind a landscape that was relatively flat to gently rolling.

This part of the watershed is at the southern-most extent of the Prairie Pothole Region and approximately 30% of the soils in the watershed are poorly drained (10). A majority of the watershed once was covered in tall grass prairie interspersed with wetlands, many of which were linked drainage depressions. The root system of the prairie vegetation and the accumulation of rich organic matter from these young hydric soils created deep, dark colored soil, rich in nutrients (11).

As mentioned above, approximately half of the South Skunk River Watershed is in the Des Moines Lobe, also known as the Iowa and Minnesota Till Prairies Common Resource Area (page 6). The southern portion of the watershed is in the Southern Iowa Drift Plain. This portion of the watershed is broken up into two common resource areas, the Iowa River Loess and Till and the Des Moines and Skunk River Loess and Till Plains (see page 6). The Southern Iowa Drift Plain is primarily covered by glacial deposits left by ice sheets 500,000 years ago (9). The landscape was then carved out through stream erosion creating a well connected drainage system through time and a steeply rolling landscape compared to the Des Moines Lobe. Loess covers the upland areas including the high slopes (9).

The soils in the South Skunk River Watershed vary significantly because two different ecoregions comprise this watershed. The Clarion-Canisteo-Storden, Canisteo-Clarion-Nicollet and Clarion-Webster-Nicollet associations are the most extensive in the northern portion of the watershed. The Clarion-Canisteo-Storden association is found on moderately steep slopes that vary from well drained to poorly drained soils. The soils associated with this association formed in glacial sediments and till. This association is typically associated with flats, knolls and side slopes with slopes ranging from 0-18%. The Canisteo-Clarion-Nicollet association also has poor to well drained soils and is described as having silty and loamy soils that developed in glacial sediments and till. Flats and swales; gently rolling areas on rises, knolls, and low hills are typical of this association. In addition, this association had many areas with marshes and ponded depressions that existed before artificial drainage. The Clarion-Webster-Nicollet is similar in drainage and slope characteristics to the previous described association, except it is described as having loamy soils formed in glacial till and local alluvium. These soils are described as rolling ground moraines of swales and rises that vary from 5-10 feet in elevation.



## Physical Description

[Back to Contents](#)

### Soils, Landforms and Vegetation *con't*

The southeastern portion of the watershed that is considered the Southern Iowa Drift Plain is dominated by the Downs-Tama-Shelby and Clinton-Keswick-Lindley Associations. The Downs-Tama-Shelby Association consists of well to moderately-well drained soils that are found on flat to moderately sloping ridgetops and moderately to steep convex side slopes. The soils in this association formed in both loess and glacial till. The Downs soils formed in loess under deciduous trees and tall grass prairie. The Tama and Shelby soils both formed under prairie grasses but the Tama developed in loess and the Shelby developed in glacial till. The Clinton-Keswick-Lindley Association has moderately drained soils that are dominated by a clay and sandy-clay loam subsoil. In the South Skunk River Watershed, the Clinton-Keswick-Lindley Association is limited to the hilly, dissected drainageways, found on the floodplain edge of the South Skunk River and its tributaries. This association is found on narrow, rounded ridgetops, steep convex sideslopes, and in narrow upland valleys. Most of this association developed under forest vegetation.

The first soil survey report to be published in the South Skunk River Watershed is Story County, in 1903. All of the soil survey reports have been updated, with the two most recent surveys ranging from 2000 in Polk County to 2003 in Keokuk County. The Iowa Soil Properties and Interpretations Database (ISPAID) was the first complete digital soil survey for the state of Iowa, which was completed in 1996 (12). ISPAID is composed of digitized soil maps from each soil survey, most of the information in the published survey, in addition to some extra information that is not available in the surveys. A new revision comes out every time the USDA updates a county soil survey (12). The NRCS Soil Survey Geographic (SSURGO) Database was completed for all the counties in the South Skunk River Watershed in 2006 and 2007 (10). The data and maps in SSURGO correspond to all the data in the published soil survey report. The maps are digitized from the soil survey manual and the data is linked to the National Soil Information System (NASIS) Database.

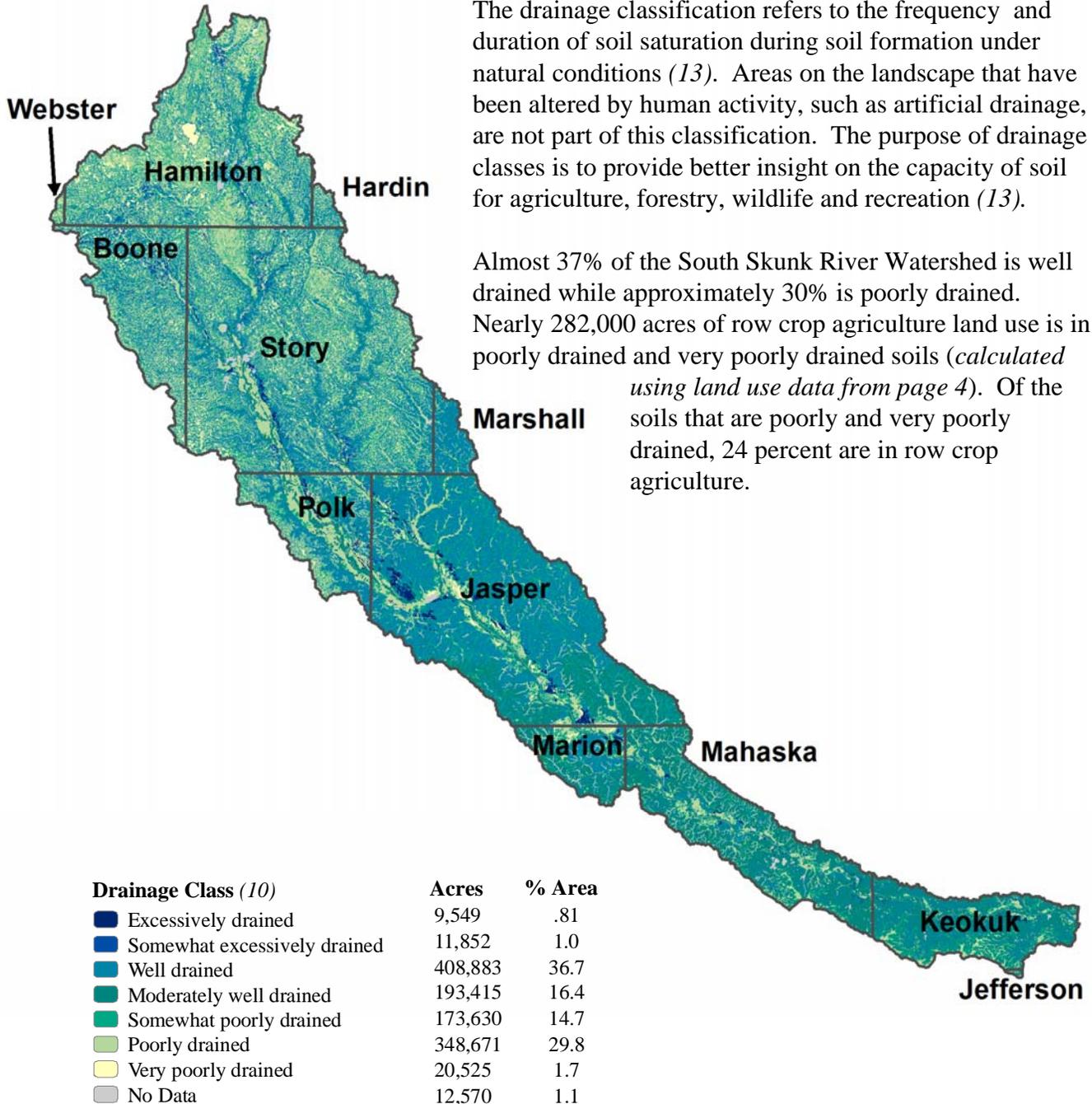
Physical Description

[Back to Contents](#)

Drainage Classification

The drainage classification refers to the frequency and duration of soil saturation during soil formation under natural conditions (13). Areas on the landscape that have been altered by human activity, such as artificial drainage, are not part of this classification. The purpose of drainage classes is to provide better insight on the capacity of soil for agriculture, forestry, wildlife and recreation (13).

Almost 37% of the South Skunk River Watershed is well drained while approximately 30% is poorly drained. Nearly 282,000 acres of row crop agriculture land use is in poorly drained and very poorly drained soils (*calculated using land use data from page 4*). Of the soils that are poorly and very poorly drained, 24 percent are in row crop agriculture.



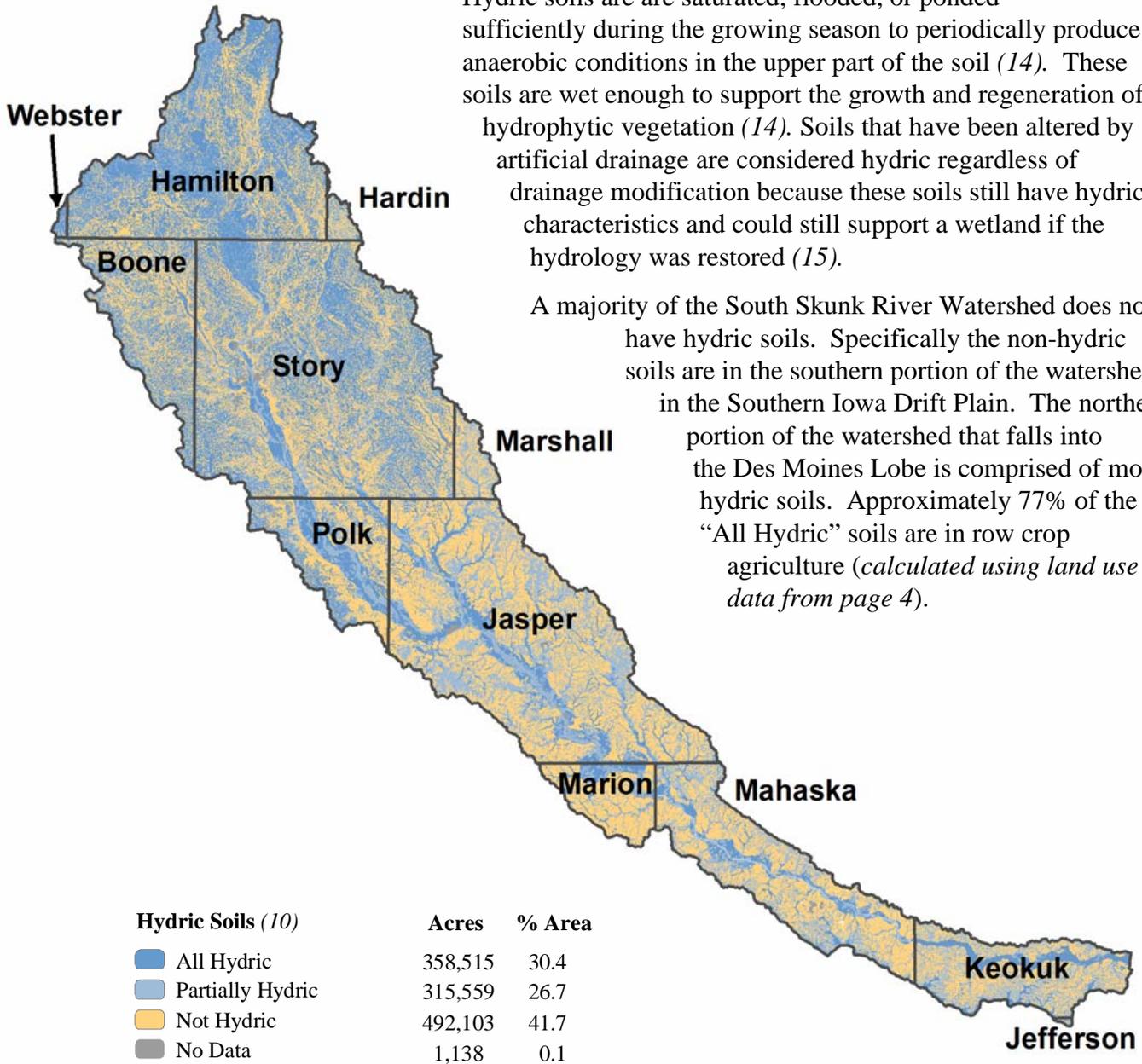
Physical Description

[Back to Contents](#)

Hydric Soils

Hydric soils are saturated, flooded, or ponded sufficiently during the growing season to periodically produce anaerobic conditions in the upper part of the soil (14). These soils are wet enough to support the growth and regeneration of hydrophytic vegetation (14). Soils that have been altered by artificial drainage are considered hydric regardless of drainage modification because these soils still have hydric characteristics and could still support a wetland if the hydrology was restored (15).

A majority of the South Skunk River Watershed does not have hydric soils. Specifically the non-hydric soils are in the southern portion of the watershed in the Southern Iowa Drift Plain. The northern portion of the watershed that falls into the Des Moines Lobe is comprised of more hydric soils. Approximately 77% of the “All Hydric” soils are in row crop agriculture (calculated using land use data from page 4).



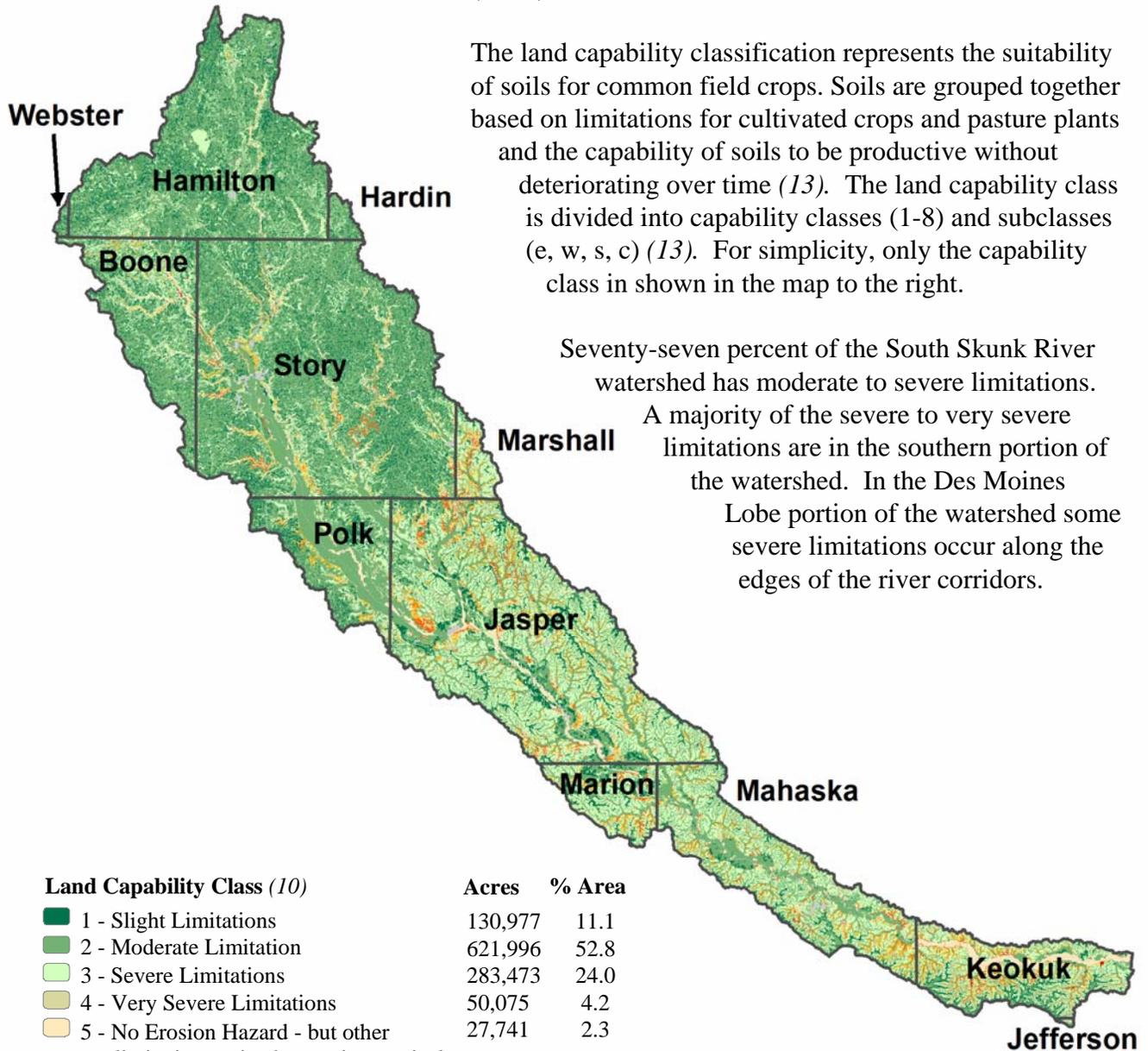
Physical Description

[Back to Contents](#)

Land Capability Classification (LCC)

The land capability classification represents the suitability of soils for common field crops. Soils are grouped together based on limitations for cultivated crops and pasture plants and the capability of soils to be productive without deteriorating over time (13). The land capability class is divided into capability classes (1-8) and subclasses (e, w, s, c) (13). For simplicity, only the capability class is shown in the map to the right.

Seventy-seven percent of the South Skunk River watershed has moderate to severe limitations. A majority of the severe to very severe limitations are in the southern portion of the watershed. In the Des Moines Lobe portion of the watershed some severe limitations occur along the edges of the river corridors.



| Land Capability Class (10)   | Acres   | % Area |
|--|---------|--------|
| 1 - Slight Limitations   | 130,977 | 11.1   |
| 2 - Moderate Limitation  | 621,996 | 52.8   |
| 3 - Severe Limitations   | 283,473 | 24.0   |
| 4 - Very Severe Limitations  | 50,075  | 4.2    |
| 5 - No Erosion Hazard - but other limitations exist that are impractical to remove, that limit their use | 27,741  | 2.3    |
| 6 - Severe Limitations: Limited to Pasture, Range, & Forest  | 36,019  | 3.1    |
| 7 - Severe Limitations: Limited to Grazing, Forest, & Wildlife Habitat                                   | 16,041  | 1.4    |
| 8 - Miscellaneous Area   | 307     | 0.02   |
| No Data or Water   | 12,466  | 1.1    |

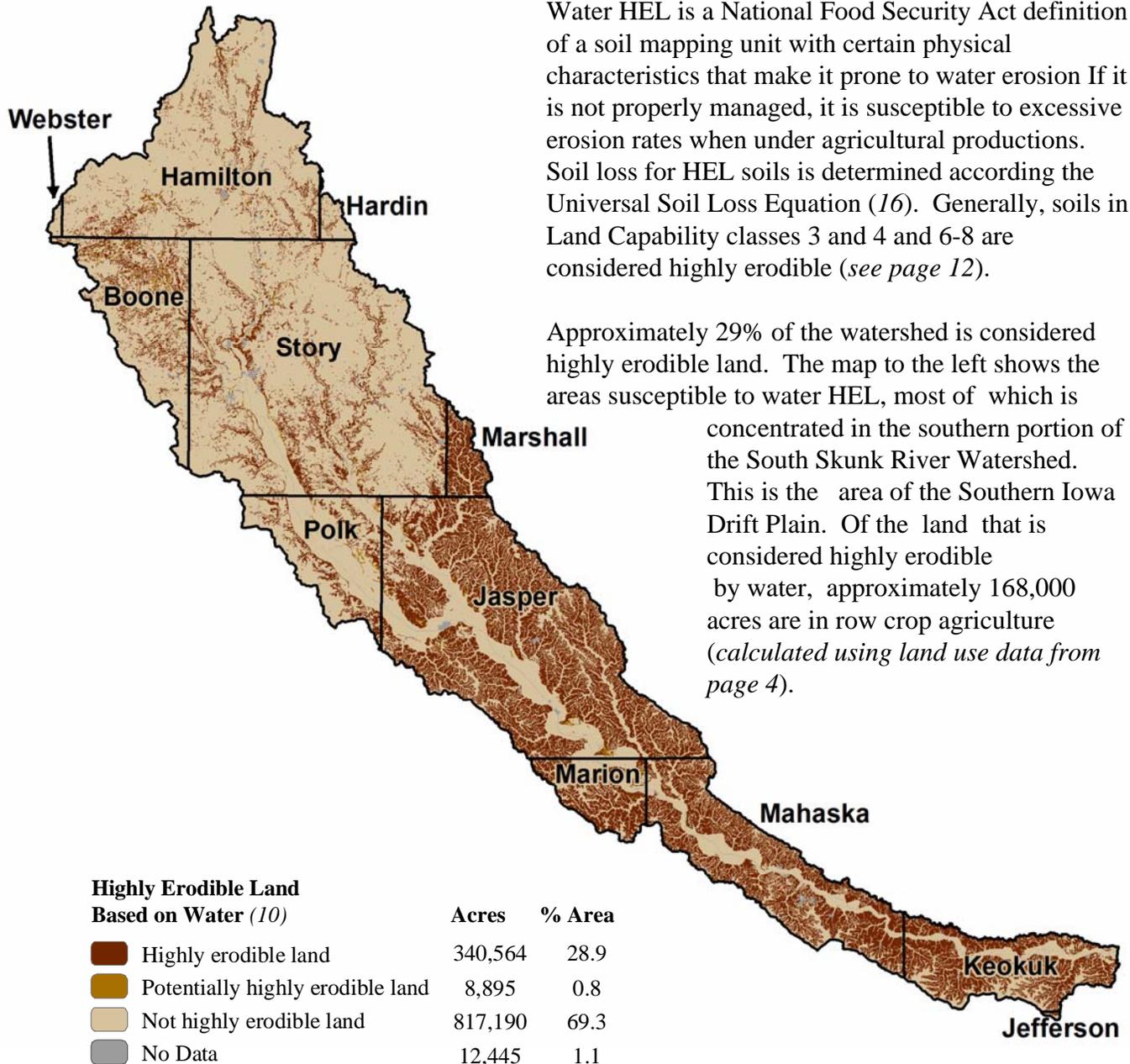
Physical Description

[Back to Contents](#)

**Highly Erodible Land (HEL)  
Based on Water HEL**

Water HEL is a National Food Security Act definition of a soil mapping unit with certain physical characteristics that make it prone to water erosion. If it is not properly managed, it is susceptible to excessive erosion rates when under agricultural productions. Soil loss for HEL soils is determined according to the Universal Soil Loss Equation (16). Generally, soils in Land Capability classes 3 and 4 and 6-8 are considered highly erodible (see page 12).

Approximately 29% of the watershed is considered highly erodible land. The map to the left shows the areas susceptible to water HEL, most of which is concentrated in the southern portion of the South Skunk River Watershed. This is the area of the Southern Iowa Drift Plain. Of the land that is considered highly erodible by water, approximately 168,000 acres are in row crop agriculture (calculated using land use data from page 4).



## Physical Description

[Back to Contents](#)

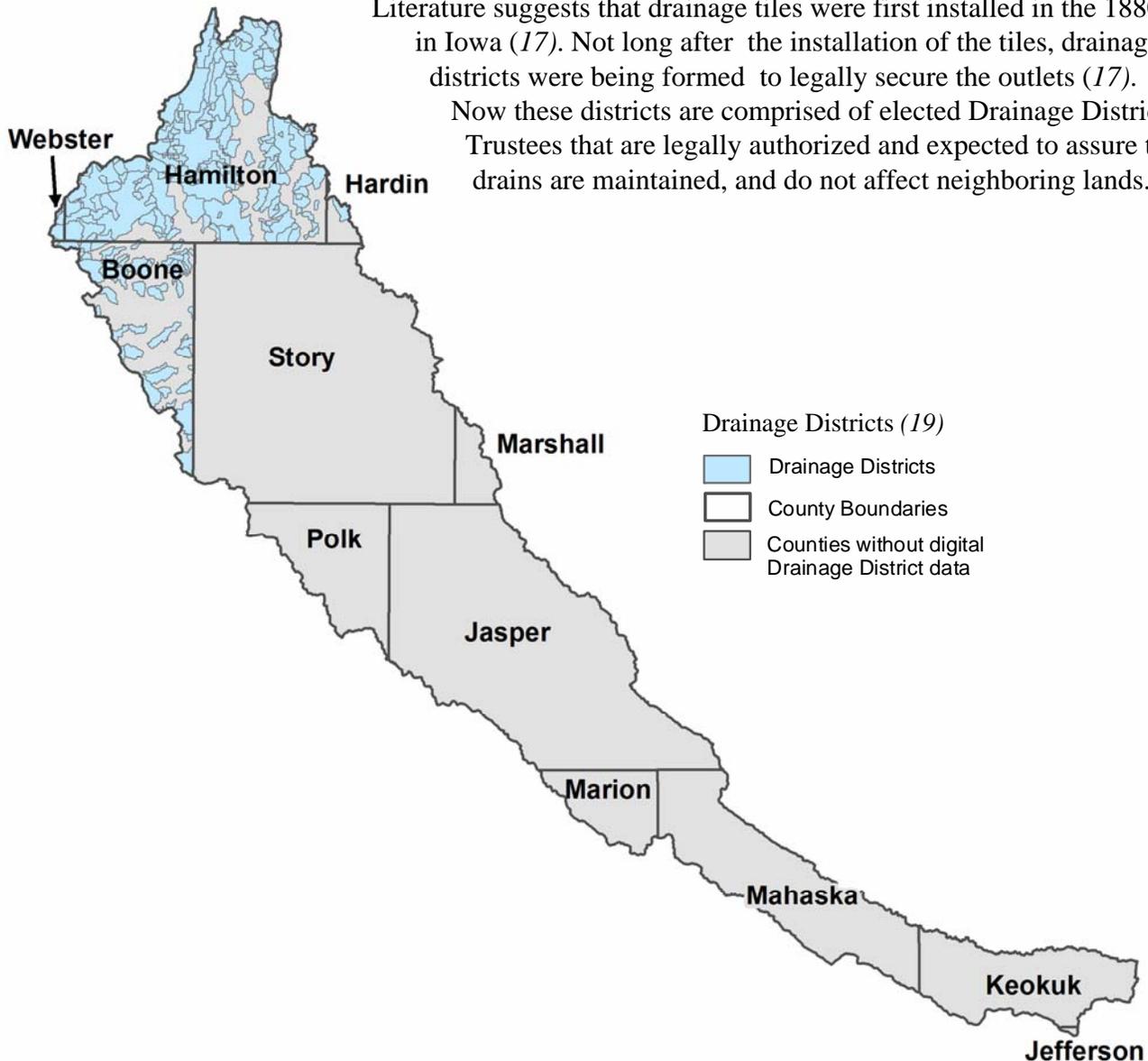
### Subsurface Drainage

Subsurface drainage is commonly installed in soils that are poorly drained to increase agricultural production. The use of artificial drainage lowers the water table making what would be a wetland or wet meadow area, dryer, more productive farm land.

One of the challenges with using an artificially drained system is the maintenance of water quality before it reaches the stream. Fertilized fields lose excess nitrate-nitrogen ( $\text{NO}_3$ ) into the drain that directly enters neighboring streams. If these areas were not artificially drained  $\text{NO}_3$  and other nutrients could be reduced by other conservation systems such as streamside buffers and/or wetlands before entering the stream.

Literature suggests that drainage tiles were first installed in the 1880's in Iowa (17). Not long after the installation of the tiles, drainage districts were being formed to legally secure the outlets (17).

Now these districts are comprised of elected Drainage District Trustees that are legally authorized and expected to assure the drains are maintained, and do not affect neighboring lands.

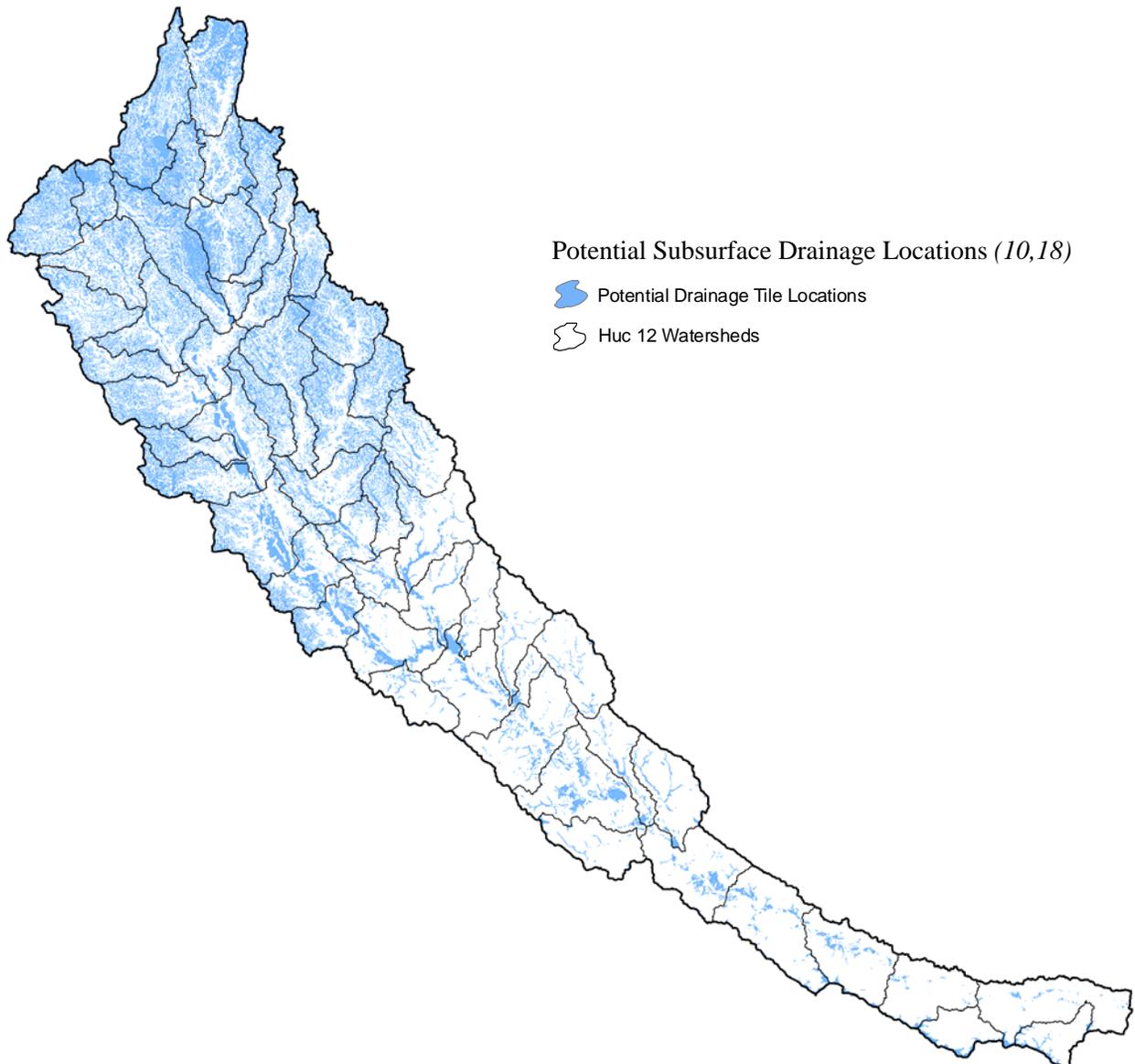


### Physical Description

[Back to Contents](#)

#### Subsurface Drainage *con't*

The map below depicts the likely extent of artificially drained soils in the South Skunk River Watershed. Since actual locations of agricultural drainage is not available, using soil characteristic criteria developed by Dr. Dan Jaynes, USDA ARS National Soil Tilth Laboratory, gives us an idea of where subsurface drainage would likely be necessary for crop production (18). The specific criteria are slope (high value) less than or equal to 2%, either poor or very poor drainage, and soils with a very slow infiltration rate when thoroughly wet (hydrological soil group D). Approximately 30% of the watershed potential has subsurface drainage according to Jaynes criteria, using the SSURGO soils dataset (10).



## Physical Description

[Back to Contents](#)

### Surface Waters Assessment

The South Skunk River and its tributaries are important recreationally and biologically. Paddle sports, hunting, and fishing are common activities on the South Skunk River. There is an 18-mile Skunk River Canoe Trail that extends from Story City to Ames. This trail provides recreational opportunities, such as primitive camping, hiking and fishing. Additionally there is Chichaqua Bottoms Greenbelt in Polk County that is a ten mile corridor with restored wetlands and old river bends. The Greenbelt is also an important recreation area for fishing, hunting, camping and dog training. The watershed as a whole has a diversity of fish and mussel species, some of which are state and federally listed (*see page 27*).

The stream flow and stream data is acquired by the USGS at several locations throughout Iowa. In the South Skunk River Watershed there are 13 gages and the three in the table below are located in the northern, central, and southern portions of the watershed (20). Further summary information is available at the USGS National Water Information Systems website (20).

|  |   | Total Avg. Yield* | Acre-Feet      |                          |
|--|---|-------------------|----------------|--------------------------|
| Stream Flow Data (20)                              | USGS 05470000 South Skunk River near Ames, IA   | Total Avg. Yield* | 95,772         |                          |
|  |   | May-Sept. Yield   | 67,778         |                          |
|  | USGS 05471050 South Skunk River at Colfax, IA   | Total Avg. Yield* | 268,081        |                          |
|  |   | May-Sept. Yield   | 162,204        |                          |
|  | USGS 05471500 South Skunk River near Oskaloosa, IA  | Total Avg. Yield* | 534,352        |                          |
|  |   | May-Sept. Yield   | 253,400        |                          |
|  |   |                   |                | <b>Cubic Feet/Second</b> |
|  | USGS 05470000 South Skunk River near Ames, IA   | Total Avg. Yield* | 132.2          |                          |
|  |   | May-Sept. Yield   | 224.5          |                          |
|  | USGS 05471050 South Skunk River at Colfax, IA   | Total Avg. Yield* | 370.1          |                          |
| May-Sept. Yield                                    |   | 537.4             |                |                          |
| USGS 05471500 South Skunk River near Oskaloosa, IA | Total Avg. Yield*   | 737.6             |                |                          |
|  | May-Sept. Yield   | 839.5             |                |                          |
|  |   | <b>Miles</b>      | <b>Percent</b> |                          |
| Stream Data  | Total-Miles - Major (100K Hydro GIS Layer) (21)   | 2,319.8           | 100.0          |                          |
|  | 303d/TMDL Listed Streams (DEQ) (22)   | 74.6              | 3.2            |                          |
|  | Protected Streams (3)   | 57                | 2.5            |                          |
|  |   |                   | <b>Number</b>  | <b>Percent</b>           |
|  | Number of Fish species (1889-2002) (23)   | 73                | 100.0          |                          |
|  | Number of State and Federally Listed Fish Species (46) ( <i>see pages 27-28 for further information</i> )   | 5                 | 6.8            |                          |
|  | Number of State and Federally Listed Mussel Species (46) ( <i>see pages 27-28 for further information</i> ) | 3                 | NA             |                          |

\* Total Average Yield dates are 10/01/2005 - 09/30/2006

## Physical Description

[Back to Contents](#)

### Surface Waters Assessment *con't*

Land use has a major impact on the quality of streams. In the table, on the next page, a 180-ft buffer on either side of the stream was used to calculate land use directly next to the stream. One hundred and eighty feet was selected as an example because 180-ft is the maximum distance for NRCS practice standard 391, riparian forest buffer.

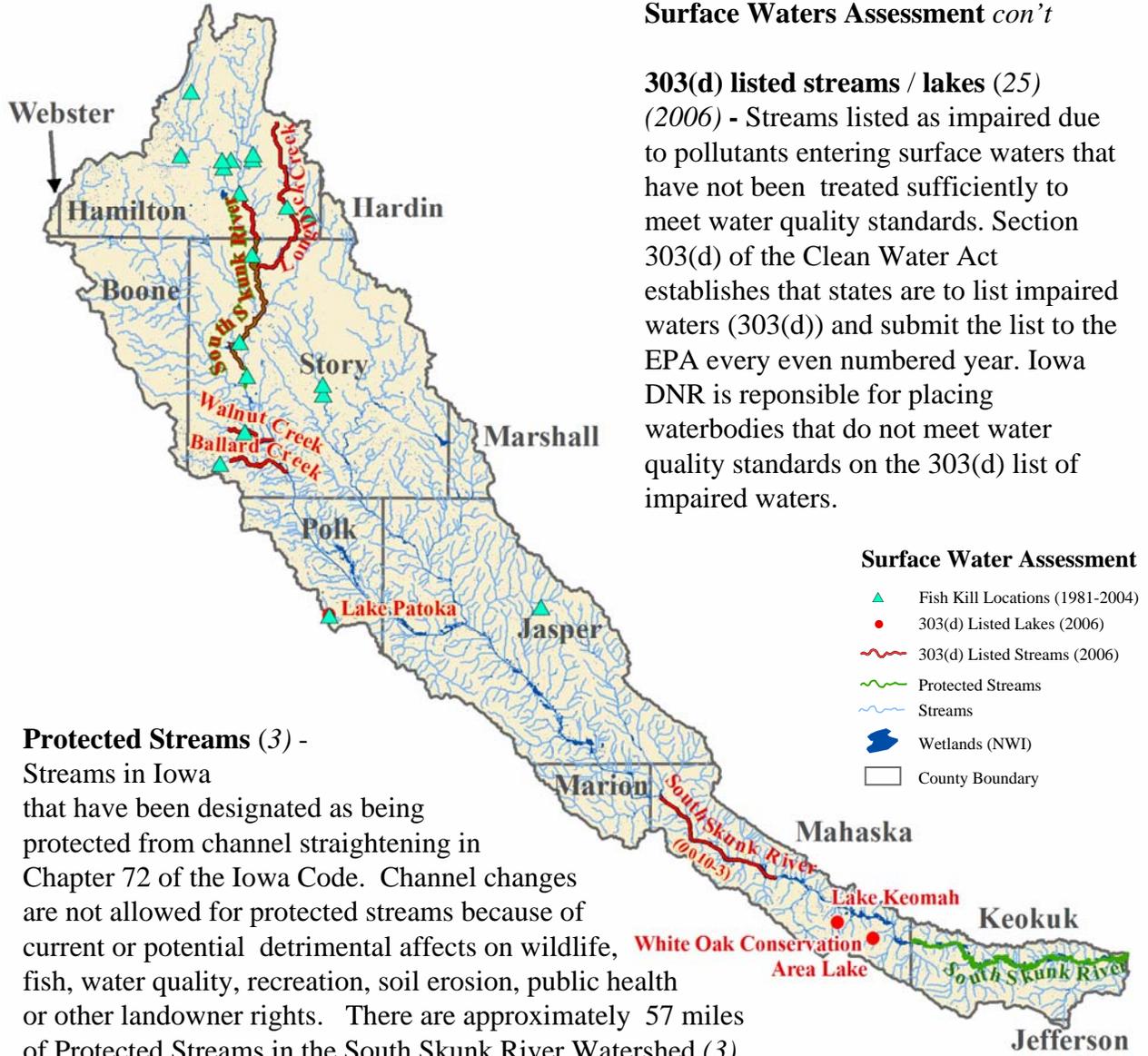
|   |   | Acres          | Percent      |
|---|---|----------------|--------------|
| <b>Land Cover/Use</b><br>(1, 21)<br><br><i>Based on a 180-foot buffer on both sides of all streams in the 100K hydro GIS layer.</i> | Forest  | 19,812.0       | 18.9         |
|   | Row Crops                                     | 34,079.5       | 32.5         |
|   | Grassland/Alfalfa                             | 26,972.7       | 25.8         |
|   | CRP   | 4,218.6        | 4.0          |
|   | Grazed Grassland                              | 10,898.7       | 10.4         |
|   | Developed                                     | 3,682.8        | 3.5          |
|   | Water/Wetland                                 | 5,056.7        | 4.8          |
|   | Other   | 17.9           | 0.0          |
|   | <b>Total Acres of 180-foot Stream Buffers</b> | <b>104,739</b> | <b>100.0</b> |

Physical Description and Resource Priorities/Capabilities

[Back to Contents](#)

Surface Waters Assessment *con't*

**303(d) listed streams / lakes (25)**  
(2006) - Streams listed as impaired due to pollutants entering surface waters that have not been treated sufficiently to meet water quality standards. Section 303(d) of the Clean Water Act establishes that states are to list impaired waters (303(d)) and submit the list to the EPA every even numbered year. Iowa DNR is responsible for placing waterbodies that do not meet water quality standards on the 303(d) list of impaired waters.



- Surface Water Assessment**
- ▲ Fish Kill Locations (1981-2004)
  - 303(d) Listed Lakes (2006)
  - ~ 303(d) Listed Streams (2006)
  - ~ Protected Streams
  - ~ Streams
  - Wetlands (NWI)
  - County Boundary

**Protected Streams (3) -**

Streams in Iowa that have been designated as being protected from channel straightening in Chapter 72 of the Iowa Code. Channel changes are not allowed for protected streams because of current or potential detrimental affects on wildlife, fish, water quality, recreation, soil erosion, public health or other landowner rights. There are approximately 57 miles of Protected Streams in the South Skunk River Watershed (3).

**Wetlands (NWI - National Wetland Inventory) (24)** – Records of wetland locations developed by the U.S. Fish & Wildlife Service. Wetlands are interpreted from aerial photography, so some wetlands are missing due to limitations of scale, photo quality, inventory techniques and other factors.

**Fish Kills (59)** – Locations of fish kills reported to the DNR. The causes of the kills vary from animal waste, low dissolved oxygen, municipal wastewater, bacteria, fertilizer, industrial chemicals, unknown causes, winter kill and other unknown natural causes. There has been an estimated 23,000 fish killed at fifteen of the sites between 1981 and 2004. Four of the sites do not have fish kill numbers reported due to unreliable data.

## Resource Priorities/Capabilities

[Back to Contents](#)

### Surface Waters Assessment *con't*

| 2006 Water Quality Concerns - 303d List and TMDL Parameters |                                  |       |                 |                                    |       |                 |
|---|----------------------------------|-------|-----------------|------------------------------------|-------|-----------------|
| Impaired Streams (303d) (22,25)                             |                                  |       |                 |                                    |       |                 |
| Segment   | Water Body                       | Miles | Use Impaired    | Cause                              | Class | Use Class       |
| IA 03-SSK-0010_3  | South Skunk River                | 14.4  | Drinking Water  | Nitrate                            | 5a    | B(WW), C        |
| IA 03-SSK-0030_2  | South Skunk River                | 19.9  | Primary Contact | Indicator Bacteria                 | 5a    | A 1, B(WW), HQR |
| IA 03-SSK-0030_3  | South Skunk River                | 6.1   | Aquatic Life    | Biological                         | 5b    | B(LR), HQR      |
| IA 03-SSK-0057_0  | Ballard Creek                    | 7.2   | Aquatic Life    | Ammonia, Organic Enrichment/Low DO | 5b    | B(LR)           |
| IA 03-SSK-0058_0  | Walnut Creek                     | 5.7   | Aquatic Life    | Biological                         | 5b    | B(LR)           |
| IA 03-SSK-0090_0  | Long Dick Creek                  | 7.4   | Aquatic Life    | Biological                         | 5b    | B(LR)           |
| IA 03-SSK-0091_0  | Long Dick Creek                  | 14    | General Use     | Ammonia, Organic Enrichment/Low DO | 5b    | B(LR)           |
| Impaired Lakes (303d) (22, 25)                              |                                  |       |                 |                                    |       |                 |
| Segment   | Water Body                       | Acres | Use Impaired    | Cause                              | Class | Use Class       |
| IA 03-SSK-00118-L_0   | White Oak Conservation Area Lake | 22    | Aquatic Life    | pH                                 | 5a    | A 1, B(LW)      |
|   |                                  |       | Primary Contact | Algae, pH, Turbidity               |       |                 |
| IA 03-SSK-00120-L_0   | Lake Keomah                      | 84    | Aquatic Life    | pH                                 | 5a    | A 1, B(LW), C   |
|   |                                  |       | Primary Contact | Algae, pH, Turbidity               |       |                 |
| IA 03-SSK-0056-L_0  | Lake Patoka                      | 50    | General Use     | Chlorine                           | 5b    | General Use     |

See Appendix A (page 53) for definitions

### Waterbodies requiring a TMDL

There are a number of causes for the impaired waters requiring a TMDL in the South Skunk River Watershed. Ammonia, organic enrichment/low DO, indicator bacteria, chlorine and biological causes are the primary water quality impairments requiring a TMDL in the northern part of the watershed. In the southern part of the watershed nitrate, algae, pH and turbidity are the primary causes for impaired waters that require a TMDL.

#### Northern South Skunk River Watershed

Approximately 20 miles of the South Skunk River (segment 0010) is partially supported due to indicator bacteria for primary contact use. Thirty-eight percent (9 out of 24) of the samples collected during the recreation seasons of 2002-2004 exceeded the single-sample maximum of 235 organisms/100ml (26, 27). U.S. EPA guidelines suggest that if E. coli levels exceed the single-sample criterion in more than 10% of the samples, the primary contact use should then be classified as partially supported (26, 27). Continuing north on this same stretch of the South Skunk River just where it crosses into Hamilton County (see map on previous page) six miles are partially supported for aquatic life uses due to biological causes. In 2003 data was collected and assessed as part of the DNR/UHL stream biocriteria project (26). The results of the assessment were a Fish Index of Biotic Integrity (FIBI)

## Resource Priorities/Capabilities

[Back to Contents](#)

### Surface Waters Assessment

#### Waterbodies requiring a TMDL *con't*

##### Northern South Skunk River Watershed *con't*

score of 48 (Fair)\* and a Benthic Macroinvertebrate Index of Biotic Integrity (BMIBI) of 41 (Fair)\* (26). The reason this portion of the river was assessed as partially supporting was based on comparing FIBI and BMIBI scores with stream ecoregion reference sites (biological impairment criteria (BIC)) from previous 305b reports (26). The reference sites are from 1994-2004 (26).

Ballard Creek is on the impaired waters list as partially supported due to a fish kill in August of 2002 (25). The fish kill occurred on a 40-meter stretch of river and was believed to be caused by animal waste (26). It has remained on the 303(d) list due to the potential for future kills from any unknown causes (26).

Just north of Ballard Creek is Walnut Creek (see map on page 17). Walnut Creek is also listed as partially supported based on the results of a fish kill, in addition to the IDNR/UHL biocriteria sampling that took place in 1999 (26). The results of the biocriteria assessment were a FIBI score of 42 (Fair)\* and a BMIBI score of 59 (Good)\* (26). These scores were compared to established BIC from the 2002 305b report and was then assessed as only partially supporting aquatic life uses. There was also a fish kill of approximately 550 fish in 2003 that could have occurred due to winter conditions (naturally caused) but could also have been caused by a fuel accelerant used near the stream (26).

Two sections of Long Dick Creek were assessed as impaired in 2006. Section 0090 that runs into the South Skunk River is assessed as partially supported based on data collected in the 2003 DNR/UHL biocriteria project (26). The results were FIBI scores of 35 (Fair)\*; 33 (Fair) and BMIBI scores of 33 (Fair)\*; 45 (Fair) (26). The FIBI BIC for this ecoregion is 53 for riffles, of which the score of 33 failed but it did pass the non-riffle BIC of 32 with the corresponding score of 35 (26). The BMIBI reference BIC is 62 which also does not pass. The next upstream segment of Long Dick Creek was assessed as partially supporting general use of the stream due to a fish kill in 2004 (26). The fish kill was identified as animal waste that had entered this segment of Long Dick Creek through a tile line (26).

The only lake in the northern portion of the South Skunk Watershed that is listed as impaired is Lake Patoka. Lake Pakota is in the central portion of the watershed (see map on page 17) and is assessed as partially supported for general use due to a fish kill on April 14, 2005 (26). The cause of the fish kill is unknown but previous to this date a fish kill had occurred by the discharge of city water (containing chlorine) into the lake (26). Approximately 80 fish were killed in this event (26).

As of April 2008, TMDL's are scheduled for Walnut Creek by 2012 (subject to change), Long Dick Creek by 2010, and Lake Keomah by 2011 (subject to change).

\* The assessment looks at 12 metrics for BMIBI and 12 metrics for FIBI that are summed together to get a number between 0 (poor) and 100 (excellent).



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## Resource Priorities/Capabilities

[Back to Contents](#)

### Surface Waters Assessment

#### Waterbodies requiring a TMDL *con't*

##### Southern South Skunk River Watershed

In the southern portion of the watershed approximately 14 miles of the South Skunk River is impaired due to excess nitrate concentrations (25). The results from the 2002-2004 IDNR ambient monthly monitoring at Oskaloosa Station show that there were 11 out of 36 violations of the nitrate maximum contaminated level (MCL) (26). This exceeds the 25% of the samples criterion, making this portion of the river as not supported for Class C uses (26).

Both of the lakes in the southern portion of the watershed are impaired and require a TMDL due to algae, pH, and turbidity for both primary contact recreation and aquatic life support (25). White Oak Conservation Area Lake is not supported for primary contact recreation due primarily to very poor water transparency making it aesthetically objectionable conditions (26). The results of monitoring conducted by ISU, using Carlson's trophic state indices, suggested extremely high levels of phosphorus, moderately high production of suspended algae, and very poor water transparency (26). In addition the presence of bluegreen algae may also be present and contributing to the impairment of Class A uses (26). Aquatic life uses (B(LW)) are partially supported due to excessive nutrient loading, bluegreen algae, siltation in the lake, and high pH levels (26). Eight out of 15 samples collected were greater than 9.0 units (26). Ten percent or less of the samples collected need to be less than 9.0 pH units to pass Iowa's pH assessment (26).

Lake Keomah has similar impairments to White Oak Conservation Area Lake. Lake Keomah is partially supported for primary contact recreation due to high levels of phosphorus, moderately high levels of chlorophyll-a, and poor water transparency (26). Class B(LW) or aquatic life uses are also partially supporting due to high levels of pH (26). Seven out of 15 samples collected were greater than 9.0 pH units (26). It is also noted in the 305b report that large populations of bluegreen algae are also a problem in Lake Keomah (26).



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## Resource Priorities/Capabilities

[Back to Contents](#)

### **Water Erosion (Sheet and Rill)**

Water erosion from cropland accounts for nearly 90% of Iowa's soil erosion (28). In Iowa there has been a steady decline in sheet and rill erosion from 1982 to 1997 but on average soil erosion remains above sustainable levels (28,30,31). In order to maintain high levels of soil productivity soil erosion should not exceed the "T" value established for a particular soil mapping unit. In Iowa, "T" ranges from 2-5 tons/acre/year. However, sediment losses well below "T" may still be detrimental to stream water quality and aquatic integrity.

### **National Resources Inventory (NRI)**

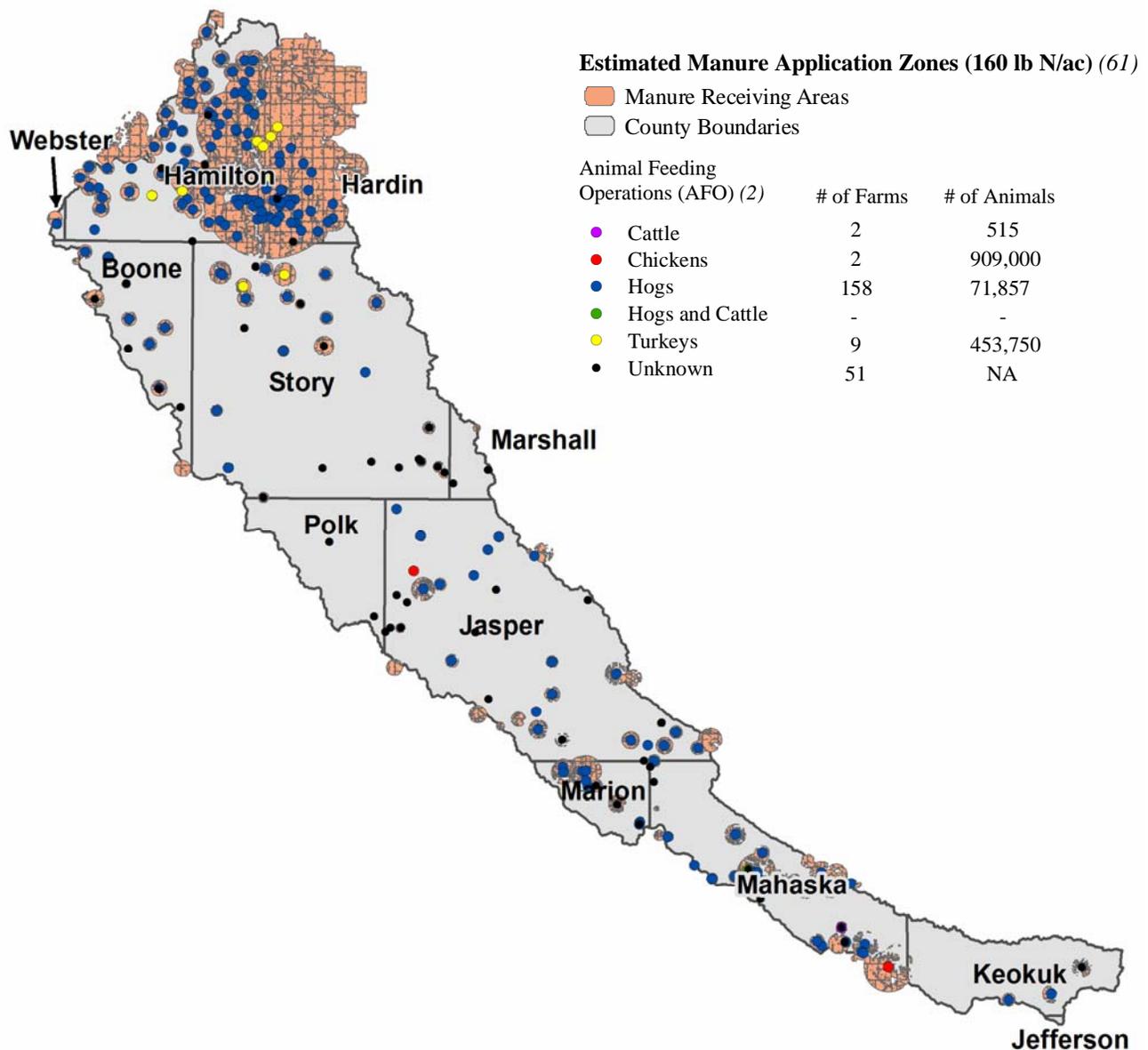
In the South Skunk River Watershed overall soil loss (tons/year) due to water erosion, decreased approximately 26,300 acres from 1982 to 1997 according to the NRI data (29). In 1982 the South Skunk River Watershed had a soil loss of approximately 11 tons/acre/year, attributed to water erosion, with 63% from cultivated cropland (29). In 1997 soil loss decreased to 6 tons/acre/year with 69% from cultivated cropland (29). There has been a decline in soil loss by water erosion in the South Skunk River Watershed but it is still just above tolerable levels. A likely contributor to the decline in erosion is the increased enrollment of highly erodible land in conservation programs (28).

## Resource Priorities/Capabilities

[Back to Contents](#)

In Iowa, manure from livestock is commonly spread on cropland as fertilizer (32). Potential challenges with using manure as a fertilizer is bacteria and nutrients from the manure delivered to the stream via surface runoff or subsurface drainage networks (32). This is also a potential problem from cattle feedlots and pastures. Additionally grazing along the stream can have detrimental effects on stream bank stability when cattle have direct access to the stream.(2).

There are approximately 170 animal feeding operations (AFOs) in the South Skunk River Watershed (see table below) (2). The map below shows how much nitrogen from manure would be spread on the row crop land surrounding the AFO if it was applied at the agronomic rate of 160 lb N/ac for a two year crop rotation (61).





## Resource Priorities/Capabilities

[Back to Contents](#)

### Facilities/Sites Subject to Environmental Regulation

#### **Solid Waste Permit Facilities include (33):**

- Municipal and industrial waste landfills
- Transfer stations
- Compost facilities and some recycling centers
- Land application, land farming and beneficial reuse
- Appliance demanufacturing
- Cathode ray tube device collection and recycling

#### **Underground Storage Tanks (36):**

- Storage of substances, primarily petroleum products

#### **National Pollutant Discharge Elimination System**

(NPDES) (40): - Regulates the discharge of Wastewater into surface waters

#### **Resource Conservation and Recovery Act**

(RCRA) (40): – Management of hazardous waste in treatment, storage or disposal units

#### **Toxic Release Inventory System (TRIS) (40): –**

Data on manufacturing facilities that release toxic chemicals into the environment through the air, water, and land.

#### **Non-National Priority Sites (37): – Hazardous waste sites**

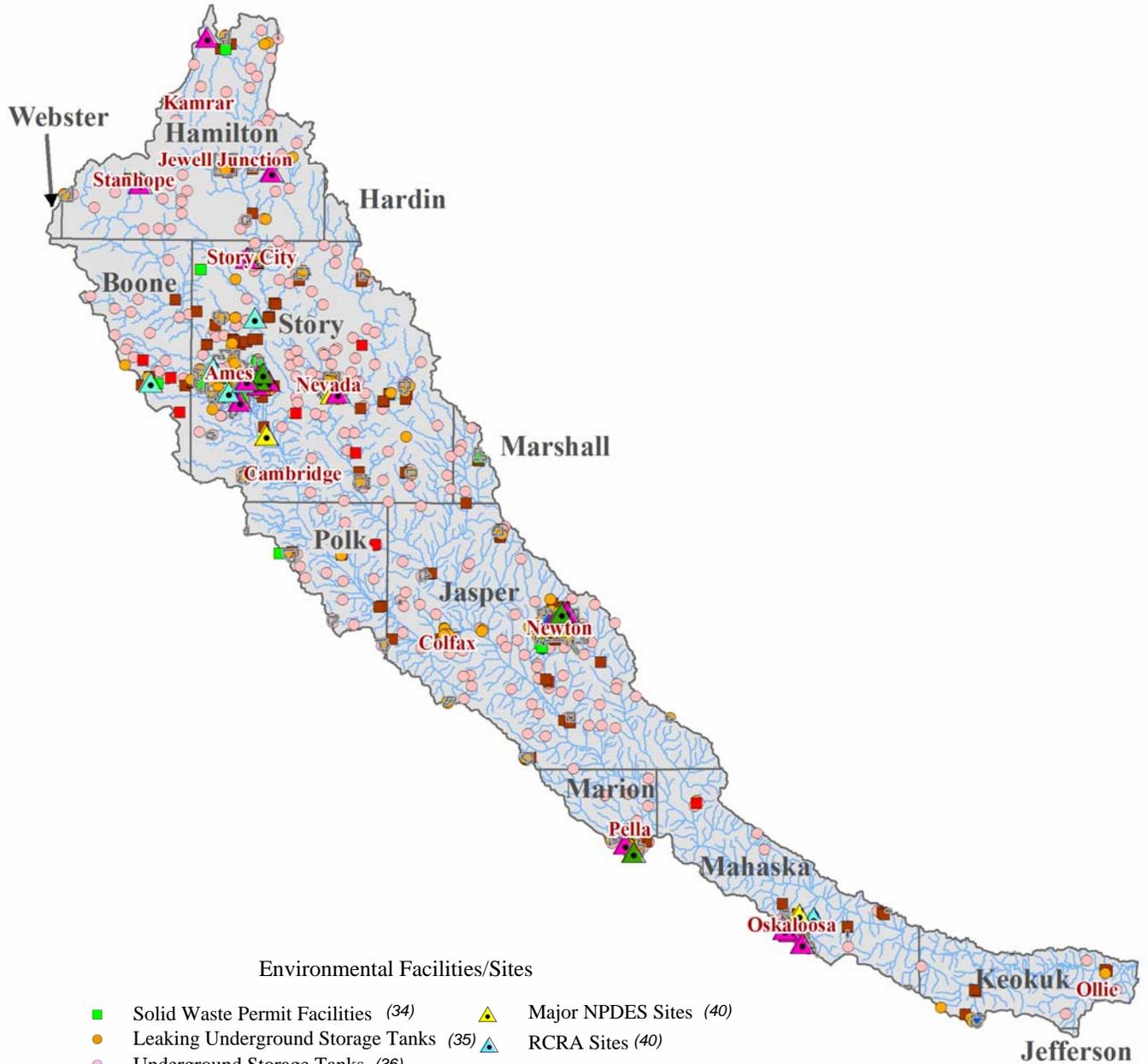
that did not make the final EPA National Priority List (NPL) (NPL- sites eligible for extensive, long-term clean-up actions under the Superfund program)

**Unsewered Communities (38) –** Small communities with aging septic systems or drain tile networks that discharge sewage directly into surface waters. There are 104 reported homes in need of septic systems that are in the watershed. Those counties include: Story County - 36 homes, Boone County - 47 homes, and Mahaska County – 21 homes. Polk county is estimated to have 9 homes without septic systems.

Resource Priorities/Capabilities

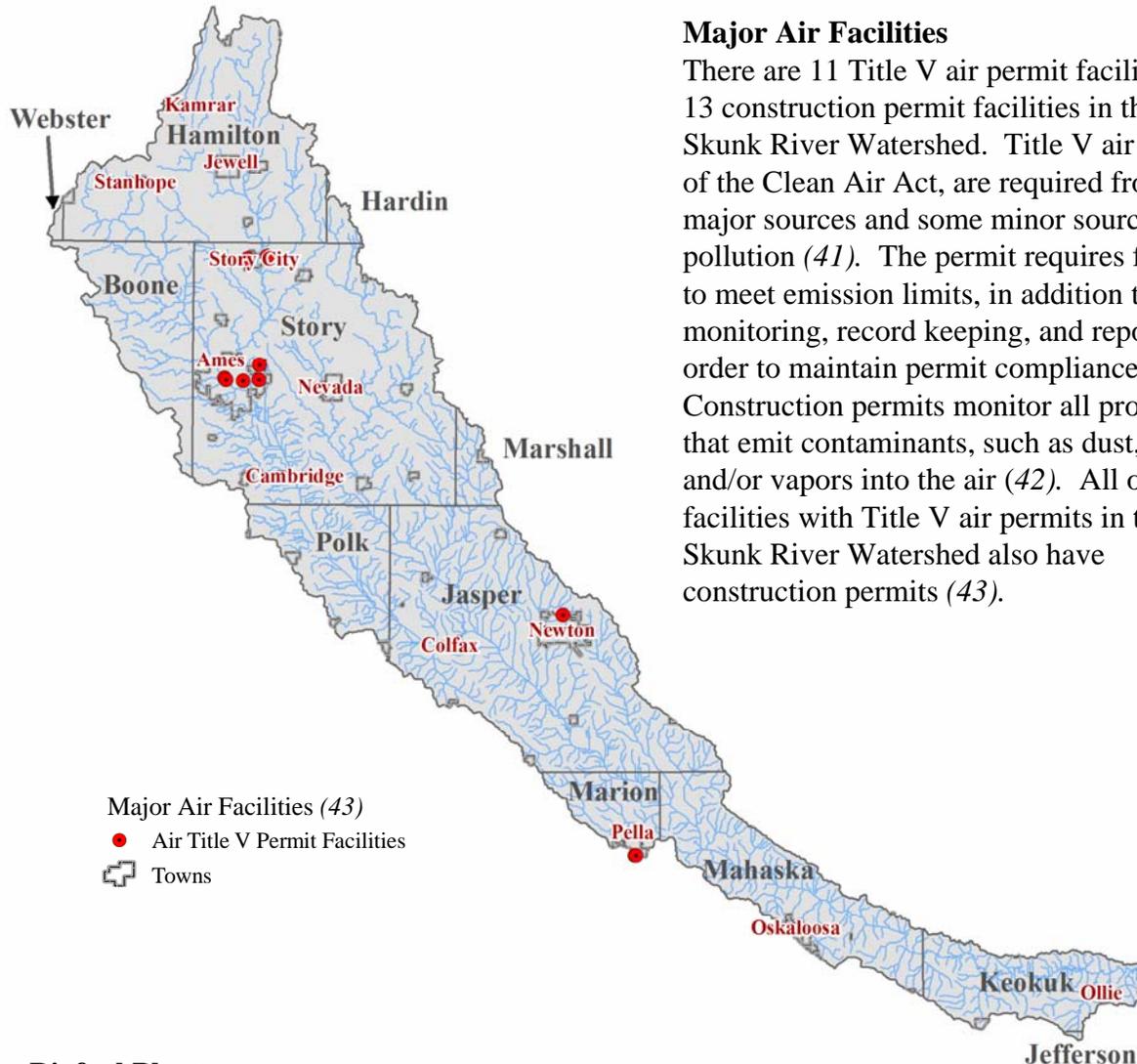
[Back to Contents](#)

Facilities/Sites Subject to Environmental Regulation *con't*



## Resource Priorities/Capabilities

[Back to Contents](#)



### Major Air Facilities

There are 11 Title V air permit facilities and 13 construction permit facilities in the South Skunk River Watershed. Title V air permits, of the Clean Air Act, are required from all major sources and some minor sources of air pollution (41). The permit requires facilities to meet emission limits, in addition to monitoring, record keeping, and reporting in order to maintain permit compliance (41). Construction permits monitor all processes that emit contaminants, such as dust, fumes and/or vapors into the air (42). All of the facilities with Title V air permits in the South Skunk River Watershed also have construction permits (43).

### Biofuel Plants

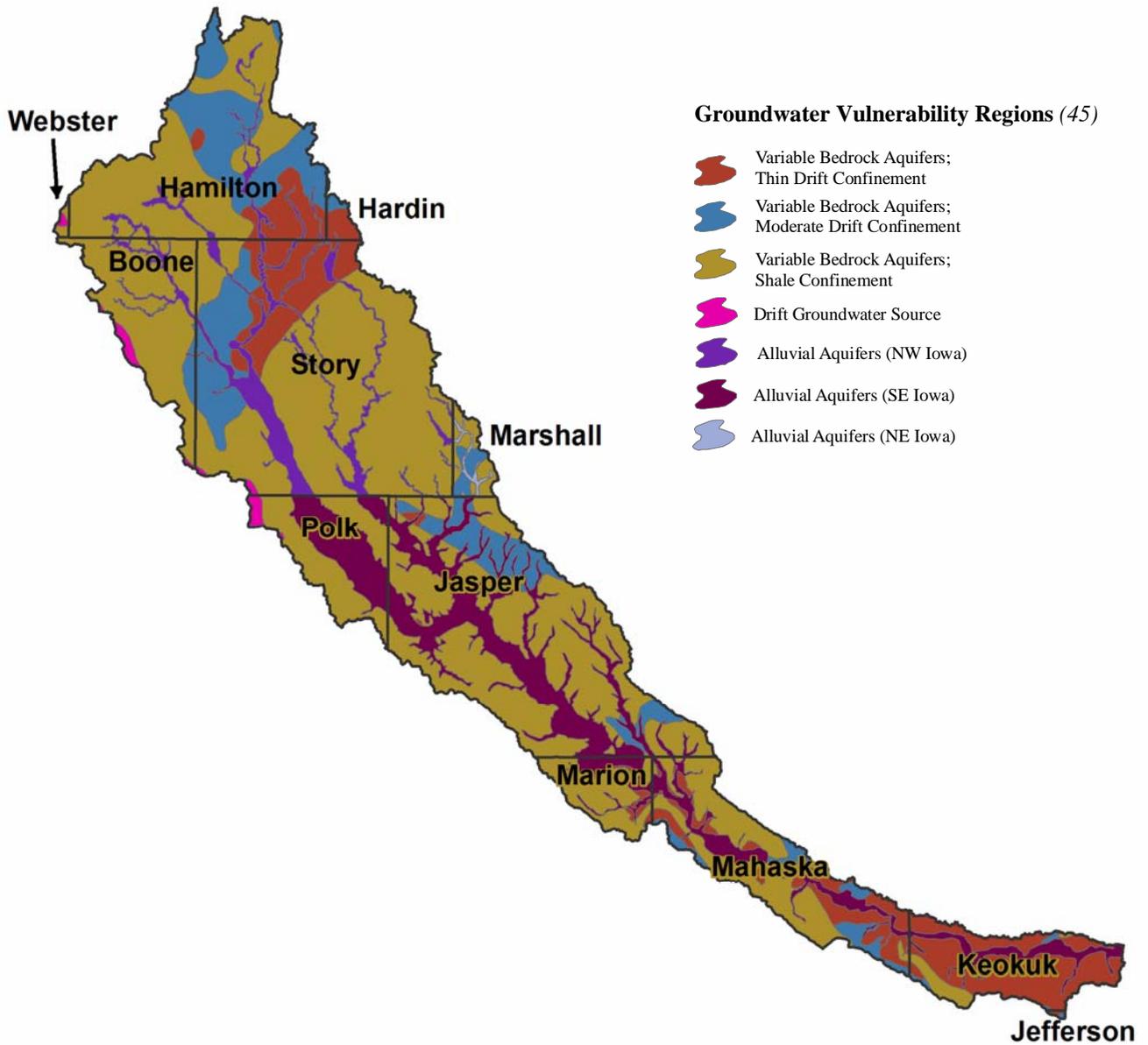
In the state of Iowa, as of May 2007, there were approximately 60 operating or proposed biofuel plants (44). At the time of the report there were two ethanol plants in the South Skunk River Watershed, one in Jewell, IA called POET Refining and one in Nevada, IA called Lincolnway Energy, LLC (44). There were also two biodiesel plants, one located in Nevada, IA called Mid-States Biodiesel and one in Newton, IA called Central Iowa Energy. The feedstock that POET Refining and Lincolnway Energy, LLC are using is corn, and the current capacity is 62 and 50 million gallons/year, respectively (44). The feedstock at Mid-States Biodiesel and Central Iowa Energy are both multiple feedstocks and the current capacity is .45 and 30 million gallons/year respectively (44). It is estimated that 2-4 gallons of water is required for every gallon of biofuel produced. This means, for example, that POET Refining would use 124 million gallons of water per year, using the multiplier of 2 gallons of water/gallon of ethanol.

**Resource Priorities/Capabilities**

[Back to Contents](#)

**Ground Water**

The groundwater vulnerability regions are areas with similar hydrogeologic characteristics and are therefore areas thought to have similar potentials for groundwater and/or well contamination (45). The regions were mapped looking at geologic, soil, bedrock aquifers, thickness of Quaternary deposits, alluvial aquifers, sinkholes, and agricultural drainage wells (45).





[Back to Contents](#)

## **Resource Priorities/Capabilities**

### **Fish and Wildlife**

The primary sources of information on fish and wildlife in the South Skunk Watershed to date are the Iowa DNR's Natural Inventory database (46) and the Iowa DNR's biological assessment of streams and rivers (47). The Iowa DNR Natural Areas Inventory is a database of state and federal listed species and their distributions in Iowa by county (46). The IDNR's biological assessment of streams and rivers involves the sampling of fish and benthic macroinvertebrates in order to assess the stream or river's biotic integrity (47). Another assessment that just started recently by IDNR is the Multiple Species Inventory and Monitoring Program (MSIM) (48). It is a standardized assessment/survey intended to provide a basic inventory of all wildlife using a randomized sampling design (48). Currently this program has only covered seven counties, so is not included in this assessment, but could be a useful dataset for future watershed planning.

The Iowa DNR biological assessment categorizes stream health by using a fish index of biotic integrity (FIBI) and benthic macroinvertebrate index of biotic integrity (BMIBI). The assessment looks at 12 metrics that are summed together to get a number between 0 (poor) and 100 (excellent) (47). The IDNR sampled several sites in the Des Moines Lobe portion of the South Skunk watershed.

#### Fish Index of Biotic Integrity (FIBI) - See Table, Appendix A (page 54)

The average score for the FIBI in the watershed, for all years (1995–2004), was 40.10 or a fair rating, out of 31 sites sampled (this includes counting sites sampled multiple years) (49). In the most recent year sampled, 2004, one site was sampled on Mud Creek and the condition of fish as an indicator of stream health was also rated fair (49). Six sites fell into the poor category, three sites on Bear Creek (two in 2003, one in 1997) near Roland and the other three poor sites were sampled in 1997, one site on Long Dick Creek near Roland, one site on the South Skunk River near Ellsworth, and one on Drainage Ditch 71 near Jewell (49). Seven sites were categorized as good. The most recent sites were on the Squaw Creek in 2000 and on the South Skunk River in 2003, both near Ames. There were no sites in the excellent category (49). There are five fish listed as threatened on the state list that potentially reside in the South Skunk River Watershed (see next page) (42).

#### Benthic Macroinvertebrate Index of Biotic Integrity (BMIBI) - See Table, Appendix A (page 54)

The benthic macroinvertebrates assemblage status is good, with a rating of 59.13 (49). This is a mean score based on 29 sites, as two sites did not have scores. There are no sites with a poor rating (49). Seventeen sites were considered good and four sites were considered excellent (49).

Currently there is little information available on the wildlife of the South Skunk River Watershed, other than what is available in the Natural Areas Inventory database (see next five pages). As more counties are completed in the Multiple Species Inventory and Monitoring Program (MSIM) this could be a source for wildlife status and distributions throughout the watershed. There is some information available on River Otters on the Iowa DNR website at

## Resource Priorities/Capabilities

[Back to Contents](#)

### Fish and Wildlife *con't*

<http://www.iowadnr.com/wildlife/files/otter.html>. River otters were released in two locations in the South Skunk River Watershed (50). In 1998-1999 five otters of unknown sex were released at Peterson Pits near Ames, IA and in 1997 six females and six males were released into the Skunk River near Chichaqua, IA (50). Little information is published on the current population, other than the fact they seem to be breeding in most counties throughout Iowa (50).

### Federal and State Listed Species (46)

S = Species of Concern – species which problems of status or distribution are suspected but not documented, thus are not protected by law.

T = Threatened – species that are likely to become endangered if factors affecting its vulnerability are not reversed.

E = Endangered – is any fish, plant, or wildlife species that is protected by law because it is in danger of extinction through part of its range.

| Federal and State Listed Species (46) |                        |                                   |        |         |        |          |        |        |        |         |        |          |      |       |
|---------------------------------------|------------------------|-----------------------------------|--------|---------|--------|----------|--------|--------|--------|---------|--------|----------|------|-------|
|                                       | Name                   |                                   | Status |         | County |          |        |        |        |         |        |          |      |       |
|                                       | Common                 | Scientific                        | State  | Federal | Boone  | Hamilton | Hardin | Jasper | Keokuk | Mahaska | Marion | Marshall | Polk | Story |
| Reptiles & Amphibians                 | Blanding's Turtle      | <i>Emydoidea blandingii</i>       | T      |         |        | x        |        | x      |        |         |        |          | x    | x     |
|                                       | Mudpuppy               | <i>Necturus maculosus</i>         | T      |         | x      |          |        |        |        |         |        |          |      |       |
|                                       | Ornate Box Turtle      | <i>Terrapene ornata</i>           | T      |         | x      |          |        |        |        |         |        |          |      |       |
|                                       | Slender Glass Lizard   | <i>Ophisaurus attenuatus</i>      | T      |         |        |          |        |        |        |         |        |          | x    |       |
|                                       | Smooth Green Snake     | <i>Liochlorophis vernalis</i>     | S      |         | x      |          |        | x      | x      |         | x      |          |      | x     |
| Fish                                  | Blacknose Shiner       | <i>Notropis heterolepis</i>       | T      |         |        |          |        |        |        |         |        |          | x    | x     |
|                                       | Grass Pickerel         | <i>Esox americanus</i>            | T      |         |        |          |        |        |        |         |        |          | x    |       |
|                                       | Orangethroat Darter    | <i>Etheostoma spectabile</i>      | T      |         |        |          |        |        |        |         |        |          |      | x     |
|                                       | Topeka Shiner          | <i>Notropis topeka</i>            | T      | E       | x      | x        |        |        |        |         |        | x        |      |       |
|                                       | Western Sand Darter    | <i>Ammocrypta clara</i>           | T      |         | x      |          |        |        |        |         |        |          | x    |       |
| Mussels                               | Creepers               | <i>Strophitus undulatus</i>       | T      |         |        | x        | x      |        |        |         |        |          |      |       |
|                                       | Cylindrical Papershell | <i>Anodontoides ferussacianus</i> | T      |         |        | x        |        |        |        |         |        |          |      |       |
|                                       | Round Pigtoe           | <i>Pleurobema sintoxia</i>        | E      |         |        | x        | x      |        |        |         |        |          |      |       |

**Resource Priorities/Capabilities**

[Back to Contents](#)

**Federal and State Listed Species *con't***

| Federal and State Listed Species (46) <i>con't</i> |                        |                                 |        |         |        |          |        |        |        |         |        |          |      |       |
|--|------------------------|---------------------------------|--------|---------|--------|----------|--------|--------|--------|---------|--------|----------|------|-------|
|  | Name                   |                                 | Status |         | County |          |        |        |        |         |        |          |      |       |
|  | Common                 | Scientific                      | State  | Federal | Boone  | Hamilton | Hardin | Jasper | Keokuk | Mahaska | Marion | Marshall | Polk | Story |
| Birds  | Henlow's Sparrow       | <i>Ammodramus henslowii</i>     | T      |         |        |          |        |        |        | x       |        |          |      |       |
|  | Long-eared Owl         | <i>Asio otus</i>                | T      |         | x      |          |        |        |        |         | x      |          |      |       |
|  | Red-shouldered Hawk    | <i>Buteo lineatus</i>           | E      |         | x      |          |        |        |        |         |        | x        |      |       |
| Insects  | Purplish Copper        | <i>Lycaena helloides</i>        | S      |         |        |          |        |        |        |         |        |          |      | x     |
|  | Regal Fritillary       | <i>Speyeria idalia</i>          | S      |         |        |          |        | x      |        |         |        |          |      | x     |
|  | Wild Indigo Dusky Wing | <i>Erynnis baptisiae</i>        | S      |         |        |          |        |        |        |         | x      |          |      | x     |
|  | Zabulon Skipper        | <i>Poanes zabulon</i>           | S      |         |        |          |        |        |        |         |        |          | x    | x     |
|  | Zebra Swallowtail      | <i>Eurytides marcellus</i>      | S      |         |        |          |        |        |        |         |        |          |      | x     |
| Mammals  | Indiana Bat            | <i>Myotis sodalis</i>           | E      | E       |        |          |        | x      | x      |         | x      |          |      |       |
|  | Plains Pocket          | <i>Perognathus flavescens</i>   | E      |         | x      |          |        |        |        |         |        |          | x    |       |
|  | Southern Bog           | <i>Synatomys cooperi</i>        | T      |         | x      |          |        |        | x      | x       | x      |          |      | x     |
|  | Spotted Skunk          | <i>Spilogale putorius</i>       | E      |         |        |          |        |        |        |         |        |          | x    |       |
| Plants   | Alkali Muhly           | <i>Muhlenbergia asperifolia</i> | S      |         | x      |          |        |        |        |         |        |          |      | x     |
|  | Arrow Grass            | <i>Triglochin maritimum</i>     | T      |         | x      |          |        |        |        |         |        |          |      | x     |
|  | Blue Giant Hyssop      | <i>Agastache foeniculum</i>     | E      |         |        |          |        |        |        |         |        |          |      | x     |
|  | Broom Sedge            | <i>Andropogon virginicus</i>    | S      |         |        |          |        |        |        |         | x      |          |      |       |
|  | Bush's Sedge           | <i>Carex bushii</i>             | S      |         |        |          |        | x      |        | x       |        |          |      |       |
|  | Crowfoot Clubmoss      | <i>Lycopodium digitatum</i>     | S      |         |        |          |        |        |        | x       |        |          |      |       |
|  | Earleaf Foxglove       | <i>Tomanthera auriculata</i>    | S      |         | x      |          |        | x      | x      | x       |        |          | x    | x     |
|  | Field Sedge            | <i>Carex conoidea</i>           | S      |         |        |          |        |        |        |         |        | x        |      |       |
|  | Flax-leaved Aster      | <i>Aster linarifolius</i>       | T      |         |        |          |        | x      |        |         |        |          |      |       |
|  | Fringed Sedge          | <i>Carex crinita</i>            | S      |         |        |          |        |        | x      |         |        |          |      |       |

Resource Priorities/Capabilities

[Back to Contents](#)

Federal and State Listed Species *con't*

| Federal and State Listed Species (46) <i>con't</i> |                              |                           |        |         |        |          |        |        |        |         |        |          |      |       |
|--|------------------------------|---------------------------|--------|---------|--------|----------|--------|--------|--------|---------|--------|----------|------|-------|
|  | Name                         |                           | Status |         | County |          |        |        |        |         |        |          |      |       |
|  | Common                       | Scientific                | State  | Federal | Boone  | Hamilton | Hardin | Jasper | Keokuk | Mahaska | Marion | Marshall | Polk | Story |
| Plants   | Glomerate Sedge              | Carex aggregata           | S      |         | x      |          |        |        |        | x       | x      |          |      |       |
|  | Golden Corydalis             | Corydalis aurea           | T      |         |        |          |        |        |        |         | x      |          |      |       |
|  | Goosefoot                    | Chenopodium missouriensis | S      |         | x      |          |        |        |        |         |        |          |      |       |
|  | Great Plains Ladies'-tresses | Spiranthes magnicamporum  | S      |         | x      |          |        |        |        |         |        |          | x    |       |
|  | Green Adder's Mouth          | Malaxis unifolia          | S      |         |        |          |        |        |        |         |        |          |      | x     |
|  | Green Violet                 | Hybanthus concolor        | T      |         | x      |          |        |        |        |         |        |          |      |       |
|  | Hawthorn                     | Crataegus pruinosa        | S      |         | x      |          |        |        |        |         |        |          |      |       |
|  | Hill's Thistle               | Cirsium hillii            | S      |         |        |          |        |        | x      |         | x      |          | x    | x     |
|  | Hooker's Orchid              | Platanthera hookeri       | T      |         |        |          |        |        |        |         |        |          |      | x     |
|  | Leafy Northern Green Orchid  | Platanthera hyperborea    | T      |         |        |          |        |        |        |         |        |          |      | x     |
|  | Little Grape Fern            | Botrychium simplex        | T      |         |        |          |        |        |        |         |        | x        |      |       |
|  | Marginal Shield Fern         | Dryopteris marginalis     | T      |         |        |          |        | x      |        |         |        |          |      |       |
|  | Meadow Bluegrass             | Poa wolfii                | S      |         |        | x        |        |        |        | x       |        | x        |      | x     |
|  | Muskroot                     | Adoxa moschatellina       | S      |         |        |          |        | x      |        |         |        |          |      |       |
|  | Nodding Thistle              | Cirsium undulatum         | S      |         | x      |          |        |        |        |         |        |          |      | x     |
|  | Northern Adder's-tongue      | Ophioglossum pusillum     | S      |         |        |          |        |        |        | x       |        | x        |      |       |
|  | Nothern Black Currant        | Ribes hudsonianum         | T      |         |        |          |        | x      |        |         |        |          |      |       |
|  | Oak Fern                     | Gymnocarpium dryopteris   | T      |         |        |          |        | x      |        |         |        |          |      |       |
|  | Oval Ladies'-tresses         | Spiranthes ovalis         | T      |         |        | x        |        |        | x      |         |        | x        |      | x     |
|  | Pink Milkwort                | Polygala incarnata        | T      |         |        |          |        |        | x      |         |        | x        |      |       |
| Prairie Bush Clover                                | Lespedeza leptostachya       | T                         | T      |         |        |          |        |        |        |         | x      |          | x    |       |

Resource Priorities/Capabilities

[Back to Contents](#)

Federal and State Listed Species *con't*

| Federal and State Listed Species (46) <i>con't</i> |                                 |                                 |        |         |        |          |        |        |        |         |        |          |      |       |
|--|---------------------------------|---------------------------------|--------|---------|--------|----------|--------|--------|--------|---------|--------|----------|------|-------|
|  | Name                            |                                 | Status |         | County |          |        |        |        |         |        |          |      |       |
|  | Common                          | Scientific                      | State  | Federal | Boone  | Hamilton | Hardin | Jasper | Keokuk | Mahaska | Marion | Marshall | Polk | Story |
| Plants   | Pretty Dodder                   | <i>Cuscuta indecora</i>         | S      |         |        |          |        |        |        |         |        |          |      | X     |
|  | Ragwort                         | <i>Senecio pseud aureus</i>     | S      |         | X      |          |        |        |        |         |        |          |      |       |
|  | Rough Bedstraw                  | <i>Galium asprellum</i>         | S      |         |        |          |        |        |        | X       |        |          |      |       |
|  | Showy Lady's Slipper            | <i>Cypripedium reginae</i>      | T      |         | X      | X        |        | X      |        |         |        |          |      | X     |
|  | Silver Bladderpod               | <i>Lesquerella ludoviana</i>    | S      |         |        |          | X      |        |        |         |        |          |      |       |
|  | Silver Buffalo-berry            | <i>Sheperdia argentea</i>       | T      |         |        |          |        |        |        |         |        |          |      | X     |
|  | Slender Sedge                   | <i>Carex tenera</i>             | S      |         | X      |          |        |        |        |         |        |          |      |       |
|  | Slender Ladies'-tresses         | <i>Spiranthes lacera</i>        | T      |         |        |          |        | X      | X      |         |        |          |      |       |
|  | Small Fringed Gentian           | <i>Gentianopsis procera</i>     | S      |         |        |          |        |        |        |         |        | X        |      |       |
|  | Small White Lady's Slipper      | <i>Cypripedium candidum</i>     | S      |         |        | X        |        |        |        |         |        |          | X    | X     |
|  | Soft Rush                       | <i>Juncus effusus</i>           | S      |         |        |          |        |        |        | X       |        |          |      |       |
|  | Spring Avens                    | <i>Geum vernum</i>              | S      |         | X      |          |        |        | X      | X       |        |          |      |       |
|  | Tall Cotton Grass               | <i>Eriophorum angustifolium</i> | S      |         |        | X        |        |        |        |         |        |          |      |       |
|  | Three-seeded Mercury            | <i>Acalypha ostryifolia</i>     | S      |         | X      |          |        |        |        |         |        |          |      |       |
|  | Tuberclcd Orchid                | <i>Platanthera flava</i>        | E      |         |        |          |        |        |        | X       |        |          |      |       |
|  | Tuckerman Sedge                 | <i>Carex tuckermanii</i>        | S      |         |        |          |        | X      |        |         |        |          |      |       |
|  | Virginia Spiderwort             | <i>Tradescantia virginiana</i>  | S      |         |        |          |        |        | X      | X       |        |          |      |       |
|  | Water Shield                    | <i>Brasenia schreberi</i>       | S      |         |        | X        |        |        |        |         |        |          |      |       |
| Water Starwort                                     | <i>Callitriche heterophylla</i> | S                               |        | X       |        |          |        |        |        |         |        |          |      |       |
| Western Prairie Fringed Orchid                     | <i>Platanthera praeclara</i>    | T                               | T      |         | X      |          |        |        |        |         |        | X        | X    |       |



**Resource Priorities/Capabilities**

[Back to Contents](#)

**Federal and State Listed Species *con't***

| Federal and State Listed Species (46) <i>con't</i> |                      |                        |        |         |        |          |        |        |        |         |        |          |      |       |
|--|----------------------|------------------------|--------|---------|--------|----------|--------|--------|--------|---------|--------|----------|------|-------|
|  | Name                 |                        | Status |         | County |          |        |        |        |         |        |          |      |       |
|  | Common               | Scientific             | State  | Federal | Boone  | Hamilton | Hardin | Jasper | Keokuk | Mahaska | Marion | Marshall | Polk | Story |
| <b>Plants</b>                                      | Winged Monkey Flower | Mimulus alatus         | T      |         |        |          |        |        |        | x       |        |          |      |       |
|  | Woodland Horsetail   | Equisetum sylvaticum   | T      |         |        |          |        | x      |        |         |        |          |      |       |
|  | Woolly Milkweed      | Asclepias lanuginosa   | T      |         |        |          | x      |        |        |         |        |          |      |       |
|  | Yellow Monkey Flower | Mimulus glabratus      | T      |         | x      |          |        |        |        |         |        |          |      |       |
|  | Yellow Trout lily    | Erythronium Americanum | T      |         |        |          |        |        |        |         | x      |          |      |       |

## Resource Priorities/Capabilities

[Back to Contents](#)

### SWAPA + H

SWAPA + H stands for soils, water, air, plants, animals + humans. SWAPA + H is used in watershed and ecosystem planning to identify natural systems and how they relate to social/economic conditions. The table below lists the resource priorities/capabilities of stakeholders and landowners, which were then ranked from 1 (poor) to 5 (excellent) on how each land use, listed at the top, affects that concern.

| SWAPA + H*<br>Priorities/Concerns | Specific Resource<br>Priorities/Concerns | Row Crops | Livestock<br>Operations | CRP/Grass<br>Filterstrip | Pasture/Crazed<br>Timber/Grassland | Forest/Timber | Hayfield | Farmsteads | Urban | Rural Residential<br>Development |
|-----------------------------------|--|-----------|-------------------------|--------------------------|------------------------------------|---------------|----------|------------|-------|----------------------------------|
| Soil                              | Erosion Runoff                           | X         |                         |                          | X                                  | X             |          | X          | X     | X                                |
|                                   | Gullies                                  | X         |                         |                          | X                                  | X             |          |            | X     | X                                |
|                                   | Stream Bank Erosion                      | X         | X                       | X                        | X                                  | X             |          |            | X     |                                  |
|                                   | Channel Instability                      | X         |                         | X                        | X                                  | X             | X        |            | X     | X                                |
|                                   | sediment loss                            | X         |                         |                          |                                    |               |          |            |       |                                  |
|                                   | soil compaction issues                   | X         |                         |                          |                                    |               |          |            |       |                                  |
|                                   | sediment loss due to construction        |           |                         |                          |                                    |               |          |            | X     |                                  |
|                                   | pastureland loss                         |           |                         |                          | X                                  |               |          |            |       |                                  |
|                                   | Nitrogen Management                      |           | X                       |                          |                                    |               |          |            |       |                                  |
|                                   | Soil Quality - Impacts                   | X         |                         |                          |                                    |               |          |            |       |                                  |
| Water Quantity                    | Nutrient Management                      |           | X                       |                          |                                    |               |          |            |       |                                  |
|                                   | Wetlands Drained                         |           |                         |                          |                                    |               |          |            |       |                                  |
|                                   | First flush after rain events            |           |                         |                          |                                    |               |          |            | X     |                                  |
|                                   | drought/supply                           | X         | X                       |                          |                                    |               |          |            | X     |                                  |
|                                   | Hydrologic Alteration                    | X         | X                       |                          | X                                  |               |          |            | X     |                                  |
|                                   | Flooding Problems                        |           |                         |                          |                                    |               |          |            | X     |                                  |
| Surface Water Quality             | drainage district issues                 | X         |                         |                          |                                    |               |          |            |       |                                  |
|                                   | Decline in Fish                          |           |                         |                          |                                    |               |          |            |       |                                  |
|                                   | Pesticides                               | X         | X                       | X                        | X                                  | X             | X        | X          | X     | X                                |
|                                   | Wastewater/industrial discharge          |           |                         |                          |                                    |               |          |            | X     |                                  |
|                                   | Aquatic Integrity (flow, habitat)        | X         | X                       |                          | X                                  |               |          | X          | X     | X                                |
|                                   | Sedimentation                            | X         | X                       | X                        | X                                  | X             | X        | X          | X     | X                                |
|                                   | Phosphorus                               | X         | X                       | X                        | X                                  | X             | X        | X          | X     | X                                |
|                                   | Nitrogen                                 | X         | X                       | X                        | X                                  | X             | X        | X          | X     | X                                |
|                                   | Storm Water Discharge                    |           |                         |                          |                                    |               |          |            | X     |                                  |
|                                   | temperature                              | X         |                         |                          | X                                  |               |          |            |       | X                                |
|                                   | emerging contaminants                    | X         | X                       |                          |                                    |               |          | X          | X     | X                                |
|                                   | Invasive Species                         | X         |                         | X                        |                                    |               |          |            | X     |                                  |
|                                   | Bacteria                                 | X         | X                       |                          | X                                  |               |          | X          | X     | X                                |
| Dissolved Oxygen                  |  | X         |                         |                          |                                    |               |          |            |       |                                  |

**Resource Priorities/Capabilities**

[Back to Contents](#)

**SWAPA + H con't**

| SWAPA + H*<br>Priorities/Concerns<br><i>con't</i> | Specific Resource<br>Priorities/Concerns             | Row Crops | Livestock<br>Operations | CRP/Grass<br>Filterstrip | Pasture/Grazed<br>Timber/Grassland | Forest/Timber | Hayfield | Farmsteads | Urban | Rural Residential<br>Development |
|---|--|-----------|-------------------------|--------------------------|------------------------------------|---------------|----------|------------|-------|----------------------------------|
| Ground Water Quality                              | Nitrate  | X         | X                       |                          | X                                  |               |          |            | X     | X                                |
|   | septic systems                                       |           |                         |                          |                                    |               |          | X          | X     | X                                |
| Air Quality                                       | Odor--Nuisance                                       |           | X                       |                          |                                    |               |          |            |       |                                  |
|   | Road Dust/drift/soil                                 | X         | X                       |                          |                                    |               |          |            |       |                                  |
|   | Particulates   |           |                         |                          |                                    |               |          |            | X     |                                  |
|   | greenhouse gases                                     | X         | X                       |                          |                                    |               |          |            | X     |                                  |
|   | emissions  |           |                         |                          |                                    |               |          |            | X     |                                  |
|   | Ammonia  |           |                         |                          |                                    |               |          |            |       |                                  |
| Plants  | Lack of Native Plant Habitat                         | X         |                         | X                        |                                    | X             |          |            | X     | X                                |
|   | native plant vigor                                   |           |                         |                          | X                                  | X             |          |            |       |                                  |
|   | Fragmentation of Native Plants                       | X         |                         | X                        |                                    |               |          |            | X     | X                                |
|   | Invasive Species                                     | X         |                         |                          |                                    |               |          |            | X     |                                  |
|   | local ecotypes                                       |           |                         | X                        |                                    |               |          |            |       |                                  |
|   | corn/soybean rotations                               | X         |                         |                          |                                    |               |          |            |       |                                  |
|   | Forest cover/diversity -<br>stream corridor          |           |                         |                          |                                    |               | X        |            |       |                                  |
| Animal  | Wildlife Habitat<br>(food, cover, shelter)           | X         | X                       | X                        | X                                  | X             | X        | X          | X     | X                                |
|   | Endangered Species                                   |           |                         |                          |                                    |               |          |            |       |                                  |
|   | species diversity                                    | X         |                         | X                        | X                                  |               |          |            | X     |                                  |
|   | invasive species (ash borer, zebra<br>mussels)       | X         | X                       |                          |                                    |               | X        |            | X     |                                  |
|   | beaver--levee damage, cause flooding                 | X         |                         |                          |                                    |               |          |            |       |                                  |
|   | deer   | X         |                         |                          |                                    |               | X        | X          | X     | X                                |
| Human   | Aesthetic value on river &<br>wildlife viewing       |           |                         |                          |                                    |               |          |            |       |                                  |
|   | changing landuse                                     | X         | X                       | X                        | X                                  | X             | X        | X          | X     | X                                |
|   | Recreation   | X         |                         | X                        |                                    |               |          |            | X     |                                  |
|   | Perception of rural/urban                            |           |                         |                          |                                    |               |          | X          | X     |                                  |
|   | Market Trends  | X         | X                       | X                        | X                                  | X             | X        | X          | X     | X                                |
|   | Low community well being                             |           |                         |                          |                                    |               |          | X          | X     | X                                |
|   | High capital/ financial costs                        | X         |                         |                          |                                    |               |          |            | X     |                                  |
|   | low or unreliable profitability                      | X         | X                       | X                        |                                    |               |          |            |       |                                  |
|   | Lack of Technical Assistance                         | X         | X                       | X                        |                                    |               |          |            |       |                                  |
|   | High land values resulting in<br>less protected land | X         |                         |                          |                                    |               |          |            |       |                                  |



## Resource

### Priorities/Capabilities

SWAPA + H *con't*

[Back to Contents](#)

### Row Crops

Surface water quality is a concern in areas of row crop agriculture, which is the primary land use in the South Skunk River Watershed. Soil erosion is a challenge in fields using conventional tillage practices especially in fields planted right to the stream bank. Under these conditions sheet and rill erosion can carry sediment and nutrients easily to the stream channel. No till and minimum mulch till practices leave residues on the field that protect the soil from raindrop impact and slows sheet and rill erosion. However, even under these conditions surface runoff can concentrate and move directly to the channel unless it is intercepted by a perennial plant cover in the form of a riparian forest buffer or a grass filter. The buffer system not only slows concentrated flow, but also protects streambanks from erosion and provides benefits such as temperature control and carbon inputs to the stream ecosystem.

Another challenge in row crop agriculture is hydrologic alteration created by ditching or subsurface drainage. Subsurface drainage provides a direct route for nutrients, particularly nitrate-N ( $\text{NO}_3$ ), and pesticides to enter surface waters and ditches provide a shorter distance for these pollutants to reach the stream. Excess nutrients in the stream can lead to eutrophication, lowering the amount of dissolved oxygen, affecting the aquatic integrity. There are also some subsurface drainage outlets that empty into agricultural drainage wells, which is a concern for groundwater quality. Subsurface drainage also has the potential to affect stream discharge and its timing. Water enters the subsurface drainage rather than further percolating through the soil or being slowed by vegetation before reaching the stream. The result is more water reaching the stream at a faster rate, creating the potential for stream bank erosion.

Human economics related to row crop agriculture are also a concern in the watershed. Row crop agriculture is associated with high levels of capital investment and financial expenditures and operate in relatively volatile economic conditions in terms of the value of the outputs and cost of the inputs. Many best management practices associated with row crop agriculture also may come with high capital requirements. There are federal and state programs available to reduce some of these capital costs.

### Animal Feeding Operations

The primary natural Resource Priorities/Capabilities associated with livestock operations are water and air pollution. There is a zero tons/yr discharge allowance for livestock operations by size by state law. The concern is manure application and spills (32). Excess phosphorus, nitrogen and bacteria are carried to the stream by runoff and through subsurface drainage. Excess nutrients in the stream can lead to eutrophication, lowering the amount of dissolved oxygen, affecting the aquatic integrity. Air quality (specifically odor, particulates, ammonia) associated with AFOs are also a concern, although there is limited data available. There are 171 animal feeding operations in the South Skunk River Watershed, which could potentially be contributing to air quality issues. Potential air quality issues associated with livestock operations include: effects



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## **Resource Priorities/Capabilities**

[Back to Contents](#)

### **SWAPA + H *con't***

#### **Animal Feeding Operations *con't***

on human and animal health, impacts on property values, increased risk of nuisance litigation, and NO<sub>x</sub> pollution (51).

Human economics are also a concern in the watershed. Livestock production is associated with high levels of capital investment and financial expenditures and often require high labor inputs and operate in relatively volatile economic conditions in terms of the value of the outputs and cost of the inputs. Many best management practices associated with livestock production and manure management also may come with high capital requirements.

#### **Pasture/Grazed Timber/Grassland**

Grazing management is a concern along streams, in the South Skunk River Watershed. According to the 2002 land use, approximately 10% of the riparian area is grazed (*see page 16*). Grazing along the stream can have detrimental effects on stream bank stability when cattle have direct access to the stream. Another concern is soil erosion by water due to overgrazing leading to the compaction of the soil and a landscape denuded of vegetation, increasing the potential for excess nutrients and sediment reaching the stream. Also bacteria is a concern from cattle defecating into and near the stream. Management that restricts cattle from having free access along riparian corridors would be beneficial to stream quality.

#### **Urban**

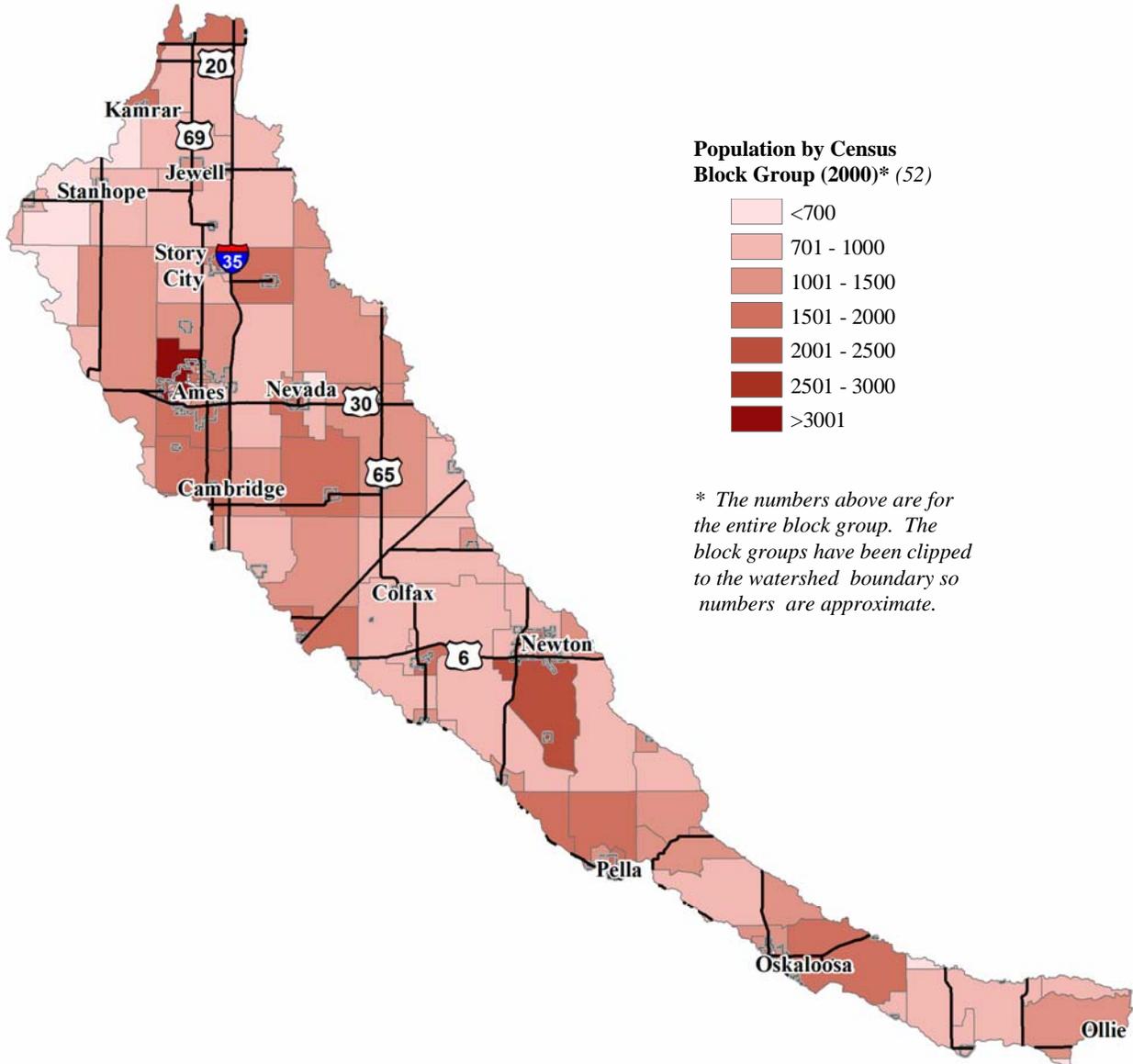
Approximately four percent of the South Skunk River Watershed is urban. Some of the more common impacts on water quality in urban areas identified in this watershed include; runoff carrying bacteria from human and animal waste, chemical fertilizers applied to lawns and golf courses, and sediment (58). Additionally, as the urban areas expand and sprawl out into what used to be country side, the once vegetated land is replaced with an impermeable surface that decreases infiltration greatly, increasing runoff. An impermeable surface allows a greater volume of runoff to move at a faster rate, since water cannot percolate through the soil, resulting in more flooding.

Point Source pollution is also a concern to water quality. Industrial and municipal facilities/infrastructures can impact a stream, due to excess sewage, nutrients, pesticides, metals or other contaminants discharging into the stream. Other potential point sources specific to the South Skunk River Watershed include leaking underground storage tanks and hazardous waste sites (*see map page 25*). For further information contact the municipality, EPA region 7, County Conservation Board, or the Iowa Water Pollution Control Association.

In drought years, water supply is also a concern. According to the City of Ames, Water and Pollution Control Department, during the summers of 2006 and 2007 there was record high water usage in Ames, IA. To help with sudden demands like this, particularly in times of drought, the department has put together an education program, called the Smart Water Campaign, to help teach people ways to conserve water.

U.S. Census Bureau Demographic Data

[Back to Contents](#)

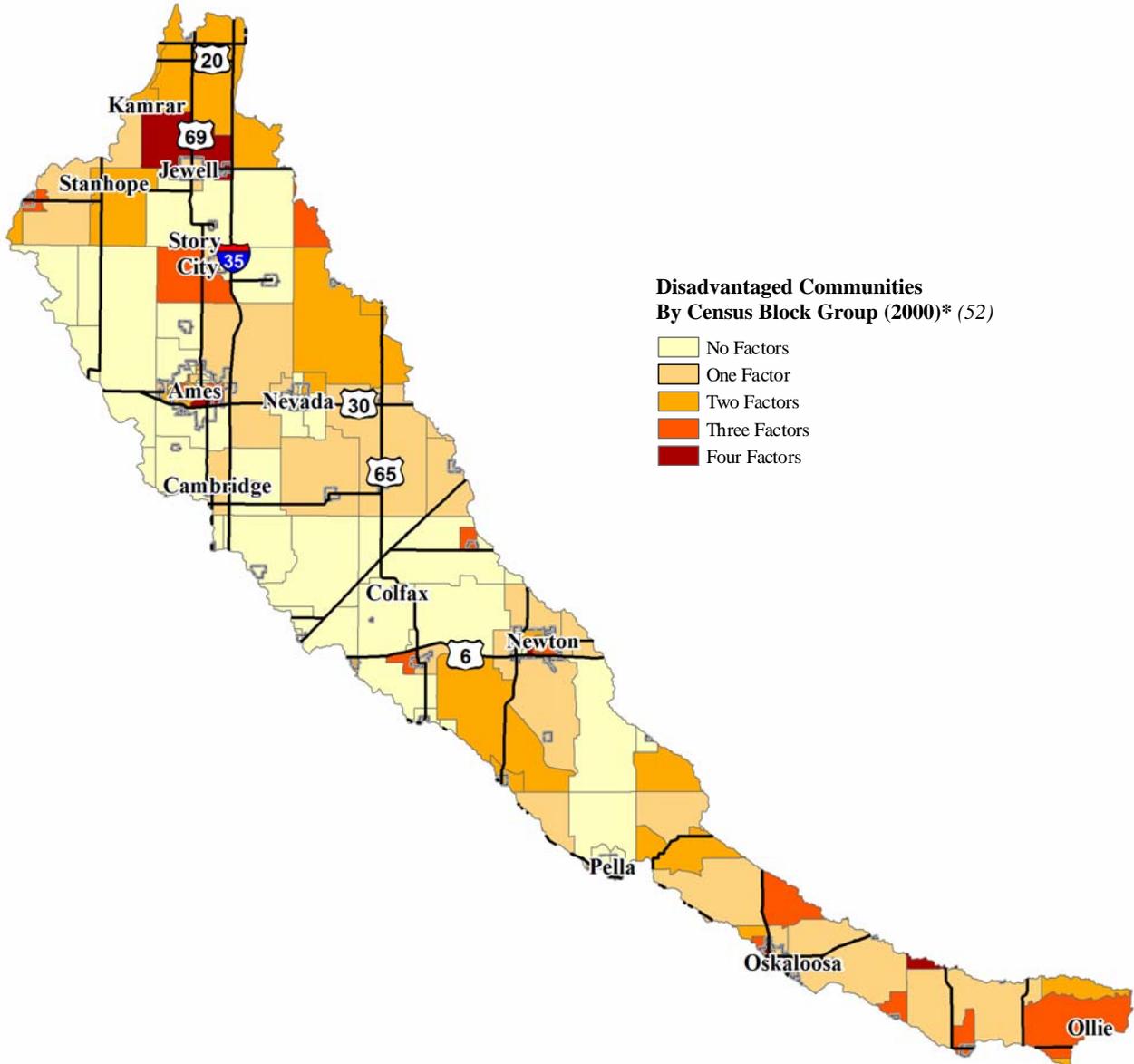


**Population**

This map is total population by census block group and reports the total population residing in that block group. The estimated total population\* of the South Skunk River Watershed in 2000 was 181,381 (52).

U.S. Census Bureau Demographic Data *con't*

[Back to Contents](#)



**Disadvantaged Communities**

A disadvantaged community for the purposes of this map includes per capita income, median housing value, percent unemployed and percent below poverty. Each block group received a factor of one if it was below (per capital income and median housing value) or above (percent unemployed and number of individuals with income below poverty) the statewide average. The statewide averages in 2000 were as follows: per capita income - \$19,065, median housing value - \$80,141, percent unemployed – 2.8%, and percent below poverty – 9.3%. These were then added together for each block group and reported in the above map. For example those with a factor of four fit all four criteria.



[Back to Contents](#)

## NRCS Social Survey

**Estimated Level of Willingness and Ability to Participate in Conservation (60) : 37%**

- **Timing - Low**

There is a need for significant adjustments in technical assistance, financial assistance, and a dedicated marketing effort to achieve a successful participation rate in a reasonable amount of time.

- **Management: Low**

Management skills and a combination of educational assistance and technical assistance needs to be significantly increased to achieve a successful participation rate.

- **Technical Assistance: Low**

The technical delivery system needs major modifications.

- **Information/Education Assistance: Low**

The existing information/education deliver system needs major modifications.

- **Financial Assistance: Low**

The existing financial incentives needs major expansion or substantial increases to achieve a successful participation rate in a reasonable amount of time.

### NASS Farm Census Data

[Back to Contents](#)

| 2002 Agricultural Census Data (53)                   |  | Boone   | Hamilton | Hardin  | Jasper  | Keokuk  | Mahaska | Marion  | Marshall | Polk    | Story   |
|--|--|---------|----------|---------|---------|---------|---------|---------|----------|---------|---------|
|  | County (acres)   | 366,825 | 369,322  | 364,510 | 468,523 | 371,010 | 366,885 | 364,758 | 366,583  | 378,571 | 366,869 |
| Farms  | Farms (number)   | 827     | 797      | 829     | 1,212   | 1,093   | 328,579 | 1,051   | 848      | 764     | 977     |
|  | Land in farms (acres)  | 312,708 | 348,216  | 327,725 | 410,347 | 383,858 | 315     | 276,782 | 335,043  | 227,069 | 359,604 |
| Cropland (Acres)                                     | Total cropland (acres)   | 280,874 | 326,719  | 298,014 | 354,676 | 279,904 | 278,134 | 214,360 | 302,281  | 204,203 | 330,149 |
|  | Total cropland - Harvested cropland (acres)                                  | 267,212 | 313,870  | 286,019 | 320,456 | 211,257 | 231,055 | 168,055 | 279,661  | 190,229 | 310,483 |
| Farms by Size (Acres)                                | 1 to 9 acres   | 70      | 61       | 64      | 70      | 39      | 35      | 34      | 42       | 70      | 87      |
|  | 10 to 49 acres   | 177     | 163      | 162     | 266     | 212     | 172     | 258     | 212      | 246     | 215     |
|  | 50 to 179 acres  | 180     | 149      | 162     | 299     | 334     | 308     | 385     | 174      | 180     | 232     |
|  | 180 to 499 acres   | 187     | 182      | 203     | 285     | 279     | 314     | 212     | 190      | 132     | 204     |
|  | 500 to 999 acres   | 115     | 144      | 148     | 188     | 159     | 155     | 101     | 116      | 69      | 142     |
|  | 1,000 acres or more  |         | 98       |         |         |         |         |         |          |         |         |
| Market Value of Agricultural Products Sold (\$1,000) | All Agricultural Products  | 105,933 | 234,900  | 251,970 | 148,941 | 98,841  | 132,748 | 68,462  | 132,095  | 68,517  | 118,730 |
|  | Crops  | 75,622  | 87,729   | 81,102  | 88,644  | 50,478  | 55,802  | 46,133  | 85,597   | 59,131  | 92,488  |
|  | Livestock, poultry, and their products                                       | 30,311  | 147,171  | 170,868 | 60,298  | 48,363  | 76,946  | 22,329  | 46,498   | 9,386   | 26,243  |
| Government Payments                                  | Government payments (farms)  | 520     | 606      | 595     | 802     | 839     | 783     | 699     | 592      | 408     | 631     |
|  | Government payments (\$1,000)  | 4,303   | 4,837    | 5,438   | 6,418   | 8,559   | 6,330   | 4,733   | 5,757    | 3,259   | 5,577   |
| Principal Operator (Number)                          | Primary occupation - Farming   | 561     | 602      | 576     | 833     | 756     | 721     | 629     | 576      | 427     | 627     |
|  | Primary occupation - Other (not farming)                                     | 266     | 195      | 253     | 379     | 337     | 322     | 422     | 272      | 337     | 350     |
|  | Days worked off farm   | 465     | 428      | 485     | 645     | 601     | 542     | 604     | 399      | 405     | 534     |
|  | Days worked off farm - Any - 200 days or more                                | 327     | 291      | 328     | 464     | 417     | 394     | 423     | 269      | 301     | 397     |
| Inventory of Livestock and Poultry (Number)          | Cattle and calves - Milk cows  | 288     | 0        | NA      | 686     | 314     | 615     | 644     | NA       | 121     | 504     |
|  | Cattle and calves - Beef cows  | 4,468   | 0        | NA      | 14,068  | 13,231  | 9,695   | 11,975  | NA       | 4,664   | 4,101   |
|  | Cattle and calves  | 17,309  | 5,593    | 19,839  | 39,276  | 29,863  | 39,209  | 26,605  | 19,576   | 10,836  | 16,040  |
|  | Hogs and pigs  | 63,649  | 467,250  | 887,938 | 145,643 | 444,629 | 207,651 | 48,789  | 132,689  | 22,439  | 78,623  |
|  | Sheep and lambs  | 1,917   | 890      | 1,167   | 5,061   | 3,656   | 2,595   | 3,181   | 3,135    | 1,931   | 4,813   |
|  | Layers 20 weeks old and older  | 22      | 0        | NA      | NA      | 454     | NA      | 908     | 251      | 641     | 1,910   |
| Selected Crops Harvested (Acres)                     | Corn for grain   | 17,377  | 164,589  | 154,606 | 156,944 | 101,240 | 116,121 | 76,831  | 138,383  | 92,691  | 163,078 |
|  | Corn for silage or greenchop   | 598     | 754      | 818     | 843     | 1,680   | 1,794   | 776     | 1,603    | 487     | 808     |
|  | Oats for grain   | 1,099   | 483      | 418     | 1,796   | 1,420   | 1,200   | 1,014   | 737      | 377     | 593     |
|  | Soybeans for beans   | 120,863 | 144,979  | 124,764 | 144,889 | 56,794  | 100,829 | 71,426  | 132,204  | 86,310  | 140,082 |
|  | Forage - land used for all hay and all haylage, grass silage, land greenchop | 7,187   | 2,719    | 5,598   | 18,415  | 14,192  | 12,471  | 20,068  | 7,605    | 9,034   | 6,447   |
|  | Vegetables harvested for sale  | 131     | 26       | NA      | 33      | 13      | 42      | 60      | 87       | 159     | 83      |



**Progress/Status**

[Back to Contents](#)

| Watershed Projects, Plans, Studies, and Assessments |  |         |
|---|--|---------|
| Organizations                                       | Projects                                       | Status  |
| IOWATER Watershed Monitoring Group                  | Clear Creek                                    | Ongoing |
|   | Squaw Creek Watershed Council                  | Ongoing |
| EPA Citizen-based Watershed Groups                  | Earth Team                                     | Ongoing |
|   | Squaw Creek Watershed Coalition                | Ongoing |
| Story County SWCD/IDALS-DSC                         | Hallett's Quarry Lake Watershed Project        |         |
| Watershed Alliance/Council                          | Iowa Association of County Conservation Boards | Ongoing |

### Progress/Status

[Back to Contents](#)

| PRMS Data  | Planned FY05 | Applied FY05 | Planned FY06 | Applied FY06 | Planned FY07 | Applied FY07 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|
| Total Conservation Systems (ac) (54)                         | 30,101       | 31,845       | 54,940       | 30,488       | 56,717       | 52,877       |
| <b>Conservation Practices (55)</b>                           |              |              |              |              |              |              |
| Brush Management (314) (ac)                                  |              | 94           | 81           | 3            | 110          | 110          |
| Comprehensive Nutrient Management Plan (100) (no)            | 4            |              | 3            |              | 6            | 2            |
| Conservation Completion Incentive First Year (CCIA) (no)     | 1            | 7            | 26           | 2            |              |              |
| Conservation Completion Incentive Second Year (CCIB) (no)    | 1            |              | 1            |              |              |              |
| Conservation Cover (327) (ac)                                | 3,246        | 2,572        | 3,382        | 1,908        | 3,120        | 3,255        |
| Conservation Crop Rotation (328) (ac)                        | 31,246       | 29,778       | 29,366       | 17,309       | 19,242       | 17,203       |
| Contour Buffer Strips (332) (ac)                             | 12           | 6            |              |              |              |              |
| Contour Farming (330) (ac)                                   | 1,340        | 759          | 4,156        | 1,991        | 2,633        | 3,931        |
| Cover Crop (340) (ac)  | 31           | 31           |              |              |              |              |
| Critical Area Planting (342) (ac)                            | 332          | 16           | 30           | 22           | 66           | 32           |
| Dike (356) (ft)  | 1,675        |              | 11,066       | 11,016       | 1,000        | 1,000        |
| Diversion (362) (ft)   | 241          |              |              | 750          |              |              |
| Early Successional Habitat Development/Management (647) (ac) | 8,879        | 617          | 5,567        | 600          | 1,041        | 1,165        |
| Enhancement - Air Resource Management (EAM) (ac)             |              |              | 811          |              |              |              |
| Enhancement - Energy Management (EEM) (ac)                   |              |              | 4,042        |              |              |              |
| Enhancement - Grazing Management (EGM) (ac)                  |              |              | 1,164        |              |              |              |
| Enhancement - Habitat Management (EHM) (ac)                  |              |              | 352          |              |              |              |
| Enhancement - Nutrient Management (ENM) (ac)                 |              |              | 4,628        |              |              |              |
| Enhancement - Pest Management (EPM) (ac)                     |              |              | 2,550        |              |              |              |
| Enhancement - Soil Management (ESM) (ac)                     |              |              | 5,085        |              |              |              |
| Fence (382) (ft)   | 22,498       | 36,472       | 74,657       | 26,544       | 37,200       | 4,850        |
| Field Border (386) (ft)                                      | 23,164       | 40,897       | 50,048       | 27,226       | 8,869        | 11,453       |
| Filter Strip (393) (ac)                                      | 435          | 195          | 432          | 249          | 400          | 563          |
| Firebreak (394) (ft)   |              |              | 16,250       | 16,250       |              |              |
| Forage Harvest Management (511) (ac)                         | 556          | 238          | 899          | 235          | 255          | 80           |
| Forest Stand Improvement (666) (ac)                          | 16           |              |              |              | 107          | 107          |
| Grade Stabilization Structure (410) (no)                     | 7            | 11           | 25           | 5            | 8            | 9            |
| Grassed Waterway (412) (ac)                                  | 5,797        | 81           | 970          | 512          | 523          | 540          |
| Heavy Use Area Protection (561) (ac)                         | 2            | 3            | 15           | 11           | 6            | 0            |
| Manure Transfer (634) (no)                                   |              |              | 2            |              |              |              |
| Nutrient Management (590) (ac)                               | 11,857       | 10,814       | 23,404       | 5,432        | 19,625       | 7,130        |
| Pasture and Hay Planting (512) (ac)                          | 219          | 229          | 577          | 363          | 568          | 371          |

**Progress/Status**

[Back to Contents](#)

| Conservation Practices <i>con't</i>                                       | Planned FY05 | Applied FY05 | Planned FY06 | Applied FY06 | Planned FY07 | Applied FY07 |
|---|--------------|--------------|--------------|--------------|--------------|--------------|
| Pest Management (595) (ac)  | 9,687        | 5,244        | 19,832       | 1,560        | 15,395       | 1,850        |
| Pipeline (516) (ft)   | 2,485        | 3,885        | 18,303       | 13,237       | 5,900        | 1,800        |
| Pond (378) (no)   | 4            | 3            | 2            |              | 5            | 6            |
| Prescribed Burning (338) (ac)   | 793          | 20           | 1,035        | 365          | 410          | 240          |
| Prescribed Grazing (528) (ac)   | 143          | 562          | 549          | 248          | 702          | 27           |
| Pumping Plant (533) (no)  | 1            | 1            | 3            | 2            |              |              |
| Residue and Tillage Management, Mulch Till (345) (ac)                     | 31,034       | 26,197       | 29,427       | 17,481       | 19,312       | 15,349       |
| Residue and Tillage Management, No-Till/Strip Till/Direct Seed (329) (ac) | 7,787        | 7,448        | 6,581        | 3,531        | 5,210        | 5,321        |
| Residue and Tillage Management, Ridge Till (346) (ac)                     | 717          | 935          | 659          | 156          | 188          | 714          |
| Residue Management, Seasonal (344) (ac)                                   |              |              | 83           | 83           |              |              |
| Restoration and Management of Rare and Declining Habitats (643) (ac)      |              | 3            | 31           | 44           |              |              |
| Riparian Forest Buffer (391) (ac)   | 31           | 38           | 24           | 50           | 15           | 94           |
| Riparian Herbaceous Cover (390) (ac)                                      |              |              |              |              | 2            | 2            |
| Sediment Basin (350) (no)   |              |              | 1            |              |              |              |
| Shallow Water Development and Management (646) (ac)                       |              |              | 25           | 48           |              |              |
| Streambank and Shoreline Protection (580) (ft)                            |              |              | 1,700        | 1,700        |              |              |
| Subsurface Drain (606) (ft)   | 40,469       | 21,922       |              |              |              | 5,000        |
| Terrace (600) (ft)  | 61,296       | 56,260       | 37,290       | 21,570       | 52,971       | 49,961       |
| Tree/Shrub Establishment (612) (ac)                                       | 133          | 63           | 35           | 47           | 119          | 187          |
| Tree/Shrub Site Preparation (490) (ac)                                    | 8            | 1            |              |              |              |              |
| Underground Outlet (620) (ft)   | 34,262       | 16,606       | 19,996       | 4,181        | 74,901       | 23,134       |
| Upland Wildlife Habitat Management (645) (ac)                             | 7,265        | 4,693        | 3,842        | 1,761        | 2,231        | 3,397        |
| Use Exclusion (472) (ac)  | 3,136        | 2,516        | 2,784        | 1,491        | 2,069        | 2,435        |
| Waste Storage Facility (313) (no)   | 3            |              | 3            |              | 3            |              |
| Water and Sediment Control Basin (638) (no)                               | 45           | 58           | 87           | 63           | 6            | 41           |
| Water Harvesting Catchment (636) (no)                                     |              |              |              |              | 4            | 4            |
| Watering Facility (614) (no)  | 7            | 4            | 17           | 14           | 14           | 47           |
| Wetland Creation (658) (ac)   |              | 5            | 5            |              | 14           | 14           |
| Wetland Restoration (657) (ac)  | 335          | 293          | 681          | 635          | 1,198        | 1,113        |
| Wetland Wildlife Habitat Management (644) (ac)                            | 378          | 324          | 540          | 978          | 1,240        | 1,159        |
| Windbreak/Shelterbelt Establishment (380) (ft)                            | 5,762        | 1,050        | 7,561        | 5,824        | 6,154        | 5,511        |



### Progress/Status

[Back to Contents](#)

| Farm Bill Program Acres, Funding, and Contracts |           |                        |           |           |             |           |           |           |           |           |           |
|---|-----------|------------------------|-----------|-----------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|
|   | Program   | Acres in the Watershed |           |           |             |           |           |           |           |           |           |
| 2007*   | CRP       | 32,739                 |           |           |             |           |           |           |           |           |           |
|   | WRP       | 8,953                  |           |           |             |           |           |           |           |           |           |
| 2004 - 2006                                     | CSP       | 33,806                 |           |           |             |           |           |           |           |           |           |
|   | Program   | Boone                  | Hamilton  | Hardin    | Jasper      | Keokuk    | Mahaska   | Marion    | Marshall  | Polk      | Story     |
| 2006  | Acres     |                        |           |           |             |           |           |           |           |           |           |
|   | EQIP      | 2,351                  | 4,175     | 2,869     | 484         | 638       | 3,140     | 1,505     | 858       | 1,716     | 2,992     |
|   | WHIP      | 49                     | 30        | 4         | 0           | 0         | 60        | 80        | 0         | 0         | 0         |
|   | WRP       | 0                      | 0         | 0         | 130         | 167       | 0         | 0         | 0         | 0         | 0         |
|   | Funding   |                        |           |           |             |           |           |           |           |           |           |
|   | EQIP      | \$146,745              | \$273,300 | \$231,693 | \$277,145   | \$152,158 | \$163,251 | \$340,427 | \$127,684 | \$199,729 | \$115,731 |
|   | WHIP      | \$5,296                | \$6,480   | \$2,400   | \$0         | \$0       | \$5,760   | \$7,566   | \$0       | \$0       | \$0       |
|   | WRP       | \$0                    | \$0       | \$0       | \$459,845   | \$577,299 | \$0       | \$0       | \$0       | \$0       | \$0       |
|   | Contracts |                        |           |           |             |           |           |           |           |           |           |
|   | EQIP      | 31                     | 18        | 14        | 50          | 10        | 15        | 34        | 6         | 13        | 28        |
|   | WHIP      | 1                      | 1         | 2         | 0           | 0         | 2         | 1         | 0         | 0         | 0         |
|   | WRP       | 0                      | 0         | 0         | 1           | 1         | 0         | 0         | 0         | 0         | 0         |
| 2003 - 2005                                     | Acres     |                        |           |           |             |           |           |           |           |           |           |
|   | GRP       | 0                      | 0         | 0         | 677         | 0         | 0         | 0         | 0         | 0         | 0         |
|   | Funding   |                        |           |           |             |           |           |           |           |           |           |
|   | GRP       | \$0                    | \$0       | \$0       | \$111,690   | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       |
| 2004  | Acres     |                        |           |           |             |           |           |           |           |           |           |
|   | WRP       | 0                      | 0         | 0         | 803         | 0         | 20        | 0         | 0         | 0         | 0         |
|   | Funding   |                        |           |           |             |           |           |           |           |           |           |
|   | WRP       | \$0                    | \$0       | \$0       | \$1,737,737 | \$0       | \$7,575   | \$0       | \$0       | \$0       | \$0       |
| 2003  | Acres     |                        |           |           |             |           |           |           |           |           |           |
|   | EQIP      | NA                     | NA        | NA        | NA          | NA        | NA        | NA        | NA        | NA        | NA        |
|   | WHIP      | NA                     | NA        | NA        | NA          | NA        | NA        | NA        | NA        | NA        | NA        |
|   | WRP       | 29                     | 0         | 175       | 102         | 0         | 0         | 0         | 0         | 78        | 0         |
|   | Funding   |                        |           |           |             |           |           |           |           |           |           |
|   | EQIP      | \$87,505               | \$91,670  | \$112,416 | \$124,597   | \$94,855  | \$115,900 | \$197,495 | \$84,501  | \$83,345  | \$91,623  |
|   | WHIP      | \$0                    | \$0       | \$0       | \$0         | \$0       | \$0       | \$0       | \$0       | \$0       | \$0       |
|   | WRP       | \$10,920               | \$0       | \$475,251 | \$250,646   | \$0       | \$0       | \$0       | \$0       | \$214,871 | \$0       |
|   | Contracts |                        |           |           |             |           |           |           |           |           |           |
|   | EQIP      | NA                     | NA        | NA        | NA          | NA        | NA        | NA        | NA        | NA        | NA        |
|   | WHIP      | 0                      | 0         | 0         | 0           | 0         | 0         | 0         | 0         | 0         | 0         |
|   | WRP       | 1                      | 0         | 1         | 1           | 0         | 0         | 0         | 0         | 1         | 0         |

\* The 2007 acres listed are for land units currently enrolled in the program through September 30, 2007, so there are multiple years included in the totals.

### Progress/Status

[Back to Contents](#)

| Summary of Farm Service Agency Practices (Acres) for all Active<br>CRP Contracts, 1992-2008 (57) |       |         |          |         |         |           |          |         |          |       |         |
|--|-------|---------|----------|---------|---------|-----------|----------|---------|----------|-------|---------|
| Practice   | Code  | Boone   | Hamilton | Hardin  | Jasper  | Keokuk    | Mahaska  | Marion  | Marshall | Polk  | Story   |
| Introduced Grasses   | CP1   | 81.5    | 9.7      | 566.3   | 2,315.3 | 109,039.0 | 2,590.0  | 6,765.0 | 1,368.7  | 475.3 | 36.1    |
| Native Grasses   | CP2   | 927.0   | 151.1    | 1,556.9 | 4,124.0 | 3,003.2   | 2,907.9  | 990.2   | 567.8    | 631.3 | 412.1   |
| Tree Planting  | CP3   | 4.2     | 0.0      | 3.7     | 0.0     | 8.2       | 11.9     | 0.0     | 0.0      | 0.0   | 1.5     |
| Hardwood Tree Planting   | CP3A  | 55.6    | 21.9     | 119.5   | 105.2   | 91.4      | 138.1    | 171.0   | 61.2     | 73.3  | 148.7   |
| Wildlife Habitat Corridor (SU 10-12)   | CP4A  | 0.0     | 0.0      | 5.7     | 0.0     | 0.0       | 0.0      | 0.0     | 0.0      | 0.0   | 0.0     |
| Wildlife Habitat Corridor (SU 10+)   | CP4B  | 0.0     | 0.0      | 0.0     | 0.0     | 131.2     | 0.0      | 0.0     | 0.0      | 0.0   | 0.0     |
| Wildlife Habitat (SU 10+)  | CP4D  | 754.1   | 1,458.4  | 540.8   | 2,794.7 | 11,449.2  | 7,315.9  | 6,159.5 | 4,124.0  | 503.6 | 1,419.7 |
| Field Windbreaks (SU 10+)  | CP5A  | 64.8    | 0.7      | 39.1    | 43.8    | 0.0       | 1.7      | 0.0     | 7.40.5   | 13.0  | 49.1    |
| Grass Waterways (SU 10+)   | CP8A  | 160.7   | 210.4    | 377.4   | 306.3   | 534.3     | 216.0    | 97.8    | 735.9    | 49.0  | 159.9   |
| Wildlife Water   | CP9   | 68.1    | 22.4     | 163.9   | 148.4   | 164.8     | 658.6    | 112.3   | 290.8    | 91.9  | 237.8   |
| Established Grass  | CP10  | 1,134.3 | 35.8     | 472.3   | 3,563.6 | 18,720.9  | 12,472.4 | 9,620.0 | 864.7    | 470.5 | 443.9   |
| Established Trees  | CP11  | 5.5     | 19.0     | 70.6    | 50.8    | 133.4     | 265.5    | 162.5   | 44.6     | 29.4  | 26.7    |
| Wildlife Food Plots  | CP12  | 44.7    | 8.3      | 56.8    | 30.2    | 68.2      | 102.4    | 58.6    | 64.0     | 6.5   | 18.4    |
| Contour Grass Strips   | CP15A | 1.0     | 14.7     | 9.4     | 339.2   | 74.2      | 56.1     | 234.5   | 324.9    | 78.0  | 18.2    |
| Contour Grass Strips Terraces  | CP15B | 0.0     | 0.0      | 0.0     | 2.4     | 0.0       | 9.6      | 0.0     | 0.0      | 0.0   | 0.0     |
| Shelterbelt Establishment (SU 10+)   | CP16A | 24.9    | 36.0     | 43.5    | 3.3     | 0.0       | 0.0      | 0.6     | 15.7     | 15.7  | 33.3    |
| Living Snow Fences (SU 10+)  | CP17A | 9.0     | 1.5      | 14.9    | 3.1     | 0.0       | 0.0      | 5.1     | 7.3      | 2.0   | 13.1    |
| Filter Strips  | CP21  | 1,336.9 | 3,819.0  | 2,528.0 | 2,549.1 | 5,739.1   | 2,968.3  | 1,552.5 | 2,785.6  | 993.2 | 1,919.8 |
| Riparian Buffers   | CP22  | 420.2   | 112.0    | 254.1   | 146.0   | 266.5     | 230.0    | 594.1   | 65.7     | 80.3  | 479.8   |
| Wetland Restoration  | CP23  | 513.7   | 293.2    | 705.5   | 376.6   | 831.6     | 614.4    | 218.7   | 475.6    | 543.6 | 266.0   |
| Wetland Rest. Non-Floodplain   | CP23A | 79.1    | 40.2     | 13.8    | 0.0     | 0.0       | 0.0      | 0.0     | 169.3    | 0.0   | 0.0     |
| Rare and Declining Habitat   | CP25  | 559.3   | 217.5    | 783.6   | 448.7   | 497.5     | 1,812.8  | 1,069.8 | 55.2     | 80.7  | 678.0   |
| Farmable Wetland Pilot Wetland   | CP27  | 809.6   | 1,295.4  | 284.7   | 17.5    | 3.3       | 6.7      | 7.0     | 35.1     | 169.3 | 234.8   |
| Farmable Wetland Pilot Buffer  | CP28  | 1,976.5 | 3,368.8  | 745.8   | 23.4    | 6.7       | 4.3      | 200.3   | 71.8     | 353.2 | 531.0   |
| Marginal Pastureland Wildlife Habitat  | CP29  | 18.7    | 36.9     | 88.0    | 32.9    | 0         | 20.9     | 31.6    | 29.9     | 13.4  | 43.3    |
| Marginal Pastureland Wetland Buffer  | CP30  | 17.0    | 0.0      | 32.9    | 3.6     | 0         | 7.6      | 0.0     | 0.0      | 0.0   | 0.0     |
| Bottomland Wetland Trees   | CP31  | 0.0     | 0.0      | 0.0     | 0.0     | 0.0       | 0.0      | 0.0     | 0.0      | 29.6  | 14.7    |
| Hardwood Trees Expir./Re-enroll  | CP32  | 0.0     | 0.0      | 53.8    | 0.0     | 31.6      | 13.3     | 0.0     | 128.5    | 0.0   | 26.2    |
| Upland Bird Habitat Buffers  | CP33  | 1,298.4 | 537.5    | 15.4    | 1.1     | 114.1     | 27.7     | 27.3    | 0.0      | 161.1 | 170.0   |



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[Back to Contents](#)

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## Bibliography

[Back to Contents](#)

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[Back to Contents](#)

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## Bibliography

[Back to Contents](#)

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[Back to Contents](#)

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[Back to Contents](#)

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[Back to Contents](#)

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[Back to Contents](#)

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**Appendix A**

[\*Back to Contents\*](#)

| <b>South Skunk River Watershed</b>          |                  |                     |
|---|------------------|---------------------|
| <b>USDA - NRCS Service Center Locations</b> |                  |                     |
| <b>County</b>                               | <b>City</b>      | <b>Phone Number</b> |
| Webster                                     | Fort Dodge, IA   | (515) 432-2316      |
| Hamilton                                    | Webster City, IA | (515) 832-2916      |
| Hardin                                      | Iowa Falls, IA   | (641) 648-3463      |
| Boone                                       | Boone, IA        | (515) 432-2316      |
| Marshall                                    | Marshalltown, IA | (641) 753-8677      |
| Story                                       | Nevada, IA       | (515) 382-2217      |
| Polk  | Ankeny, IA       | (515) 964-1883      |
| Jasper                                      | Newton, IA       | (641) 792-4116      |
| Poweshiek                                   | Malcom, IA       | (641) 528-2065      |
| Marion                                      | Knoxville, IA    | (641) 842-5314      |
| Mahaska                                     | Oskaloosa, IA    | (641) 673-7094      |
| Keokuk                                      | Sigourney, IA    | (641) 622-3380      |
| Jefferson                                   | Farifield, IA    | (641) 472-4356      |

## Appendix A

[Back to Contents](#)

| <b>Water Quality Criteria (56)</b> |  |
|------------------------------------|--|
| <b>General Categories</b>          |  |
| <b>Category</b>                    | <b>Description</b>   |
| 1                                  | All designated uses are met  |
| 2                                  | Some of the designated uses are met, but there are insufficient data to determine if the remaining designated uses are met.  |
| 3                                  | Insufficient data to determine whether any designated uses are met.  |
| 4                                  | Waterbody is impaired or threatened but a TMDL is not needed.  |
| 5                                  | Waterbody is impaired or a threatened but a TMDL is needed.  |
| <b>Specific Categories</b>         |  |
| <b>Category</b>                    | <b>Description</b>   |
| 1                                  | All designated uses met  |
| 2a                                 | Some designated uses met; insufficient data to determine whether other uses are met  |
| 2b                                 | At least one designated use is met with at least one other use potentially impaired based on an "evaluated" assessment   |
| 3a                                 | Insufficient data to determine whether any designated uses are met   |
| 3b                                 | Insufficient data to determine whether any designated uses are met but at least one use is potentially impaired based on "evaluated" assessment                          |
| 4a                                 | All TMDLs need to result in attainment of all applicable water quality standards have been approved or established by EPA  |
| 4b                                 | Other required control measures are expected to result in the attainment of water quality standards in a reasonable period of time                                       |
| 4c                                 | The impairment or threat is not caused by a pollutant  |
| 4d                                 | Waterbody assessed as "impaired" due to a fish kill where enforcement action was taken to address the source of the kill: no TMDL required                               |
| 5a                                 | Waterbody is impaired or threatened and a TMDL is needed   |
| 5b                                 | Impairment is based on results of biological monitoring or a fish kill investigation where specific causes and/or sources of the impairment have not yet been identified |
| <b>Use Class</b>                   |  |
| <b>Class</b>                       | <b>Description</b>   |
| A1                                 | Primary human contact recreation   |
| A2                                 | Secondary human contact recreational use   |
| A3                                 | Children's recreational use  |
| B(WW)                              | Significant resource warm water aquatic life   |
| B(LR)                              | Limited resource warm water aquatic life   |
| B(CW)                              | Cold water aquatic life  |
| B(LW)                              | Aquatic life of lakes and wetlands   |
| C                                  | Source of water supply   |

**Appendix A**

[Back to Contents](#)

| <b>South Skunk River Watershed IDNR Biological Assessment (1995-2004) (49)</b> |   |             |      |       |
|--|---|-------------|------|-------|
| Stream Name  | Nearest Landmark                            | Sample Date | FIBI | BMIBI |
| South Skunk River  | Ames  | 09/15/95    | 61   | 70    |
| Bear Creek   | Roland Wwtp- Downstream                     | 09/25/97    | 35   | 43    |
| Bear Creek   | Roland Wwtp- Upstream                       | 09/26/97    | 25   | 56    |
| South Skunk River  | Ames - River Valley Park                    | 09/26/97    | 56   | 81    |
| South Skunk River  | Ames - Squaw Creek Confluence               | 09/29/97    | 51   | 69    |
| Keigley Branch   | Gilbert                                     | 09/29/97    | 40   | 80    |
| Long Dick Creek  | Roland                                      | 10/02/97    | 19   | 50    |
| Long Dick Creek  | Roland                                      | 10/02/97    | 39   | 57    |
| Bear Creek   | Skunk River Greenbelt- Ames                 | 10/02/97    | 37   | 82    |
| South Skunk River  | Ames  | 10/06/97    | 69   | 56    |
| South Skunk River  | Ames- Lincolnway Bridge                     | 10/06/97    | 49   | 70    |
| South Skunk River  | Story City- Upstream WWTP, Downstream Storm | 10/09/97    | 60   | 30    |
| Drainage Ditch 71  | Jewell                                      | 10/09/97    | 20   | 41    |
| South Skunk River  | Randall                                     | 10/09/97    | 34   | 71    |
| South Skunk River  | Ellsworth                                   | 10/09/97    | 18   | NA    |
| South Skunk River  | Story City Wwtp- Downstream                 | 10/10/97    | 40   | 53    |
| South Skunk River  | Story City- 200 ft. Upstr WWTP Outfall      | 10/10/97    | 48   | 63    |
| Mud Creek  | Baxter                                      | 10/12/98    | 33   | 54    |
| Walnut Creek   | Ames  | 07/15/99    | 42   | 60    |
| Squaw Creek  | Stuart Smith Park- Ames                     | 07/12/00    | 51   | 74    |
| Squaw Creek  | Zenorsville                                 | 07/14/00    | 43   | 74    |
| Squaw Creek  | Ames- Veenker Golf Course- Remap #9         | 07/18/02    | 45   | 80    |
| Bear Creek   | Roland Wwtp- Downstream                     | 09/10/03    | 20   | 38    |
| Bear Creek   | Roland Wwtp- Upstream                       | 09/10/03    | 25   | NA    |
| South Skunk River  | Ames  | 09/16/03    | 54   | 76    |
| South Skunk River  | Randall                                     | 09/17/03    | 48   | 41    |
| South Skunk River  | Story City Wwtp- Downstream                 | 09/18/03    | 44   | 65    |
| Long Dick Creek  | Roland                                      | 09/23/03    | 35   | 33    |
| Long Dick Creek  | Roland                                      | 09/24/03    | 33   | 45    |
| Indian Creek   | Mingo - Remap #90                           | 09/30/03    | 30   | NA    |
| Mud Creek  | Baxter                                      | 09/04/04    | 39   | 46    |

**Current Conditions for Row Crop**

| Row Crop    |  | Quantity |       | Costs                      |             | Effects           |              |                |                |               |                   |                  |                 | Implementation |      |      |     |     |     |      |
|-------------|--|----------|-------|----------------------------|-------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|----------------|------|------|-----|-----|-----|------|
| Mgmt System | Practice Name                          | Code     | Units | Quantity (Total 2005-2007) | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality    | EQIP | WHIP | CRP | WRP | GLC | IFIP |
| <b>BM1</b>  | <b>Soil Erosion - Sheet and Rill</b>   |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|             | Conservation Cover                     | 327      | ac    | 7,735                      | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2              | -    | -    | -   | X   | -   | X    |
|             | Conservation Crop Rotation             | 328      | ac    | 64,290                     | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2              | X    | -    | X   | -   | -   |      |
|             | Contour Buffer Strips                  | 332      | ac    | 6                          | \$40.00     | 2%                | 2            | 2              | 1              | 1             | 2                 | 1                | 4               | 1              | -    | -    | -   | -   | -   | X    |
|             | Contour Farming                        | 330      | ac    | 6,681                      | \$10.00     | 0%                | 2            | 2              | 1              | 1             | 0                 | 0                | 1               | 1              | -    | -    | -   | -   | -   | X    |
|             | Cover Crop                             | 340      | ac    | 31                         | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2              | -    | -    | -   | -   | -   |      |
|             | Critical Area Planting                 | 342      | ac    | 70                         | \$137.50    | 3%                | 4            | 3              | 4              | 2             | 2                 | 1                | 5               | 2              | X    | -    | -   | -   | -   | X    |
|             | Diversion                              | 362      | ft    | 750                        | \$1.13      | 2%                | 2            | 2              | 1              | 1             | 0                 | 0                | 2               | 0              | -    | -    | -   | -   | -   | X    |
|             | Field Border                           | 386      | ft    | 79,576                     | \$0.35      | 1%                | 2            | 2              | 0              | 2             | 2                 | 0                | 5               | 1              | X    | -    | X   | -   | -   | X    |
|             | Residue Management, No-Till/Strip Till | 329      | ac    | 16,300                     | \$14.00     | 0%                | 4            | 0              | 0              | 0             | 0                 | 0                | 0               | 0              | X    | -    | -   | -   | -   | X    |
|             | Residue Management, Mulch Till         | 345      | ac    | 59,027                     | \$33.00     | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0              | -    | -    | -   | -   | -   |      |
|             | Terrace                                | 600      | ft    | 127,791                    | \$1.50      | 0%                | 1            | 1              | 1              | 1             | 1                 | 0                | 2               | 0              | X    | -    | -   | -   | -   | X    |
|             | Underground Outlet                     | 620      | ft    | 43,921                     | \$0.93      | 3%                | 3            | 2              | 3              | 1             | 0                 | 0                | 0               | 0              | X    | -    | -   | -   | -   |      |
| <b>BM2</b>  | <b>Soil Erosion - Ephemeral Gully</b>  |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|             | Conservation Cover                     | 327      | ac    | 7,735                      | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2              | -    | -    | -   | X   | -   | X    |
|             | Conservation Crop Rotation             | 328      | ac    | 64,290                     | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2              | X    | -    | X   | -   | -   |      |
|             | Contour Buffer Strips                  | 332      | ac    | 6                          | \$40.00     | 2%                | 2            | 2              | 1              | 1             | 2                 | 1                | 4               | 1              | -    | -    | -   | -   | -   | X    |
|             | Contour Farming                        | 330      | ac    | 6,681                      | \$10.00     | 0%                | 2            | 2              | 1              | 1             | 0                 | 0                | 1               | 1              | -    | -    | -   | -   | -   | X    |
|             | Cover Crop                             | 340      | ac    | 31                         | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2              | -    | -    | -   | -   | -   |      |
|             | Critical Area Planting                 | 342      | ac    | 70                         | \$137.50    | 3%                | 4            | 3              | 4              | 2             | 2                 | 1                | 5               | 2              | X    | -    | -   | -   | -   | X    |
|             | Diversion                              | 362      | ft    | 750                        | \$1.13      | 2%                | 2            | 2              | 1              | 1             | 0                 | 0                | 2               | 0              | -    | -    | -   | -   | -   | X    |
|             | Field Border                           | 386      | ft    | 79,576                     | \$0.35      | 1%                | 2            | 2              | 0              | 2             | 2                 | 0                | 5               | 1              | X    | -    | X   | -   | -   | X    |
|             | Grade Stabilization Structure          | 410      | no    | 25                         | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0              | X    | -    | X   | -   | -   | X    |
|             | Grassed Waterway                       | 412      | ac    | 1,133                      | \$2,500.00  | 2%                | 3            | -1             | 3              | 2             | 1                 | 1                | 4               | 1              | X    | -    | X   | -   | -   |      |
|             | Residue Management, No-Till/Strip Till | 329      | ac    | 16,300                     | \$14.00     | 0%                | 4            | 0              | 0              | 0             | 0                 | 0                | 0               | 0              | X    | -    | -   | -   | -   | X    |
|             | Residue Management, Mulch Till         | 345      | ac    | 59,027                     | \$33.00     | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0              | -    | -    | -   | -   | -   |      |
|             | Terrace                                | 600      | ft    | 127,791                    | \$1.50      | 0%                | 1            | 1              | 1              | 1             | 1                 | 0                | 2               | 0              | X    | -    | -   | -   | -   | X    |
|             | Underground Outlet                     | 620      | ft    | 43,921                     | \$0.93      | 3%                | 3            | 2              | 3              | 1             | 0                 | 0                | 0               | 0              | X    | -    | -   | -   | -   |      |
| <b>BM3</b>  | <b>Soil Erosion - Classic Gully</b>    |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|             | Critical Area Planting                 | 342      | ac    | 70                         | \$137.50    | 3%                | 4            | 3              | 4              | 2             | 2                 | 1                | 5               | 2              | X    | -    | -   | -   | -   | X    |
|             | Diversion                              | 362      | ft    | 750                        | \$1.13      | 2%                | 2            | 2              | 1              | 1             | 0                 | 0                | 2               | 0              | -    | -    | -   | -   | -   | X    |
|             | Grade Stabilization Structure          | 410      | no    | 25                         | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0              | X    | -    | X   | -   | -   | X    |
|             | Grassed Waterway                       | 412      | ac    | 1,133                      | \$2,500.00  | 2%                | 3            | -1             | 3              | 2             | 1                 | 1                | 4               | 1              | X    | -    | X   | -   | -   |      |
|             | Pond                                   | 378      | no    | 9                          | \$16,000.00 | 1%                | 1            | 2              | 1              | 1             | 3                 | 5                | 2               | 0              | X    | -    | -   | -   | X   |      |

Current Conditions for Row Crop

| Row Crop    |  | Quantity |       |                            | Costs       |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
|-------------|--|----------|-------|----------------------------|-------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Mgmt System | Practice Name  | Code     | Units | Quantity (Total 2005-2007) | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
|             | Terrace  | 600      | ft    | 127,791                    | \$1.50      | 0%                | 1            | 1              | 1              | 1             | 1                 | 0                | 2               | 0           | X              | -    | -   | -   | -   | X    |
|             | Underground Outlet   | 620      | ft    | 43,921                     | \$0.93      | 3%                | 3            | 2              | 3              | 1             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   |      |
|             | Water and Sediment Control Basin                               | 638      | no    | 162                        | \$3,250.00  | 3%                | 3            | 3              | 1              | 1             | 0                 | 1                | 0               | 0           | X              | -    | -   | -   | -   |      |
| <b>BM4</b>  | <b>Soil Erosion - Streambank</b>                               |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|             | Critical Area Planting   | 342      | ac    | 70                         | \$137.50    | 3%                | 4            | 3              | 4              | 2             | 2                 | 1                | 5               | 2           | X              | -    | -   | -   | -   | X    |
|             | Filter Strip   | 393      | ac    | 1,007                      | \$2,000.00  | 2%                | 2            | 2              | 3              | 2             | 2                 | 1                | 5               | 1           | -              | -    | X   | -   | -   | X    |
|             | Grade Stabilization Structure                                  | 410      | no    | 25                         | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0           | X              | -    | X   | -   | -   | X    |
|             | Riparian Forest Buffer   | 391      | ac    | 182                        | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|             | Streambank and Shoreline Protection                            | 580      | ft    | 1,700                      | \$20.00     | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
| <b>BM5</b>  | <b>Soil Condition - Organic Matter Depletion</b>               |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|             | Conservation Crop Rotation                                     | 328      | ac    | 64,290                     | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|             | Cover Crop   | 340      | ac    | 31                         | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|             | Nutrient Management  | 590      | ac    | 23,376                     | \$10.00     | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
|             | Residue Management, No-Till/Strip Till                         | 329      | ac    | 16,300                     | \$14.00     | 0%                | 4            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   | X    |
|             | Residue Management, Mulch Till                                 | 345      | ac    | 59,027                     | \$33.00     | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | -              | -    | -   | -   | -   |      |
| <b>BM6</b>  | <b>Water Quantity - Excessive Runoff, Flooding, or Ponding</b> |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|             | Contour Buffer Strips  | 332      | ac    | 6                          | \$40.00     | 2%                | 2            | 2              | 1              | 1             | 2                 | 1                | 4               | 1           | -              | -    | -   | -   | -   | X    |
|             | Pond   | 378      | no    | 9                          | \$16,000.00 | 1%                | 1            | 2              | 1              | 1             | 3                 | 5                | 2               | 0           | X              | -    | -   | -   | X   |      |
|             | Subsurface Drain   | 606      | ft    | 26,922                     | \$1.20      | 3%                | 2            | 1              | 2              | 1             | 0                 | 4                | 3               | 0           | X              | -    | -   | -   | -   |      |
|             | Terrace  | 600      | ft    | 127,791                    | \$1.50      | 0%                | 1            | 1              | 1              | 1             | 1                 | 0                | 2               | 0           | X              | -    | -   | -   | -   | X    |
|             | Underground Outlet   | 620      | ft    | 43,921                     | \$0.93      | 3%                | 3            | 2              | 3              | 1             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   |      |
|             | Water and Sediment Control Basin                               | 638      | no    | 162                        | \$3,250.00  | 3%                | 3            | 3              | 1              | 1             | 0                 | 1                | 0               | 0           | X              | -    | -   | -   | -   |      |
|             | Wetland Restoration  | 657      | ac    | 2,041                      | \$675.00    | 1%                | 3            | 1              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
|             | Wetland Wildlife Habitat Management                            | 644      | ac    | 2,461                      | \$7.00      | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
| <b>BM7</b>  | <b>Water Quantity - Excessive Subsurface Water</b>             |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|             | Subsurface Drain   | 606      | ft    | 26,922                     | \$1.20      | 3%                | 2            | 1              | 2              | 1             | 0                 | 4                | 3               | 0           | X              | -    | -   | -   | -   |      |
|             | Wetland Restoration  | 657      | ac    | 2,041                      | \$675.00    | 1%                | 3            | 1              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
|             | Wetland Wildlife Habitat Management                            | 644      | ac    | 2,461                      | \$7.00      | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
| <b>BM8</b>  | <b>Water Quality - Excessive Nutrients in Groundwater</b>      |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|             | Conservation Crop Rotation                                     | 328      | ac    | 64,290                     | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|             | Cover Crop   | 340      | ac    | 31                         | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|             | Nutrient Management  | 590      | ac    | 23,376                     | \$10.00     | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |

Current Conditions for Row Crop

| Current Conditions for Row Crop |  |      |          |                            |             |                   |              |                |               |               |                   |                  |                 |             |                |      |     |     |     |      |
|---------------------------------|--|------|----------|----------------------------|-------------|-------------------|--------------|----------------|---------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Row Crop                        |  |      | Quantity |                            | Costs       |                   | Effects      |                |               |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                     | Practice Name  | Code | Units    | Quantity (Total 2005-2007) | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quality | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
| <b>BM9</b>                      | <b>Water Quality - Excessive Nutrients in Surface Waters</b>                               |      |          |                            |             |                   |              |                |               |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                 | Conservation Crop Rotation   | 328  | ac       | 64,290                     | \$50.00     | 0%                | 2            | 4              | 2             | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|                                 | Cover Crop   | 340  | ac       | 31                         | \$31.50     | 1%                | 2            | 2              | 2             | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|                                 | Nutrient Management  | 590  | ac       | 23,376                     | \$10.00     | 0%                | 2            | 2              | 0             | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
|                                 | Wetland Restoration  | 657  | ac       | 2,041                      | \$675.00    | 1%                | 3            | 1              | 3             | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
| <b>BM10</b>                     | <b>Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters</b>          |      |          |                            |             |                   |              |                |               |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                 | Conservation Cover   | 327  | ac       | 7,735                      | \$95.00     | 3%                | 2            | 2              | 2             | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|                                 | Conservation Crop Rotation   | 328  | ac       | 64,290                     | \$50.00     | 0%                | 2            | 4              | 2             | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|                                 | Contour Buffer Strips  | 332  | ac       | 6                          | \$40.00     | 2%                | 2            | 2              | 1             | 1             | 2                 | 1                | 4               | 1           | -              | -    | -   | -   | -   | X    |
|                                 | Contour Farming  | 330  | ac       | 6,681                      | \$10.00     | 0%                | 2            | 2              | 1             | 1             | 0                 | 0                | 1               | 1           | -              | -    | -   | -   | -   | X    |
|                                 | Cover Crop   | 340  | ac       | 31                         | \$31.50     | 1%                | 2            | 2              | 2             | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|                                 | Critical Area Planting   | 342  | ac       | 70                         | \$137.50    | 3%                | 4            | 3              | 4             | 2             | 2                 | 1                | 5               | 2           | X              | -    | -   | -   | -   | X    |
|                                 | Field Border   | 386  | ft       | 79,576                     | \$0.35      | 1%                | 2            | 2              | 0             | 2             | 2                 | 0                | 5               | 1           | X              | -    | X   | -   | -   | X    |
|                                 | Diversion  | 362  | ft       | 750                        | \$1.13      | 2%                | 2            | 2              | 1             | 1             | 0                 | 0                | 2               | 0           | -              | -    | -   | -   | -   | X    |
|                                 | Filter Strip   | 393  | ac       | 1,007                      | \$2,000.00  | 2%                | 2            | 2              | 3             | 2             | 2                 | 1                | 5               | 1           | -              | -    | X   | -   | -   | X    |
|                                 | Grade Stabilization Structure  | 410  | no       | 25                         | \$10,000.00 | 1%                | 1            | 0              | 1             | 2             | 2                 | 0                | 0               | 0           | X              | -    | X   | -   | -   | X    |
|                                 | Grassed Waterway   | 412  | ac       | 1,133                      | \$2,500.00  | 2%                | 3            | -1             | 3             | 2             | 1                 | 1                | 4               | 1           | X              | -    | X   | -   | -   |      |
|                                 | Nutrient Management  | 590  | ac       | 23,376                     | \$10.00     | 0%                | 2            | 2              | 0             | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
|                                 | Residue Management, Mulch Till   | 345  | ac       | 59,027                     | \$33.00     | 0%                | 3            | 0              | 0             | 0             | 0                 | 0                | 0               | 0           | -              | -    | -   | -   | -   |      |
|                                 | Residue Management, No-Till/Strip Till   | 329  | ac       | 16,300                     | \$14.00     | 0%                | 4            | 0              | 0             | 0             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   | X    |
|                                 | Riparian Forest Buffer   | 391  | ac       | 182                        | \$317.00    | 1%                | 2            | 3              | 3             | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|                                 | Streambank and Shoreline Protection  | 580  | ft       | 1,700                      | \$20.00     | 10%               | 4            | 2              | 3             | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|                                 | Terrace  | 600  | ft       | 127,791                    | \$1.50      | 0%                | 1            | 1              | 1             | 1             | 1                 | 0                | 2               | 0           | X              | -    | -   | -   | -   | X    |
|                                 | Underground Outlet   | 620  | ft       | 43,921                     | \$0.93      | 3%                | 3            | 2              | 3             | 1             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   |      |
|                                 | Water and Sediment Control Basin   | 638  | no       | 162                        | \$3,250.00  | 3%                | 3            | 3              | 1             | 1             | 0                 | 1                | 0               | 0           | X              | -    | -   | -   | -   |      |
| <b>BM11</b>                     | <b>Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration</b> |      |          |                            |             |                   |              |                |               |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                 | Conservation Cover   | 327  | ac       | 7,735                      | \$95.00     | 3%                | 2            | 2              | 2             | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|                                 | Riparian Forest Buffer   | 391  | ac       | 182                        | \$317.00    | 1%                | 2            | 3              | 3             | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|                                 | Streambank and Shoreline Protection  | 580  | ft       | 1,700                      | \$20.00     | 10%               | 4            | 2              | 3             | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|                                 | Tree/Shrub Establishment   | 612  | ac       | 297                        | \$285.00    | 0%                | 3            | 2              | 2             | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|                                 | Wetland Wildlife Habitat Management  | 644  | ac       | 2,461                      | \$7.00      | 1%                | 3            | 0              | 3             | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
| <b>BM12</b>                     | <b>Plant Condition - Threatened or Endangered Plant Species</b>                            |      |          |                            |             |                   |              |                |               |               |                   |                  |                 |             |                |      |     |     |     |      |

**Current Conditions for Row Crop**

| Row Crop    |  | Quantity |       | Costs                      |             | Effects           |              |                |                |               |                   |                  |                 | Implementation |      |      |     |     |     |      |
|-------------|--|----------|-------|----------------------------|-------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|----------------|------|------|-----|-----|-----|------|
| Mgmt System | Practice Name  | Code     | Units | Quantity (Total 2005-2007) | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality    | EQIP | WHIP | CRP | WRP | GLC | IFIP |
|             | Conservation Cover                                       | 327      | ac    | 7,735                      | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2              | -    | -    | -   | X   | -   | X    |
|             | Upland Wildlife Habitat Management                       | 645      | ac    | 9,851                      | \$150.00    | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2              | X    | X    | X   | X   | -   |      |
|             | Wetland Wildlife Habitat Management                      | 644      | ac    | 2,461                      | \$7.00      | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1              | -    | -    | X   | X   | -   |      |
| <b>BM13</b> | <b>Plant Condition - Productivity, Health, and Vigor</b> |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|             | Brush Management   | 314      | ac    | 207                        | \$87.50     | 1%                | 2            | 1              | 1              | 0             | 3                 | 2                | 4               | -2             | X    | -    | -   | -   | -   |      |
|             | Conservation Cover                                       | 327      | ac    | 7,735                      | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2              | -    | -    | -   | X   | -   | X    |
|             | Conservation Crop Rotation                               | 328      | ac    | 64,290                     | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2              | X    | -    | X   | -   | -   |      |
|             | Filter Strip   | 393      | ac    | 1,007                      | \$2,000.00  | 2%                | 2            | 2              | 3              | 2             | 2                 | 1                | 5               | 1              | -    | -    | X   | -   | -   | X    |
|             | Nutrient Management                                      | 590      | ac    | 23,376                     | \$10.00     | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2              | X    | -    | X   | -   | X   |      |
|             | Pest Management  | 595      | ac    | 8,654                      | \$4.00      | 0%                | 3            | 2              | 1              | 4             | 3                 | 4                | 4               | 3              | X    | -    | X   | -   | -   |      |
|             | Riparian Forest Buffer                                   | 391      | ac    | 182                        | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2              | -    | -    | X   | -   | -   |      |
|             | Tree/Shrub Establishment                                 | 612      | ac    | 297                        | \$285.00    | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3              | -    | -    | X   | X   | -   | X    |
|             | Windbreak/Shelterbelt Establishment                      | 380      | ft    | 12,385                     | \$350.00    | 1%                | 3            | 2              | 1              | 2             | 4                 | 4                | 5               | 3              | -    | -    | X   | -   | -   | X    |
| <b>BM14</b> | <b>Fish and Wildlife - Inadequate Food</b>               |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|             | Conservation Cover                                       | 327      | ac    | 7,735                      | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2              | -    | -    | -   | X   | -   | X    |
|             | Conservation Crop Rotation                               | 328      | ac    | 64,290                     | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2              | X    | -    | X   | -   | -   |      |
|             | Cover Crop   | 340      | ac    | 31                         | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2              | -    | -    | -   | -   | -   |      |
|             | Pond   | 378      | no    | 9                          | \$16,000.00 | 1%                | 1            | 2              | 1              | 1             | 3                 | 5                | 2               | 0              | X    | -    | -   | -   | X   |      |
|             | Residue Management, Mulch Till                           | 345      | ac    | 59,027                     | \$33.00     | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0              | -    | -    | -   | -   | -   |      |
|             | Residue Management, No-Till/Strip Till                   | 329      | ac    | 16,300                     | \$14.00     | 0%                | 4            | 0              | 0              | 0             | 0                 | 0                | 0               | 0              | X    | -    | -   | -   | -   | X    |
|             | Upland Wildlife Habitat Management                       | 645      | ac    | 9,851                      | \$150.00    | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2              | X    | X    | X   | X   | -   |      |
|             | Wetland Wildlife Habitat Management                      | 644      | ac    | 2,461                      | \$7.00      | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1              | -    | -    | X   | X   | -   |      |
|             | Wetland Creation   | 658      | ac    | 19                         | \$675.00    | 1%                | 3            | 1              | 1              | 2             | 4                 | 2                | 4               | 1              | -    | -    | -   | X   | -   |      |
|             | Wetland Restoration                                      | 657      | ac    | 2,041                      | \$675.00    | 1%                | 3            | 1              | 3              | 2             | 4                 | 2                | 4               | 1              | -    | -    | X   | X   | -   |      |
| <b>BM15</b> | <b>Fish and Wildlife - Inadequate Shelter</b>            |          |       |                            |             |                   |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|             | Conservation Cover                                       | 327      | ac    | 7,735                      | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2              | -    | -    | -   | X   | -   | X    |
|             | Contour Buffer Strips                                    | 332      | ac    | 6                          | \$40.00     | 2%                | 2            | 2              | 1              | 1             | 2                 | 1                | 4               | 1              | -    | -    | -   | -   | -   | X    |
|             | Cover Crop   | 340      | ac    | 31                         | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2              | -    | -    | -   | -   | -   |      |
|             | Field Border   | 386      | ft    | 79,576                     | \$0.35      | 1%                | 2            | 2              | 0              | 2             | 2                 | 0                | 5               | 1              | X    | -    | X   | -   | -   | X    |
|             | Residue Management, Mulch Till                           | 345      | ac    | 59,027                     | \$33.00     | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0              | -    | -    | -   | -   | -   |      |
|             | Residue Management, No-Till/Strip Till                   | 329      | ac    | 16,300                     | \$14.00     | 0%                | 4            | 0              | 0              | 0             | 0                 | 0                | 0               | 0              | X    | -    | -   | -   | -   | X    |
|             | Tree/Shrub Establishment                                 | 612      | ac    | 297                        | \$285.00    | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3              | -    | -    | X   | X   | -   | X    |
|             | Upland Wildlife Habitat Management                       | 645      | ac    | 9,851                      | \$150.00    | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2              | X    | X    | X   | X   | -   |      |
|             | Wetland Creation   | 658      | ac    | 19                         | \$675.00    | 1%                | 3            | 1              | 1              | 2             | 4                 | 2                | 4               | 1              | -    | -    | -   | X   | -   |      |

**Current Conditions for Row Crop**

| Current Conditions for Row Crop |  |      |          |                            |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|---------------------------------|--|------|----------|----------------------------|-----------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Row Crop                        |  |      | Quantity |                            | Costs     |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                     | Practice Name  | Code | Units    | Quantity (Total 2005-2007) | Unit Cost | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
|                                 | Wetland Restoration  | 657  | ac       | 2,041                      | \$675.00  | 1%                | 3            | 1              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
|                                 | Wetland Wildlife Habitat Management                          | 644  | ac       | 2,461                      | \$7.00    | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
|                                 | Windbreak/Shelterbelt Establishment                          | 380  | ft       | 12,385                     | \$350.00  | 1%                | 3            | 2              | 1              | 2             | 4                 | 4                | 5               | 3           | -              | -    | X   | -   | -   | X    |
| <b>BM16</b>                     | <b>Fish and Wildlife - Threatened and Endangered Species</b> |      |          |                            |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                 | Conservation Cover   | 327  | ac       | 7,735                      | \$95.00   | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|                                 | Upland Wildlife Habitat Management                           | 645  | ac       | 9,851                      | \$150.00  | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2           | X              | X    | X   | X   | -   |      |
|                                 | Wetland Wildlife Habitat Management                          | 644  | ac       | 2,461                      | \$7.00    | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |

| Future Conditions for Row Crop |  |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|--------------------------------|--|------|-------|-------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Row Crop                       |  |      | Units | Costs       |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                    | Practice Name                          | Code | Units | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
| <b>RMS1</b>                    | <b>Soil Erosion - Sheet and Rill</b>   |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Conservation Cover                     | 327  | ac    | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|                                | Conservation Crop Rotation             | 328  | ac    | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|                                | Contour Buffer Strips                  | 332  | ac    | \$40.00     | 2%                | 2            | 2              | 1              | 1             | 2                 | 1                | 4               | 1           | -              | -    | -   | -   | -   | X    |
|                                | Contour Farming                        | 330  | ac    | \$10.00     | 0%                | 2            | 2              | 1              | 1             | 0                 | 0                | 1               | 1           | -              | -    | -   | -   | -   | X    |
|                                | Cover Crop                             | 340  | ac    | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|                                | Critical Area Planting                 | 342  | ac    | \$137.50    | 3%                | 4            | 3              | 4              | 2             | 2                 | 1                | 5               | 2           | X              | -    | -   | -   | -   | X    |
|                                | Diversion                              | 362  | ft    | \$1.13      | 2%                | 2            | 2              | 1              | 1             | 0                 | 0                | 2               | 0           | -              | -    | -   | -   | -   | X    |
|                                | Field Border                           | 386  | ft    | \$0.35      | 1%                | 2            | 2              | 0              | 2             | 2                 | 0                | 5               | 1           | X              | -    | X   | -   | -   | X    |
|                                | Residue Management, No-Till/Strip Till | 329  | ac    | \$14.00     | 0%                | 4            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   | X    |
|                                | Residue Management, Mulch Till         | 345  | ac    | \$33.00     | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | -              | -    | -   | -   | -   |      |
|                                | Terrace                                | 600  | ft    | \$1.50      | 0%                | 1            | 1              | 1              | 1             | 1                 | 0                | 2               | 0           | X              | -    | -   | -   | -   | X    |
|                                | Underground Outlet                     | 620  | ft    | \$0.93      | 3%                | 3            | 2              | 3              | 1             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   |      |
| <b>RMS2</b>                    | <b>Soil Erosion - Ephemeral Gully</b>  |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Conservation Cover                     | 327  | ac    | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|                                | Conservation Crop Rotation             | 328  | ac    | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|                                | Contour Buffer Strips                  | 332  | ac    | \$40.00     | 2%                | 2            | 2              | 1              | 1             | 2                 | 1                | 4               | 1           | -              | -    | -   | -   | -   | X    |
|                                | Contour Farming                        | 330  | ac    | \$10.00     | 0%                | 2            | 2              | 1              | 1             | 0                 | 0                | 1               | 1           | -              | -    | -   | -   | -   | X    |
|                                | Cover Crop                             | 340  | ac    | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|                                | Critical Area Planting                 | 342  | ac    | \$137.50    | 3%                | 4            | 3              | 4              | 2             | 2                 | 1                | 5               | 2           | X              | -    | -   | -   | -   | X    |
|                                | Diversion                              | 362  | ft    | \$1.13      | 2%                | 2            | 2              | 1              | 1             | 0                 | 0                | 2               | 0           | -              | -    | -   | -   | -   | X    |
|                                | Field Border                           | 386  | ft    | \$0.35      | 1%                | 2            | 2              | 0              | 2             | 2                 | 0                | 5               | 1           | X              | -    | X   | -   | -   | X    |
|                                | Grade Stabilization Structure          | 410  | no    | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0           | X              | -    | X   | -   | -   | X    |
|                                | Grassed Waterway                       | 412  | ac    | \$2,500.00  | 2%                | 3            | -1             | 3              | 2             | 1                 | 1                | 4               | 1           | X              | -    | X   | -   | -   |      |
|                                | Residue Management, No-Till/Strip Till | 329  | ac    | \$14.00     | 0%                | 4            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   | X    |
|                                | Residue Management, Mulch Till         | 345  | ac    | \$33.00     | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | -              | -    | -   | -   | -   |      |
|                                | Terrace                                | 600  | ft    | \$1.50      | 0%                | 1            | 1              | 1              | 1             | 1                 | 0                | 2               | 0           | X              | -    | -   | -   | -   | X    |
|                                | Underground Outlet                     | 620  | ft    | \$0.93      | 3%                | 3            | 2              | 3              | 1             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   |      |
| <b>RMS3</b>                    | <b>Soil Erosion - Classic Gully</b>    |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Critical Area Planting                 | 342  | ac    | \$137.50    | 3%                | 4            | 3              | 4              | 2             | 2                 | 1                | 5               | 2           | X              | -    | -   | -   | -   | X    |
|                                | Diversion                              | 362  | ft    | \$1.13      | 2%                | 2            | 2              | 1              | 1             | 0                 | 0                | 2               | 0           | -              | -    | -   | -   | -   | X    |
|                                | Grade Stabilization Structure          | 410  | no    | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0           | X              | -    | X   | -   | -   | X    |
|                                | Grassed Waterway                       | 412  | ac    | \$2,500.00  | 2%                | 3            | -1             | 3              | 2             | 1                 | 1                | 4               | 1           | X              | -    | X   | -   | -   |      |
|                                | Pond                                   | 378  | no    | \$16,000.00 | 1%                | 1            | 2              | 1              | 1             | 3                 | 5                | 2               | 0           | X              | -    | -   | -   | X   |      |
|                                | Terrace                                | 600  | ft    | \$1.50      | 0%                | 1            | 1              | 1              | 1             | 1                 | 0                | 2               | 0           | X              | -    | -   | -   | -   | X    |
|                                | Underground Outlet                     | 620  | ft    | \$0.93      | 3%                | 3            | 2              | 3              | 1             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   |      |

| Future Conditions for Row Crop |  |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|--------------------------------|--|------|-------|-------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Row Crop                       |  |      | Units | Costs       |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                    | Practice Name  | Code | Units | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQUIP          | WHIP | CRP | WRP | GLC | IFIP |
|                                | Water and Sediment Control Basin                               | 638  | no    | \$3,250.00  | 3%                | 3            | 3              | 1              | 1             | 0                 | 1                | 0               | 0           | X              | -    | -   | -   | -   |      |
| <b>RMS4</b>                    | <b>Soil Erosion - Streambank</b>                               |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Critical Area Planting   | 342  | ac    | \$137.50    | 3%                | 4            | 3              | 4              | 2             | 2                 | 1                | 5               | 2           | X              | -    | -   | -   | -   | X    |
|                                | Filter Strip   | 393  | ac    | \$2,000.00  | 2%                | 2            | 2              | 3              | 2             | 2                 | 1                | 5               | 1           | -              | -    | X   | -   | -   | X    |
|                                | Grade Stabilization Structure                                  | 410  | no    | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0           | X              | -    | X   | -   | -   | X    |
|                                | In-Channel Structures  |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Riparian Forest Buffer   | 391  | ac    | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|                                | Streambank and Shoreline Protection                            | 580  | ft    | \$20.00     | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
| <b>RMS5</b>                    | <b>Soil Condition - Organic Matter Depletion</b>               |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Conservation Crop Rotation                                     | 328  | ac    | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|                                | Cover Crop   | 340  | ac    | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|                                | Nutrient Management  | 590  | ac    | \$10.00     | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
|                                | Residue Management, No-Till/Strip Till                         | 329  | ac    | \$14.00     | 0%                | 4            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   | X    |
|                                | Residue Management, Mulch Till                                 | 345  | ac    | \$33.00     | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | -              | -    | -   | -   | -   |      |
| <b>RMS6</b>                    | <b>Water Quantity - Excessive Runoff, Flooding, or Ponding</b> |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Contour Buffer Strips  | 332  | ac    | \$40.00     | 2%                | 2            | 2              | 1              | 1             | 2                 | 1                | 4               | 1           | -              | -    | -   | -   | -   | X    |
|                                | Dam, Diversion   | 348  |       |             | 3%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Pond   | 378  | no    | \$16,000.00 | 1%                | 1            | 2              | 1              | 1             | 3                 | 5                | 2               | 0           | X              | -    | -   | -   | X   |      |
|                                | Structure for Water Control                                    | 587  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Subsurface Drain   | 606  | ft    | \$1.20      | 3%                | 2            | 1              | 2              | 1             | 0                 | 4                | 3               | 0           | X              | -    | -   | -   | -   |      |
|                                | Terrace  | 600  | ft    | \$1.50      | 0%                | 1            | 1              | 1              | 1             | 1                 | 0                | 2               | 0           | X              | -    | -   | -   | -   | X    |
|                                | Underground Outlet   | 620  | ft    | \$0.93      | 3%                | 3            | 2              | 3              | 1             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   |      |
|                                | Water and Sediment Control Basin                               | 638  | no    | \$3,250.00  | 3%                | 3            | 3              | 1              | 1             | 0                 | 1                | 0               | 0           | X              | -    | -   | -   | -   |      |
|                                | Wetland Enhancement  | 659  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Wetland Restoration  | 657  | ac    | \$675.00    | 1%                | 3            | 1              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
|                                | Wetland Wildlife Habitat Management                            | 644  | ac    | \$7.00      | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
| <b>RMS7</b>                    | <b>Water Quantity - Excessive Subsurface Water</b>             |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Controlled Drainage  |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Structure for Water Control                                    | 587  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Subsurface Drain   | 606  | ft    | \$1.20      | 3%                | 2            | 1              | 2              | 1             | 0                 | 4                | 3               | 0           | X              | -    | -   | -   | -   |      |
|                                | Wetland Enhancement  | 659  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Wetland Restoration  | 657  | ac    | \$675.00    | 1%                | 3            | 1              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
|                                | Wetland Wildlife Habitat Management                            | 644  | ac    | \$7.00      | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |

| Future Conditions for Row Crop         |  |      |            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|--|--|------|------------|-------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Row Crop                               |  |      | Units      | Costs       |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                            | Practice Name  | Code | Units      | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQUIP          | WHIP | CRP | WRP | GLC | IFIP |
| RMS8                                   | <b>Water Quality - Excessive Nutrients in Groundwater</b>                                  |      |            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Conservation Crop Rotation   | 328  | ac         | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|  | Cover Crop   | 340  | ac         | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|  | Nutrient Management  | 590  | ac         | \$10.00     | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
| RMS9                                   | <b>Water Quality - Excessive Nutrients in Surface Waters</b>                               |      |            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Biofilters   |      |            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Conservation Crop Rotation   | 328  | ac         | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|  | Controlled Drainage  |      |            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Cover Crop   | 340  | ac         | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|  | Nutrient Management  | 590  | ac         | \$10.00     | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
| RMS10                                  | <b>Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters</b>          |      |            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Conservation Cover   | 327  | ac         | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|  | Conservation Crop Rotation   | 328  | ac         | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|  | Contour Buffer Strips  | 332  | ac         | \$40.00     | 2%                | 2            | 2              | 1              | 1             | 2                 | 1                | 4               | 1           | -              | -    | -   | -   | -   | X    |
|  | Contour Farming  | 330  | ac         | \$10.00     | 0%                | 2            | 2              | 1              | 1             | 0                 | 0                | 1               | 1           | -              | -    | -   | -   | -   | X    |
|  | Cover Crop   | 340  | ac         | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|  | Critical Area Planting   | 342  | ac         | \$137.50    | 3%                | 4            | 3              | 4              | 2             | 2                 | 1                | 5               | 2           | X              | -    | -   | -   | -   | X    |
|  | Diversion  | 362  | ft         | \$1.13      | 2%                | 2            | 2              | 1              | 1             | 0                 | 0                | 2               | 0           | -              | -    | -   | -   | -   | X    |
|  | Field Border   | 386  | ft         | \$0.35      | 1%                | 2            | 2              | 0              | 2             | 2                 | 0                | 5               | 1           | X              | -    | X   | -   | -   | X    |
|  | Filter Strip   | 393  | ac         | \$2,000.00  | 2%                | 2            | 2              | 3              | 2             | 2                 | 1                | 5               | 1           | -              | -    | X   | -   | -   | X    |
|  | Grade Stabilizatoin Structure  | 410  | no         | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0           | X              | -    | X   | -   | -   | X    |
|  | Grassed Waterway   | 412  | ac         | \$2,500.00  | 2%                | 3            | -1             | 3              | 2             | 1                 | 1                | 4               | 1           | X              | -    | X   | -   | -   |      |
|  | Nutrient Management  | 590  | ac         | \$10.00     | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
|  | Residue Management, Mulch Till   | 345  | ac         | \$33.00     | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | -              | -    | -   | -   | -   |      |
| Residue Management, No-Till/Strip Till | 329  | ac   | \$14.00    | 0%          | 4                 | 0            | 0              | 0              | 0             | 0                 | 0                | 0               | X           | -              | -    | -   | -   | X   |      |
| Riparian Forest Buffer                 | 391  | ac   | \$317.00   | 1%          | 2                 | 3            | 3              | 3              | 4             | 4                 | 4                | 2               | -           | -              | X    | -   | -   |     |      |
| Streambank and Shoreline Protection    | 580  | ft   | \$20.00    | 10%         | 4                 | 2            | 3              | 2              | 2             | 1                 | 4                | 3               | -           | -              | -    | -   | -   |     |      |
| Terrace                                | 600  | ft   | \$1.50     | 0%          | 1                 | 1            | 1              | 1              | 1             | 0                 | 2                | 0               | X           | -              | -    | -   | -   | X   |      |
| Underground Outlet                     | 620  | ft   | \$0.93     | 3%          | 3                 | 2            | 3              | 1              | 0             | 0                 | 0                | 0               | X           | -              | -    | -   | -   |     |      |
| Water and Sediment Control Basin       | 638  | no   | \$3,250.00 | 3%          | 3                 | 3            | 1              | 1              | 0             | 1                 | 0                | 0               | X           | -              | -    | -   | -   |     |      |
| RMS11                                  | <b>Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration</b> |      |            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Conservation Cover   | 327  | ac         | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |

| Future Conditions for Row Crop |   |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|--------------------------------|---|------|-------|-------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Row Crop                       |   |      | Units | Costs       |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                    | Practice Name   | Code | Units | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
|                                | In-Channel Structures   |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Riparian Forest Buffer  | 391  | ac    | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|                                | Streambank and Shoreline Protection                             | 580  | ft    | \$20.00     | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|                                | Tree/Shrub Establishment  | 612  | ac    | \$285.00    | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|                                | Wetland Wildlife Habitat Management                             | 644  | ac    | \$7.00      | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
| <b>RMS12</b>                   | <b>Plant Condition - Threatened or Endangered Plant Species</b> |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Conservation Cover  | 327  | ac    | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|                                | Upland Wildlife Habitat Management                              | 645  | ac    | \$150.00    | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2           | X              | X    | X   | X   | -   |      |
|                                | Wetland Wildlife Habitat Management                             | 644  | ac    | \$7.00      | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
| <b>RMS13</b>                   | <b>Plant Condition - Productivity, Health, and Vigor</b>        |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Brush Management  | 314  | ac    | \$87.50     | 1%                | 2            | 1              | 1              | 0             | 3                 | 2                | 4               | -2          | X              | -    | -   | -   | -   |      |
|                                | Conservation Cover  | 327  | ac    | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|                                | Conservation Crop Rotation                                      | 328  | ac    | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|                                | Field Windbreak   | 392  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Filter Strip  | 393  | ac    | \$2,000.00  | 2%                | 2            | 2              | 3              | 2             | 2                 | 1                | 5               | 1           | -              | -    | X   | -   | -   | X    |
|                                | Nutrient Management   | 590  | ac    | \$10.00     | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
|                                | Pest Management   | 595  | ac    | \$4.00      | 0%                | 3            | 2              | 1              | 4             | 3                 | 4                | 4               | 3           | X              | -    | X   | -   | -   |      |
|                                | Riparian Forest Buffer  | 391  | ac    | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|                                | Tree/Shrub Establishment  | 612  | ac    | \$285.00    | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|                                | Windbreak/Shelterbelt Renovation                                | 650  |       |             | 3%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     | X    |
|                                | Windbreak/Shelterbelt Establishment                             | 380  | ft    | \$350.00    | 1%                | 3            | 2              | 1              | 2             | 4                 | 4                | 5               | 3           | -              | -    | X   | -   | -   | X    |
| <b>RMS14</b>                   | <b>Fish and Wildlife - Inadequate Food</b>                      |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Conservation Cover  | 327  | ac    | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|                                | Conservation Crop Rotation                                      | 328  | ac    | \$50.00     | 0%                | 2            | 4              | 2              | 2             | 2                 | 3                | 4               | 2           | X              | -    | X   | -   | -   |      |
|                                | Cover Crop  | 340  | ac    | \$31.50     | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|                                | Early Successional Habitat                                      | 647  | ac    | \$5.23      | 1%                | 2            | 0              | 0              | -2            | 4                 | 1                | 4               | 0           | -              | -    | X   | -   | -   |      |
|                                | Field Windbreak   | 392  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Pond  | 378  | no    | \$16,000.00 | 1%                | 1            | 2              | 1              | 1             | 3                 | 5                | 2               | 0           | X              | -    | -   | -   | -   | X    |
|                                | Grasses and Legumes in Rotation                                 | 411  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Residue Management, Mulch Till                                  | 345  | ac    | \$33.00     | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | -              | -    | -   | -   | -   |      |
|                                | Residue Management, No-Till/Strip Till                          | 329  | ac    | \$14.00     | 0%                | 4            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   | X    |
|                                | Upland Wildlife Habitat Management                              | 645  | ac    | \$150.00    | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2           | X              | X    | X   | X   | -   |      |
|                                | Wetland Wildlife Habitat Management                             | 644  | ac    | \$7.00      | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
|                                | Wetland Creation  | 658  | ac    | \$675.00    | 1%                | 3            | 1              | 1              | 2             | 4                 | 2                | 4               | 1           | -              | -    | -   | X   | -   |      |
|                                | Wetland Enhancement   | 659  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |

| Future Conditions for Row Crop |  |      |       |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|--------------------------------|--|------|-------|-----------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Row Crop                       |  |      | Units | Costs     |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                    | Practice Name  | Code | Units | Unit Cost | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
|                                | Wetland Restoration  | 657  | ac    | \$675.00  | 1%                | 3            | 1              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
| <b>RMS15</b>                   | <b>Fish and Wildlife - Inadequate Shelter</b>                |      |       |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Conservation Cover   | 327  | ac    | \$95.00   | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|                                | Contour Buffer Strips  | 332  | ac    | \$40.00   | 2%                | 2            | 2              | 1              | 1             | 2                 | 1                | 4               | 1           | -              | -    | -   | -   | -   | X    |
|                                | Cover Crop   | 340  | ac    | \$31.50   | 1%                | 2            | 2              | 2              | 2             | 2                 | 3                | 3               | 2           | -              | -    | -   | -   | -   |      |
|                                | Early Successional Habitat                                   | 647  | ac    | \$5.23    | 1%                | 2            | 0              | 0              | -2            | 4                 | 1                | 4               | 0           | -              | -    | X   | -   | -   |      |
|                                | Field Border   | 386  | ft    | \$0.35    | 1%                | 2            | 2              | 0              | 2             | 2                 | 0                | 5               | 1           | X              | -    | X   | -   | -   | X    |
|                                | Hedgerow Planting  | 422  |       |           | 5%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Residue Management, Mulch Till                               | 345  | ac    | \$33.00   | 0%                | 3            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | -              | -    | -   | -   | -   |      |
|                                | Residue Management, No-Till/Strip Till                       | 329  | ac    | \$14.00   | 0%                | 4            | 0              | 0              | 0             | 0                 | 0                | 0               | 0           | X              | -    | -   | -   | -   | X    |
|                                | Tree/Shrub Establishment                                     | 612  | ac    | \$285.00  | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|                                | Upland Wildlife Habitat Management                           | 645  | ac    | \$150.00  | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2           | X              | X    | X   | X   | -   |      |
|                                | Wetland Creation   | 658  | ac    | \$675.00  | 1%                | 3            | 1              | 1              | 2             | 4                 | 2                | 4               | 1           | -              | -    | -   | X   | -   |      |
|                                | Wetland Enhancement  | 659  |       |           | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Wetland Restoration  | 657  | ac    | \$675.00  | 1%                | 3            | 1              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
|                                | Wetland Wildlife Habitat Management                          | 644  | ac    | \$7.00    | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
|                                | Windbreak/Shelterbelt Establishment                          | 380  | ft    | \$350.00  | 1%                | 3            | 2              | 1              | 2             | 4                 | 4                | 5               | 3           | -              | -    | X   | -   | -   | X    |
|                                | Windbreak/Shelterbelt Renovation                             | 650  |       |           | 3%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     | X    |
| <b>RMS16</b>                   | <b>Fish and Wildlife - Threatened and Endangered Species</b> |      |       |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Conservation Cover   | 327  | ac    | \$95.00   | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|                                | Early Successional Habitat                                   | 647  | ac    | \$5.23    | 1%                | 2            | 0              | 0              | -2            | 4                 | 1                | 4               | 0           | -              | -    | X   | -   | -   |      |
|                                | Hedgerow Planting  | 422  |       |           | 5%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Upland Wildlife Habitat Management                           | 645  | ac    | \$150.00  | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2           | X              | X    | X   | X   | -   |      |
|                                | Wetland Wildlife Habitat Management                          | 644  | ac    | \$7.00    | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
| <b>RMS17</b>                   | <b>Air Quality - Road Dust</b>                               |      |       |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Dust Control Products  |      |       |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                                | Use Exclusion  |      |       |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |

| Current Conditions for Livestock Operations |   |      |          |                            |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|---|---|------|----------|----------------------------|-----------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Livestock Operations                        |   |      | Quantity |                            | Costs     |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                                 | Practice Name   | Code | Units    | Quantity (Total 2005-2007) | Unit Cost | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
| BM1   | Water Quality - Excessive Nutrients in Surface Waters                               |      |          |                            |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Nutrient Management   | 590  | ac       | 23,376                     | \$10.00   | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
| BM2   | Water Quality - Harmful Levels of Pathogens in Surface Water                        |      |          |                            |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Nutrient Management   | 590  | ac       | 23,376                     | \$10.00   | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
| BM3   | Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration |      |          |                            |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Conservation Cover  | 327  | ac       | 7,735                      | \$95.00   | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|   | Riparian Forest Buffer  | 391  | ac       | 182                        | \$317.00  | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|   | Streambank and Shoreline Protection   | 580  | ft       | 1,700                      | \$20.00   | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|   | Tree/Shrub Establishment  | 612  | ac       | 297                        | \$285.00  | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
| BM4   | Air Quality - Objectionable Odors   |      |          |                            |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Tree/Shrub Establishment  | 612  | ac       | 297                        | \$285.00  | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|   | Windbreak/Shelterbelt Establishment   | 380  | ft       | 12,385                     | \$350.00  | 1%                | 3            | 2              | 1              | 2             | 4                 | 4                | 5               | 3           | -              | -    | X   | -   | -   | X    |

| Future Conditions for Livestock Operations |  |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|--|--|------|-------|-------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Livestock Operations                       |  |      | Units | Costs       |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                                | Practice Name  | Code | Units | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
| <b>RMS1</b>                                | <b>Water Quality - Excessive Nutrients in Surface Waters</b>                               |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Composting Facility  | 317  |       |             | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Nutrient Management  | 590  | ac    | \$10.00     | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
|  | Waste Storage Facility   | 313  | no    | \$55,000.00 | 2%                | 0            | 2              | 0              | 2             | 0                 | 0                | 2               | -1          | -              | -    | -   | -   | -   |      |
|  | Waste Treatment Lagoon   | 359  |       |             | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Waste Utilization  | 633  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
| <b>RMS2</b>                                | <b>Water Quality - Harmful Levels of Pathogens in Surface Water</b>                        |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Composting Facility  | 317  |       |             | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Nutrient Management  | 590  | ac    | \$10.00     | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
|  | Waste Storage Facility   | 313  | no    | \$55,000.00 | 2%                | 0            | 2              | 0              | 2             | 0                 | 0                | 2               | -1          | -              | -    | -   | -   | -   |      |
|  | Waste Treatment Lagoon   | 359  |       |             | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Waste Utilization  | 633  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
| <b>RMS3</b>                                | <b>Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration</b> |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Conservation Cover   | 327  | ac    | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|  | In-Channel Structures  |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Riparian Forest Buffer   | 391  | ac    | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|  | Streambank and Shoreline Protection  | 580  | ft    | \$20.00     | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|  | Tree/Shrub Establishment   | 612  | ac    | \$285.00    | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
| <b>RMS4</b>                                | <b>Air Quality - Objectionable Odors</b>   |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Composting Facility  | 317  |       |             | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Tree/Shrub Establishment   | 612  | ac    | \$285.00    | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|  | Windbreak/Shelterbelt Establishment  | 380  | ft    | \$350.00    | 1%                | 3            | 2              | 1              | 2             | 4                 | 4                | 5               | 3           | -              | -    | X   | -   | -   | X    |
|  | Windbreak/Shelterbelt Renovation   | 650  |       |             | 3%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     | X    |
|  | Waste Storage Facility   | 313  | no    | \$55,000.00 | 2%                | 0            | 2              | 0              | 2             | 0                 | 0                | 2               | -1          | -              | -    | -   | -   | -   |      |
|  | Waste Treatment Lagoon   | 359  |       |             | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Waste Utilization  | 633  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
| <b>RMS5</b>                                | <b>Air Quality - Ammonia</b>   |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Composting Facility  | 317  |       |             | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Waste Storage Facility   | 313  | no    | \$55,000.00 | 2%                | 0            | 2              | 0              | 2             | 0                 | 0                | 2               | -1          | -              | -    | -   | -   | -   |      |
|  | Waste Treatment Lagoon   | 359  |       |             | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Waste Utilization  | 633  |       |             | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |

| Current Conditions for Pasture/Grazed Timber/Grassland |  |      |          |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|--|--|------|----------|----------------------------|-------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Pasture/Grazed Timber/Grassland                        |  |      | Quantity |                            | Costs       |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System  | Practice Name  | Code | Units    | Quantity (Total 2005-2007) | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
| <b>BM1</b>   | <b>Soil Erosion - Sheet and Rill</b>   |      |          |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Forage Harvest Management  | 517  |          |                            |             | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Pasture and Hayland Planting   | 512  | ac       | 963                        | \$64.50     | 1%                | 3            | 4              | 1              | 2             | 2                 | 4                | 5               | 1           | X              | -    | -   | -   | X   | X    |
|  | Prescribed Grazing   | 528  | ac       | 837                        | \$75.00     | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
| <b>BM2</b>   | <b>Soil Erosion - Ephemeral Gully</b>  |      |          |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Grade Stabilization Structure  | 410  | no       | 25                         | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0           | X              | -    | X   | -   | -   | X    |
|  | Pasture and Hayland Planting   | 512  | ac       | 963                        | \$64.50     | 1%                | 3            | 4              | 1              | 2             | 2                 | 4                | 5               | 1           | X              | -    | -   | -   | X   | X    |
|  | Prescribed Grazing   | 528  | ac       | 837                        | \$75.00     | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
| <b>BM3</b>   | <b>Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters</b>          |      |          |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Fencing  | 382  | ft       | 67866                      | \$0.88      | 2%                | 0            | 0              | 0              | 0             | -1                | 4                | 4               | 0           | X              | -    | X   | -   | -   |      |
|  | Riparian Forest Buffer   | 391  | ac       | 182                        | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|  | Grade Stabilization Structure  | 410  | no       | 25                         | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0           | X              | -    | X   | -   | -   | X    |
|  | Use Exclusion  | 472  | ac       | 6442                       | \$50.00     | 3%                | 2            | 2              | 2              | 1             | 3                 | 4                | 4               | 2           | X              | -    | X   | X   | -   |      |
|  | Pasture and Hayland Planting   | 512  | ac       | 963                        | \$64.50     | 1%                | 3            | 4              | 1              | 2             | 2                 | 4                | 5               | 1           | X              | -    | -   | -   | X   | X    |
|  | Streambank and Shoreline Protection  | 580  | ft       | 1700                       | \$20.00     | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|  | Prescribed Grazing   | 528  | ac       | 837                        | \$75.00     | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
| <b>BM4</b>   | <b>Water Quality - Harmful Levels of Pathogens in Surface Water</b>                        |      |          |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Fencing  | 382  | ft       | 67866                      | \$0.88      | 2%                | 0            | 0              | 0              | 0             | -1                | 4                | 4               | 0           | X              | -    | X   | -   | -   |      |
|  | Riparian Forest Buffer   | 391  | ac       | 182                        | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|  | Use Exclusion  | 472  | ac       | 6442                       | \$50.00     | 3%                | 2            | 2              | 2              | 1             | 3                 | 4                | 4               | 2           | X              | -    | X   | X   | -   |      |
|  | Streambank and Shoreline Protection  | 580  | ft       | 1700                       | \$20.00     | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|  | Prescribed Grazing   | 528  | ac       | 837                        | \$75.00     | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
| <b>BM5</b>   | <b>Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration</b> |      |          |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Conservation Cover   | 327  | ac       | 7735                       | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|  | Fencing  | 382  | ft       | 67866                      | \$0.88      | 2%                | 0            | 0              | 0              | 0             | -1                | 4                | 4               | 0           | X              | -    | X   | -   | -   |      |
|  | Prescribed Grazing   | 528  | ac       | 837                        | \$75.00     | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
|  | Riparian Forest Buffer   | 391  | ac       | 182                        | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|  | Streambank and Shoreline Protection  | 580  | ft       | 1700                       | \$20.00     | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|  | Tree/Shrub Establishment   | 612  | ac       | 297                        | \$285.00    | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|  | Use Exclusion  | 472  | ac       | 6442                       | \$50.00     | 3%                | 2            | 2              | 2              | 1             | 3                 | 4                | 4               | 2           | X              | -    | X   | X   | -   |      |
| <b>BM6</b>   | <b>Plant Condition - Threatened or Endangered Plant Species</b>                            |      |          |                            |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|  | Conservation Cover   | 327  | ac       | 7735                       | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |

| Current Conditions for Pasture/Grazed Timber/Grassland |  |      |          |                            |           |                   |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|--|--|------|----------|----------------------------|-----------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|----------------|------|------|-----|-----|-----|------|
| Pasture/Grazed Timber/Grassland                        |  |      | Quantity |                            | Costs     |                   | Effects      |                |                |               |                   |                  |                 | Implementation |      |      |     |     |     |      |
| Mgmt System  | Practice Name  | Code | Units    | Quantity (Total 2005-2007) | Unit Cost | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality    | EQIP | WHIP | CRP | WRP | GLC | IFIP |
|  | Fencing  | 382  | ft       | 67866                      | \$0.88    | 2%                | 0            | 0              | 0              | 0             | -1                | 4                | 4               | 0              | X    | -    | X   | -   | -   |      |
|  | Prescribed Grazing                                       | 528  | ac       | 837                        | \$75.00   | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2              | X    | -    | -   | -   | X   |      |
|  | Riparian Forest Buffer                                   | 391  | ac       | 182                        | \$317.00  | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2              | -    | -    | X   | -   | -   |      |
|  | Tree/Shrub Establishment                                 | 612  | ac       | 297                        | \$285.00  | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3              | -    | -    | X   | X   | -   | X    |
|  | Upland Wildlife Habitat Management                       | 645  | ac       | 9851                       | \$150.00  | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2              | X    | X    | X   | X   | -   |      |
|  | Use Exclusion  | 472  | ac       | 6442                       | \$50.00   | 3%                | 2            | 2              | 2              | 1             | 3                 | 4                | 4               | 2              | X    | -    | X   | X   | -   |      |
|  | Wetland Wildlife Habitat Management                      | 644  | ac       | 2461                       | \$7.00    | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1              | -    | -    | X   | X   | -   |      |
| <b>BM7</b>   | <b>Plant Condition - Forage Quality and Palatability</b> |      |          |                            |           |                   |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|  | Brush Management   | 314  | ac       | 207                        | \$87.50   | 1%                | 2            | 1              | 1              | 0             | 3                 | 2                | 4               | -2             | X    | -    | -   | -   | -   |      |
|  | Conservation Cover                                       | 327  | ac       | 7735                       | \$95.00   | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2              | -    | -    | -   | X   | -   | X    |
|  | Forage Harvest Management                                | 517  |          |                            |           | 2%                |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|  | Nutrient Management                                      | 590  | ac       | 23376                      | \$10.00   | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2              | X    | -    | X   | -   | X   |      |
|  | Pasture and Hayland Planting                             | 512  | ac       | 963                        | \$64.50   | 1%                | 3            | 4              | 1              | 2             | 2                 | 4                | 5               | 1              | X    | -    | -   | -   | X   | X    |
|  | Pest Management  | 595  | ac       | 8654                       | \$4.00    | 0%                | 3            | 2              | 1              | 4             | 3                 | 4                | 4               | 3              | X    | -    | X   | -   | -   |      |
|  | Prescribed Grazing                                       | 528  | ac       | 837                        | \$75.00   | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2              | X    | -    | -   | -   | X   |      |
|  | Riparian Forest Buffer                                   | 391  | ac       | 182                        | \$317.00  | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2              | -    | -    | X   | -   | -   |      |
|  | Tree/Shrub Establishment                                 | 612  | ac       | 297                        | \$285.00  | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3              | -    | -    | X   | X   | -   | X    |
|  | Windbreak/Shelterbelt Establishment                      | 380  | ft       | 12385                      | \$350.00  | 1%                | 3            | 2              | 1              | 2             | 4                 | 4                | 5               | 3              | -    | -    | X   | -   | -   | X    |
| <b>BM8</b>   | <b>Fish and Wildlife - Plant Community Fragmentation</b> |      |          |                            |           |                   |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|  | Conservation Cover                                       | 327  | ac       | 7735                       | \$95.00   | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2              | -    | -    | -   | X   | -   | X    |
|  | Forage Harvest Management                                | 517  |          |                            |           | 2%                |              |                |                |               |                   |                  |                 |                |      |      |     |     |     |      |
|  | Pasture and Hayland Planting                             | 512  | ac       | 963                        | \$64.50   | 1%                | 3            | 4              | 1              | 2             | 2                 | 4                | 5               | 1              | X    | -    | -   | -   | X   | X    |
|  | Prescribed Burning                                       | 338  | ac       | 625                        | \$25.00   | 1%                | 2            | 1              | 1              | 1             | 3                 | 2                | 5               | 0              | -    | -    | X   | -   | -   |      |
|  | Prescribed Grazing                                       | 528  | ac       | 837                        | \$75.00   | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2              | X    | -    | -   | -   | X   |      |
|  | Tree/Shrub Establishment                                 | 612  | ac       | 297                        | \$285.00  | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3              | -    | -    | X   | X   | -   | X    |
|  | Upland Wildlife Habitat Management                       | 645  | ac       | 9851                       | \$150.00  | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2              | X    | X    | X   | X   | -   |      |
|  | Wetland Creation   | 658  | ac       | 19                         | \$675.00  | 1%                | 3            | 1              | 1              | 2             | 4                 | 2                | 4               | 1              | -    | -    | -   | X   | -   |      |
|  | Wetland Restoration                                      | 657  | ac       | 2041                       | \$675.00  | 1%                | 3            | 1              | 3              | 2             | 4                 | 2                | 4               | 1              | -    | -    | X   | X   | -   |      |
|  | Wetland Wildlife Habitat Management                      | 644  | ac       | 2461                       | \$7.00    | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1              | -    | -    | X   | X   | -   |      |

| Future Conditions for Pasture/Grazed Timber/Grassland |  |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|---|--|------|-------|-------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Pasture/Grazed Timber/Grassland                       |  |      | Units | Costs       |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System   | Practice Name  | Code | Units | Unit Cost   | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQUIP          | WHIP | CRP | WRP | GLC | IFIP |
| <b>RMS1</b>   | <b>Soil Erosion - Sheet and Rill</b>   |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Forage Harvest Management  | 517  |       |             | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Pasture and Hayland Planting   | 512  | ac    | \$64.50     | 1%                | 3            | 4              | 1              | 2             | 2                 | 4                | 5               | 1           | X              | -    | -   | -   | X   | X    |
|   | Prescribed Grazing   | 528  | ac    | \$75.00     | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
| <b>RMS2</b>   | <b>Soil Erosion - Ephemeral Gully</b>  |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Grade Stabilization Structure  | 410  | no    | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0           | X              | -    | X   | -   | -   | X    |
|   | Pasture and Hayland Planting   | 512  | ac    | \$64.50     | 1%                | 3            | 4              | 1              | 2             | 2                 | 4                | 5               | 1           | X              | -    | -   | -   | X   | X    |
|   | Prescribed Grazing   | 528  | ac    | \$75.00     | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
| <b>RMS3</b>   | <b>Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters</b>          |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Fencing  | 382  | ft    | \$0.88      | 2%                | 0            | 0              | 0              | 0             | -1                | 4                | 4               | 0           | X              | -    | X   | -   | -   |      |
|   | Riparian Forest Buffer   | 391  | ac    | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|   | Grade Stabilization Structure  | 410  | no    | \$10,000.00 | 1%                | 1            | 0              | 1              | 2             | 2                 | 0                | 0               | 0           | X              | -    | X   | -   | -   | X    |
|   | Use Exclusion  | 472  | ac    | \$50.00     | 3%                | 2            | 2              | 2              | 1             | 3                 | 4                | 4               | 2           | X              | -    | X   | X   | -   |      |
|   | Pasture and Hayland Planting   | 512  | ac    | \$64.50     | 1%                | 3            | 4              | 1              | 2             | 2                 | 4                | 5               | 1           | X              | -    | -   | -   | X   | X    |
|   | Streambank and Shoreline Protection  | 580  | ft    | \$20.00     | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|   | Prescribed Grazing   | 528  | ac    | \$75.00     | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
| <b>RMS4</b>   | <b>Water Quality - Harmful Levels of Pathogens in Surface Water</b>                        |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Fencing  | 382  | ft    | \$0.88      | 2%                | 0            | 0              | 0              | 0             | -1                | 4                | 4               | 0           | X              | -    | X   | -   | -   |      |
|   | Riparian Forest Buffer   | 391  | ac    | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|   | Use Exclusion  | 472  | ac    | \$50.00     | 3%                | 2            | 2              | 2              | 1             | 3                 | 4                | 4               | 2           | X              | -    | X   | X   | -   |      |
|   | Streambank and Shoreline Protection  | 580  | ft    | \$20.00     | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|   | Prescribed Grazing   | 528  | ac    | \$75.00     | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
| <b>RMS5</b>   | <b>Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration</b> |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Conservation Cover   | 327  | ac    | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|   | Fencing  | 382  | ft    | \$0.88      | 2%                | 0            | 0              | 0              | 0             | -1                | 4                | 4               | 0           | X              | -    | X   | -   | -   |      |
|   | In-Channel Structures  |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Prescribed Grazing   | 528  | ac    | \$75.00     | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
|   | Riparian Forest Buffer   | 391  | ac    | \$317.00    | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|   | Streambank and Shoreline Protection  | 580  | ft    | \$20.00     | 10%               | 4            | 2              | 3              | 2             | 2                 | 1                | 4               | 3           | -              | -    | -   | -   | -   |      |
|   | Tree/Shrub Establishment   | 612  | ac    | \$285.00    | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|   | Use Exclusion  | 472  | ac    | \$50.00     | 3%                | 2            | 2              | 2              | 1             | 3                 | 4                | 4               | 2           | X              | -    | X   | X   | -   |      |
| <b>RMS6</b>   | <b>Plant Condition - Threatened or Endangered Plant Species</b>                            |      |       |             |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Conservation Cover   | 327  | ac    | \$95.00     | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |

| Future Conditions for Pasture/Grazed Timber/Grassland |  |      |       |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|---|--|------|-------|-----------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Pasture/Grazed Timber/Grassland                       |  |      | Units | Costs     |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System   | Practice Name  | Code | Units | Unit Cost | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
|   | Fencing  | 382  | ft    | \$0.88    | 2%                | 0            | 0              | 0              | 0             | -1                | 4                | 4               | 0           | X              | -    | X   | -   | -   |      |
|   | Prescribed Grazing                                       | 528  | ac    | \$75.00   | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
|   | Riparian Forest Buffer                                   | 391  | ac    | \$317.00  | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|   | Tree/Shrub Establishment                                 | 612  | ac    | \$285.00  | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|   | Upland Wildlife Habitat Management                       | 645  | ac    | \$150.00  | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2           | X              | X    | X   | X   | -   |      |
|   | Use Exclusion  | 472  | ac    | \$50.00   | 3%                | 2            | 2              | 2              | 1             | 3                 | 4                | 4               | 2           | X              | -    | X   | X   | -   |      |
|   | Wetland Wildlife Habitat Management                      | 644  | ac    | \$7.00    | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
| <b>RMS7</b>   | <b>Plant Condition - Forage Quality and Palatability</b> |      |       |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Brush Management   | 314  | ac    | \$87.50   | 1%                | 2            | 1              | 1              | 0             | 3                 | 2                | 4               | -2          | X              | -    | -   | -   | -   |      |
|   | Conservation Cover                                       | 327  | ac    | \$95.00   | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|   | Field Windbreak  | 392  |       |           | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Forage Harvest Management                                | 517  |       |           | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Nutrient Management                                      | 590  | ac    | \$10.00   | 0%                | 2            | 2              | 0              | 2             | 1                 | 3                | 3               | 2           | X              | -    | X   | -   | X   |      |
|   | Pasture and Hayland Planting                             | 512  | ac    | \$64.50   | 1%                | 3            | 4              | 1              | 2             | 2                 | 4                | 5               | 1           | X              | -    | -   | -   | X   | X    |
|   | Pest Management  | 595  | ac    | \$4.00    | 0%                | 3            | 2              | 1              | 4             | 3                 | 4                | 4               | 3           | X              | -    | X   | -   | -   |      |
|   | Prescribed Grazing                                       | 528  | ac    | \$75.00   | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
|   | Riparian Forest Buffer                                   | 391  | ac    | \$317.00  | 1%                | 2            | 3              | 3              | 3             | 4                 | 4                | 4               | 2           | -              | -    | X   | -   | -   |      |
|   | Tree/Shrub Establishment                                 | 612  | ac    | \$285.00  | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|   | Windbreak/Shelterbelt Establishment                      | 380  | ft    | \$350.00  | 1%                | 3            | 2              | 1              | 2             | 4                 | 4                | 5               | 3           | -              | -    | X   | -   | -   | X    |
|   | Windbreak/Shelterbelt Renovation                         | 650  |       |           | 3%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     | X    |
| <b>RMS8</b>   | <b>Fish and Wildlife - Plant Community Fragmentation</b> |      |       |           |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Conservation Cover                                       | 327  | ac    | \$95.00   | 3%                | 2            | 2              | 2              | 2             | 2                 | 0                | 4               | 2           | -              | -    | -   | X   | -   | X    |
|   | Early Successional Habitat                               | 647  | ac    | \$5.23    | 1%                | 2            | 0              | 0              | -2            | 4                 | 1                | 4               | 0           | -              | -    | X   | -   | -   |      |
|   | Forage Harvest Management                                | 517  |       |           | 2%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Hedgerow Planting  | 422  |       |           | 5%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Pasture and Hayland Planting                             | 512  | ac    | \$64.50   | 1%                | 3            | 4              | 1              | 2             | 2                 | 4                | 5               | 1           | X              | -    | -   | -   | X   | X    |
|   | Prescribed Burning                                       | 338  | ac    | \$25.00   | 1%                | 2            | 1              | 1              | 1             | 3                 | 2                | 5               | 0           | -              | -    | X   | -   | -   |      |
|   | Prescribed Grazing                                       | 528  | ac    | \$75.00   | 0%                | 3            | 3              | 1              | 2             | 3                 | 4                | 4               | 2           | X              | -    | -   | -   | X   |      |
|   | Tree/Shrub Establishment                                 | 612  | ac    | \$285.00  | 0%                | 3            | 2              | 2              | 2             | 4                 | 3                | 5               | 3           | -              | -    | X   | X   | -   | X    |
|   | Upland Wildlife Habitat Management                       | 645  | ac    | \$150.00  | 0%                | 2            | 0              | 0              | 2             | 5                 | 2                | 4               | 2           | X              | X    | X   | X   | -   |      |
|   | Wetland Creation   | 658  | ac    | \$675.00  | 1%                | 3            | 1              | 1              | 2             | 4                 | 2                | 4               | 1           | -              | -    | -   | X   | -   |      |
|   | Wetland Enhancement                                      | 659  |       |           | 1%                |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|   | Wetland Restoration                                      | 657  | ac    | \$675.00  | 1%                | 3            | 1              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |
|   | Wetland Wildlife Habitat Management                      | 644  | ac    | \$7.00    | 1%                | 3            | 0              | 3              | 2             | 4                 | 2                | 4               | 1           | -              | -    | X   | X   | -   |      |

| Future Conditions for Urban |   |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|-----------------------------|---|------|-------|---------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Urban                       |   |      | Units | Costs         |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                 | Practice Name   | Code | Units | Unit Cost     | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQIP           | WHIP | CRP | WRP | GLC | IFIP |
| <b>RMS1</b>                 | <b>Soil Erosion Control</b>   |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Compost Blankets  |      | sf    | \$0.55        |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Grading Strategies  |      | cy    | \$5-\$12      |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Mulching  |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Rolled Erosion Control Products                                     |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Vegetative Establishment  |      | sf    | \$0.25        |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
| <b>RMS2</b>                 | <b>Sediment Control</b>   |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Compost Filter Berms  |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Compost Socks   |      | lf    | \$4.00        |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Filter Strip  | 393  | ac    | \$2,000.00    | 2%                | 2            | 2              | 3              | 2             | 2                 | 1                | 5               | 1           | -              | -    | X   | -   | -   | X    |
|                             | Georidge  |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Inlet Protection Devices  |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Rock Check Dams   |      | cf    | \$45.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Sediment Control Basins   |      | ac    | \$1,000.00    |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Silt Fences   |      | lf    | \$2.00        |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
| <b>RMS3</b>                 | <b>Water Quantity - Excessive Stormwater Discharge</b>              |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Bioretention Cells  |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Bioswales   |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Infiltration Trenches   |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Native Landscaping  |      | ac    | \$1500-\$2000 |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Permeable Paving Alternatives                                       |      | sf    | \$12-\$18     |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Rain Gardens  |      | sf    | \$10-\$20     |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Soil Quality Restoration  |      | sf    | \$2.55        |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
| <b>RMS4</b>                 | <b>Water Quality - Excessive Nutrients in Surface Waters</b>        |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Bioretention Cells  |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Bioswales   |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Constructed Wetland   |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Infiltration Trenches   |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Low Maintenance Lawn  |      | sf    | \$0.10        |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Native Landscaping  |      | ac    | \$1500-\$2000 |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Residential Onsite Wastewater Treatment                             |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
| <b>RMS5</b>                 | <b>Water Quality - Harmful Levels of Pathogens in Surface Water</b> |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Bioretention Cells  |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Bioswales   |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |

| Future Conditions for Urban |  |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|-----------------------------|--|------|-------|---------------|-------------------|--------------|----------------|----------------|---------------|-------------------|------------------|-----------------|-------------|----------------|------|-----|-----|-----|------|
| Urban                       |  |      | Units | Costs         |                   | Effects      |                |                |               |                   |                  |                 |             | Implementation |      |     |     |     |      |
| Mgmt System                 | Practice Name  | Code | Units | Unit Cost     | Op. & Maint. Cost | Soil Erosion | Soil Condition | Water Quantity | Water Quality | Fish and Wildlife | Domestic Animals | Plant Condition | Air Quality | EQUIP          | WHIP | CRP | WRP | GLC | IFIP |
|                             | Constructed Wetland                                      |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Infiltration Trenches                                    |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Native Landscaping                                       |      | ac    | \$1500-\$2000 |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Residential Onsite Wastewater Treatment                  |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
| <b>RMS6</b>                 | <b>Fish and Wildlife - Plant Community Fragmentation</b> |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Backyard Pond  |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Backyard Wetland   |      | sf    | \$20.00       |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Low Maintenance Lawn                                     |      | sf    | \$0.10        |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Native Landscaping                                       |      | ac    | \$1500-\$2000 |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Terracing  |      | lf    | \$4.00        |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Tree/Shrub Establishment                                 |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Wildlife Habitat   |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
| <b>RMS7</b>                 | <b>Fish and Wildlife - Inadequate Shelter</b>            |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Backyard Pond  |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Backyard Wetland   |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Low Maintenance Lawn                                     |      | sf    | \$0.10        |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Native Landscaping                                       |      | ac    | \$1500-\$2000 |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Terracing  |      | lf    | \$4.00        |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Tree/Shrub Establishment                                 |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |
|                             | Wildlife Habitat   |      |       |               |                   |              |                |                |               |                   |                  |                 |             |                |      |     |     |     |      |

South Skunk River Watershed Assessment Matrix Summary

| South Skunk        |  | BM    |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
|--------------------|--|-------|-------------------------------|--------------------------------|------------------------------|---------------------------|---|---|---|--|---|--|---|--|---|-------------------------------------|--|---|
|                    |  |       | 1                             | 2                              | 3                            | 4                         | 5   | 6   | 7   | 8  | 9   | 10   | 11  | 12   | 13  | 14                                  | 15                                     | 16  |
| Current conditions | Practice Name                          | Acres | Soil Erosion - Sheet and Rill | Soil Erosion - Ephemeral Gully | Soil Erosion - Classic Gully | Soil Erosion - Streambank | Soil Condition - Organic Matter Depletion | Water Quantity - Excessive Runoff, Flooding, or Ponding | Water Quantity - Excessive Subsurface Water | Water Quality - Excessive Nutrients in Groundwater | Water Quality - Excessive Nutrients in Surface Waters | Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters | Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration | Plant Condition - Threatened or Endangered Plant Species | Plant Condition - Productivity, Health, and Vigor | Fish and Wildlife - Inadequate Food | Fish and Wildlife - Inadequate Shelter | Fish and Wildlife - Threatened and Endangered Species |
| Practice Code      | Practice Name                          |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 313                | Waste Storage Facility                 |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 314                | Brush Management                       |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  | X   |                                     |  |   |
| 317                | Composting Facility                    |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 327                | Conservation Cover                     |       | X                             | X                              |                              |                           |   |   |   |  |   | X  | X   | X  | X   | X                                   | X                                      | X   |
| 328                | Conservation Crop Rotation             |       | X                             | X                              |                              |                           | X   |   |   | X  | X   | X  |   |  | X   | X                                   |  |   |
| 329                | Residue Management, No-Till/Strip Till |       | X                             | X                              |                              |                           | X   |   |   |  |   | X  |   |  |   | X                                   | X                                      |   |
| 345                | Residue Management, Mulch Till         |       | X                             | X                              |                              |                           | X   |   |   |  |   | X  |   |  |   | X                                   | X                                      |   |
| 330                | Contour Farming                        |       | X                             | X                              |                              |                           |   |   |   |  |   | X  |   |  |   |                                     |  |   |
| 332                | Contour Buffer Strips                  |       | X                             | X                              |                              |                           |   | X   |   |  |   | X  |   |  |   |                                     | X                                      |   |
| 338                | Prescribed Burning                     |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 340                | Cover Crop                             |       | X                             | X                              |                              |                           | X   |   |   | X  | X   | X  |   |  |   | X                                   | X                                      |   |
| 342                | Critical Area Planting                 |       | X                             | X                              | X                            | X                         |   |   |   |  |   | X  |   |  |   |                                     |  |   |
| 348                | Dam, Diversion                         |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 359                | Waste Treatment Lagoon                 |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 362                | Diversion                              |       | X                             | X                              | X                            |                           |   |   |   |  |   | X  |   |  |   |                                     |  |   |
| 378                | Pond                                   |       |                               |                                | X                            |                           |   | X   |   |  |   |  |   |  |   | X                                   |  |   |
| 380                | Windbreak/Shelterbelt Establishment    |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  | X   |                                     | X                                      |   |
| 382                | Fencing                                |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 386                | Field Border                           |       | X                             | X                              |                              |                           |   |   |   |  |   | X  |   |  |   |                                     | X                                      |   |
| 391                | Riparian Forest Buffer                 |       |                               |                                |                              | X                         |   |   |   |  |   | X  | X   |  | X   |                                     |  |   |
| 392                | Field Windbreak                        |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 393                | Filter Strip                           |       |                               |                                |                              | X                         |   |   |   |  |   | X  |   |  | X   |                                     |  |   |
| 410                | Grade Stabilization Structure          |       |                               | X                              | X                            | X                         |   |   |   |  |   | X  |   |  |   |                                     |  |   |
| 411                | Grasses and Legumes in Rotation        |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 412                | Grassed Waterway                       |       |                               | X                              | X                            |                           |   |   |   |  |   | X  |   |  |   |                                     |  |   |
| 422                | Hedgerow Planting                      |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 472                | Use Exclusion                          |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 512                | Pasture and Hayland Planting           |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |

South Skunk River Watershed Assessment Matrix Summary

| South Skunk        |                                     | BM    |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
|--------------------|-------------------------------------|-------|-------------------------------|--------------------------------|------------------------------|---------------------------|---|---|---|--|---|--|---|--|---|-------------------------------------|--|---|
|                    |                                     |       | 1                             | 2                              | 3                            | 4                         | 5   | 6   | 7   | 8  | 9   | 10   | 11  | 12   | 13  | 14                                  | 15                                     | 16  |
| Current conditions | Practice Name                       | Acres | Soil Erosion - Sheet and Rill | Soil Erosion - Ephemeral Gully | Soil Erosion - Classic Gully | Soil Erosion - Streambank | Soil Condition - Organic Matter Depletion | Water Quantity - Excessive Runoff, Flooding, or Ponding | Water Quantity - Excessive Subsurface Water | Water Quality - Excessive Nutrients in Groundwater | Water Quality - Excessive Nutrients in Surface Waters | Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters | Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration | Plant Condition - Threatened or Endangered Plant Species | Plant Condition - Productivity, Health, and Vigor | Fish and Wildlife - Inadequate Food | Fish and Wildlife - Inadequate Shelter | Fish and Wildlife - Threatened and Endangered Species |
| Practice Code      | Practice Name                       |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 517                | Forage Harvest Management           |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 528                | Prescribed Grazing                  |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 580                | Streambank and Shoreline Protection |       |                               |                                |                              | X                         |   |   |   |  |   | X  | X   |  |   |                                     |  |   |
| 587                | Structure for Water Control         |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 590                | Nutrient Management                 |       |                               |                                |                              |                           | X   |   |   | X  | X   | X  |   |  |   | X                                   |  |   |
| 595                | Pest Management                     |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   | X                                   |  |   |
| 600                | Terrace                             |       | X                             | X                              | X                            |                           |   | X   |   |  |   | X  |   |  |   |                                     |  |   |
| 606                | Subsurface Drain                    |       |                               |                                |                              |                           |   | X   | X   |  |   |  |   |  |   |                                     |  |   |
| 612                | Tree/Shrub Establishment            |       |                               |                                |                              |                           |   |   |   |  |   |  | X   |  |   | X                                   |  | X   |
| 620                | Underground Outlet                  |       | X                             | X                              | X                            |                           |   | X   |   |  |   | X  |   |  |   |                                     |  |   |
| 633                | Waste Utilization                   |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 638                | Water and Sediment Control Basin    |       |                               |                                | X                            |                           |   | X   |   |  |   | X  |   |  |   |                                     |  |   |
| 644                | Wetland Wildlife Habitat Management |       |                               |                                |                              |                           |   | X   | X   |  |   |  | X   | X  |   | X                                   | X                                      | X   |
| 645                | Upland Wildlife Habitat Management  |       |                               |                                |                              |                           |   |   |   |  |   |  | X   |  |   | X                                   | X                                      | X   |
| 650                | Windbreak/Shelterbelt Renovation    |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
| 657                | Wetland Restoration                 |       |                               |                                |                              |                           |   | X   | X   |  | X   |  |   |  |   | X                                   | X                                      |   |
| 658                | Wetland Creation                    |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   | X                                   | X                                      |   |
| 659                | Wetland Enhancement                 |       |                               |                                |                              |                           |   |   |   |  |   |  |   |  |   |                                     |  |   |
|                    |                                     |       | 12                            | 14                             | 8                            | 5                         | 5   | 8   | 3   | 3  | 4   | 19   | 5   | 3  | 9   | 10                                  | 12                                     | 3   |

South Skunk River Watershed Assessment Matrix Summary

| South Skunk       |  | RMS                           |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------------|--|-------------------------------|--------------------------------|------------------------------|---------------------------|---|---|---|--|---|--|---|-------------------------|--|---|-------------------------------------|--|---|-------------------------------|--------------------------------|--|--|---|--|---|---|---|--|---|-----------------------------------|-----------------------|----------------------|------------------|--|---|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|                   |  | 1                             | 2                              | 3                            | 4                         | 5   | 6   | 7   | 8  | 9   | 10   | 11  | 12                      | 13   | 14  | 15                                  | 16                                     | 17  | 18                            | 19                             | 20   | 21   | 22  | 23   | 24  | 25  | 26  | 27   | 28  | 29                                | 30                    | 31                   | 32               | 33   | 35  | 36   | 37  | 38                                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Future Conditions | Practice Name                          | Soil Erosion - Sheet and Rill | Soil Erosion - Ephemeral Gully | Soil Erosion - Classic Gully | Soil Erosion - Streambank | Soil Condition - Organic Matter Depletion | Water Quantity - Excessive Runoff, Flooding, or Ponding | Water Quantity - Excessive Subsurface Water | Water Quality - Excessive Nutrients in Groundwater | Water Quality - Excessive Nutrients in Surface Waters | Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters | Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration | Air Quality - Road Dust | Plant Condition - Threatened or Endangered Plant Species | Plant Condition - Productivity, Health, and Vigor | Fish and Wildlife - Inadequate Food | Fish and Wildlife - Inadequate Shelter | Fish and Wildlife - Threatened and Endangered Species | Soil Erosion - Sheet and Rill | Soil Erosion - Ephemeral Gully | Water Quality - Excessive Suspended and Bedded Sediments in Surface Waters | Water Quality - Harmful Levels of Pathogens in Surface Water | Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration | Plant Condition - Threatened or Endangered Plant Species | Plant Condition - Forage Quality and Palatability | Fish and Wildlife - Plant Community Fragmentation | Water Quality - Excessive Nutrients in Surface Waters | Water Quality - Harmful Levels of Pathogens in Surface Water | Aquatic Integrity - Excessive Temperature, Low Dissolved Oxygen, Habitat Alteration | Air Quality - Objectionable Odors | Air Quality - Ammonia | Soil Erosion Control | Sediment Control | Water Quality - Excessive Stormwater Discharge | Water Quality - Excessive Nutrients in Surface Waters | Water Quality - Harmful Levels of Pathogens in Surface Water | Fish and Wildlife - Plant Community Fragmentation | Fish and Wildlife - Inadequate Shelter |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Practice Code     | Practice Name                          |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 313               | Waste Storage Facility                 |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 314               | Brush Management                       |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 317               | Composting Facility                    |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 327               | Conservation Cover                     | X                             | X                              |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 328               | Conservation Crop Rotation             | X                             | X                              |                              |                           | X   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 329               | Residue Management, No-Till/Strip Till | X                             | X                              |                              |                           | X   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 345               | Residue Management, Mulch Till         | X                             | X                              |                              |                           | X   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 330               | Contour Farming                        | X                             | X                              |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 332               | Contour Buffer Strips                  | X                             | X                              |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 338               | Prescribed Burning                     |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 340               | Cover Crop                             | X                             | X                              |                              |                           | X   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 342               | Critical Area Planting                 | X                             | X                              | X                            | X                         |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 348               | Dam, Diversion                         |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 359               | Waste Treatment Lagoon                 |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 362               | Diversion                              | X                             | X                              | X                            |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 378               | Pond                                   |                               |                                | X                            |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 380               | Windbreak/Shelterbelt Establishment    |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 382               | Fencing                                |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 386               | Field Border                           | X                             | X                              |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 391               | Riparian Forest Buffer                 |                               |                                |                              |                           | X   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 392               | Field Windbreak                        |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 393               | Filter Strip                           |                               |                                |                              |                           | X   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 410               | Grade Stabilization Structure          |                               |                                |                              |                           | X   | X   | X   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 411               | Grasses and Legumes in Rotation        |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 412               | Grassed Waterway                       | X                             | X                              |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 422               | Hedgerow Planting                      |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 472               | Use Exclusion                          |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 512               | Pasture and Hayland Planting           |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 517               | Forage Harvest Management              |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 528               | Prescribed Grazing                     |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 580               | Streambank and Shoreline Protection    |                               |                                |                              |                           | X   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 587               | Structure for Water Control            |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 590               | Nutrient Management                    |                               |                                |                              |                           | X   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 595               | Pest Management                        |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 600               | Terrace                                | X                             | X                              | X                            |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 606               | Subsurface Drain                       |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 612               | Tree/Shrub Establishment               |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 620               | Underground Outlet                     | X                             | X                              | X                            |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 633               | Waste Utilization                      |                               |                                |                              |                           |   |   |   |  |   |  |   |                         |  |   |                                     |  |   |                               |                                |  |  |   |  |   |   |   |  |   |                                   |                       |                      |                  |  |   |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

