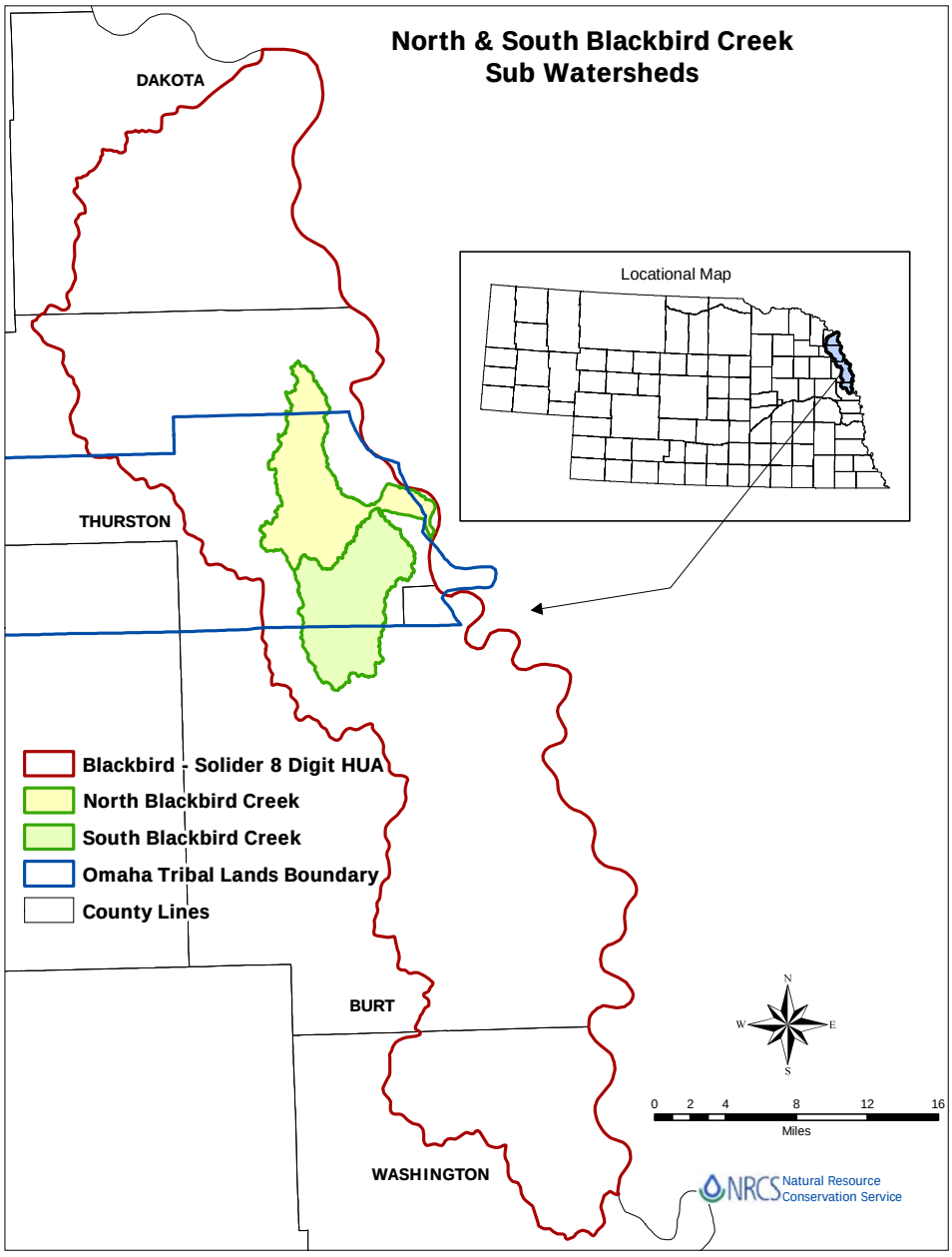
BLACKBIRD CREEK WATERSHED

RAPID WATERSHED ASSESSMENT

December 2007



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Chapter 1

Introduction & Background

This assessment is conducted with the cooperation and support of the Omaha tribe of Nebraska whos' tribal headquarters is located in Thurston County, Macy, Nebraska. The area of Blackbird Creek HUA lies within the tribal lands of the Omaha tribe. The name Blackbird Creek was taken from Chief Blackbird, the first recognized known name of a Nebraska Indian. Chief Blackbird was head chief of the Omaha tribe, whose territory extended on both sides of the Missouri River from Bow River in Cedar County to Papillion Creek in Sarpy County. Chief Blackbird died from smallpox in 1800, prior to any white settlements being established in Nebraska. NRCS is proud and honored to have a Government-to-Government relationship with the Omaha Nation.

In 2006, NRCS announced a program opportunity to fund a Pilot Rapid Watershed Assessment (RWA). RWAs are to be an assessment conducted at the 8 Digit Hydrologic Unit Area scale (HUA) to identify and address resource concerns. Initially in 2005 NRCS conducted a Inventory and Evaluation (I & E) on this watershed that provided a brief overview and evaluation of resources conditions and trends within the HUA. After reviewing this information NRCS contacted the tribe in 2006 to get their support in submitting the Blackbird-Solider 8 Digit HUA for the pilot RWA program. The I&E had identified several potential resource concerns and opportunities for consideration by the tribe to address which ultimately would improve the resource base on the reservation. Some of the more immediate resource concerns identified included ephemeral and gully erosion, sediment, flooding, degradation to the infra-structure caused by flooding and degrading of Blackbird Creek.

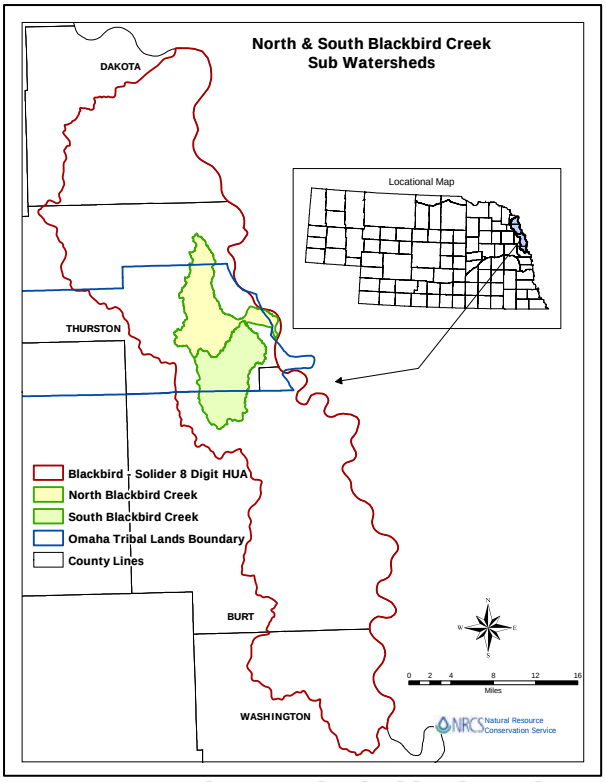


Figure 1 North & South Blackbird Creek Sub Watersheds

The initial proposal submitted for the RWA study encompassed the Nebraska portion of the Blackbird-Solider 8-Digit HUA which is reflected by the red watershed boundary on Figure 1 (Note: Full size versions of all figures can be found in Appendix A). The Blackbird-Solider HUA is located in Northeastern Nebraska and consists of approximately 512,347 acres. The Blackbird-Solider RWA proposal was selected by the NRCS National Headquarters to be one of the pilot RWAs. Since the initial proposal was done in partnership with the Omaha tribe, the scope of the RWA was narrowed to focus on the sub watersheds of North and South Blackbird Creek (See Figure 1), which

encompasses the Omaha Tribal Lands. The Rapid Watershed Assessment program is designed to provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals. Funding is provided for the Technical Assistance for the I&E and then the RWA development. Currently the RWA program does not include the Financial Assistance monies to pay for implementation of projects. However, implementation may be carried out with the help of existing NRCS and other local state and federal programs. An outline of these are provided as part of the planning process (See Appendix B).

Chapter 2

Physical Description

The North and South Blackbird Creek sub-watershed is located within the Blackbird-Solider HUA in northeastern Nebraska. The sub-watersheds encompass approximately 50,565 acres across two counties, Thurston & Burt. Two landscape features predominate in these sub watersheds, the Loess Hills-Missouri River Bluffs and Missouri River floodplain.

The Bluffs area of the sub-watersheds contains the headwaters of the tributaries that drain directly into the Missouri River. The headwaters area is highly-dissected, loess-covered, glacial till plains with short, steep slopes. The soils within this area are highly erodible loess soils that can generate significant amounts of sediment if cultivated without adequate conservation practices. Slopes may range form 10 to 30 percent in this area.

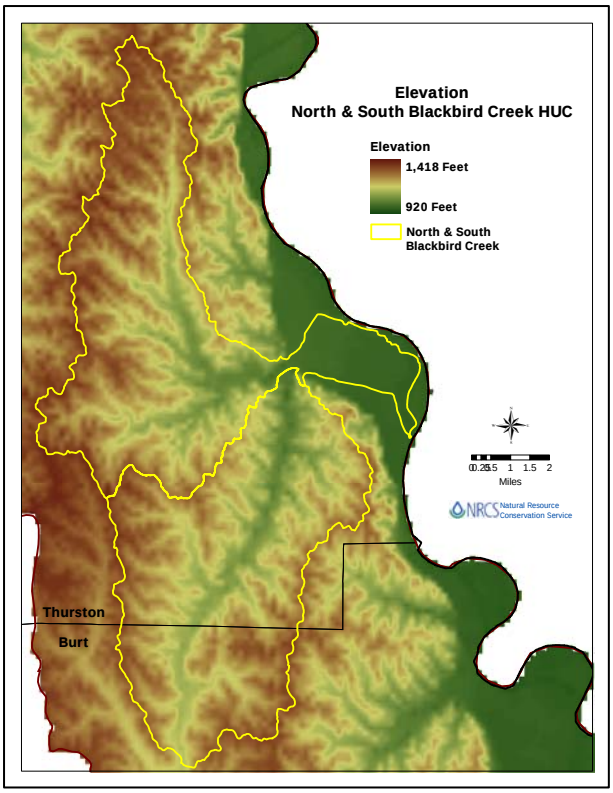


Figure 2 Elevation

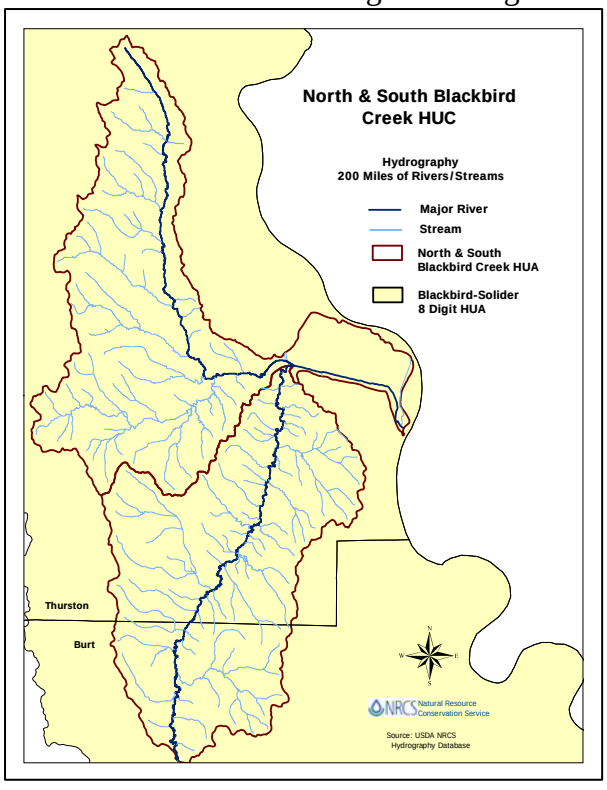


Figure 3 Hydrography

In contrast, the Missouri River floodplain is a comparatively flat expanse, which, because of poor drainage, has seen a history of tributary stream channelization to prevent flooding, improve drainage, and make these bottomlands better for cultivation. The bottom lands within the Missouri River floodplain are as much as 400 feet below adjacent the uplands. Elevations moving east to west within the HUA range from 920 ft within the floodplain to 1,418 ft within the bluffs and rolling hills to the west (See Figure 2).

There are approximately 200 miles of rivers and streams that drain the North & South Blackbird Creek sub HUAs (See Figure 3). The streams and rivers drain into the Missouri River, which is the major river passing through the overall Blackbird-Solider HUA.

Land use within the North & South Blackbird Creek HUCs is predominately agricultural (See Figure 4). The main agricultural crop is corn with over 13,000 acres planted in 2006. Other crops include oats, soybeans and wheat with alfalfa and grass making up the rest of the agricultural land uses.

Irrigation occurs on only 300 of the total cropped acres within this HUC. (See Figure 6, pg 5).

Other agricultural activities within the North & South Blackbird Creek HUA are Confined Animal Feeding Operations or CAFOs. Currently there are 5 CAFO operations within the HUC consisting of dairy cattle, feeder cattle, and swine (See Figure 7, pg 5). Total permitted animals allowed for all 5 operations is 4,900 (See Figure 7a in Appendix A).

Over seventy-five percent of the HUAs are within the Tribal land. Over 66% of the farm ground within this HUC is within the Tribal Land Boundaries (See Figure 8, pg 5).

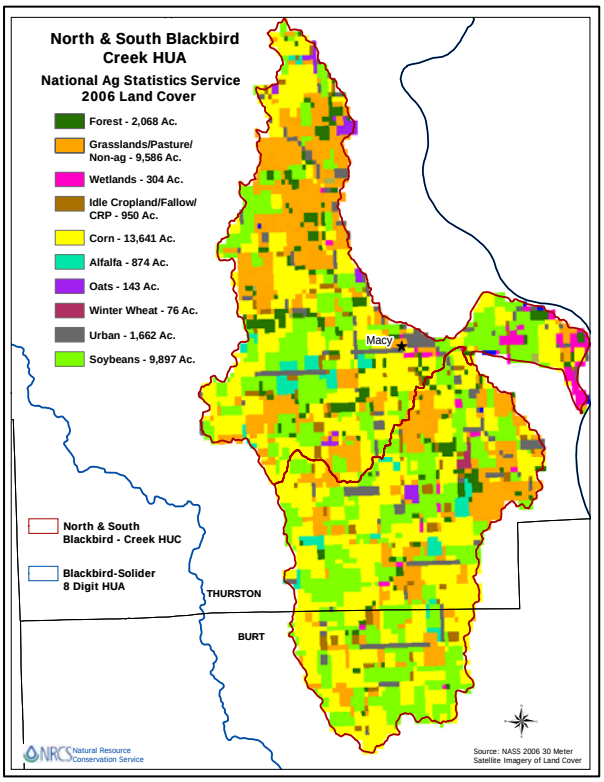


Figure 4 2006 NASS Land Cover

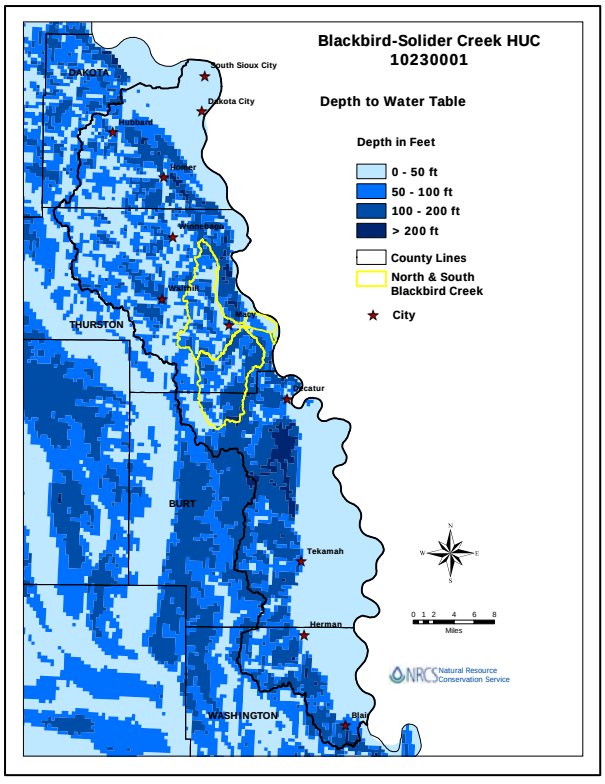


Figure 5 Depth to Water Table

Surface water is a major resource within this HUC and most likely serves as a water source for some of the irrigated fields. Ground water is the other source of water not only for irrigation, but also for public and private wells. Ground water depths vary from less than 50 to over 200 feet (See Figure 5).

The seasonal weather variations are rather unpredictable with an average temperature of 49^{o}F. Summer thunderstorms may be strong, spawning tornados and hail. Winter storm fronts sometimes create heavy snowfall with blizzard conditions causing blowing and drifting snow. The winter's temperatures range from 10 ^{o}F to 25 ^{o}F. The average annual precipitation rate is 29.5 inches of rain per year with 72 percent falling between the months of April and September.

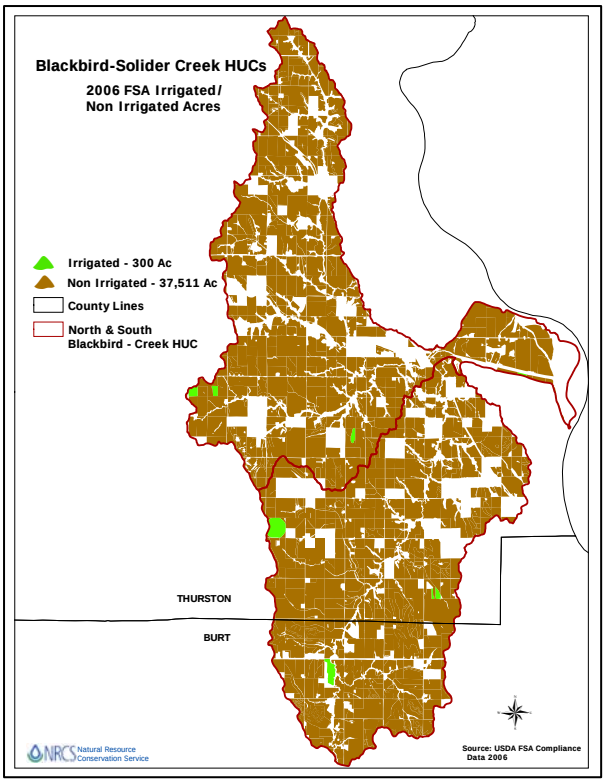


Figure 6 Irrigated/Non Irrigated Acres

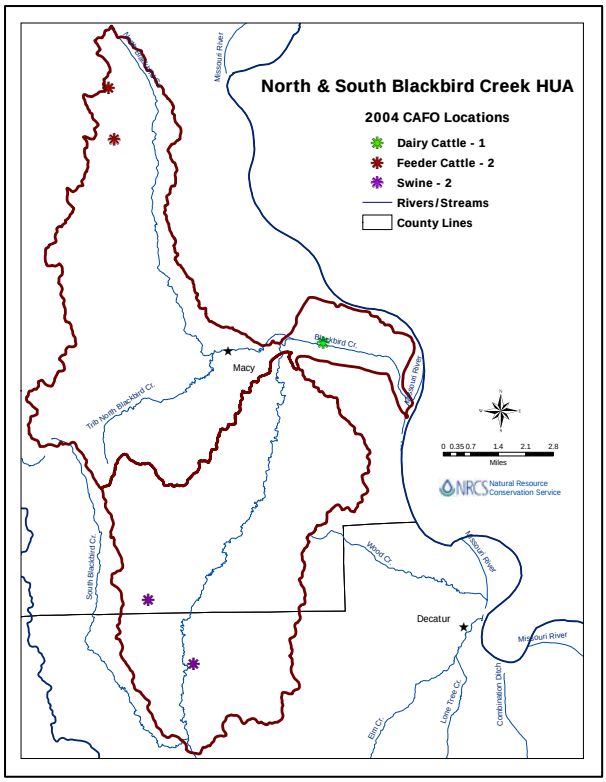


Figure 7 CAFO Locations

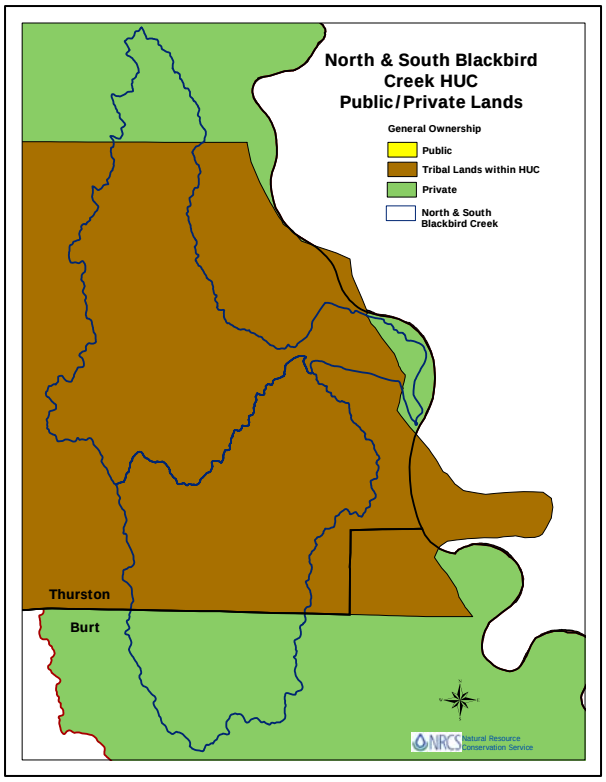


Figure 8 Public/Private Lands

2.1 COMMON RESOURCE AREAS

Common Resource Areas are areas that share common resource concerns, soil groups, hydrologic units, resource use, topography, other landscape features, and human use and treatment needs. CRAs are subdivisions of the current MLRA areas (See Figure 9).

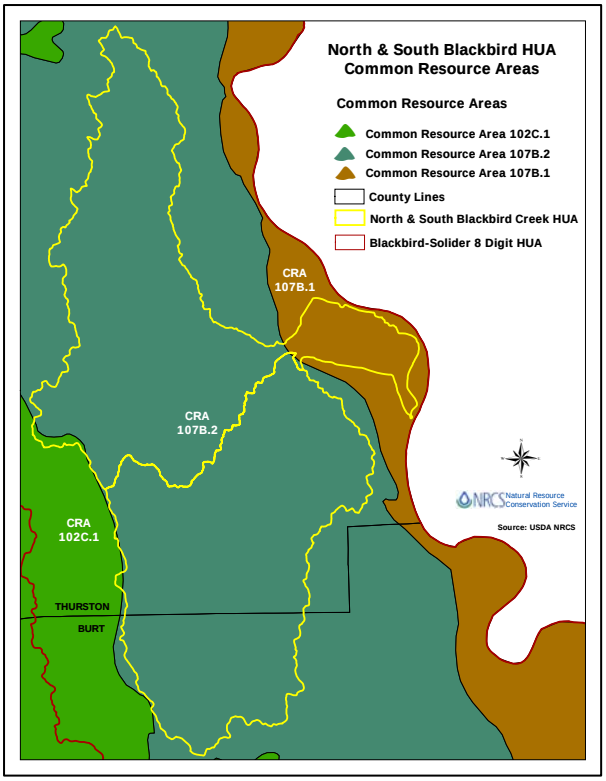


Figure 9 Common Resource Areas

102C.1 - Loess Uplands: Gently undulating to steep soils with long smooth slopes and well defined drainage ways formed in loess mantled uplands. There are some exposures of bedrock. Soils are commonly well drained with some poorly drained upland waterways. Native vegetation was mixed tall and short grass prairie. The primary land use is cropland, with corn, soybeans, grain sorghum, alfalfa and oats being the major crops. Resource concerns are water and wind erosion, nutrient management and water quality.

107B.1 - Missouri River Alluvial Land: This area consists of the nearly level to gently sloping bottomland and channel of the Missouri River and the lower Grand River. Native vegetation was largely wet prairie and marshes, with narrow bands and isolated pockets of bottomland forest. The Missouri River channel, which formerly meandered, has been stabilized, narrowed, and confined by levees. The primary land use is cropland, with corn and soybeans being the major crops. Resource concerns are wind erosion, water management and water quality.

107B.2 - Iowa Deep Loess Hills: This area is nearly level to strongly sloping soils on ridge tops and moderately sloping to very steep soils on highly dissected side slopes. Native vegetation was nearly pure prairie with thin bands of timber in the valleys and ravines. Corn and soybeans are common crops. Livestock feed lots; swine and poultry operations are common in this area. Manure utilization is a major concern in the area. Resource concerns are soil erosion, nutrient management, water quality and soil quality.

Chapter 3

Known Resource Concerns

Resource Concerns within this HUA center on impacts on soil, water, air, plants, animals and humans. Major concerns are the erosion and sedimentation occurring within the tributaries of this HUA and channelization and straightening of tributary streams on the Missouri River floodplain that has resulted in channel incision and head cutting progressing upstream into the watershed headwaters. Down cutting has undoubtedly increased sediment delivery ratios and the amount of sediment delivered to the Missouri River due to elimination of connectivity between streams and floodplain sediment storage locations. Similarly, elimination of these flood plain buffers more readily allows sediment eroded from upland fields to be delivered to the stream system.

3.1 SOIL EROSION

There are four types of water erosion: sheet, rill, gully and streambank (including channel). Sheet, or inter-rill, erosion is the relatively uniform loss of soil from the entire soil surface. Soil particles are detached by raindrop impact and transported down slope by raindrop splash and sheet flow. Rill erosion occurs when runoff is concentrated in small channels. Soil particles are detached by a combination of raindrop impact and channel scouring action associated with suspended sediment in the runoff water. Flowing water is the primary transport mechanism. Gully erosion occurs when rills converge into larger channels. Gullies are further classified as either “ephemeral” or “classic” depending on whether or not the gully can be crossed by farm equipment. Streambank erosion is the largest feature of the four and includes channel down-cutting and head-cutting as well as streambank erosion. Guidance for identifying and controlling sheet and rill, ephemeral gully, classic gully, and streambank erosion is given below. Figure 10 shows the potential for soil to erode within the watersheds. This simply indicates that the soil has a high potential to erode if exposed through farming practices or removal of ground cover. Erosion can occur by either wind or water.

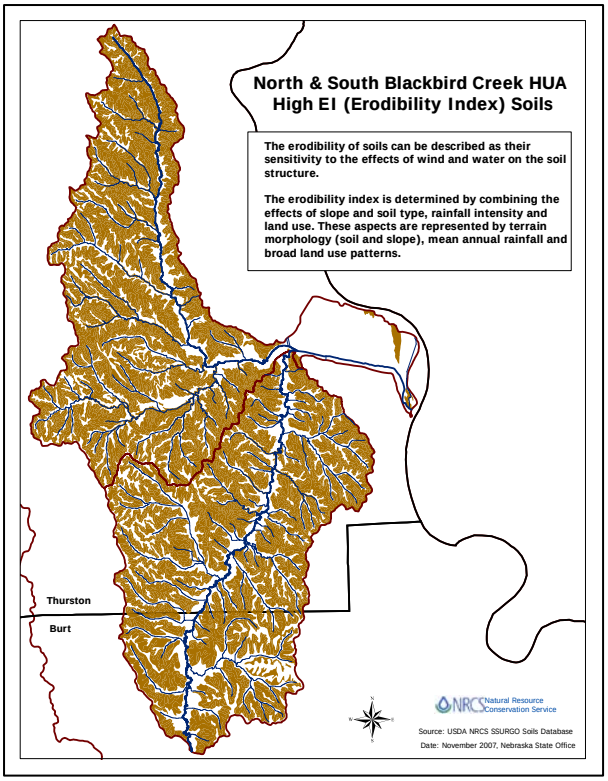


Figure 10 High EI Soils

Sheet and Rill Erosion

Identification: Sheet, or inter-rill, erosion is difficult to identify in the field especially in the absence of channels or areas of concentrated flow because of the relative uniformity of soil loss across the entire slope. Sometimes the only evidence of sheet erosion is the exposure of subsoil on the eroded slope or the accumulation of soil at the bottom of the field.

Rill erosion is much easier to identify. Rills are essentially small channels or gullies located at regular intervals across the slope that can be "erased" by normal tillage operations.

Control: Conservation practices which minimize runoff and protect the soil surface are most effective in controlling sheet and rill erosion. These practices include: a conservation crop rotation with one or more soil conserving crops; tillage and residue management systems which maximize the amount of crop residue remaining on the soil surface during critical erosion periods; and use of a cover crop. Additional practices such as contour farming, contour buffer strips, strip cropping and terraces may be required if cropping and residue management practices alone are not adequate to achieve soil loss objectives.

Ephemeral Gully Erosion

Identification: In general, an ephemeral gully is larger than a rill but smaller than a classic gully. They occur when two or more rills converge to form a deeper and wider channel or in areas of concentrated flow. Ephemeral gullies can be crossed and filled by normal tillage operations but they usually cannot be totally "erased." Regular filling of ephemeral gullies results in soil deterioration over a larger area than the gully itself because the loose material used to fill the gully is readily available for transport by runoff from the next rainfall event.

Predicting when Planning for Ephemeral Gully Erosion is needed: Ephemeral gully erosion may not be identified as a resource concern by land users due to its seasonal nature. However, control of ephemeral gully erosion is necessary to achieve resource quality criteria and sustainability. For these reasons, it is important for the planner to be able to identify areas of potential ephemeral gully erosion during the planning process.

Areas where concentrated flow will occur are likely to develop ephemeral gully erosion if control measures are not implemented. Identifying concentrated flow areas using aerial imagery and on-site observation or comparing site conditions with nearby cropped fields with similar topographic features and soils can aid the experienced planner in determining when control measures should be included in conservation plans.

Ephemeral gully erosion can also occur where no concentrated flow areas are obvious due to tillage patterns, row direction or excessive land slope and/or slope length. Excessive slope and slope length can result in ephemeral gully erosion due to the convergence of rills on the lower portion of the slope. The ability to predict this type of ephemeral gully erosion will, once again, depend on the planners experience and local knowledge.

Another method is to compare site conditions with nearby cropped fields with similar slopes, soils, drainage areas and crop management practices. In determining if ephemeral gully erosion is likely to be a problem it is important to always consider the most erosive condition in terms of crop residue cover.

Control: Grassed waterways are the most effective erosion control practice when ephemeral gully erosion occurs in concentrated flow areas while terraces are the most effective practice when ephemeral gully erosion is associated with excessive slope or slope length. Diversions, water and sediment control basins, contour stripcropping and contour buffer strips are also effective practices for controlling ephemeral gully erosion. Associated management practices such as a conservation crop rotation with one or more soil conserving crops and tillage and residue management systems which maximize the amount of crop residue remaining on the soil surface during critical erosion periods will maximize the effectiveness of the erosion control system.

Classic Gullies

Identification: Classic gullies are ruts or smaller channels that are generally too deep to be crossed by farm equipment or filled using normal tillage operations. Some type of earth moving equipment is generally required to fill them.

Control: Grade stabilization structures are the most effective control measure for this type of erosion.

Streambank/Channel Erosion

Identification: Streambank erosion includes gully erosion, streambank erosion, streambed degradation, flood-plain scour, valley trenching and much roadbank erosion.

Where streams have been straightened and channelized, channel down-cutting (incision) and widening have occurred. These processes lead to streambank erosion that is beginning to undermine bridge abutments in a few locations within the watershed. In some instances, channel erosion known as head-cutting has advanced upstream into the watershed uplands and has caused channel widening and incision and infrastructure damage along its path.

Control: Grade stabilization structures are the most effective control measure for this type of erosion.

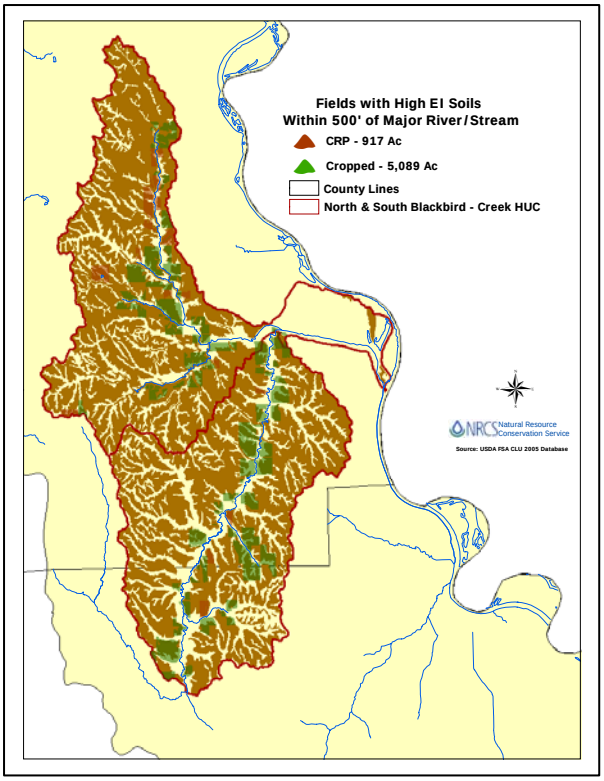


Figure 11 Fields with High EI Soils

3.2 EROSION CONCERNS

Sediment sources in the watershed include sheet, rill, channel, streambank and ephemeral gully erosion. Erosion from gravel and unimproved roads and livestock in channels also contribute sediment to the system. Loess-derived soils and steep rolling hills provide conditions for high soil loss rates.

Farming practices such as rows up-and –down hill in the watershed increase erosion rates significantly. Fortunately, CRP and conservation practices of terracing and contour cropping are used in much of the watershed thereby limiting erosion. However, there are still some fields in the watershed that exhibit farming practices and/or conditions where soil loss is not well controlled. Pastureland and vegetated ditches show signs of erosion as well. Of special concern are the cropped fields within 500' of a stream or river that have soils with a high erodibility index. Currently there are approximately 5,000 acres that are cropped and are within 500' of a stream or river (See Figure 11 previous page).

Erosion is evident along the North Branch of Blackbird Creek, particularly where it passes through the city of Macy. Also, an ephemeral tributary (tributary not shown as a blue-line on a USGS topographic map) at the east side of Macy shows the development of gully head-cutting into the terrace on which Macy is built. In other cases, roads (with serve as culverted embankments) often function as grade stabilization structures and have halted or decreased head-cutting. Note that at least one drop structure (below Highway 75 bridge on North Branch of Blackbird Creek) is in place to protect the stream from further down-cutting. The presence of natural stream terracing in the floodplain is further evidence of degradation of the general area. Several smaller tributaries appear to have incised historically but now appear to have vegetated and become relatively stable. This overall trend in channel erosion and then stabilization is generally true of the whole area with a few exceptions. Down-cutting has been brought under control where channel bottoms rest on bedrock. Bank erosion is a natural process and occurs even on streams that tend to maintain a long-term constant width (being offset by less obvious deposition and accretion).

Perhaps the most serious erosion problem in the watershed will arise on small ephemeral streams that are tributary to Blackbird Creek and its perennial tributaries. The perennial streams have already downcut, and many may have adopted a stable gradient after down-cutting. The smaller ephemeral streams, due to their episodic flows, have not had time to adjust to the new local base level imposed by the collecting perennial stream system. These (tributary) ephemeral streams are still subject to down-cutting and headward extension via gullying processes. This erosion process may be activated and/or accelerated in areas that do not have proper conservation, are urbanizing, or have had the riparian zone vegetation removed.

Water erosion is a concern in this watershed because of the steep slopes and highly erosive soils. The paragraphs below describe the different types of water erosion and identify conservation practices that can be used for its control

3.3 WATER - QUANTITY

Surface Water

The Missouri River flows along the east side of this watershed. The average annual flow at the United States Geological (USGS) stream gauge at Decatur, Nebraska (gauge number 06601200) from 19 years of data 1988 to 2006 is 30,180 cubic feet per second. This data is from the USGS stream gauge web site. Decatur is at the downstream end of the study area. The average annual rainfall for the study area is 29.5 inches averaged over the 30 year period of record or 1971 through 2000. This amount will vary during wet and dry cycles and from year to year. Rainfall

data is from NRCS WETS table for Thurston County, Nebraska and can be found on the NRCS web site.

Ground Water

Ground water quantity levels within the aquifers have been monitored by The University of Nebraska since the late 1990's. Levels are taken each spring and compared to the previous spring levels to see if there has been an increase or decrease in the level of the ground water. Overall within the North & South Blackbird Creek HUAs, change has been minimal as shown in Figure 12. Yearly changes within the ground water can be found in Appendix A under the maps for Chapter 3 at the end of the document. Changes in ground water levels do fluctuate on a yearly basis and may be based on the rainfall from season to season.

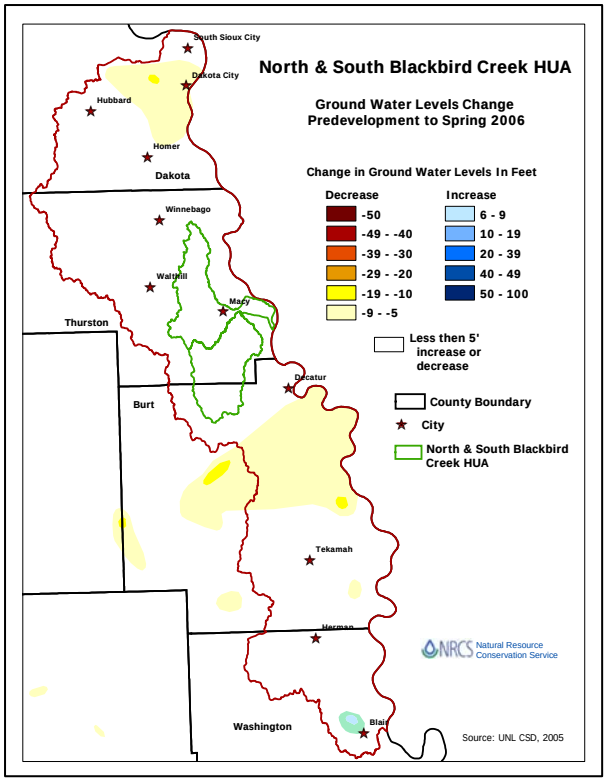


Figure 12 Ground Water Level Changes Predevelopment to Spring 2006

3.4 WATER - QUALITY

Most of the water quality concerns in the Blackbird Creek Watershed are associated with non-point source pollution. Non-point source pollution is small amounts of pollution coming from many different areas within the watershed. Agriculture is a major contributor to non-point source pollution, especially in small, rural watersheds. Sediments, nutrients, pesticides, and fecal contaminants are lost from the farm or ranch operation through leaching, runoff and airborne volatilization or drift. Surface water and ground water quality can be impacted by non-point source pollution. Surface water quality is monitored by the Department of Environmental Quality thru the Impaired Water Bodies program. Although there are not streams directly within this watershed that are listed on DEQs 303d list of impaired water bodies, all of the streams/rivers within this HUC do flow into

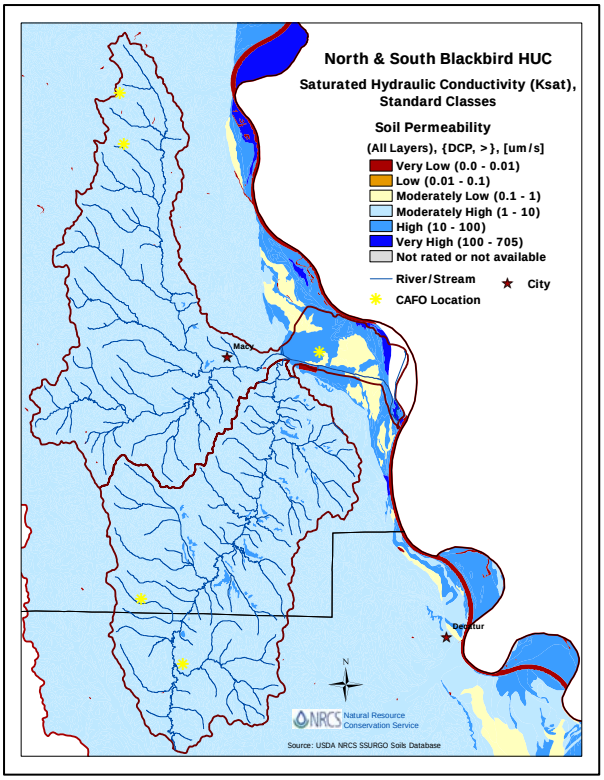


Figure 13 Soil Permeability

the Missouri River, which is listed on the 303d, and therefore, non-point source pollution from this HUC could impact the water quality of the Missouri River. Ground water quality is monitored thru the Nebraska Natural Resource Districts (NRDs) thru their well monitoring program. Non-point source pollution can permeate thru the soil and into the ground water supply. Figure 13 indicates the potential for contaminants to permeate thru the soil. As is indicated by the map, the majority of the HUC is classified as having a moderately high potential for soils to be permeable.

Sediment

Sediment is the major non-point source pollutant and can transport nutrients, pesticides, pathogens and toxic substances into surface water. Controlling sediment is an important first step in managing water quality problems. High concentrations of suspended sediment in streams can:

1) Diminish recreational uses because pathogens and toxic substances commonly associated with suspended sediment are threats to public health;
2) Reduce surface water clarity and the aesthetic appeal of streams;
3) Be harmful to stream biota by inhibiting respiration and feeding, diminishing the transmission of light needed for plant photosynthesis, and promoting infections;
4) Result in sediment deposits on the streambed that can suffocate benthic organisms, especially in the embryonic and larval stages;
5) Significantly add to the cost of water treatment for water intended for human use;
6) Cause significant wear to bridge footing and other stream structures;
7) Result in sediment accumulations in reservoirs, decrease their storage capacity, and threaten their safe operation by forcing spillways to flow more often or longer;
8) Cause physical damage to farmland, wildlife, and power generators.

Conservation practices on agricultural land that significantly reduce sediment include buffer strips, filter strips, constructed wetlands, terraces, water and sediment control structures, diversions, and sediment basins.

Applicable Resource Concerns:

- Harmful Levels of Pesticides in Surface Water
- Excessive Nutrients and Organics in Surface Water
- Excessive Suspended Sediment & Turbidity in Surface Water
- Excessive Salinity in Surface Water
- Harmful Levels of Heavy Metals in Surface Water
- Harmful Temperatures of Surface Water
- Harmful Levels of Pathogens in Surface Water
- Harmful Levels of Petroleum in Surface Water

Nutrients

Nutrients, specifically nitrates and phosphorus, from agricultural and nonagricultural sources are the leading cause of impairment in lakes and reservoirs and in estuaries and the third most

reported cause in rivers and streams, according to surface water assessments performed by the States in 1992 and 1993.

When nutrients are applied in excess of the plants needs, they can migrate beyond the field and become an environmental burden. Nutrient management reduces the likelihood of over-application or poor timing, reducing the potential for ground and surface water pollution. Production costs can be reduced and net income can be improved through nutrient balancing.

Nutrient management is managing the amount, source, placement, form and timing of application of nutrients and soil amendments to ensure adequate soil fertility for plant production and to minimize the potential for environmental degradation. Nutrient application rates are based on realistic expected yields that are environmentally and economically acceptable. Nutrient sources considered in determining nutrient application rates include irrigation water, manure, municipal sludge, legumes, residual nutrients in soil and commercial fertilizer.

Applicable Resource Concerns:

- Excessive Nutrients and Organics in Groundwater
- Excessive Nutrients and Organics in Surface Water
- Excessive Suspended Sediment & Turbidity in Surface Water

Livestock Manure

Livestock manure is a major source of N and P. Blackbird Creek Watershed has Animal Feeding Operations (AFOs) operating within its boundaries including dairies, feeder cattle and confined swine. Manure from AFOs can have both positive and negative impacts on the environment. If livestock manure and wastewater is **not** managed wisely water quality can be impaired. A planned system for diversion of clean water; collection, storage or treatment of all waste and/or runoff; and proper land application of manure and/or waste water from feedlots and confinements will improve water quality.

AFOs that meet the regulatory definition of a Concentrated Animal Feeding Operations (CAFOs) have the potential of being regulated under the National Pollutant Discharge Elimination System (NPDES) permitting program. Environmental Protection Agency (EPA) & the USDA promote approaches other than NPDES permitting to help medium and small AFOs to avoid having conditions that would result in those facilities being defined or designated as CAFOs. For example, the voluntary development and implementation of CNMPs prepared in accordance with the CNMP Technical Guidance issued by USDA's NRCS should, in most instances, meet the minimum standard requirements of an NPDES permit.

In Tribal lands, EPA is the permitting authority and will issue permits for CAFOs. The Federal NPDES Permit Regulations & Effluent Limitations Guidelines & Standards for CAFOs have undergone and continue to undergo significant revisions since December 15, 2002. A key element of the CAFO Rule is the requirement that CAFOs develop and implement Nutrient Management Plans (NMPs) that address production area and land application area requirements.

NRCS has substantial interest in the CAFO Rule implementation because of their role in helping clients develop and implement CNMPs that promote natural resource management and protect water quality. NRCS provides planning, technical and financial assistance for the conservation

of natural resources on private lands. USDA financial assistance programs, such as EQIP, were developed to provide a voluntary conservation program for farmers and ranchers that promote environmental quality as compatible to national goals. EQIP offers financial and technical help to assist eligible participants to plan & design, install or implement structural and management practices on eligible agricultural land.

Applicable Resource Concerns:

- Excessive Nutrients and Organics in Groundwater
- Excessive Nutrients and Organics in Surface Water
- Harmful Levels of Pathogens in Surface Water

Fecal Coliform

Total coliform bacteria are a collection of relatively harmless micro organisms that live in large numbers in the intestine of man and warm- and cold blooded animals. They aid in the digestion of food. A specific subgroup of this collection is the fecal coliform bacteria, the most common member being Escherichia coli. These organisms may be separated from the total coliform group by their ability to grow at elevated temperatures and are associated only with the fecal material of warm-blooded animals. Fecal coliform bacteria can enter rivers through direct discharge of waste from mammals or birds, from agricultural and storm runoff and from untreated human sewage.

Applicable Resource Concerns:

- Harmful Levels of Pathogens in Surface Water

Human Sewage

One source of fecal coliform bacteria in surface water is household wastewater treatment systems. Failing home septic tanks and open discharge pipes can allow untreated human wastes to flow into drainage ditches and nearby waters.

Applicable Resource Concerns:

- Harmful Levels of Heavy Metals in Surface Water
- Harmful Levels of Pathogens in Surface Water

Animals

Pets, especially dogs, can contribute to fecal contamination of surface waters. Runoff from roads, parking lots, and yards can carry animal wastes to streams through storm water sewers. Birds can also be a significant source of fecal coliform bacteria. Swans, geese, seagulls, and other waterfowl can all elevate bacterial counts, especially in wetlands, lakes and ponds.

Applicable Resource Concerns:

- Harmful Levels of Pathogens in Surface Water

Agriculture

Agricultural practices such as allowing livestock to graze near water bodies, spreading manure as fertilizer on fields during dry periods, and allowing livestock watering in streams can all contribute to fecal coliform contamination.

Management practices that can reduce the discharge of fecal coliform to surface water include:

- Eliminate point source open sewer discharge pipes from residential houses to surface water and sewer pipe connections to storm water drains;
- Minimize runoff from parking lots and dog walk areas through buffer and filter strips;
- Prevent grazing animal access to streams and lakes and providing animal watering facilities away from the water;
- Develop CNMPs for livestock operations for all cropland utilizing manure. CNMP, at a minimum, must address manure storage and handling, nutrient management, land treatment and record keeping. CNMP must follow all federal and state regulations, including set-backs from surface water for manure application on cropland.
- Improve manure application timing (avoid prior to storm events) and application placement (frozen ground) on cropland.
- Comply with surface water setbacks for application of municipal sludge in accordance with federal permit requirements.

Applicable Resource Concerns:

- Harmful Levels of Pathogens in Surface Water

Pesticides

Pesticides are heavily used in agriculture to protect food and fiber from damage by insects, weeds, disease, nematodes, and rodents. About 75 percent of all pesticide expenditures in the United States are for agriculture, and 70 percent of these are for herbicides, particularly for use on corn. Pesticides have the potential to leach into ground water beside runoff into surface water.

Pesticide loss from farm fields depends on the natural characteristics of an area (soil properties, climate, and terrain), properties of the chemicals used, and farm management practices. The relationships among these factors are complex. In most instances, pesticides that leach or runoff on one soil type may not significantly leach or run off with another soil type.

Pest management is a combination of strategies to manage rather than control pest populations. It reduces adverse effects on plant growth, crop production, and the environment.

Pest management programs should be compatible with crop production goals and the environment. Practices may include cultural, chemical, and biological control of weeds, insects, diseases, animals and other organisms (including invasive and non-invasive species). When possible, cultural methods, such as crop rotations, are used to reduce pesticide use. By reducing the need for pesticides, the potential for surface and ground water contamination is reduced.

Pest management involves crop scouting to determine the presence of pests and the type of control measures(s) that will be most successful. The need for control is generally based on what is *acceptable* crop loss.

Pest management utilizes chemical methods only when needed. When pesticides are used, the pesticide is selected based on how well it controls the pest(s) and the potential of the pesticide to be lost in the environment.

Key management practices that can be used to reduce pesticide pollution are:

- Improved timing (avoid applications prior to storm and wind events) and application methods (surface incorporation) to minimize pesticide losses;
- Selecting the pesticides and pesticide formulas that are most suitable to the targeted species and least toxic to non-targeted species;
- Minimize application rates (example: banding) to control target pests;
- Soil incorporation after application can reduce surface and atmospheric losses of pesticide;
- Addition of non-chemical pest control measures, such as crop rotations and winter cover crops;
- Practicing soil management (conservation tillage) and crop residue management to reduce runoff or percolation;
- Implementation of erosion and runoff control measures (strip cropping, contour buffer strips, grassed waterways, and mixed vegetative buffer strips) to reduce losses through runoff and leaching; or
- Use of Integrated Pest Management (IPM), which embodies most of the previous recommendations.

Applicable Resource Concerns:

- Harmful Levels of Pesticides in Groundwater
- Harmful Levels of Pesticides in Surface Water

3.5 AIR - QUALITY

Air quality in the RWA area relates primarily to Animal Feeding Operations (AFOs). Air emissions from AFOs are diverse group of gases and vapors, particulate matter and odors. At least four sources of AFOs air emissions have been identified:

- The animal itself (diet & metabolism);
- Housing unit, barn or open lot;
- Waste storage / handling facility; and
- Land application of the manure and wastewater.

Gases & Vapors are emitted from animal confinement buildings and open lot pens, manure piles, waste storage facilities and lagoons, and from land application of the manure and wastewater. These compounds result from the microbial degradation of urine and feces. While the complete list of gases and vapors emitted from CAFOs is long, those most commonly found include ammonia, hydrogen sulfide and methane.

> *Ammonia* (NH_3) is a colorless gas with a sharp pungent odor. It occurs naturally in the environment and is an intermediate in the global nitrogen cycle. It is found in al living

organisms and is essential in many biological processes. At AFOs, ammonia is formed when microbes decompose undigested organic nitrogen compounds in animal manure. Nitrogen compounds are also present in urine as either urea or uric acid which hydrolyzes to form ammonia soon after excretion. Nitrous oxide (N_2O) may be emitted following application of manure to poorly drained soils where anaerobic conditions favor denitrification and retard leaching of nitrates to the groundwater.

Hydrogen Sulfide (H_2S) is a gas arising from storage, handling and decomposition of animal waste from AFOs. H_2S is produced by anaerobic bacterial decomposition of protein and other sulfur containing organic matter. It is heavier than air and can accumulate in manure pits, holding tanks and other low areas in a livestock facility.

Methane is a colorless, odorless gas. It is produced by the microbial degradation of organic matter under anaerobic conditions. The primary source of methane in agriculture is from the digestive processes of ruminant animals and the storage, treatment and handling of manure. Since methane is insoluble in water, it volatizes from solution as rapidly as it is generated.

Applicable Resource Concerns:

- Excessive Greenhouse Gas - N2O
- Excessive Greenhouse Gas - CH4
- Ammonia (NH3)

Particulate matter (PM_{10} and $PM_{2.5}$) emitted from AFOs consists of fecal matter, feed materials, skin cells, pollen, bacteria, endotoxins, fungi and viruses, and products of microbial degradation of feces and urine. Sources of PM include feed & grain handling and mixing areas; bedding materials; dry manure; unpaved soil surfaces; confinement barns; animal dander and poultry feathers; and land application of manure. Concentrations vary widely depending on animal type& numbers; and manure handling practices; geographical location; and meteorological conditions; etc.

Applicable Resource Concerns:

- Particulate matter less than 10 micrometers in diameter
- Particulate matter less than 2.5 micrometers in diameter
- Reduced Visibility

Odors associated with AFOs can be a nuisance. Compounds associated with AFOs odors include hydrogen sulfide (rotten egg smell) as well as several volatile fatty acids (VFAs) (ratting vegetables, rancid butter, and fecal smell). Volatile organic contaminants (VOCs) and VFAs emitted from AFOs constitute a mixture of chemicals comprised of various acids, esters, alcohols, aldehyges, ketones, halgenates, amines and hydrocarbons. Researchers have suggested that between 100 to 330 different VOCs/VFAs are generated depending on the type of livestock and practices at the AFO.

Applicable Resource Concerns:

- Chemical Drift
- Objectionable Odors

3.6 ANIMALS – FISH AND WILDLIFE

Wildlife to be considered for habitat development and management includes primary game species such as ring-necked pheasant, northern bobwhite quail, wild turkey, and white-tailed deer. Game fish which would benefit from small ponds within the watershed include primarily bluegill, largemouth bass, and channel catfish. Other species which have declining populations that may occur within the watershed are listed below. These are listed as Tier I species in the Nebraska Natural Legacy Project and additional information on population distribution and habitat enhancements to benefit each species can be obtained from wildlife biologists with local knowledge and/or the Natural Heritage database at the Nebraska Game and Parks Commission.

Birds	**Insects**	**Mammals**	**Mollusks**
Bald eagle	Iowa skipper	Plains harvest mouse	Fatmucket
Bells Vireo	Regal fritillary	Plain pocket mouse	Plain pocketbook
Cerulean warbler			Pondmussel
Henslow's sparrow			

This watershed, like much of eastern and southern Nebraska, is dominated by row crop agriculture consisting of corn and soybeans. As a result, lack of permanent vegetative cover as habitat is the most limiting factor for most wildlife populations. The installation of conservation buffers on small portions of these crop fields would provide a significant increase in available habitat, especially for game species which highly utilize the cropland and permanent habitat interface. These same buffer practices will also address the primary resource concerns in the watershed for soil erosion and water quality. Enrollment of eligible lands into the continuous sign-up provisions of the Conservation Reserve Program administered by the Farm Services Agency is the most lucrative option since annual land-use payments are made as well as cost-share assistance for the necessary practice components. Other conservation programs such as the Environmental Quality Incentives Program and the Wetlands Reserve Program can also be used on a case by case basis to install small impoundments for fish or to restore and enhance wetlands which are located within the floodplains of small streams and the Missouri River.

3.7 CULTURAL RESOURCES

Cultural resources that commonly occur in northeastern Nebraska include artifacts, buildings, other structures, objects and places, of historical, cultural or scientific importance to our society.

Records maintained in the Nebraska State Historical Society Archeology Division's Master Archeological Site File indicate that within the Blackbird Creek Watershed there are a total of 6

identified and recorded cultural resources. Five of these sites are located within 1 mile of the village of Macy. Cultural resources identified within the watershed include 19th and 20th century middens, historic house ruins, as well as American Indian habitation sites dating prior to Euro American settlement in the area.

Previous survey of lands within the Blackbird Creek Watershed totals approximately 156.6 acres. These investigations which have been reported to the Nebraska State Historical Society Archeology Division have been conducted between 1992-2006. These investigations in general have been small in scale focusing on individual construction or development projects with the majority under 10 acres.

With the paucity of surveyed area within the watershed it is appropriate to assume that there are numerous unidentified cultural resources. The physical condition of some of these resources may have been affected by agricultural or other developmental pursuits but maintain research potential, uniqueness, and overall cultural value. Determining the quantity, diversity, condition, context, and location of cultural resources is a concern within the watershed.

Cultural and historic resources important specifically to the Omaha Tribe may be present within and adjacent to the Blackbird Creek Watershed. Examples include Blackbird Hill and Blackbird Canyon which are located close to but outside of the Blackbird Watershed and contain important resources relating to Omaha Tribal history.

3.8 ENDANGERED AND THREATENED SPECIES

The federally listed and proposed species documented by the US Fish and Wildlife Service as a concern for Burt and Thurston Counties is the Pallid Sturgeon. The field office technical guide (FOTG) indicates that the following state species of concern may also need to be addressed: Lake Sturgeon, Sturgeon Chub, Massasauga, American Ginseng, and Small White Lady's Slipper. The actual review of affects upon these species will depend on the alternatives that are developed and decided to be reviewed in detail. However, following is a project area cursory review of the above listed species for the area in general based on information from the FOTG.

Pallid Sturgeon and Lake Sturgeon: Both are currently associated with the Missouri river interface with the project area. However, historically the Lake Sturgeon may have once been found in the lower reaches of Blackbird Creek if the rock or sandy substrate habitat were once present.

Sturgeon Chub: Historically found in the Missouri River and a few selected Creeks/Rivers, but not specifically Blackbird Creek. Current distribution is restricted to the Missouri River downstream of Ft. Calhoun and thus well below the project area.

Massasauga: Project area in historic range but no recent confirmed reports in area.

American Ginseng: Project area in historic range. Habitat is in rich, older-growth, deciduous forest such as those along the Missouri River. Identify these types of habitats and if they are being impacted by current degrading conditions or future project.

Small White Lady's Slipper: Project area is in the historic range but no recent confirmed reports in the area. Habitat is native, sub-irrigated wet meadows with sandy loam soils. Identify these types of habitats and if they are being impacted by current degrading conditions or future project.

This species information needs further review once project alternatives are identified. When scoping the resource concerns the specific habitats related to these species should also be identified.

Chapter 4
Census and Social Data

4.1 OMAHA TRIBAL GOVERNMENT:

The United States Government, as defined by the United States Constitution, has governmental relationships with International, Tribal, and State entities. The Tribal nations have a government-to-government relationship with the United States. The Omaha Tribe signed treaties with the United States which are the legal documents that established the Tribal homeland boundaries and recognized their rights as a sovereign government.

The Omaha Tribe lived near the Missouri River in present day Nebraska in the days prior to diplomatic relations with the United States government. The Omaha Tribe was originally designated reservation lands along the Missouri River recognized in a treaty with the United States signed on March 16, 1854. This includes all rights-of-way, waterways, watercourses and streams running through any part of the reservation and to such others lands as may hereafter be added to the reservation under the law of the United States.

The Omaha Tribe operates under a constitution consistent with the Indian Reorganization Act of June 18, 1934. The Tribal Council governs the Omaha Tribe and consists of a Chairman, Vice-Chairman, Secretary, Treasurer and three additional Councilmen all of whom are elected by the tribal membership.

The Tribal Council Chairman serves as the administrative head of the Tribe. The Tribal Council members serve a term of three years at-large without regard to residence in a particular district of the reservation.

4.2 TRIBE OVERVIEW

Tribal/Agency Headquarters: Macy, Nebraska 68039
Nebraska: Thurston, Burt, Cuming, Wayne Counties
Iowa: Monona County
Number of enrolled members: 5,992
Reservation Population: 5,227
Language: Omaha and English
See the following website for population distribution.
http://www.iowadatacenter.org/maps/OutlineMaps/Omaha

Land Status:
Tribal Owned/Use: 46 %
Individual Allotted: 47 %
Total Tribal/Allotted: 94 %
Non-Indian Owned: 6 %

4.3 LAND

The Omaha Tribal homelands are located in the northeast corner of Nebraska, overlapping into a small portion of western Iowa. The area is comprised of the Omaha Tribal Reservation and adjacent counties totaling 2,594 square miles. The Nebraska counties are; Thurston, Burt, Cuming, Wayne, and the Iowa county is Monona. Macy Nebraska is the location of the headquarters for the Omaha Tribe of Nebraska (See Figure 14).

The Omaha Reservation is located in the northeastern corner of Nebraska, 26 miles southeast of Sioux City, Iowa and seventy miles north of Omaha, Nebraska on state highways 75 and 77. The Missouri River is the eastern boundary of the reservation. The Winnebago Reservation borders the northern side of the reservation. Over ninety three per cent of the lands within the reservation boundaries are owned by the Tribe and Tribal members.

The Omaha Tribe maintains the right and responsibility to provide environmental authority in compliance with Tribal and Federal law for protection of the land and resources within the exterior boundaries of the reservation through code development and regulatory procedures. The maintenance and protection of the land is very important to the Omaha people and our future generations.

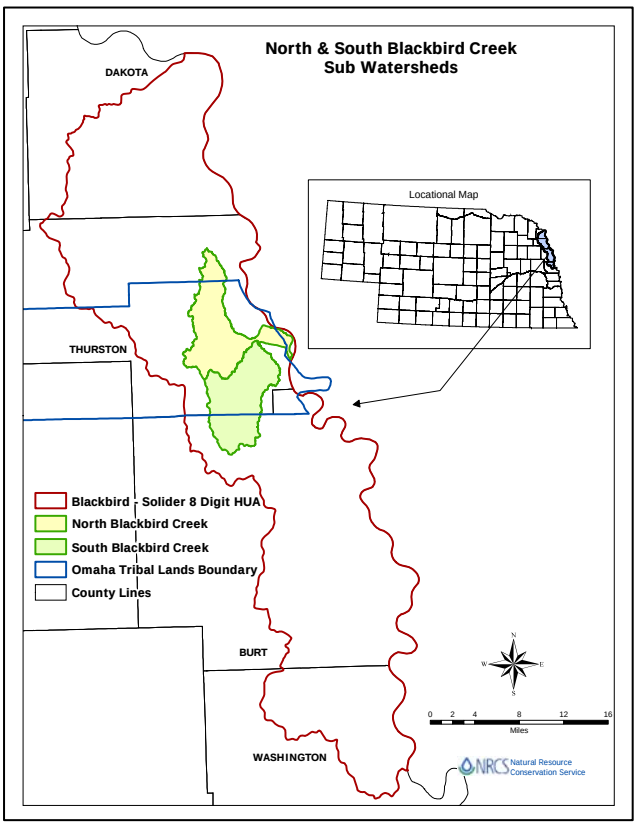


Figure 14 North & South Blackbird Creek Sub Watersheds

The terrain consists of low rolling hills marked by creeks and shrubs and scattered woodlands, leveling off into agricultural land. The woodlands generally consist of cottonwood and willow species on moist soil sites and along the Missouri River which borders the eastern side of the reservation. A gradation to more upland tree species on higher floodplain benches and side slopes in the uplands. These upland species may include basswood, green ash, bur oak, hackberry, and red elm with an understory of ironwood, chokecherry, and various dogwood and gooseberry species..

Terrain: Rolling hills, woodlands, and streams dominate the reservation. Tribal land area within the North & South Blackbird Creek HUAs consists of the following land cover acres (Percentages of land cover based on NASS06 Satellite Imagery):

Agriculture: 66% Wetlands: 1% Developed/Urban: 4%

Grass/Pasture: 24% Forest: 5%

In 1996, Tribal environmental staff identified insufficient resources to perform baseline data gathering functions to enable them to quantify their environmental resources and environmental problems as the major reservation environmental problem which may be hazardous to the resource sustainability of the reservation.

4.4 CULTURE

The future of the Omaha Tribe is directly related to the conservation of their homelands and how well they enable their children to continue the cultural traditions and manage our resources in rebuilding the economy.

4.5 TRANSPORTATION

The highway system serving the area consists of three highways providing north and south access to the reservation. Highway 77 near the center of the reservation with Highway 75 and Interstate 29 along the eastern boundary of the reservation. County roads and a system of Bureau of Indian Affairs (BIA) roads serve the rural areas (See Figure 15). These highways are in good condition, but often become treacherous during the winter months. No major passenger service is available on the reservation. People must travel to Sioux City, 35 miles to the north, or Omaha, 70 miles to the south, where major airlines and bus services are available.

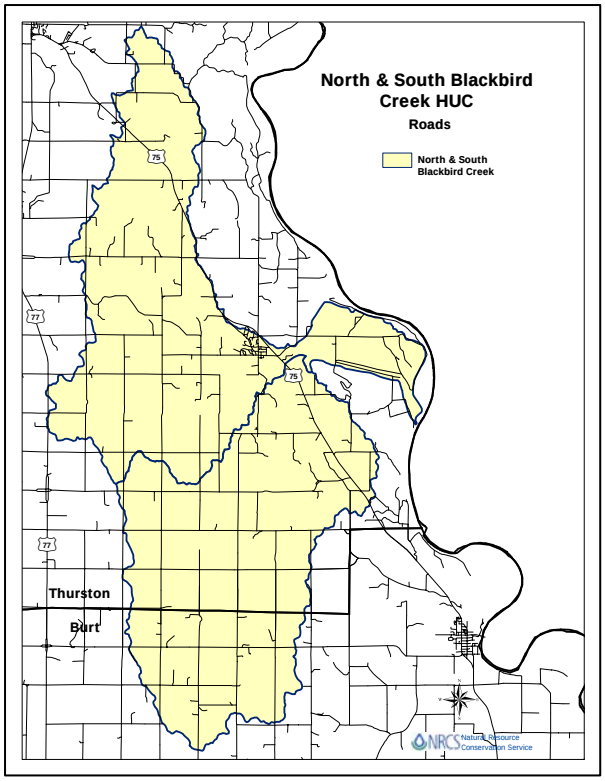


Figure 15 Transportation

4.6 TRIBAL ECONOMY:

The Omaha Tribe's major economic occupations are Tribal and Federal government administration, farming including both Tribal and Non-Tribal operators, or staff positions relative to the Tribal Casino operation. The majority of employment is provided by the Omaha Tribe, the Casino, Bureau of Indian Affairs, and the Carl T. Curtis Health Center, a Tribal health facility. The Omaha Tribe independently owns and manages the Carl T. Curtis Health Center in Macy, NE.

Commercial business by private operators includes a gas station, two grocery stores, bait shop, arts and handcrafts. The major commercial center for service area residents is Sioux City, IA, 35 miles north.

4.7 COMMUNITY SERVICES:

The Omaha Tribe independently owns and manages the Carl T. Curtis Health Center in Macy, NE. An Indian Health Service (IHS) Hospital is located in the community of Winnebago, NE.

The Omaha provides an Elderly Nutrition Program and Youth Recreational Activities. Additional health care is provided by the Tribal Health Department through the Community Health Representative and Substance Abuse Prevention Program. The Health Department also provides examinations and eyeglasses to all residents at reduced rates.

IHS provides ambulance and transport service for Nursing Home residents and outpatient referrals at the Carl T. Curtis Health Center. Transportation for the elderly on the reservation is provided by the Inter-Tribal Elderly Program. Transportation service is available for families for the purpose of shopping for necessities provided by Macy Industries, Inc. of Macy, NE.

There are postal services available, 3 churches, and a community center which is used to hold social events such as funerals, dances, and Indian ceremonials. The Omaha Tribe provides police coverage and a jail in the community, and the fire department is on a volunteer basis. A group home provides a safe environment for troubled and endangered youth.

4.8 HOUSING:

The Omaha Housing Authority manages a number of housing units in the communities of Macy and Walt Hill and on rural scattered sites through HUD Low Rent and Mutual Help home ownership housing programs. Other housing is available through the Bureau of Indian Affairs and Indian Health Service in Winnebago for their employees. Private housing stock is limited.

4.9 RECREATION:

The Omaha Tribe has some excellent hunting and fishing with local guides and bait shops available. Water sports are enjoyed by many on the Missouri River. The Tribe operates the Casino and Resort, a forty room motel with a convention center. The Tribe also has an RV park for tourists, hunters and fisherman near Macy, NE. Tribal organizations sponsor high stakes bingo games several nights of the week.

The Omaha Tribe sponsors an annual pow-wow every summer. Special pow-wows are also held for special accomplishments i.e. reaching certain stages in life, graduation or acceptance into the armed forces. This event also includes arts and handcrafts sales and a softball tournament. During the year other sports activities such as softball, volleyball, and basketball tournaments are also held during the year in Macy. The reservation has several beach areas and boat ramps for fishing and water sports along the Missouri River.

4.10 PUBLIC UTILITIES:

Burt County Public Power supplies electricity service on the reservation. The Huntel Telephone Company provides commercial and residential telephone service to the reservation.

4.11 FUTURE:

The Tribe continues to explore means to expand business opportunities for the Tribe and Tribal members. Planning and development are underway in Cultural Resources to preserve the

cultural resources and educate the Tribal members and non-members on the history of the Omaha people. The plans include the development of tourism to strengthen the economy on the reservation.

Chapter 5

Status of Resources

5.1 STATUS AND HISTORY OF RESOURCE CONSERVATION IN THE WATERSHED

The North & South Blackbird Creek HUAs lie within the Nebraska Loess Hills RC&D and are serviced by their office in Oakland. Conservation assistance is provided by the NRCS service center at Walthill. Resource concerns center around erosion control but also include water management, wildlife and wetlands.

Conservation progress for the entire Blackbird-Solider HUA from 1999 to present, is reflected in the following table. Conservation practices installed are not reflected in this table Conservation efforts have focused mainly on row crops and the reduction in erosion, as indicated by the acres under Tillage & Residue Management as well as the implementation of terraces within the HUAs.

PRMS Profile for Blackbird-Solider 8 Digit HUC - 10230001

PRMS Data	1999	2000	2001	2002	2003	2004	2005
Planned	1,128	6,872	10,164	15,381	9,530	NA	20,558
Applied	1,100	6,787	10,448	14,989	16,584	NA	14,476
Conservation Treatments Applied							
Contour Buffer Strips (332) (ac)	112	150	278	324	212	19	
Reduction in the Acreage of Cropland Soils Damaged by Erosion (Ac.)	2,490	7,761	11,500	8,380	3,386		8,517
Field Border (386) (ft)	0	3	24,581	13,000	3,000		21,488
Filter Strip (393) (ac)	110	70	236	271	147	171	46
Grassed Waterway (412) (ac)	0	9	20	25	27	2,618	47
Nutrient Management (590) (ac)	103	1,008	1,814	935	1,928	250	298
Pest Management (595) (ac)	103	1,779	4,989	4,439	2,281	2,926	673
Prescribed Grazing (528) (ac)	103	465	202	1,899	764	462	1,329
Prescribed Grazing (528A) (ac)							5

5.2 CONSERVATION PROGRAMS FOR RESOURCE CONSIDERATIONS

The environmental evaluation (EE) is a NRCS planning process as described in the NRCS National Planning Procedures Handbook. The EE identifies and analyzes the economic, environmental, and social concerns. This planning process is then documented/summarized on the NE-CPA-52 Environmental Evaluation for Conservation Planning form. This EE planning process started with the identification of problems and opportunities and continues through the application and evaluation of the project.

For the planning purposes of this Rapid Watershed Assessment, the NE-CPA-52 has been utilized as part of the I&E. and scoping process. The results of the EE (scoping and documented NE-CPA-52) are used to identify the resource concerns and special environmental concerns. The Resource Considerations Field Inventory Guide Sheet portion of the NE-CPA-52 can be found in

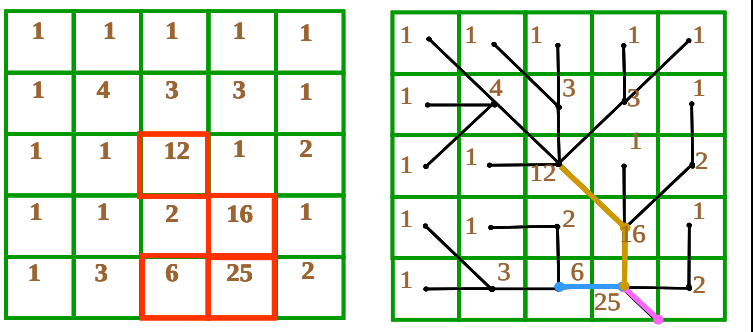
Appendix C Supporting Information and identifies 26 various potential resource concerns identified during the I&E and then explained in Chapter 3 Known Resource Concerns.

NRCS technical specialists, along with input from the Tribe, reviewed these various concerns for relevance. Several concerns were found to be of minor relevance in the context of the overall resource conditions for the Blackbird watershed and were eliminated from further consideration. Many of these inconsequential concerns that were potentially identified were also found to be unquantifiable due to the lack of assessment tools for quality criteria evaluation. If future planning identifies any of these inconsequential concerns as being elevated to higher importance then they could be addressed at that time.

The primary resource concerns that were identified were carried through the NRCS Resource Management System planning process to identify applicable conservation practices to treat that concern. The rest of this chapter focuses on those concerns, how to address them with NRCS conservation practices, the estimated treatment cost, and potential NRCS funding sources.

5.3 EVALUATION OF THE WATERSHED USING ADVANCED GIS METHODS

A study of the watershed was completed using a DEM Grid Tool that analyzed the 10 meter Digital Elevation Model (DEMs) for the sub watersheds. The purpose of this analysis was to identify stream networks and various sub watersheds within the North and South Blackbird Creek Watershed where there may be a potential to place a small grade stabilization structure.



After drainage network connectivity is established, drainage area, or any other parameter such as sediment load, can be accumulated for all cells in the grid.

Grade stabilization structures are important in helping to control sediment along with erosion. A major source of sediment, in addition to sheet, rill and ephemeral gully erosion was identified as head cutting. Head cutting has occurred as some of the sub watersheds sought to stabilize the grade difference from the uplands to the deeply entrenched channel of Blackbird Creek. The sediment load from the grade problem could be addressed through a series of small grade stabilization structures located strategically along Blackbird Creek.

This tool was used to identify potential sites where it would be feasible to place a small grade stabilization structure. Identifying the stream networks within a portion of the watersheds is the first step in the analysis (See Figure 16, see pg 28). The stream network was then used to position a potential grade stabilization site on the map. The DEM Grid Tool then calculated the drainage area controlled by the site and delineated the area on the map. This allows the planner to select the sites that offer the most benefit on the most efficient sized drainage area. Obviously some areas are too small and others may be too large because of costs, land owner acceptance, efficiency or other environmental or social factors. The tool simply allows the planner to quickly

identify and evaluate multiple sites to aid in selecting the most cost efficient sites for planning purposes.

Shaded areas on Figure 17 indicate the size of the drainage area in acres that will benefit or encompassed by the grade stabilization. Figure 18 on page 29 shows some potential grade stabilization sites for the entire North & South Blackbird Creek HUA.

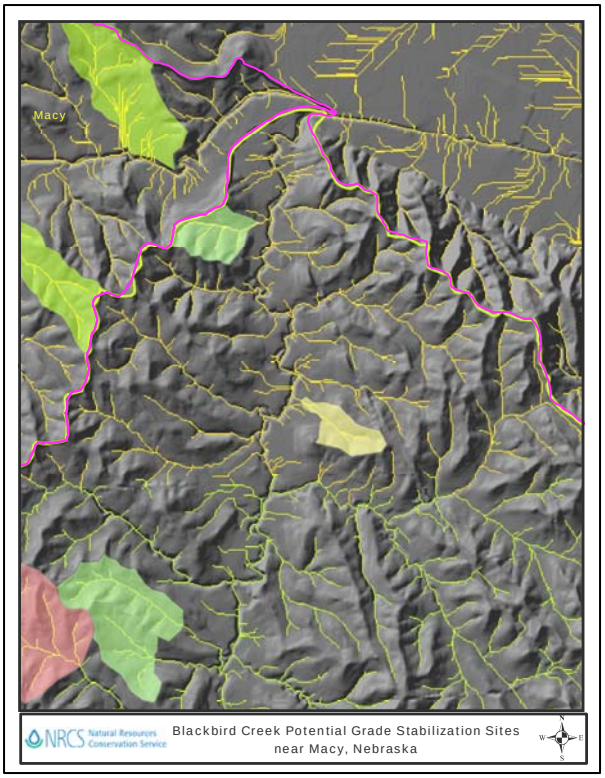


Figure17 Potential Grade Stabilization Sites

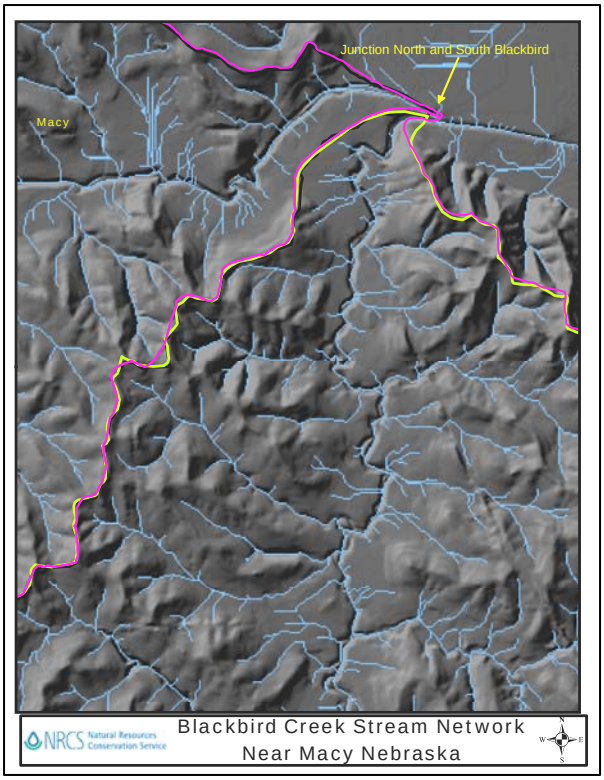


Figure 16 Stream Network

GIS tools were also used to evaluate the potential for buffer and filter strips. The Common Land Unit (CLU) layer was used in conjunction with the Hydrology layer and the High EI soils layer to identify cropland with high EI soils within 500 feet of a flowing stream (See Figure 19, pg 29). This area could then be evaluated as to the potential to establish or enhance buffers , riparian buffers and filter strips. This technique could also be used to determine eligible acres under different programs on a farm by farm basis. Figure 20 on page 29 show approximate areas of a field that would be eligible for buffers under the existing CRP program.

These tools could be transferred for use by the local field office in Customer Service Toolkit to expedite planning and providing technical assistance in quickly evaluating different options available to producers.

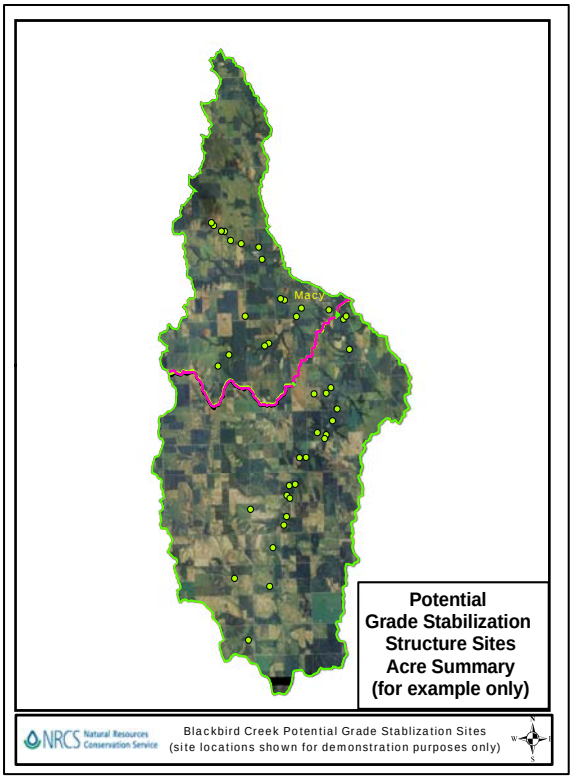


Figure 18 Potential Grade Stabilization Structure Sites

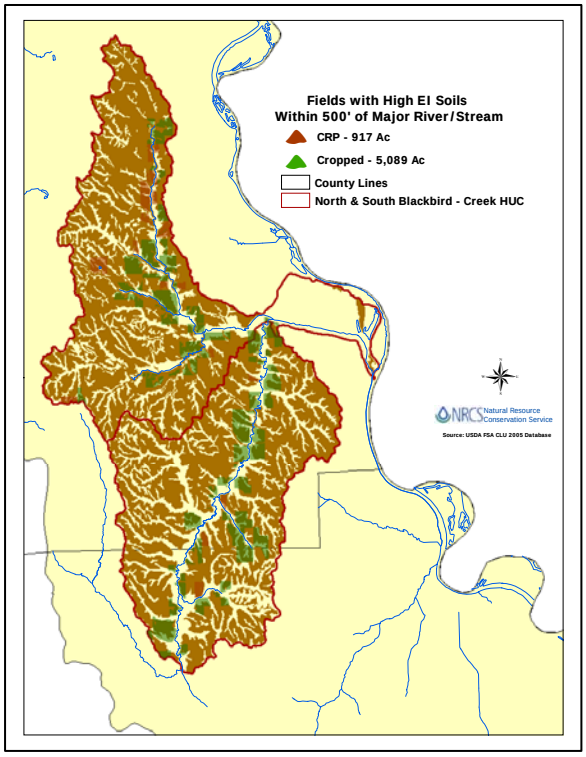


Figure 19 Field with High EI Soils

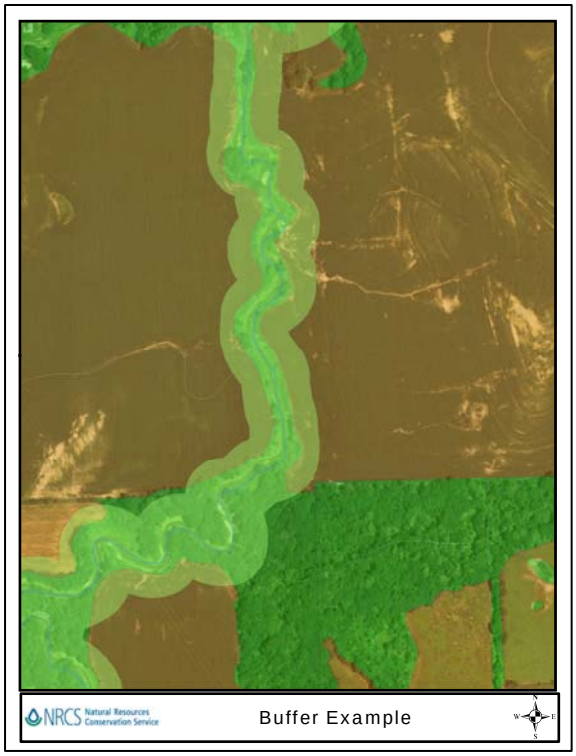


Figure 20 Buffer Example

5.4 CURRENT AND FUTURE CONDITIONS TABLES

5.4.1 – Cropland Matrix excluding Cropland Currently in CRP Assessment Information *(Note: Estimates for Matrices are for general planning purposes only and not based on actual funding.)*

WATERSHED NAME & CODE	NORTH AND SOUTH BLACKBIRD CREEK -				LANDUSE ACRES			48,352
LANDUSE TYPE	CROPLAND - NON CRP				TYPICAL UNIT SIZE ACRES			80
ASSESSMENT INFORMATION					ESTIMATED PARTICIPATION			60%
CONSERVATION SYSTEMS BY TREATMENT LEVELS	CURRENT CONDITIONS	FUTURE CONDITIONS			RESOURCE CONCERNS			
	Total	Existing	New	Total	Soil Erosion – Sheet and Rill	Soil Erosion – Ephemeral Gully	Soil Erosion – Classic Gully	Soil Erosion – Streambank
	Units	Unchanged	Treatment	Units				
		Units	Units					
Baseline System	**System Rating ->**				**2**	**2**	**1**	**0**
Total Acreage at Baseline Level	**24,176**	**9,670**	**0**	**9,670**				
Conservation Crop Rotation (ac.) 328	24,176	9,670	0	9,670	3	3	1	0
Nutrient Management (ac.) 590	4,835	1,934	0	1,934	1	1	0	0
Pest Management (ac.) 595	4,835	1,934	0	1,934	1	0	0	0
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	14,506	5,802	0	5,802	1	2	2	0
Progressive System	**System Rating ->**				**2**	**4**	**2**	**0**
Total Acreage at Progressive Level	**19,341**	**17,407**	**10,879**	**28,286**				
Conservation Crop Rotation (ac.) 328	19,341	28,286	0	28,286	3	3	1	0
Grassed Waterway (ac.) 412	580	522	326	849	0	5	4	0
Nutrient Management (ac.) 590	9,670	10,879	3,264	14,143	1	1	0	0
Pest Management (ac.) 595	9,670	10,879	3,264	14,143	1	0	0	0
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	12,572	17,842	544	18,386	1	2	2	0
Terrace (ft.) 600	3,868,160	3,481,344	2,175,840	5,657,184	2	2	0	0
Resource Management System (RMS)	**System Rating ->**				**4**	**4**	**3**	**3**
Total Acreage at RMS Level	**4,835**	**4,835**	**5,560**	**10,396**				
Conservation Crop Rotation (ac.) 328	4,835	10,396	0	10,396	3	3	1	0
Contour Farming (ac.) 330	4,835	4,835	5,560	10,396	3	3	1	0

Critical Area Planting (ac.) 342	242	242	278	520	5	5	1	4
Filter Strip (ac.) 393	242	242	278	520	2	0	0	0
Grade Stabilization Structure (no.) 410	30	30	35	65	0	4	4	3
Nutrient Management (ac.) 590	4,835	6,528	3,868	10,396	1	1	0	0
Pest Management (ac.) 595	4,835	6,528	3,868	10,396	1	0	0	0
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	4,835	8,268	2,127	10,396	1	2	2	0
Tree/Shrub Establishment (ac.) 612	48	48	56	104	2	2	2	2
Pest Management (ac.) 595	4,835	6,528	3,868	10,396	1	0	0	0
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	4,835	8,268	2,127	10,396	1	2	2	0
Tree/Shrub Establishment (ac.) 612	48	48	56	104	2	2	2	2

CONSERVATION INVESTMENT INFORMATION

	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
CONSERVATION SYSTEMS BY TREATMENT LEVELS	New Treatment Units	Installation Cost	Management Cost - 3 yrs	Technical Assistance	Total Present Value Cost	Installation Cost	Annual O & M + Mgt Costs	Total Present Value Cost
		50%	100%	20%		50%	100%	
Progressive System Acres Treated	**10879.2**							
Total Acreage at Progressive Level	0	$0	$0	$0	$0	$0	$0	$0
Conservation Crop Rotation (ac.) 328	326	$217,856	$0	$43,571	$261,427	$217,856	$8,714	$254,564
Grassed Waterway (ac.) 412	3,264	$0	$78,330	$15,666	$85,459	$0	$26,110	$40,193
Nutrient Management (ac.) 590	3,264	$0	$78,330	$15,666	$85,459	$0	$26,110	$40,193
Pest Management (ac.) 595	544	$0	$32,638	$6,528	$35,608	$0	$10,879	$16,747
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	2,175,840	$1,142,316	$0	$228,463	$1,370,779	$1,142,316	$68,539	$1,431,027
	Subtotal	**$1,360,172**	**$189,298**	**$309,894**	**$1,838,731**	**$1,360,172**	**$140,353**	**$1,782,723**
Resource Management System (RMS) Acres Treated	**5560.48**							
Filter Strip (ac.) 393	0	$0	$0	$0	$0	$0	$0	$0
Grade Stabilization Structure (no.) 410	5,560	$0	$0	$0	$0	$0	$0	$0
Nutrient Management (ac.) 590	278	$27,802	$0	$5,560	$33,363	$27,802	$2,780	$39,514
Pest Management (ac.) 595	278	$41,704	$0	$8,341	$50,044	$41,704	$1,668	$48,730
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	35	$191,142	$0	$38,228	$229,370	$191,142	$3,823	$207,245
Tree/Shrub Establishment (ac.) 612	3,868	$0	$92,836	$18,567	$101,284	$0	$30,945	$47,636
Pest Management (ac.) 595	3,868	$0	$92,836	$18,567	$101,284	$0	$30,945	$47,636
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	2,127	$0	$127,649	$25,530	$139,266	$0	$42,550	$65,499
Tree/Shrub Establishment (ac.) 612	56	$83,407	$0	$16,681	$100,089	$83,407	$1,668	$90,434
	Subtotal	**$344,055**	**$313,321**	**$131,475**	**$754,700**	**$344,055**	**$114,380**	**$546,693**
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	**16439.68**	**$1,704,227**	**$502,619**	**$441,369**	**$2,593,431**	**$1,704,227**	**$254,732**	**$2,329,416**

5.4.2 – Rangeland and Other Land Assessment Information *(Note: Estimates for Matrices are for general planning purposes only and not based on actual funding.)*

WATERSHED NAME & CODE	NORTH AND SOUTH BLACK BIRD CREEK -				LANDUSE ACRES		8,740	
LANDUSE TYPE	RANGE AND OTHER LANDS				TYPICAL UNIT SIZE ACRES		30	
ASSESSMENT INFORMATION					ESTIMATED PARTICIPATION		60%	
CONSERVATION SYSTEMS BY TREATMENT LEVELS	CURRENT CONDITIONS	FUTURE CONDITIONS			RESOURCE CONCERNS			
	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Soil Erosion – Classic Gully	Soil Erosion – Streambank	Fish and Wildlife – Inadequate Cover/Shelter	Fish and Wildlife – Habitat Fragmentation
Baseline System			System Rating ->		0	1	1	1
Total Acreage at Baseline Level	**6,555**	**3,278**	**0**	**3,278**				
Prescribed Grazing (ac.) 528	656	328	0	328	0	3	2	2
Progressive System			System Rating ->		0	1	3	3
Total Acreage at Progressive Level	**1,748**	**1,573**	**2,622**	**4,195**				
Prescribed Grazing (ac.) 528	874	1,049	1,049	2,098	0	3	2	2
Upland Wildlife Habitat Management (ac.) 645	437	393	656	1,049	0	0	5	5
Resource Management System (RMS)			System Rating ->		1	2	4	4
Total Acreage at RMS Level	**437**	**437**	**830**	**1,267**				
Prescribed Grazing (ac.) 528	437	590	677	1,267	0	3	2	2
Riparian Forest Buffer (ac.) 391	13	13	25	38	0	2	5	5
Tree/Shrub Establishment (ac.) 612	9	9	17	25	2	2	3	3
Upland Wildlife Habitat Management (ac.) 645	219	262	371	634	0	0	5	5

CONSERVATION INVESTMENT INFORMATION								
	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
CONSERVATION SYSTEMS BY TREATMENT LEVELS	New Treatment Units	Installation Cost	Management Cost - 3 yrs	Technical Assistance	Total Present Value Cost	Installation Cost	Annual O & M + Mgt Costs	Total Present Value Cost
		50%	100%	20%		50%	100%	
Progressive System Acres Treated	**2622**							

Prescribed Grazing (ac.) 528	1,049	$445,740	$0	$89,148	$534,888	$445,740	$0	$445,740
Upland Wildlife Habitat Management (ac.) 645	656	$0	$235,980	$47,196	$261,407	$0	$78,660	$126,346
	Subtotal	**$445,740**	**$235,980**	**$136,344**	**$796,295**	**$445,740**	**$78,660**	**$572,086**
Resource Management System (RMS) Acres Treated	**830.3**							
Prescribed Grazing (ac.) 528	677	$287,874	$0	$57,575	$345,449	$287,874	$0	$287,874
Riparian Forest Buffer (ac.) 391	25	$41,536	$0	$8,307	$49,843	$41,536	$2,492	$52,325
Tree/Shrub Establishment (ac.) 612	17	$24,909	$0	$4,982	$29,891	$24,909	$498	$27,066
Upland Wildlife Habitat Management (ac.) 645	371	$0	$133,722	$26,744	$148,130	$0	$44,574	$71,596
	Subtotal	**$354,319**	**$133,722**	**$97,608**	**$573,313**	**$354,319**	**$47,564**	**$438,861**
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	**3452.3**	**$800,059**	**$369,702**	**$233,952**	**$1,369,607**	**$800,059**	**$126,224**	**$1,010,947**

SOIL: EROSION

RESOURCE CONCERN	ALTERNATIVE	FUNDING SOURCE	Ref. #
Sheet & Rill	Residue & Tillage Mgmt, No-Till/Strip Till/Direct Seed	Table 5.7	329
	Conversion to permanent vegetation		
	• Range Planting		550
	• Pasture and Hay Planting		512
	• Upland Wildlife Habitat Management		645
	Cover Crop		340
	Contour Farming		330
	Contour Buffer Strips		332
	Continuous CRP Practices		Multiple Ref's
Ephemeral Gully	Terraces	Table 5.7	600
	Grassed Waterways		412

Classic Gully	Grade Stabilization Structure • Sediment Basin • Water and Sediment Control Basin Terraces Grassed Waterways Underground Outlets Diversion	Table 5.7	410 350 638 600 412 620 362
Stream Bank	Filter Strips Grade Stabilization Structures • Sediment Basin • Water and Sediment Control Basin Riparian Forest Buffer Riparian Herbaceous Cover Stream Bank and Shoreline Protection Stream Channel Stabilization	Table 5.7	393 410 350 638 391 390 580 584
Road Sides	Critical Area Planting	Table 5.7	342

WATER: QUALITY

RESOURCE CONCERN	ALTERNATIVE	FUNDING SOURCE	Ref. #
Harmful Levels of Pesticides in Surface Water	Pest Management	Table 5.7	595
Excessive Suspended Sediment in Surface Water	See Erosion Control Alternatives	Table 5.7	
Excessive Nutrients and Organics in Surface Water	Nutrient Management	Table 5.7	590

AIR: QUALITY

RESOURCE CONCERN	ALTERNATIVE	FUNDING SOURCE	Ref. #
Objectionable Odors	See Notes Below	Table 5.7	595
Excessive Ammonia	See Notes Below	Table 5.7	

Practices and management that can be used to minimize air emissions include:

- **Livestock operation, waste storage facility and land application sites**
  - Develop and implement a Comprehensive Nutrient Management Plan (CNMP) including 590 Nutrient Management and 633 Waste Management for AFOs.

- **Livestock**
  - Promote balance nitrogen in feed rations, avoid overfeeding protein.
- **Open Lots**
  - Avoiding anaerobic conditions in open lot operations by keeping (a) manure and other organic materials as dry as practical, (b) manure storages and surfaces exposed to oxygen, and (c) corral surfaces hard, smooth, and free of uncompacted manure.
  - Plant tree lines or construct wind breaks to enable the mixing of air with gases and PM from livestock operations.(Windbreak and/or Shelterbelt Establishment - Standard 380)
- **Confinement Buildings**
  - Use biofiltration uses microorganisms to break down gaseous contaminants and produce nonodorous end products.
  - Use biomass filters as a means of removing odorous dust from swine buildings. Biomass filters use the principle that dust, if removed from the ventilation exhaust stream, will capture a large portion of the odors with it.
  - A properly designed and placed tree or vegetative shelterbelt could conceivably provide a very large filtration surface for both dust and odorous compound removal from building exhaust air and odor dispersion and dilution
- **Waste Control Facilities**
  - Employ manure treatment technologies such as anaerobic digesters for confinement barns. (Standards 365 and 366)
  - Use chemical or biological additives to waste storage facilities or lagoons (Standard 591).
  - Use covers on waste storage facilities to minimize gas emissions. (Refer to Standard 367)
  - Plant tree lines or construct wind breaks to enable the mixing of air. (Refer to Standard 380)
- **Land Application (See Waste Utilization Standard 633)**
  - Manure injection into the soil is the most effective way to reduce odor during the land application of untreated liquid manure. However, this must complement tillage practices and current program requirements.
  - Characteristics of irrigation systems that reduce odor include using nozzles and pressures that produce large droplet sizes, installing drop nozzles on center pivot systems, and adding dilution water to the liquid manure before applying.
  - Consider wind direction, especially if broadcasting. Select days when the wind is blowing away from neighbors and dwellings.
  - Consider timing, if feasible, spread manure on weekdays when neighbors are likely to be away from their home; avoid weekends, especially Sundays and holidays.
- **Manure stockpiles and composting operations**
  - Avoid long-term stockpiling of manure. Unmanaged stockpiles will eventually exclude oxygen, and even if the stockpiles are not odorous, old, stockpiled

manure releases more odors upon land application than manure exposed to oxygen.
  - Minimize stockpile size.
  - Avoid overheating, put manure up dry (< 45% moisture). When land applied, charred stockpiles release intense, uniquely disagreeable odors.
  - Locate stockpiles and composting operations upwind relative to prevailing winds and the AFO center. Because of the odor potential of stockpiles and storage areas, they should be located as far upwind of the principal downwind property line as topography or other operational considerations permit.
  - Provide supplemental carbon for composting. A proper carbon-to-nitrogen ratio in a compost pile or windrow encourages faster composting and reduces odors over the long term (Refer to Standard 317 – Composting Facility)
- A**nimal Mortality**
  - Carcasses should be quickly removed from corrals followed by proper disposal, especially in warm weather. (Refer to Standard 316 – Animal Mortality)

ANIMALS: FISH AND WILDLIFE

RESOURCE CONCERN	ALTERNATIVE	FUNDING SOURCE
Inadequate Cover/Shelter Plant Community Fragmentation	**Primary Corridor Habitats** Field Borders Contour Buffer Strips Filter Strips and Riparian Herbaceous Cover Riparian Forest Buffers Grassed Waterways Proper Grazing Use **Secondary Corridor Habitats**	Continuous CRP Buffers General CRP Sign-up (Blocks) EQIP • Buffer practices • Conversion to habitat incentive payments • Fish pond practices • Wetland practices

	Windbreak/Shelterbelt **Primary Block Habitats** Restoration and Management of Declining Habitats Upland Wildlife Habitat Management **Fish Habitat** Pond Grade Stabilization Structure **Wetland Habitat** – (within stream/river floodplains) Wetland Restoration/Enhancement/Creation	WRP • Wetland practices

SPECIAL ENVIRONMENTAL CONCERNS

Cultural Resources	PLANNING CONCERN
Culturally Significant and Indigenous (plant?)Species	Field Investigation for identification and evaluation of condition Documentation of identified CR's
Cultural Resource Sites	Field Investigation for identification and evaluation of condition Documentation of identified CR's

Economic & Social Considerations

	ALTERNATIVE	CONCERN
These need to be put in either "Land Use, Capital, Labor, Management Level, Profitability, Risk, or social issues and Other"		
Improving the socioeconomic health of the community	Look at recreation areas	(RD) Indian tribal College Grant Rural Business Opportunity Grant Community Facilities Water & Waste Water Program Rural Business Enterprise Grant Intermediary Relending Program
Other		

5.5 CROPLAND SUMMARY TABLE

WATERSHED NAME & CODE	NORTH AND SOUTH BLACKBIRD CREEK -				LANDUSE ACRES	48,352		
LANDUSE TYPE	CROPLAND - NON CRP				TYPICAL UNIT SIZE ACRES	80		
CONSERVATION INVESTMENT INFORMATION					ESTIMATED PARTICIPATION	60%		
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
	New Treatment	Installation Cost	Management Cost -	Technical Assist	Total Present Value Cost	Installation Cost	Annual O & M + Mgt	Total Present Value

	Units	50%	3 yrs 100%	ance 20%		50%	Costs 100%	Cost
Progressive System Acres Treated	**10,879**							
Conservation Crop Rotation (ac.) 328	0	$0	$0	$0	$0	$0	$0	$0
Grassed Waterway (ac.) 412	326	$217,856	$0	$43,571	$261,427	$217,856	$8,714	$254,564
Nutrient Management (ac.) 590	3,264	$0	$78,330	$15,666	$85,459	$0	$26,110	$40,193
Pest Management (ac.) 595	3,264	$0	$78,330	$15,666	$85,459	$0	$26,110	$40,193
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	544	$0	$32,638	$6,528	$35,608	$0	$10,879	$16,747
Terrace (ft.) 600	2,175,840	$1,142,316	$0	$228,463	$1,370,779	$1,142,316	$68,539	$1,431,027
	Subtotal	**$1,360,172**	**$189,298**	**$309,894**	**$1,838,731**	**$1,360,172**	**$140,353**	**$1,782,723**
Resource Management System (RMS) Acres Treated	**5,560**							
Conservation Crop Rotation (ac.) 328	0	$0	$0	$0	$0	$0	$0	$0
Contour Farming (ac.) 330	5,560	$0	$0	$0	$0	$0	$0	$0
Critical Area Planting (ac.) 342	278	$27,802	$0	$5,560	$33,363	$27,802	$2,780	$39,514
Filter Strip (ac.) 393	278	$41,704	$0	$8,341	$50,044	$41,704	$1,668	$48,730
Grade Stabilization Structure (no.) 410	35	$191,142	$0	$38,228	$229,370	$191,142	$3,823	$207,245
Nutrient Management (ac.) 590	3,868	$0	$92,836	$18,567	$101,284	$0	$30,945	$47,636
Pest Management (ac.) 595	3,868	$0	$92,836	$18,567	$101,284	$0	$30,945	$47,636
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	2,127	$0	$127,649	$25,530	$139,266	$0	$42,550	$65,499
Tree/Shrub Establishment (ac.) 612	56	$83,407	$0	$16,681	$100,089	$83,407	$1,668	$90,434
	Subtotal	**$344,055**	**$313,321**	**$131,475**	**$754,700**	**$344,055**	**$114,380**	**$546,693**
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	**0**	**$1,704,227**	**$502,619**	**$441,369**	**$2,593,431**	**$1,704,227**	**$254,732**	**$2,329,416**

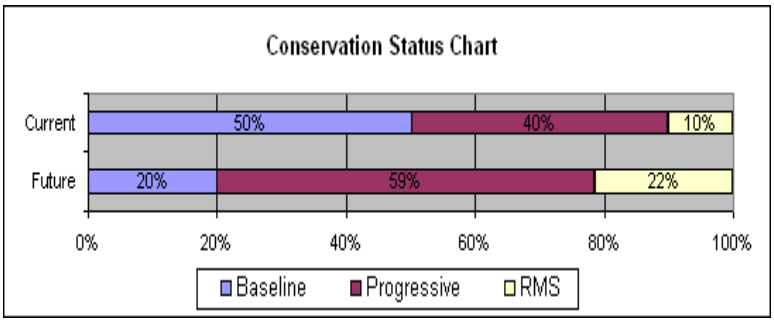


Chart Refers To	
Landuse Type	CROPLAND - NON CRP
Estimated Participation Rate	60%

Average PV Costs per Ac		
System	**Federal**	**Private**
Prog	$169	$164
RMS	$136	$98

Estimated FTE per Year		0.9

5.6 RANGELAND SUMMARY TABLE

WATERSHED NAME & CODE	NORTH AND SOUTH BLACK BIRD CREEK -				LANDUSE ACRES			8,740
LANDUSE TYPE	RANGE AND OTHER LANDS				TYPICAL UNIT SIZE ACRES			30
CONSERVATION INVESTMENT INFORMATION					ESTIMATED PARTICIPATION			60%
CONSERVATION SYSTEMS BY TREATMENT LEVELS	FUTURE	USDA INVESTMENT				PRIVATE INVESTMENT		
	New Treatment Units	Installation Cost 50%	Management Cost - 3 yrs 100%	Technical Assistance 20%	Total Present Value Cost	Installation Cost 50%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive System Acres Treated	**2,622**							
Prescribed Grazing (ac.) 528	1,049	$445,740	$0	$89,148	$534,888	$445,740	$0	$445,740
Upland Wildlife Habitat Management (ac.) 645	656	$0	$235,980	$47,196	$261,407	$0	$78,660	$126,346
	Subtotal	**$445,740**	**$235,980**	**$136,344**	**$796,295**	**$445,740**	**$78,660**	**$572,086**
Resource Management System (RMS) Acres Treated	**830**							
Prescribed Grazing (ac.) 528	677	$287,874	$0	$57,575	$345,449	$287,874	$0	$287,874
Riparian Forest Buffer (ac.) 391	25	$41,536	$0	$8,307	$49,843	$41,536	$2,492	$52,325
Tree/Shrub Establishment (ac.) 612	17	$24,909	$0	$4,982	$29,891	$24,909	$498	$27,066
Upland Wildlife Habitat Management (ac.) 645	371	$0	$133,722	$26,744	$148,130	$0	$44,574	$71,596
	Subtotal	**$354,319**	**$133,722**	**$97,608**	**$573,313**	**$354,319**	**$47,564**	**$438,861**
TOTAL ACRES TREATED / ESTIMATED TREATMENT COSTS	**1726.15**	**$800,059**	**$369,702**	**$233,952**	**$1,369,607**	**$800,059**	**$126,224**	**$1,010,947**

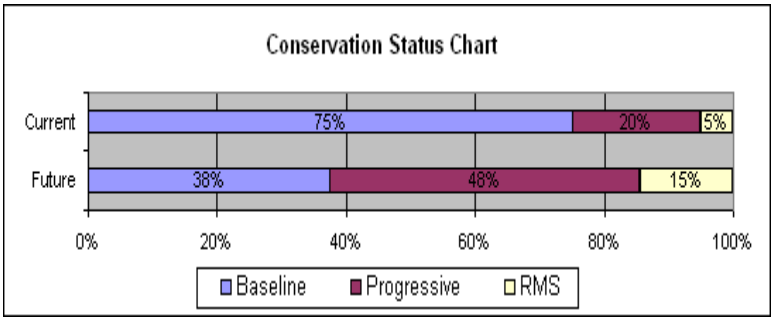


Chart Refers To	
Landuse Type	RANGE AND OTHER LANDS
Estimated Participation Rate	60%

Average PV Costs per Ac		
System	Federal	Private
Prog	$304	$218
RMS	$690	$529

Estimated FTE per Year		0.5

5.7 FUNDING SUMMARY TABLE

WATERSHED NAME & CODE	NORTH AND SOUTH BLACKBIRD CREEK -							LANDUSE ACRES			48,352
LANDUSE TYPE	CROPLAND - NON CRP							TYPICAL UNIT SIZE ACRES			80
POSSIBLE SOURCES OF FUNDING								ESTIMATED PARTICIPATION			60%
	FUTURE	USDA INVESTMENT						OTHERS			
CONSERVATION SYSTEMS BY TREATMENT LEVELS	New Treatment Units	CTA	EQIP	WRP	WHIP	CSP	CRP/CREP	Fed	State	Local	NOTES/COMMENTS
Progressive System Acres Treated	**10,879**										
Conservation Crop Rotation (ac.) 328	0	X	X								
Grassed Waterway (ac.) 412	326	X	X		X	X					
Nutrient Management (ac.) 590	3,264	X	X		X	X					
Pest Management (ac.) 595	3,264	X	X	X							
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	544	X	X								
Terrace (ft.) 600	2,175,840	X	X	X	X	X					
Resource Management System (RMS) Acres Treated	**5,560**										
Conservation Crop Rotation (ac.) 328	0	X	X								
Contour Farming (ac.) 330	5,560	X	X								
Critical Area Planting (ac.) 342	278	X	X								
Filter Strip (ac.) 393	278	X	X				X				
Grade Stabilization Structure (no.) 410	35	X	X								
Nutrient Management (ac.) 590	3,868	X	X		X	X					
Pest Management (ac.) 595	3,868	X	X	X							
Residue Management, No-Till/Strip Till/Direct Seed (ac.) 329	2,127	X	X								
Tree/Shrub Establishment (ac.) 612	56	X	X	X							

Chapter 6

References

USDA, NRCS, Field Office Technical Guide, planning and practice information. http://www.nrcs.usda.gov/technical/efotg/

Omaha Tribe of Nebraska, Community Environmental Profile, http://www.mnisose.org/profiles/omaha.html.

Maps & Data By Chapter

Chapter 1

Watershed Data, USDA NRCS Hydrologic Unit Data, http://datagateway.nrcs.usda.gov/.

Chapter 2

Digital Elevation Data (DEM), USDA NRCS, http://datagateway.nrcs.usda.gov/.

Hydrography Data, USDA NRCS, http://datagateway.nrcs.usda.gov/.

National Ag Statistics Service 2006 Land Cover Data, http://www.nass.usda.gov/research/Cropland/SARS1a.htm

Depth to Water Table Data, University of Nebraska Conservation & Survey Division, http://www.snr.unl.edu/Data/NebrGIS.asp.

Irrigated/Non Irrigated Acres, USDA FSA 2006 Compliance Database.

CAFO Data, Nebraska Department of Environmental Quality 2004 Database, http://www.deq.state.ne.us/.

Common Resource Areas, USDA NRCS, http://datagateway.nrcs.usda.gov/.

Chapter 3

Erodibility Index for Soils, USDA NRCS SSURGO Soils Data, http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/.

Common Land Unit Data, USDA FSA 2005 Database, http://datagateway.nrcs.usda.gov/.

Ground Water Level Change Data, University of Nebraska Conservation & Survey Division, http://www.snr.unl.edu/Data/NebrGIS.asp.

Soil Permeability, USDA NRCS SSURGO Soils Data, http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/.

Chapter 4

Watershed Data, USDA NRCS Hydrologic Unit Data, http://datagateway.nrcs.usda.gov/.

Transportation Data, USDA NRCS, http://datagateway.nrcs.usda.gov/.

Chapter 5

Digital Elevation Data (DEM), USDA NRCS, http://datagateway.nrcs.usda.gov/.

Hydrography Data, USDA NRCS, http://datagateway.nrcs.usda.gov/.

Erodibility Index for Soils, USDA NRCS SSURGO Soils Data, http://www.ncgc.nrcs.usda.gov/products/datasets/ssurgo/.

Common Land Unit Data, USDA FSA 2005 Database, http://datagateway.nrcs.usda.gov/.

APPENDIX A

SUPPORT MAPS and FIGURES

CHAPTER 1

Figure 1

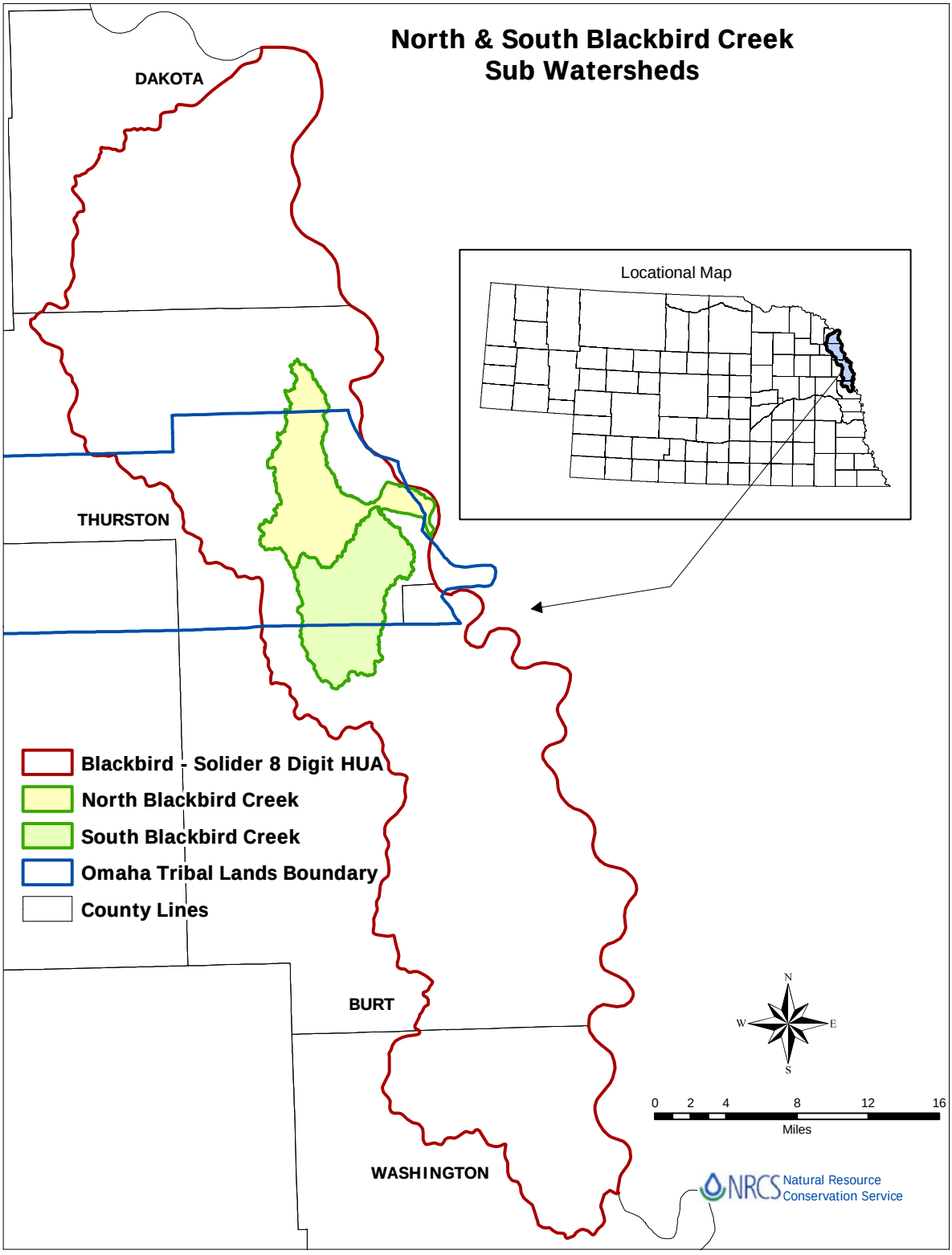


Figure 2

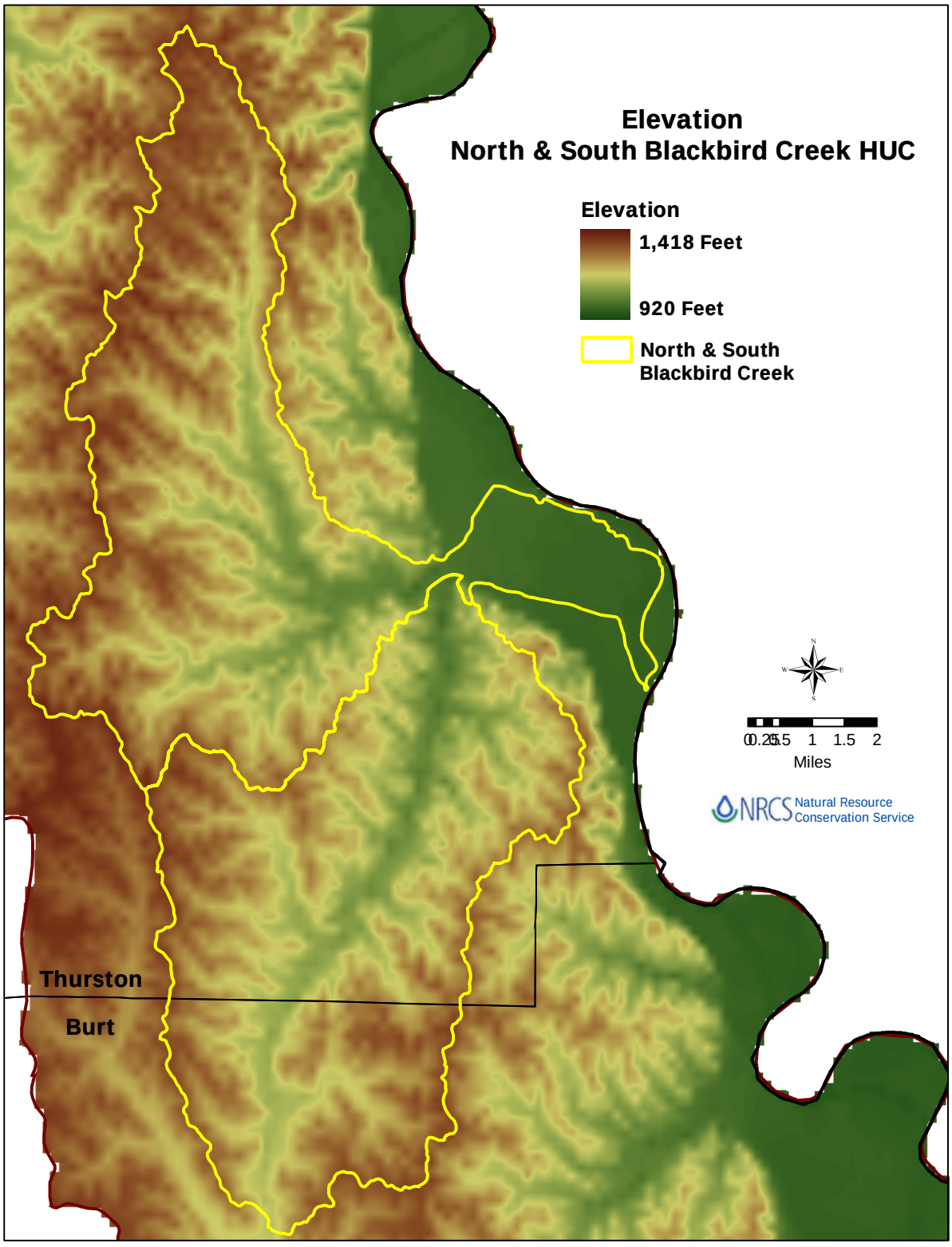

Elevation
North & South Blackbird Creek HUC
Elevation
1,418 Feet
920 Feet
North & South
Blackbird Creek
0 0.25 0.5 1 1.5 2
Miles
NRCS Natural Resource
Conservation Service
Thurston
Burt

Figure 3

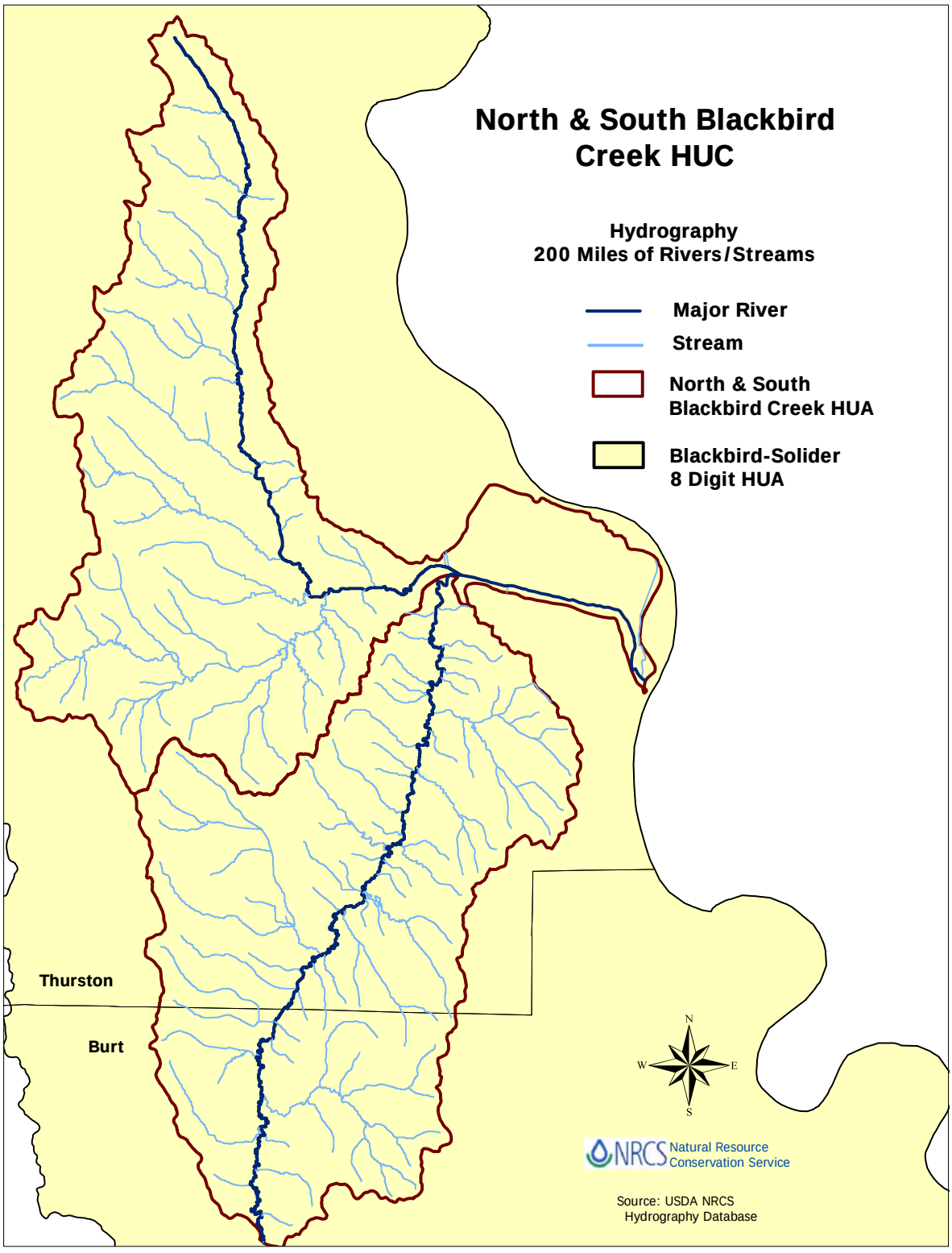

North & South Blackbird Creek HUC
Hydrography
200 Miles of Rivers/Streams
Major River
Stream
North & South Blackbird Creek HUA
Blackbird-Solider 8 Digit HUA
Thurston
Burt
N
W
E
S
NRCS Natural Resource Conservation Service
Source: USDA NRCS Hydrography Database

Figure 4

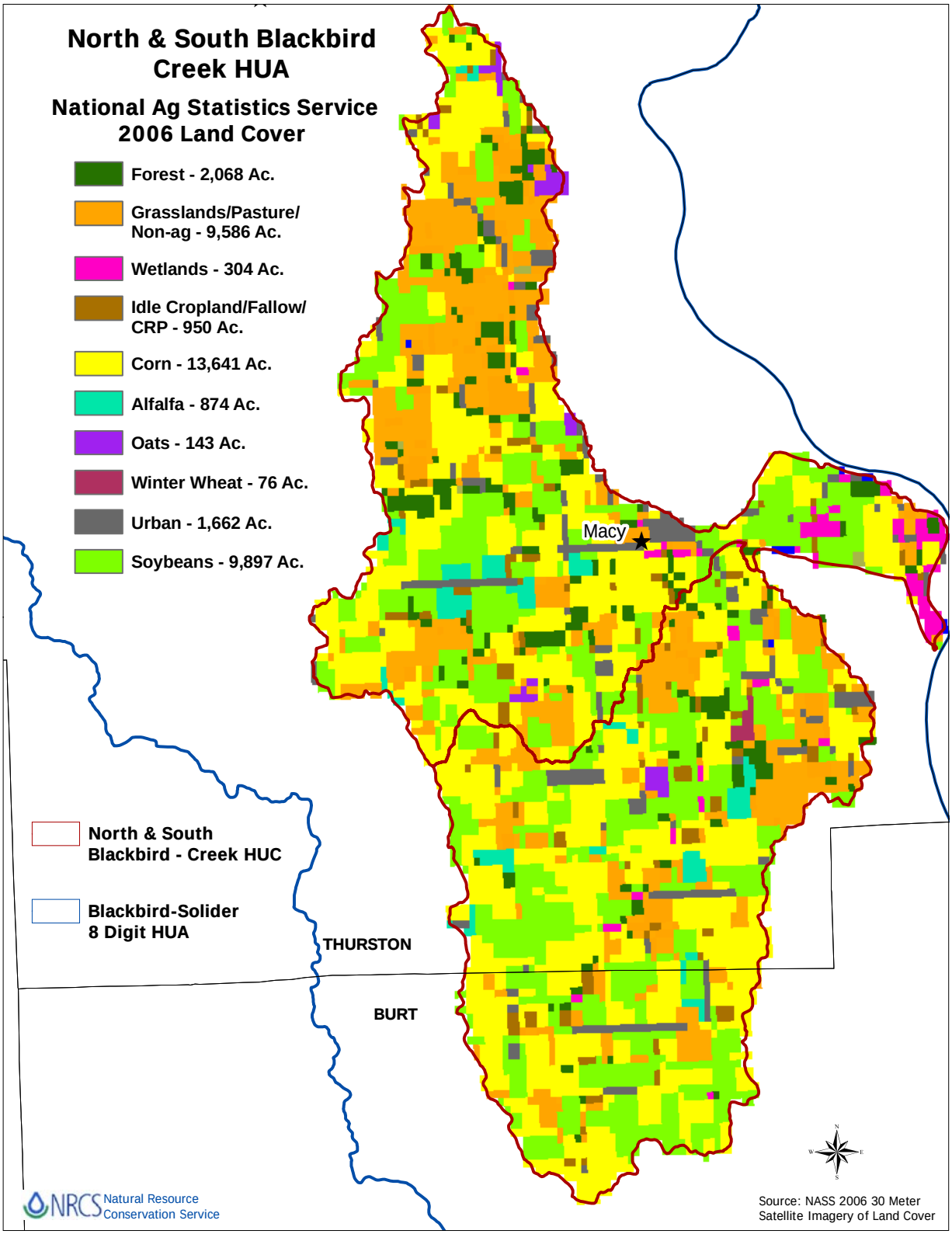

North & South Blackbird Creek HUA
National Ag Statistics Service 2006 Land Cover
Forest - 2,068 Ac.
Grasslands/Pasture/ Non-ag - 9,586 Ac.
Wetlands - 304 Ac.
Idle Cropland/Fallow/ CRP - 950 Ac.
Corn - 13,641 Ac.
Alfalfa - 874 Ac.
Oats - 143 Ac.
Winter Wheat - 76 Ac.
Urban - 1,662 Ac.
Soybeans - 9,897 Ac.
Macy
North & South Blackbird - Creek HUC
Blackbird-Solider 8 Digit HUA
THURSTON
BURT
NRCS Natural Resource Conservation Service
Source: NASS 2006 30 Meter Satellite Imagery of Land Cover

Figure 5

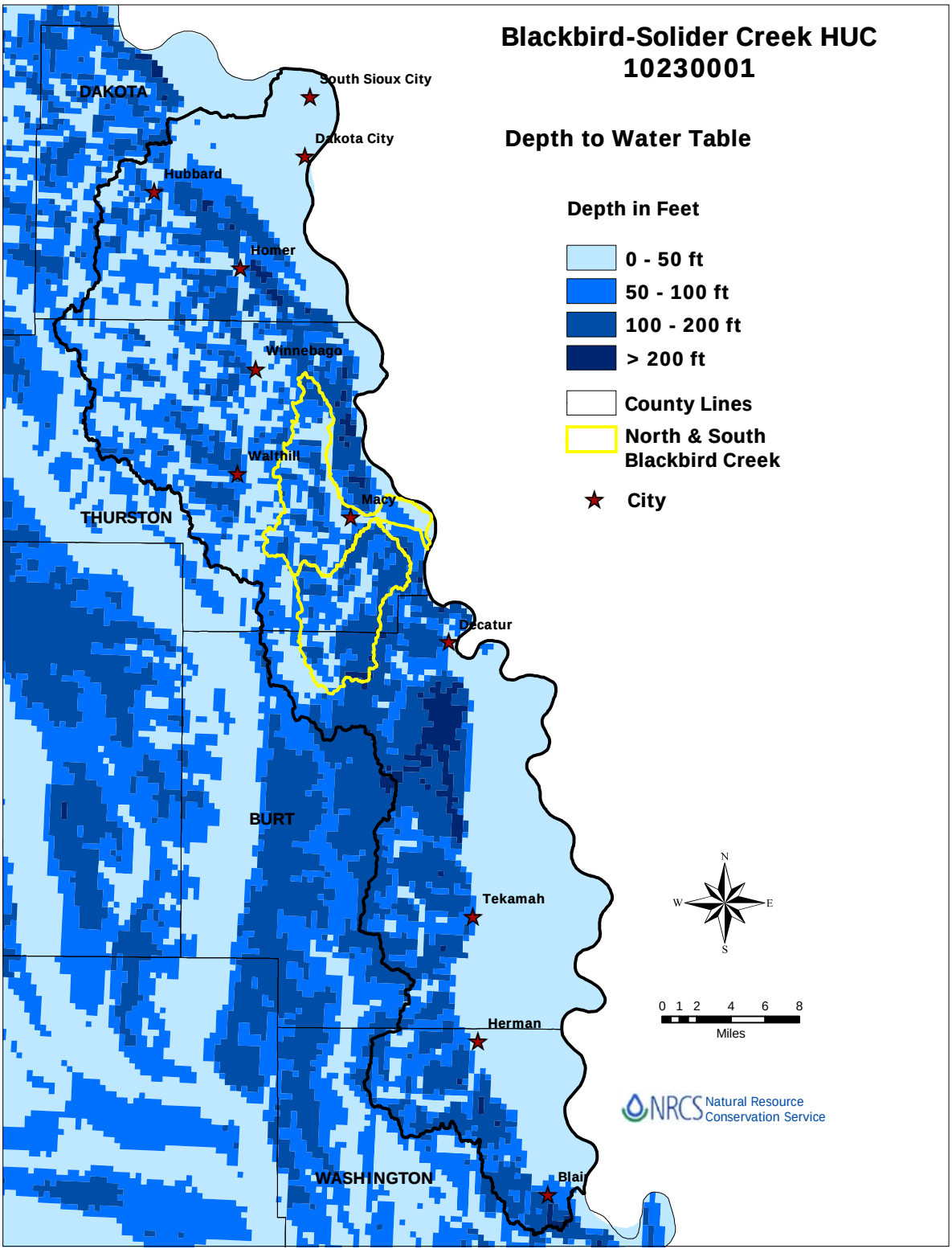

Blackbird-Solider Creek HUC
10230001
Depth to Water Table
Depth in Feet
0 - 50 ft
50 - 100 ft
100 - 200 ft
> 200 ft
County Lines
North & South
Blackbird Creek
City
DAKOTA
South Sioux City
Dakota City
Hubbard
Homer
Winnebago
Walthill
Macy
THURSTON
Decatur
BURT
Tekamah
Herman
WASHINGTON
Blair
N
W
E
S
0 1 2 4 6 8
Miles
NRCS Natural Resource
Conservation Service

Figure 6

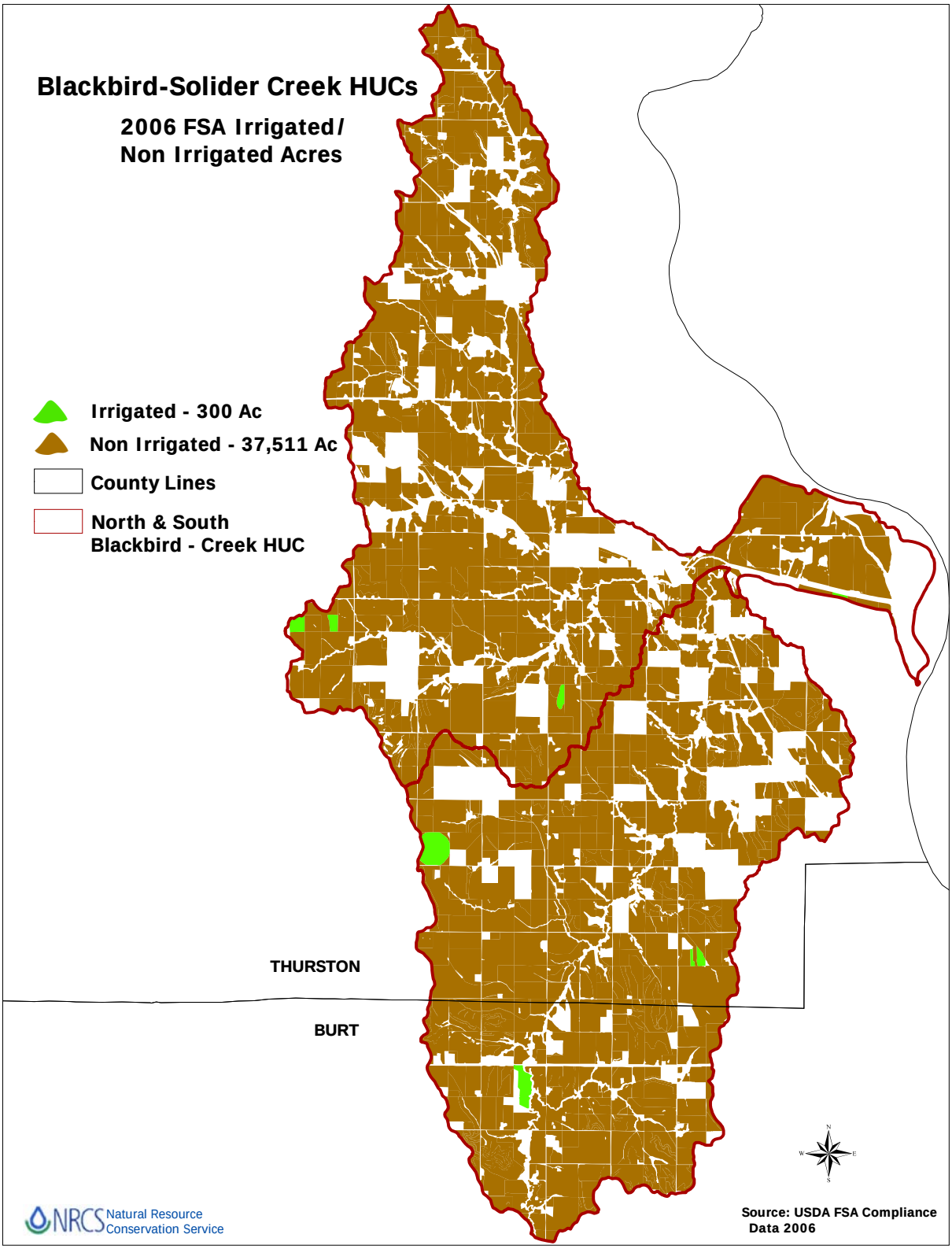

Blackbird-Solider Creek HUCs
2006 FSA Irrigated/
Non Irrigated Acres
Irrigated - 300 Ac
Non Irrigated - 37,511 Ac
County Lines
North & South
Blackbird - Creek HUC
THURSTON
BURT
NRCS Natural Resource Conservation Service
Source: USDA FSA Compliance Data 2006

Figure 7

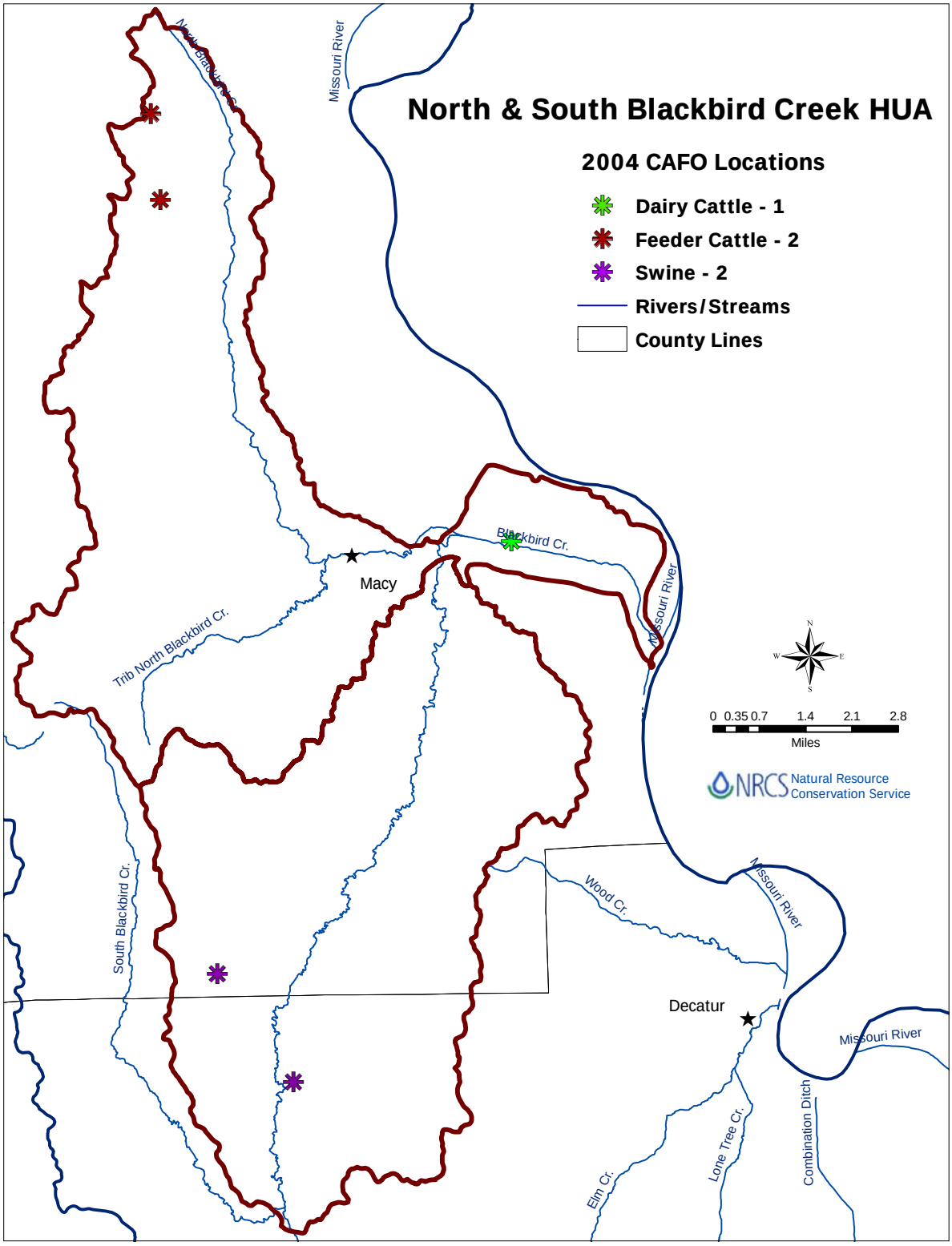

North & South Blackbird Creek HUA
2004 CAFO Locations
Dairy Cattle - 1
Feeder Cattle - 2
Swine - 2
Rivers/Streams
County Lines
Missouri River
Blackbird Cr.
Macy
Trib North Blackbird Cr.
Missouri River
0 0.35 0.7 1.4 2.1 2.8
Miles
NRCS Natural Resource Conservation Service
South Blackbird Cr.
Wood Cr.
Missouri River
Decatur
Missouri River
Combination Ditch
Lone Tree Cr.
Elm Cr.

Figure 7a

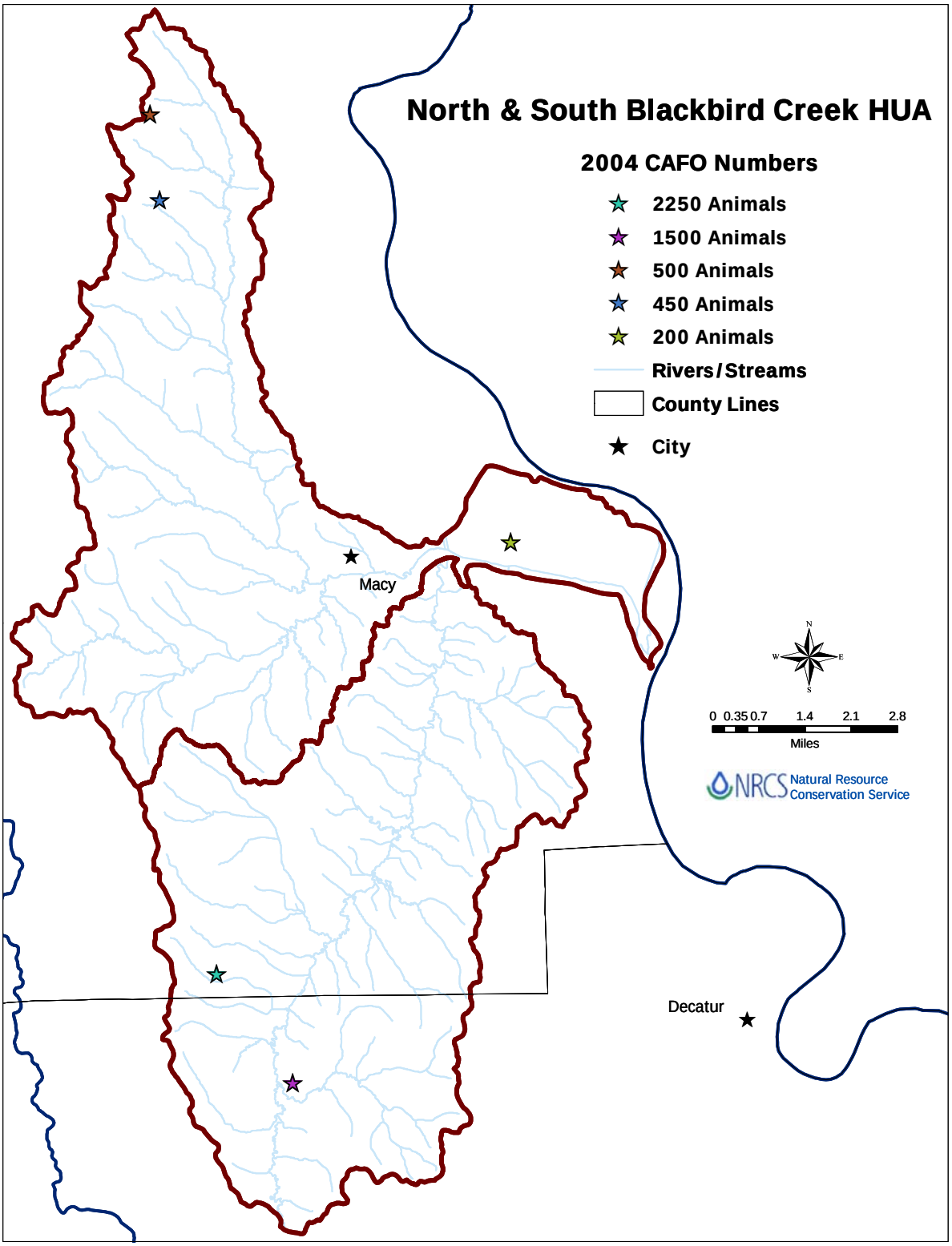
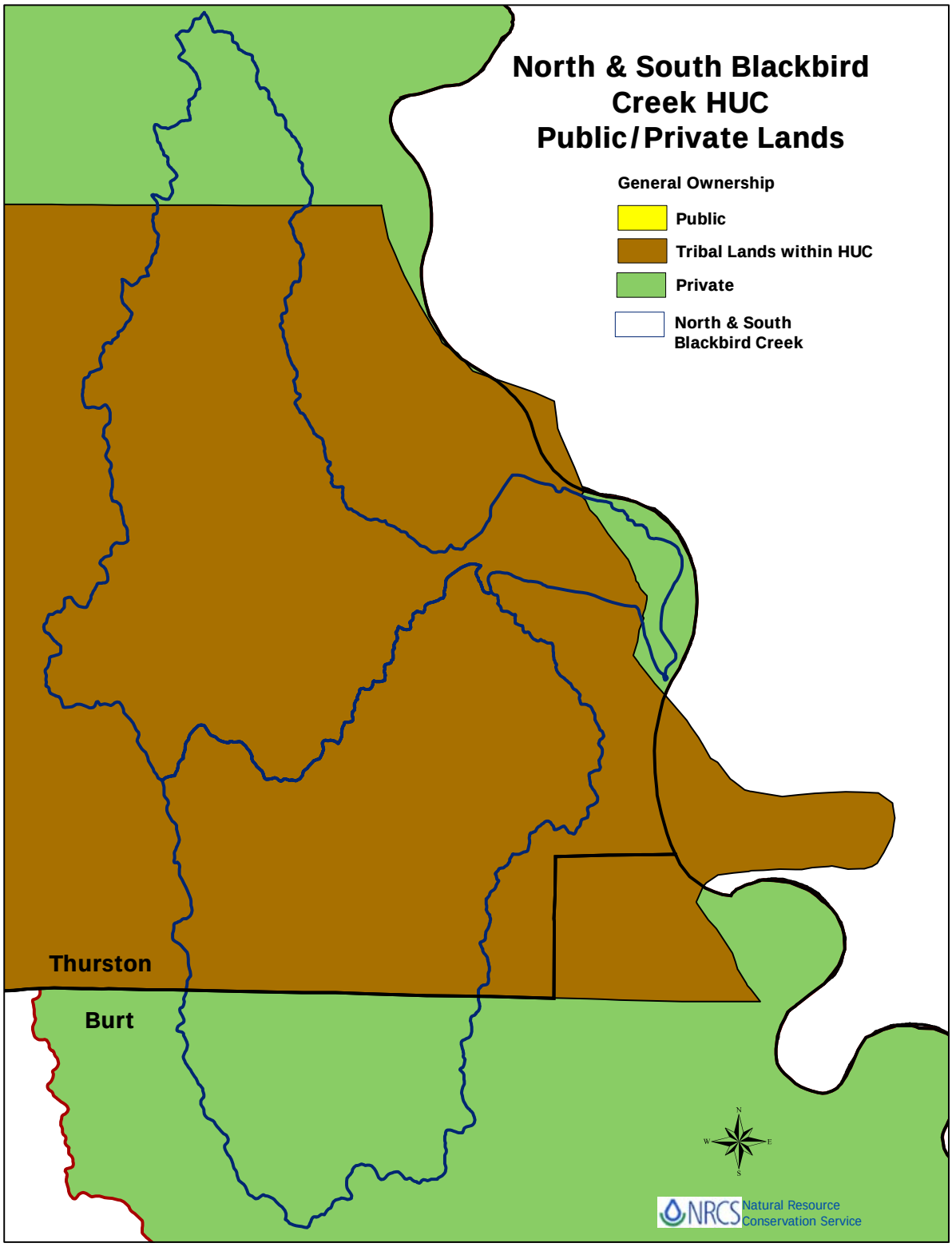
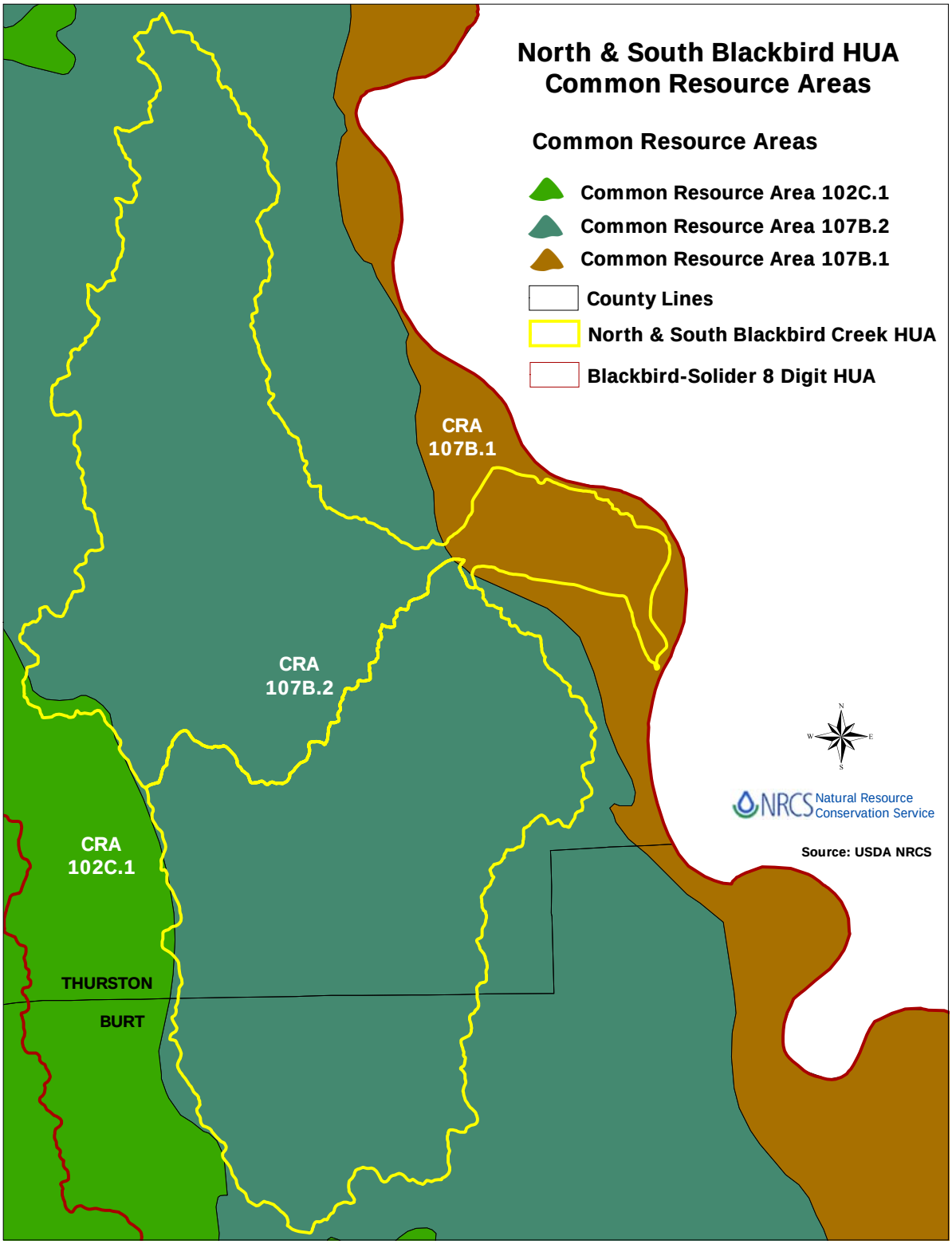

North & South Blackbird Creek HUA
2004 CAFO Numbers
2250 Animals
1500 Animals
500 Animals
450 Animals
200 Animals
Rivers/Streams
County Lines
City
Macy
Decatur
N
W
E
S
0 0.35 0.7 1.4 2.1 2.8
Miles
NRCS Natural Resource Conservation Service

Figure 8


North & South Blackbird Creek HUC
Public/Private Lands
General Ownership
Public
Tribal Lands within HUC
Private
North & South Blackbird Creek
Thurston
Burt
N
W
E
S
NRCS Natural Resource Conservation Service

CHAPTER 2

Figure 9.



CHAPTER 3

Figure 10

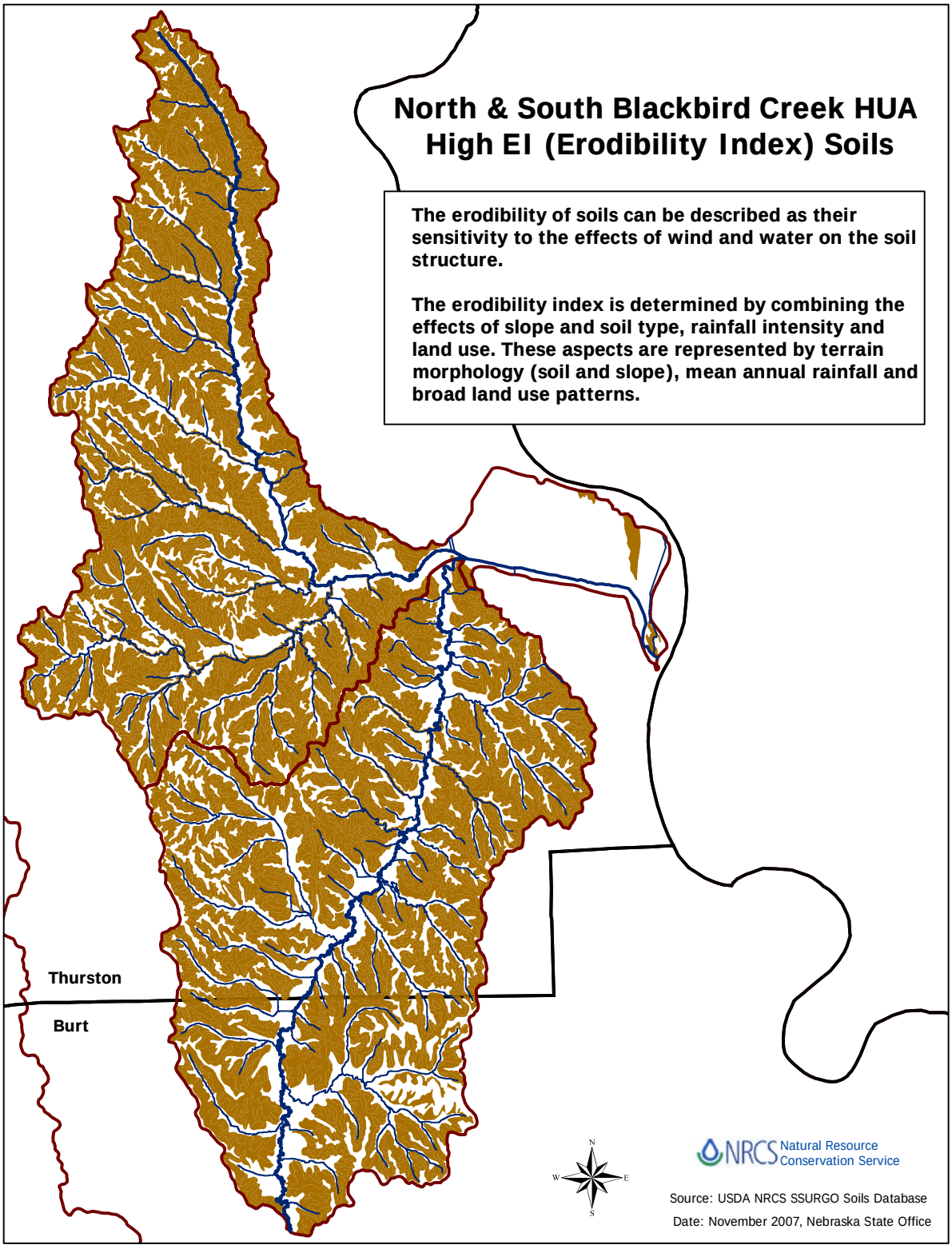


Figure 11

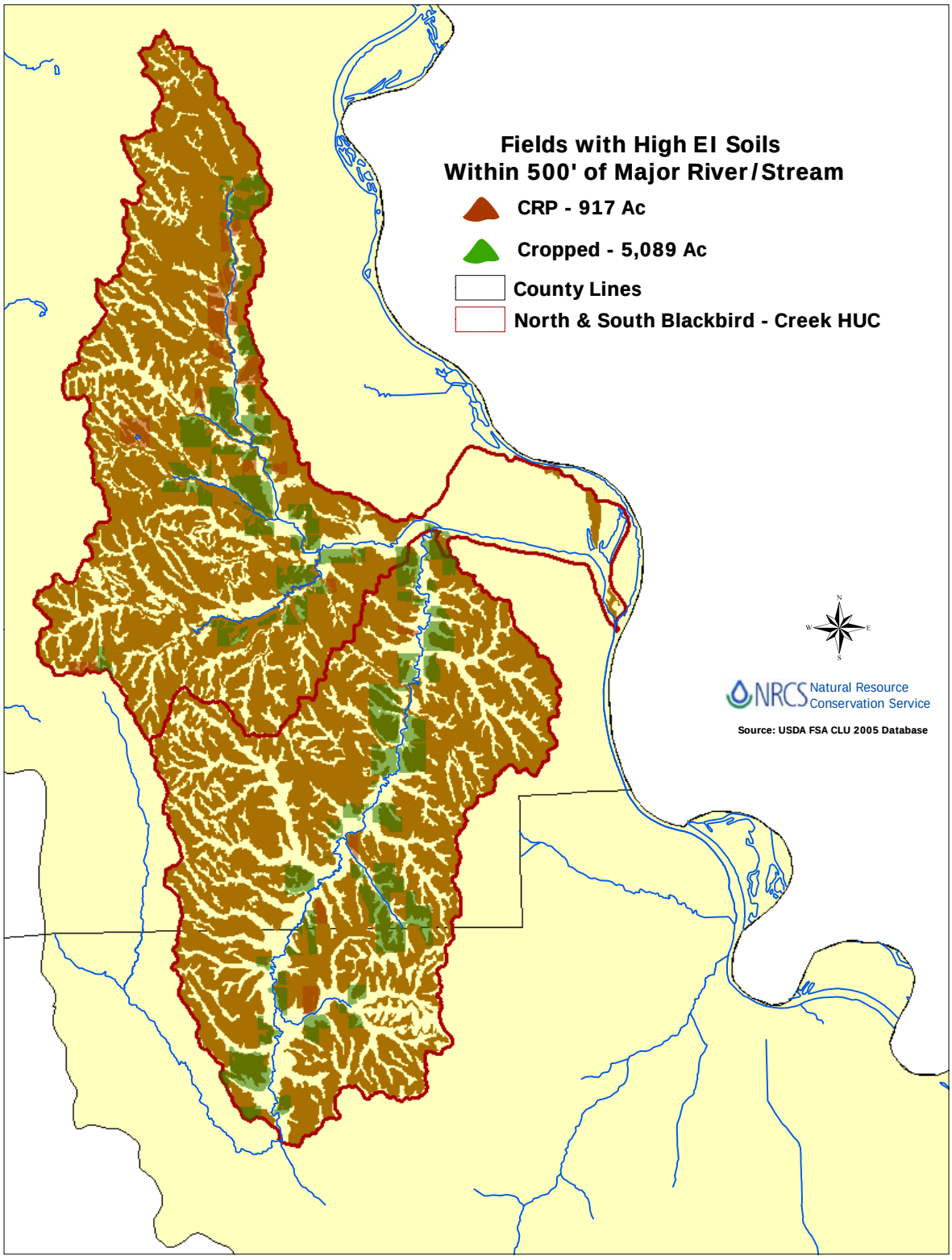

Fields with High EI Soils
Within 500' of Major River/Stream
CRP - 917 Ac
Cropped - 5,089 Ac
County Lines
North & South Blackbird - Creek HUC
N
W
E
S
NRCS Natural Resource Conservation Service
Source: USDA FSA CLU 2005 Database

Figure 12

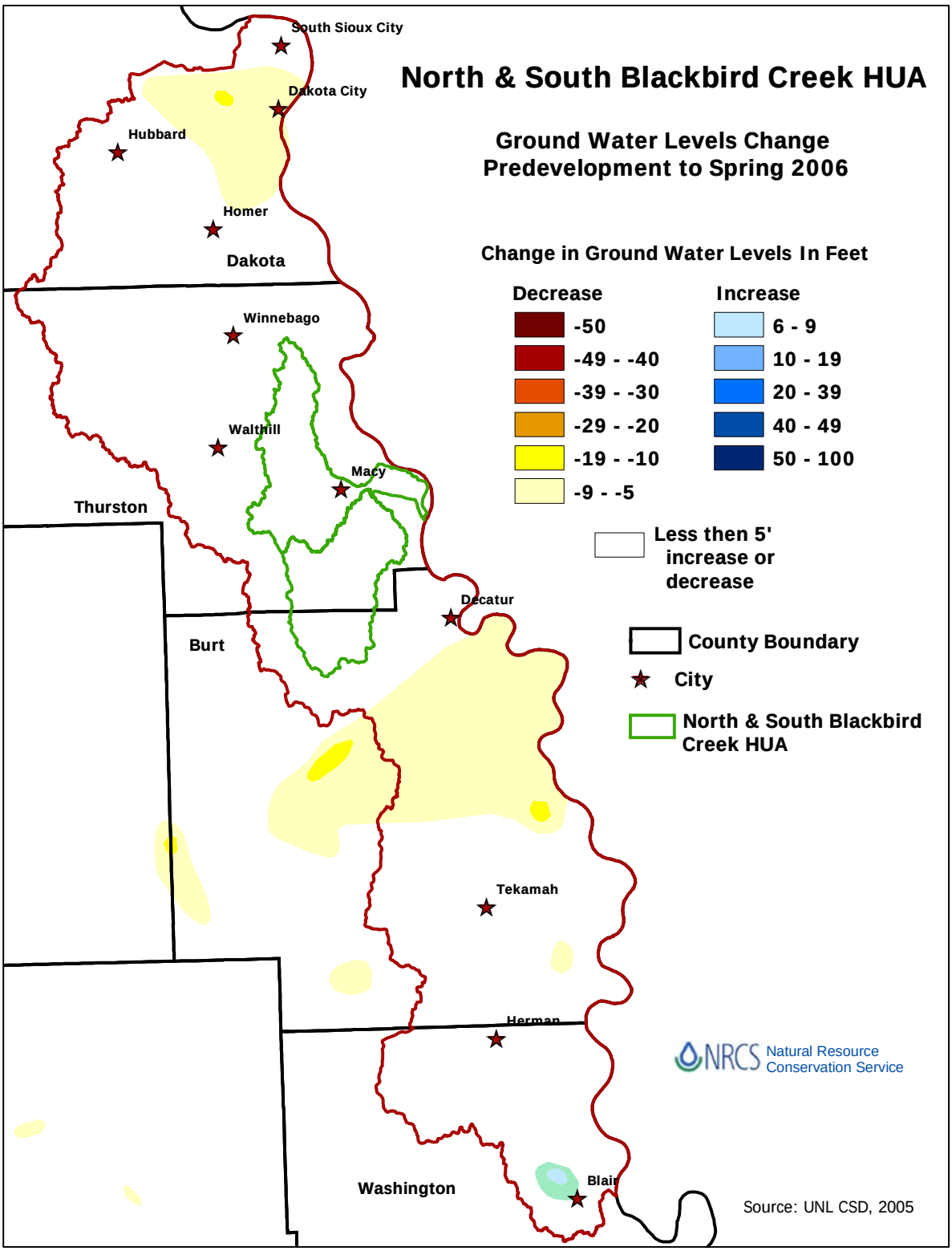

North & South Blackbird Creek HUA
Ground Water Levels Change
Predevelopment to Spring 2006
Change in Ground Water Levels In Feet
Decrease
-50
-49 - -40
-39 - -30
-29 - -20
-19 - -10
-9 - -5
Increase
6 - 9
10 - 19
20 - 39
40 - 49
50 - 100
Less then 5' increase or decrease
County Boundary
City
North & South Blackbird Creek HUA
South Sioux City
Dakota City
Hubbard
Homer
Dakota
Winnebago
Walthill
Macy
Thurston
Decatur
Burt
Tekamah
Herman
Washington
Blair
NRCS Natural Resource Conservation Service
Source: UNL CSD, 2005

Figure 12a

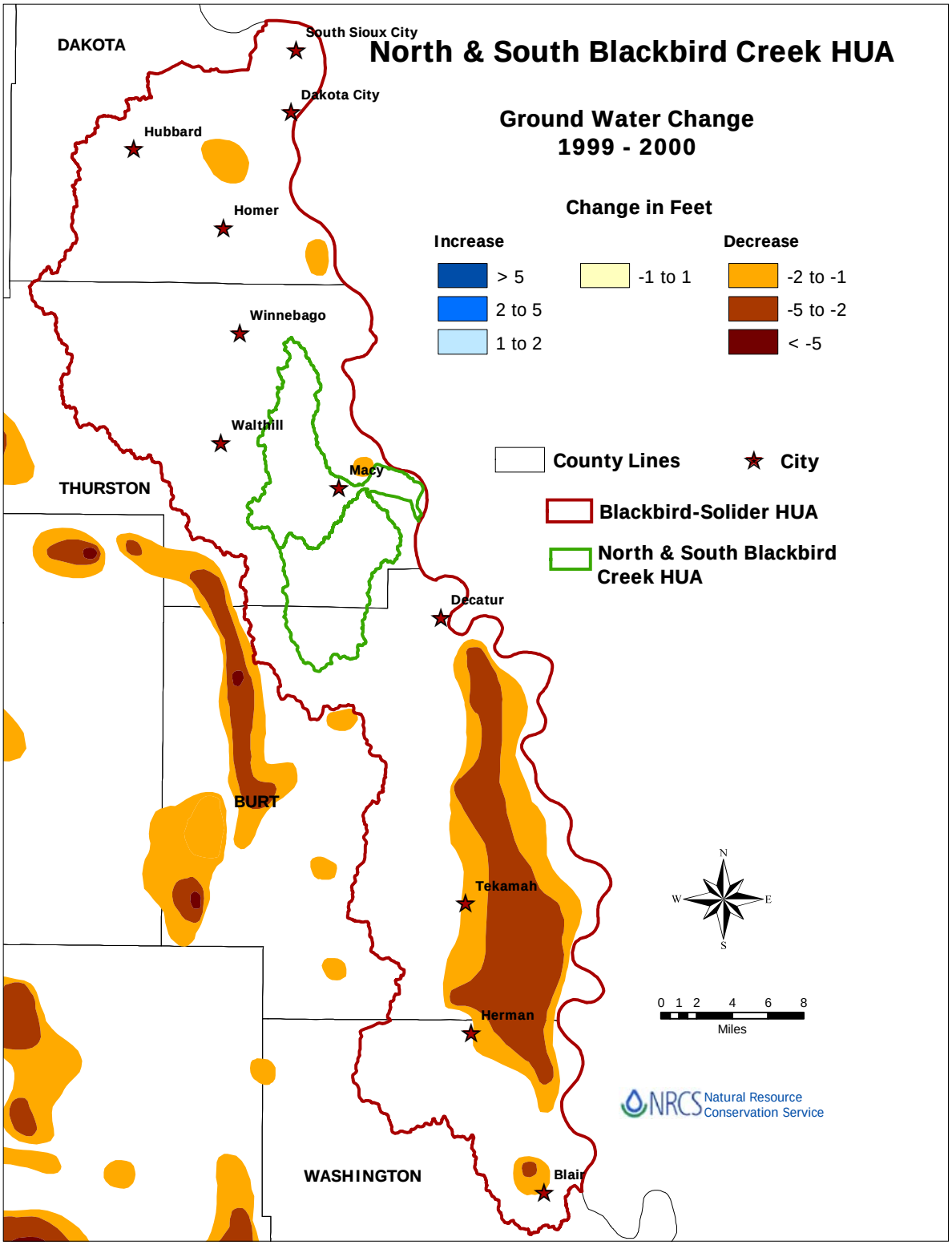

North & South Blackbird Creek HUA
Ground Water Change
1999 - 2000
Change in Feet
Increase
> 5
2 to 5
1 to 2
-1 to 1
Decrease
-2 to -1
-5 to -2
< -5
County Lines
City
Blackbird-Solider HUA
North & South Blackbird Creek HUA
DAKOTA
South Sioux City
Dakota City
Hubbard
Homer
Winnebago
Walthill
Macy
THURSTON
Decatur
BURT
Tekamah
Herman
WASHINGTON
Blair
N
W
E
S
0 1 2 4 6 8
Miles
NRCS Natural Resource Conservation Service

Figure 12b

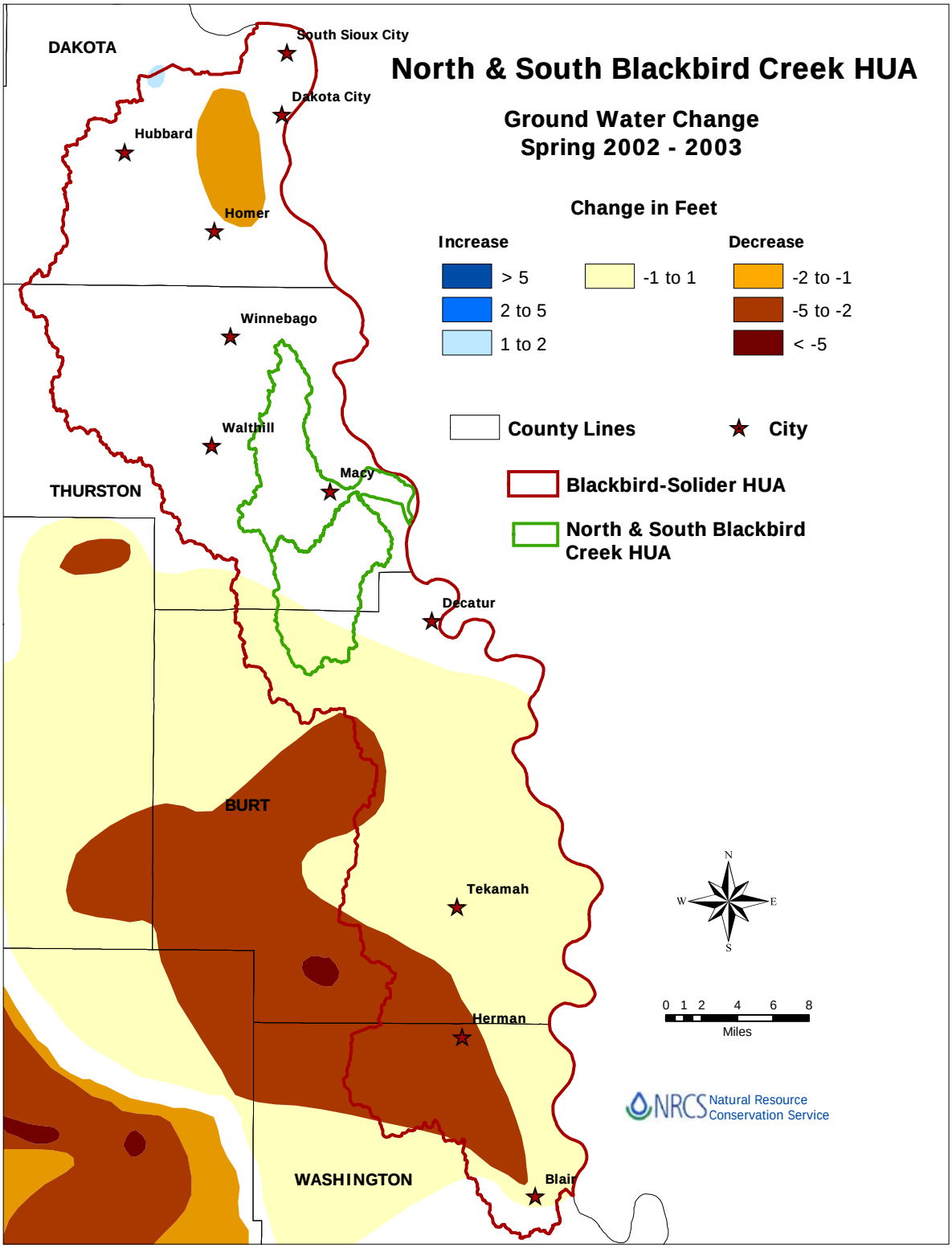

North & South Blackbird Creek HUA
Ground Water Change
Spring 2002 - 2003
Change in Feet
Increase
> 5
2 to 5
1 to 2
-1 to 1
Decrease
-2 to -1
-5 to -2
< -5
County Lines
City
Blackbird-Solider HUA
North & South Blackbird Creek HUA
DAKOTA
THURSTON
BURT
WASHINGTON
South Sioux City
Dakota City
Hubbard
Homer
Winnebago
Walthill
Macy
Decatur
Tekamah
Herman
Blair
N
W
E
S
0 1 2 4 6 8
Miles
NRCS Natural Resource Conservation Service

Figure 12c

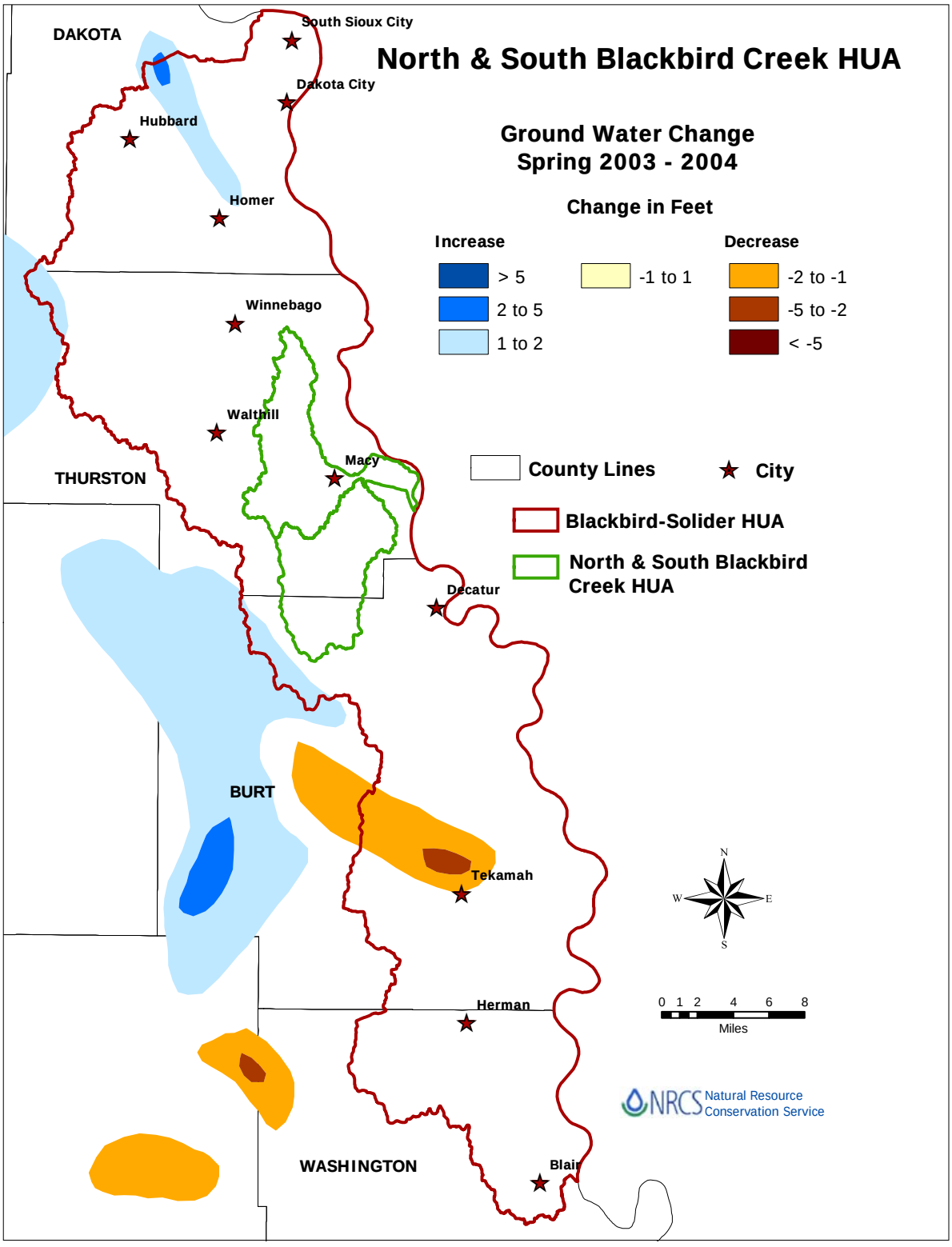

North & South Blackbird Creek HUA
Ground Water Change
Spring 2003 - 2004
Change in Feet
Increase
> 5
2 to 5
1 to 2
-1 to 1
Decrease
-2 to -1
-5 to -2
< -5
County Lines
City
Blackbird-Solider HUA
North & South Blackbird Creek HUA
South Sioux City
Dakota City
Hubbard
Homer
Winnebago
Walthill
Macy
Decatur
Tekamah
Herman
Blair
DAKOTA
THURSTON
BURT
WASHINGTON
N
W
E
S
0 1 2 4 6 8
Miles
NRCS Natural Resource Conservation Service

Figure 12d

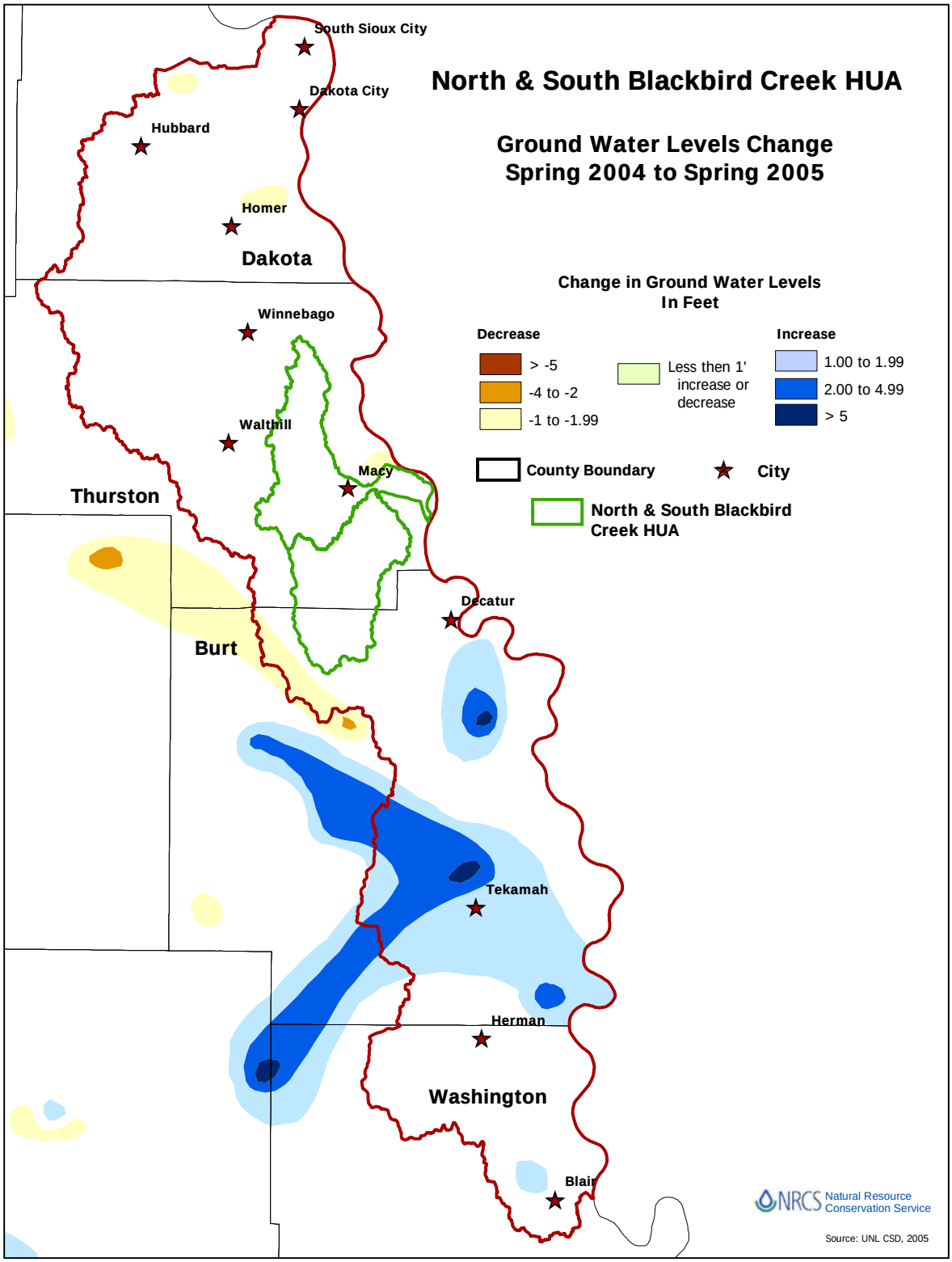

North & South Blackbird Creek HUA
Ground Water Levels Change
Spring 2004 to Spring 2005
Change in Ground Water Levels
In Feet
Decrease
> -5
-4 to -2
-1 to -1.99
Less then 1' increase or decrease
Increase
1.00 to 1.99
2.00 to 4.99
> 5
County Boundary
City
North & South Blackbird Creek HUA
South Sioux City
Dakota City
Hubbard
Homer
Dakota
Winnebago
Walthill
Macy
Thurston
Decatur
Burt
Tekamah
Herman
Washington
Blair
NRCS Natural Resource Conservation Service
Source: UNL CSD, 2005

Figure 12e

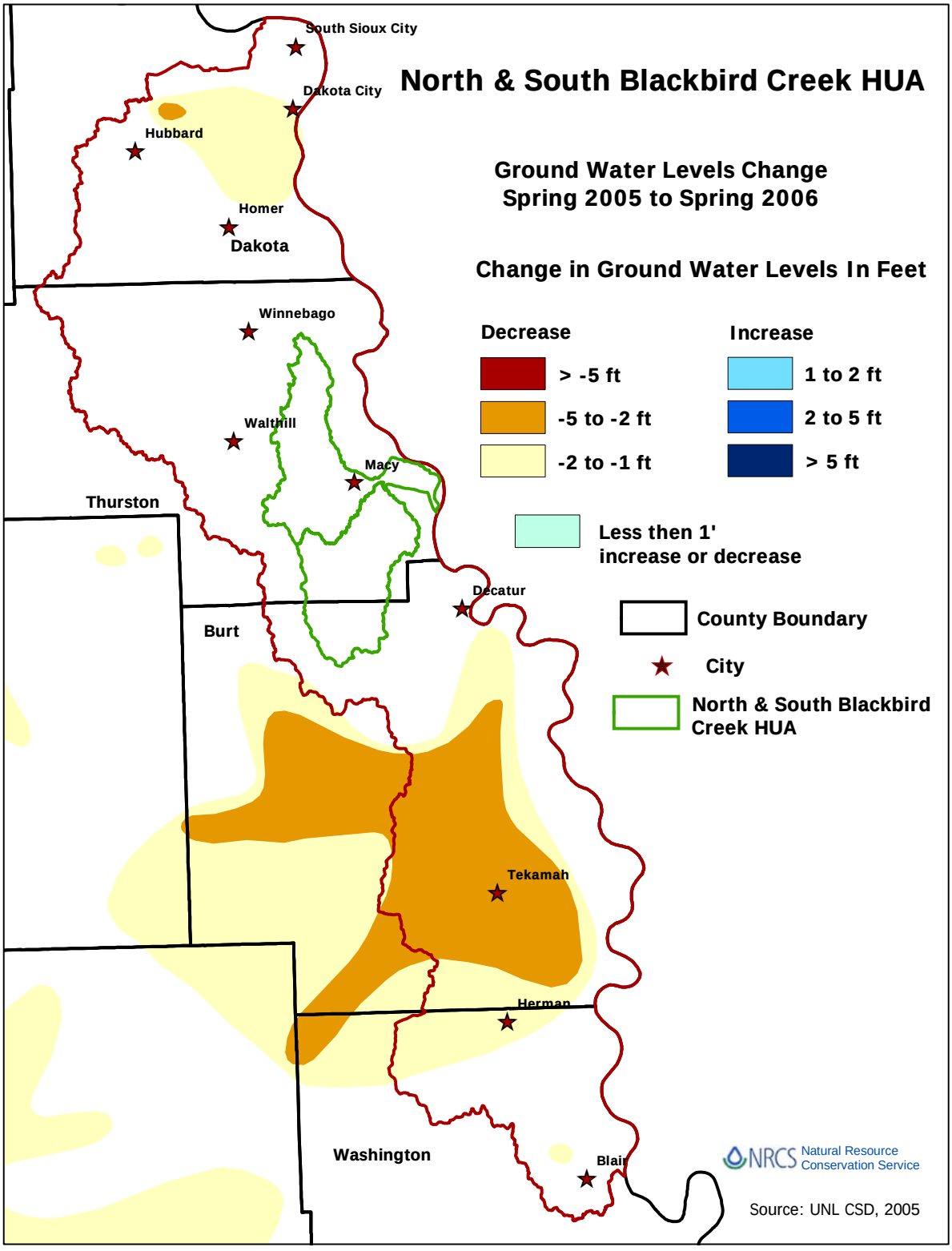

North & South Blackbird Creek HUA
Ground Water Levels Change
Spring 2005 to Spring 2006
Change in Ground Water Levels In Feet
Decrease
> -5 ft
-5 to -2 ft
-2 to -1 ft
Increase
1 to 2 ft
2 to 5 ft
> 5 ft
Less then 1'
increase or decrease
County Boundary
City
North & South Blackbird
Creek HUA
South Sioux City
Dakota City
Hubbard
Homer
Dakota
Winnebago
Walthill
Macy
Thurston
Decatur
Burt
Tekamah
Herman
Washington
Blair
NRCS Natural Resource
Conservation Service
Source: UNL CSD, 2005

Figure 12f

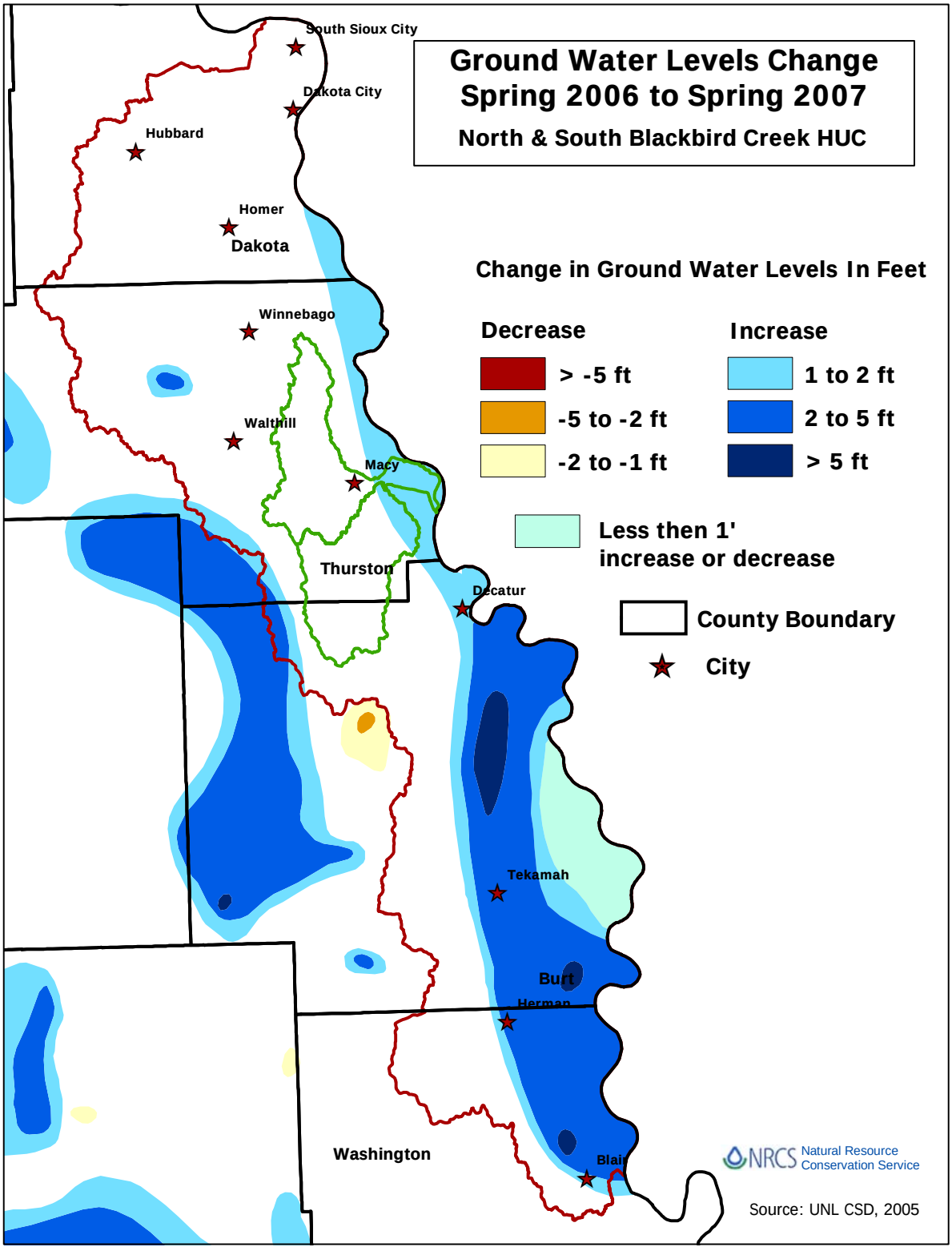
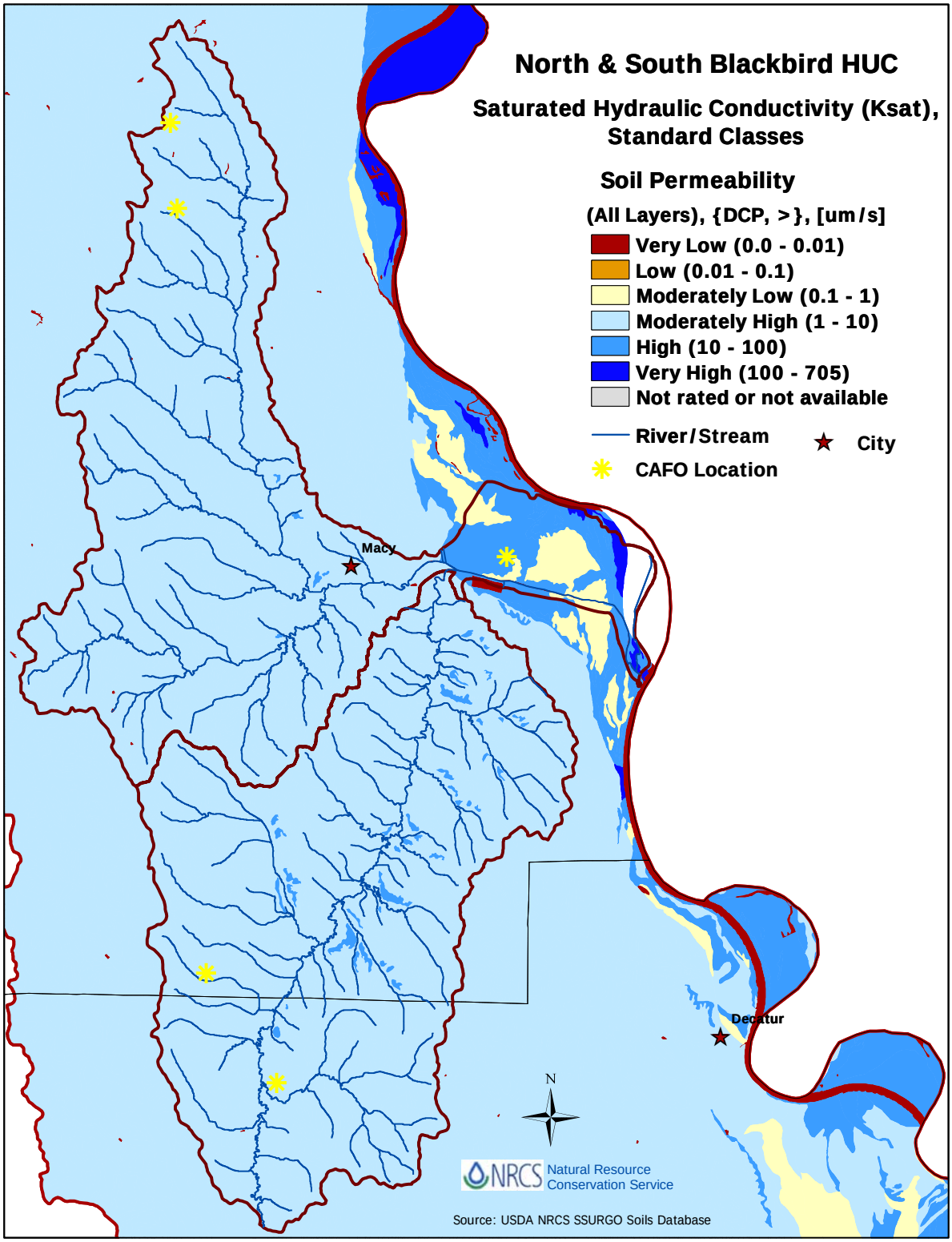

Ground Water Levels Change
Spring 2006 to Spring 2007
North & South Blackbird Creek HUC
South Sioux City
Dakota City
Hubbard
Homer
Dakota
Winnebago
Walthill
Macy
Thurston
Decatur
Tekamah
Burt
Herman
Washington
Blair
Change in Ground Water Levels In Feet
Decrease
> -5 ft
-5 to -2 ft
-2 to -1 ft
Increase
1 to 2 ft
2 to 5 ft
> 5 ft
Less then 1' increase or decrease
County Boundary
City
NRCS Natural Resource Conservation Service
Source: UNL CSD, 2005

Figure 13


North & South Blackbird HUC
Saturated Hydraulic Conductivity (Ksat), Standard Classes
Soil Permeability
(All Layers), {DCP, >}, [um/s]
Very Low (0.0 - 0.01)
Low (0.01 - 0.1)
Moderately Low (0.1 - 1)
Moderately High (1 - 10)
High (10 - 100)
Very High (100 - 705)
Not rated or not available
River/Stream
City
CAFO Location
Macy
Decatur
N
NRCS Natural Resource Conservation Service
Source: USDA NRCS SSURGO Soils Database

CHAPTER 4

Figure 14

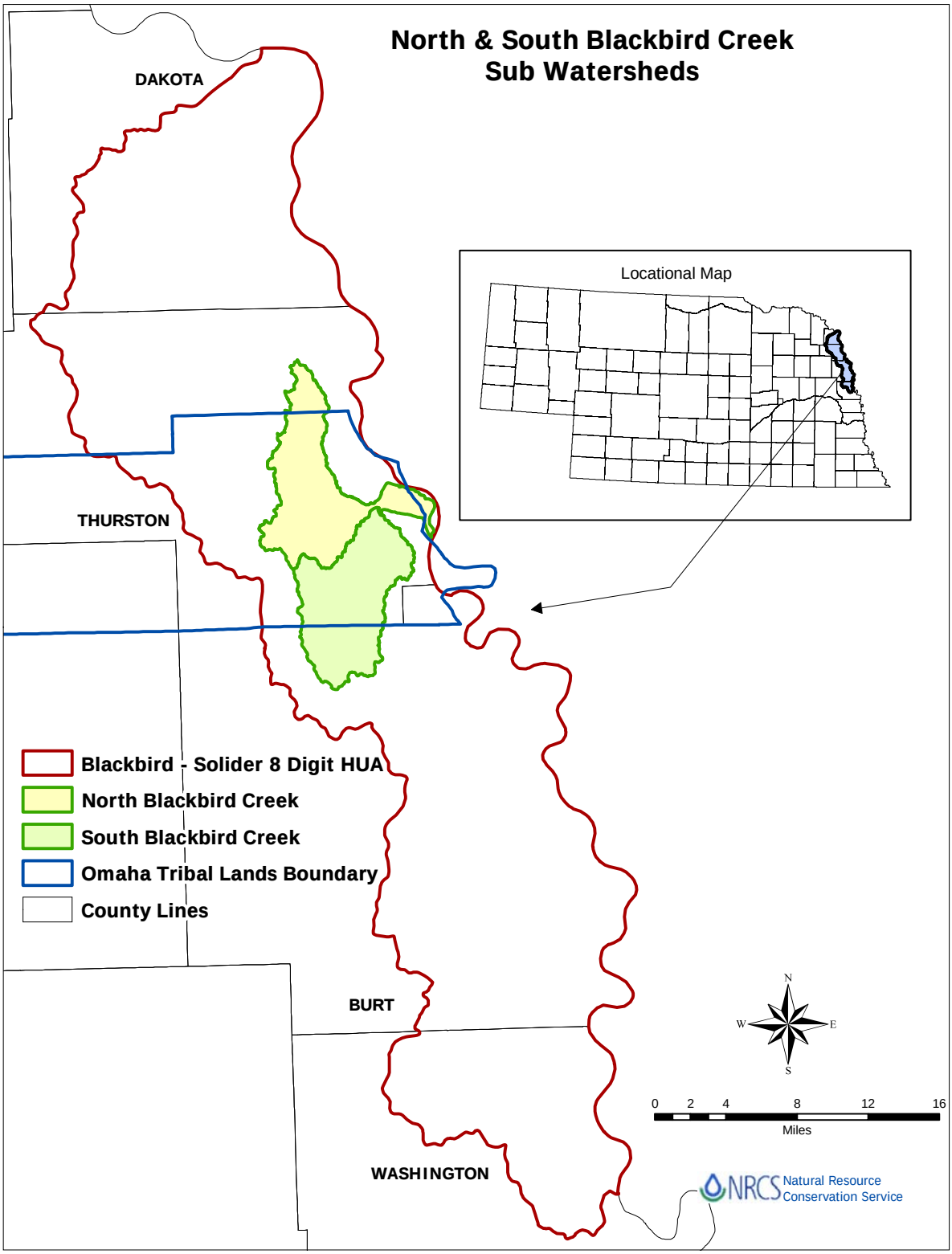
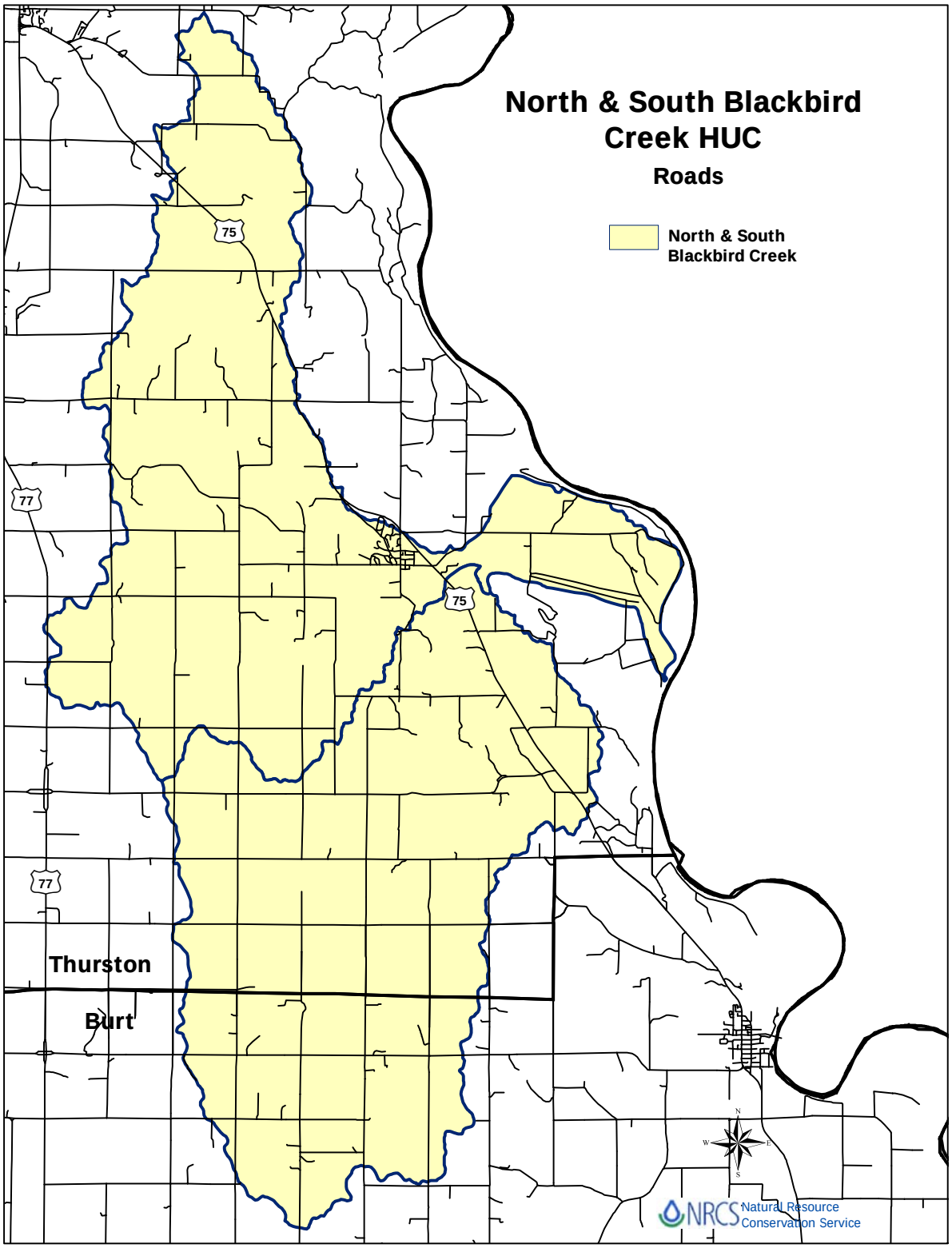


Figure 15


North & South Blackbird Creek HUC
Roads
North & South Blackbird Creek
75
77
75
77
Thurston
Burt
N
W
E
S
NRCS Natural Resource Conservation Service

CHAPTER 5

Figure 16

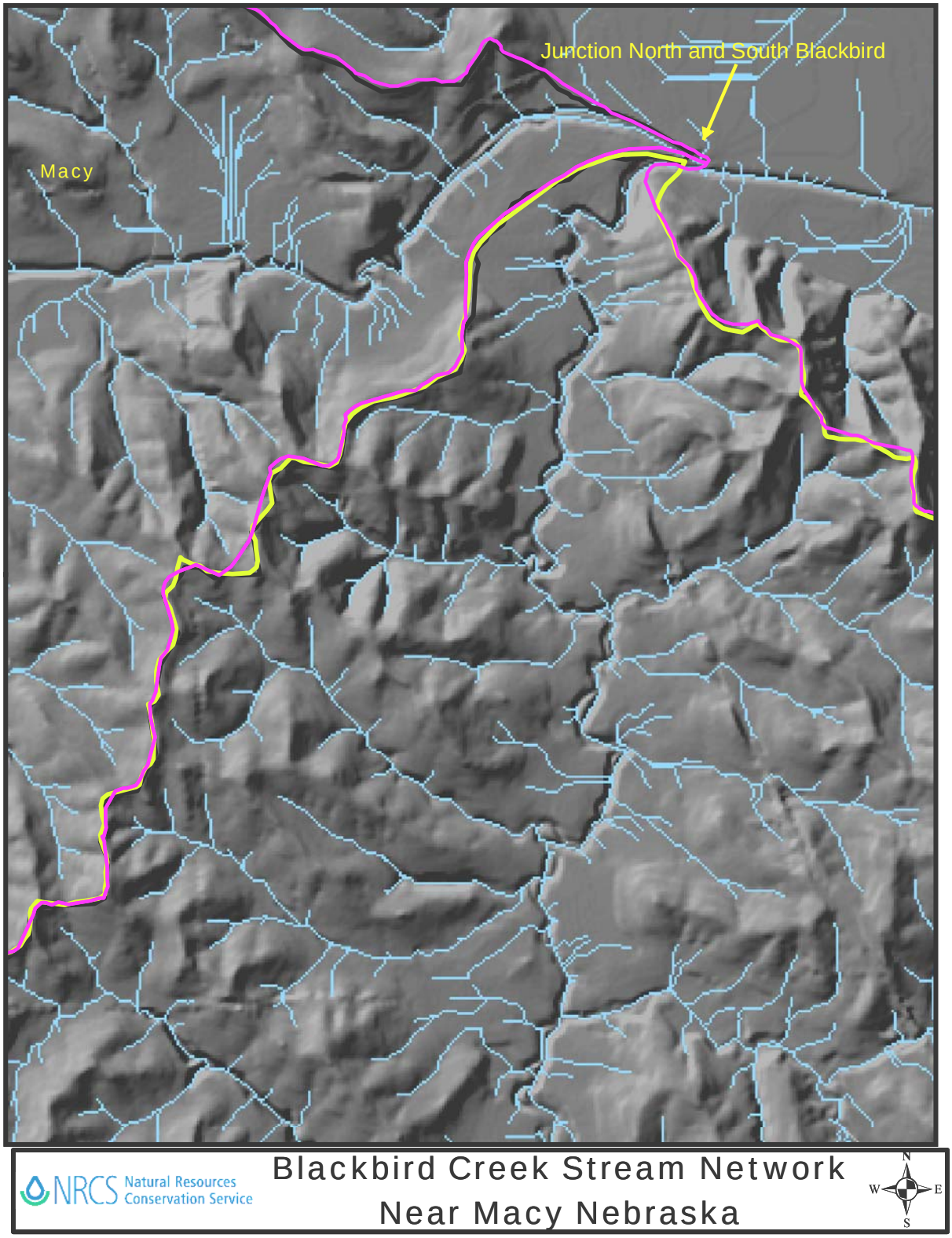


Figure 17

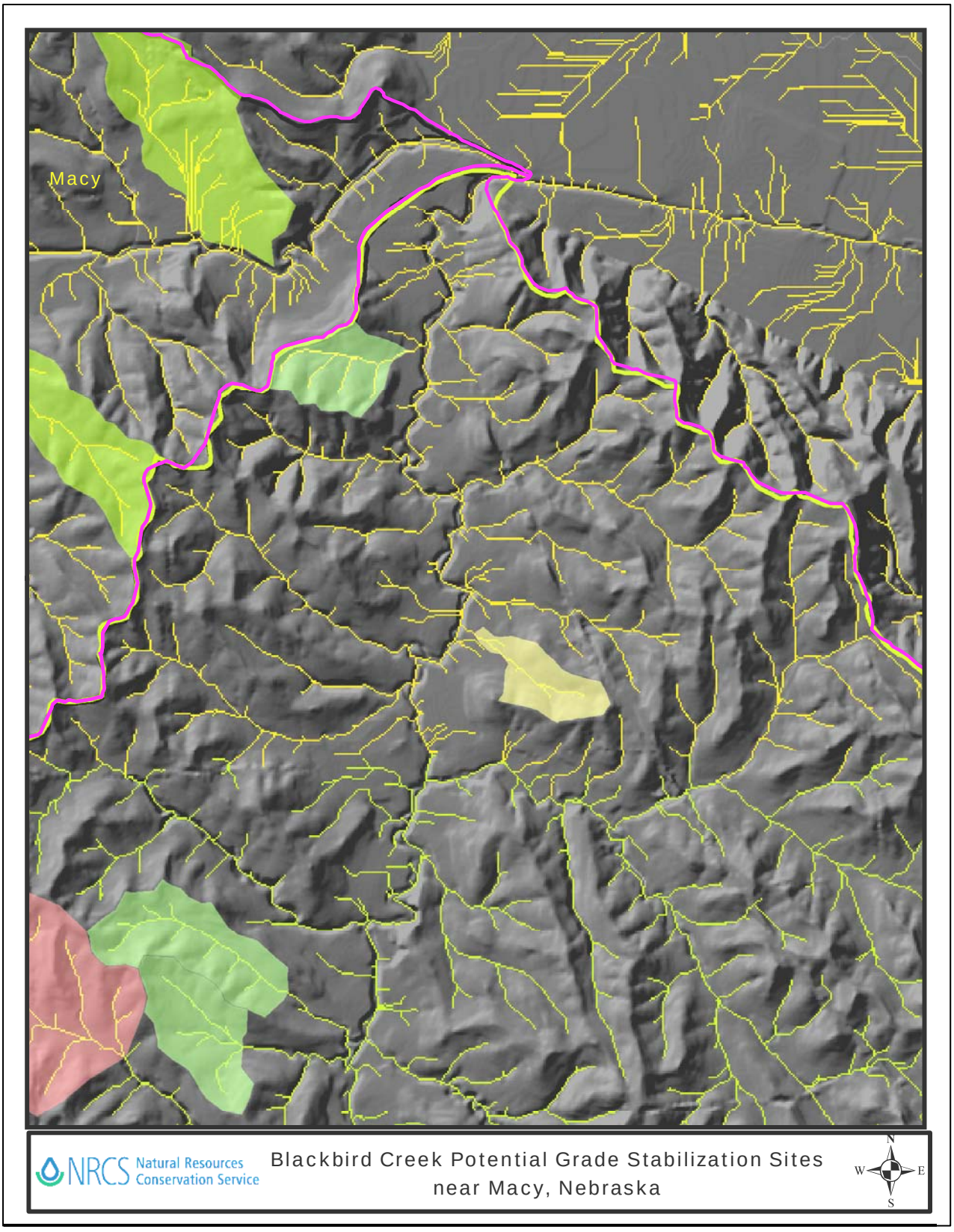

Macy
NRCS Natural Resources Conservation Service
Blackbird Creek Potential Grade Stabilization Sites
near Macy, Nebraska
N
W
E
S

Figure 18

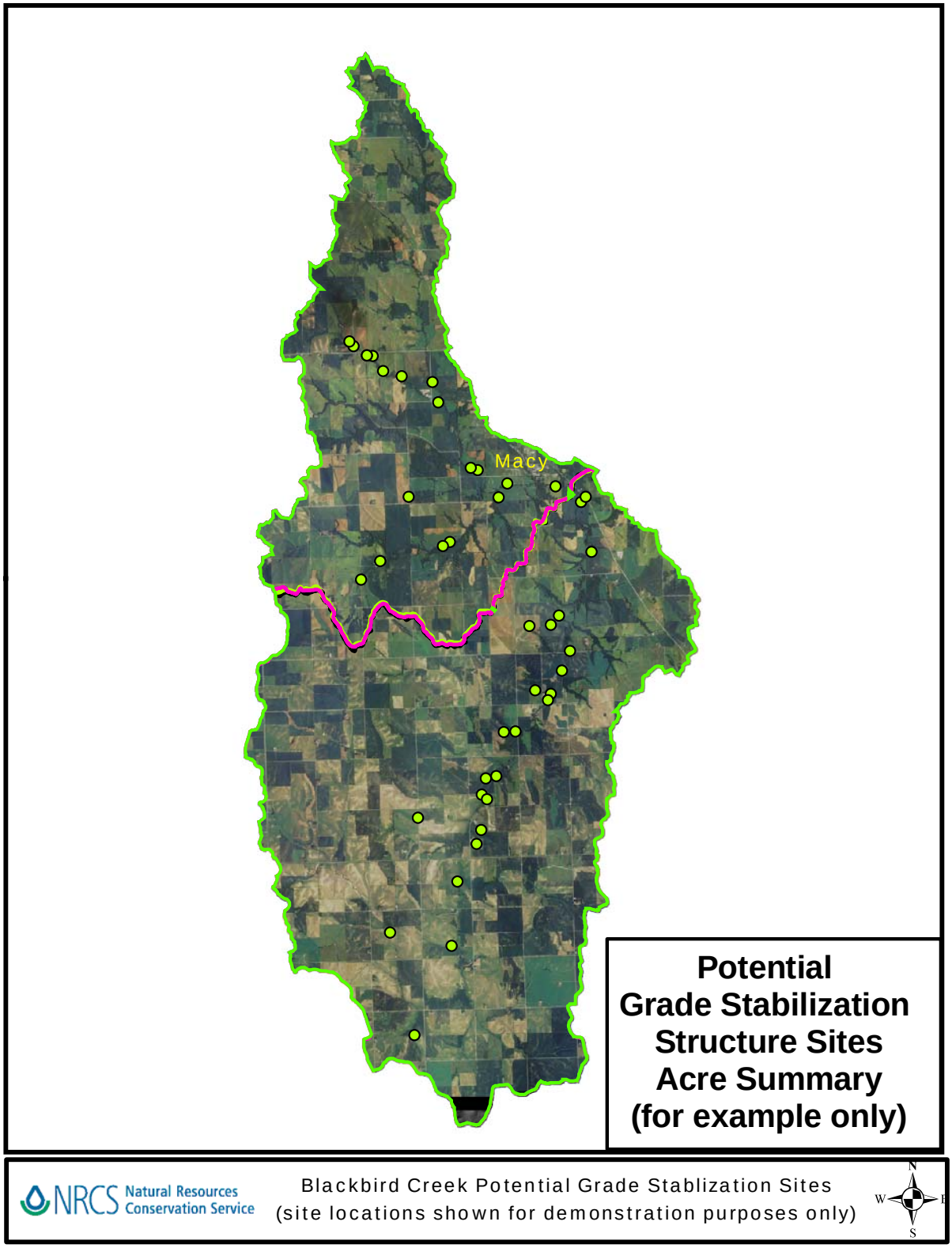

Macy
Potential
Grade Stabilization
Structure Sites
Acre Summary
(for example only)
NRCS Natural Resources Conservation Service
Blackbird Creek Potential Grade Stablization Sites
(site locations shown for demonstration purposes only)
N
W
E
S

Figure 19

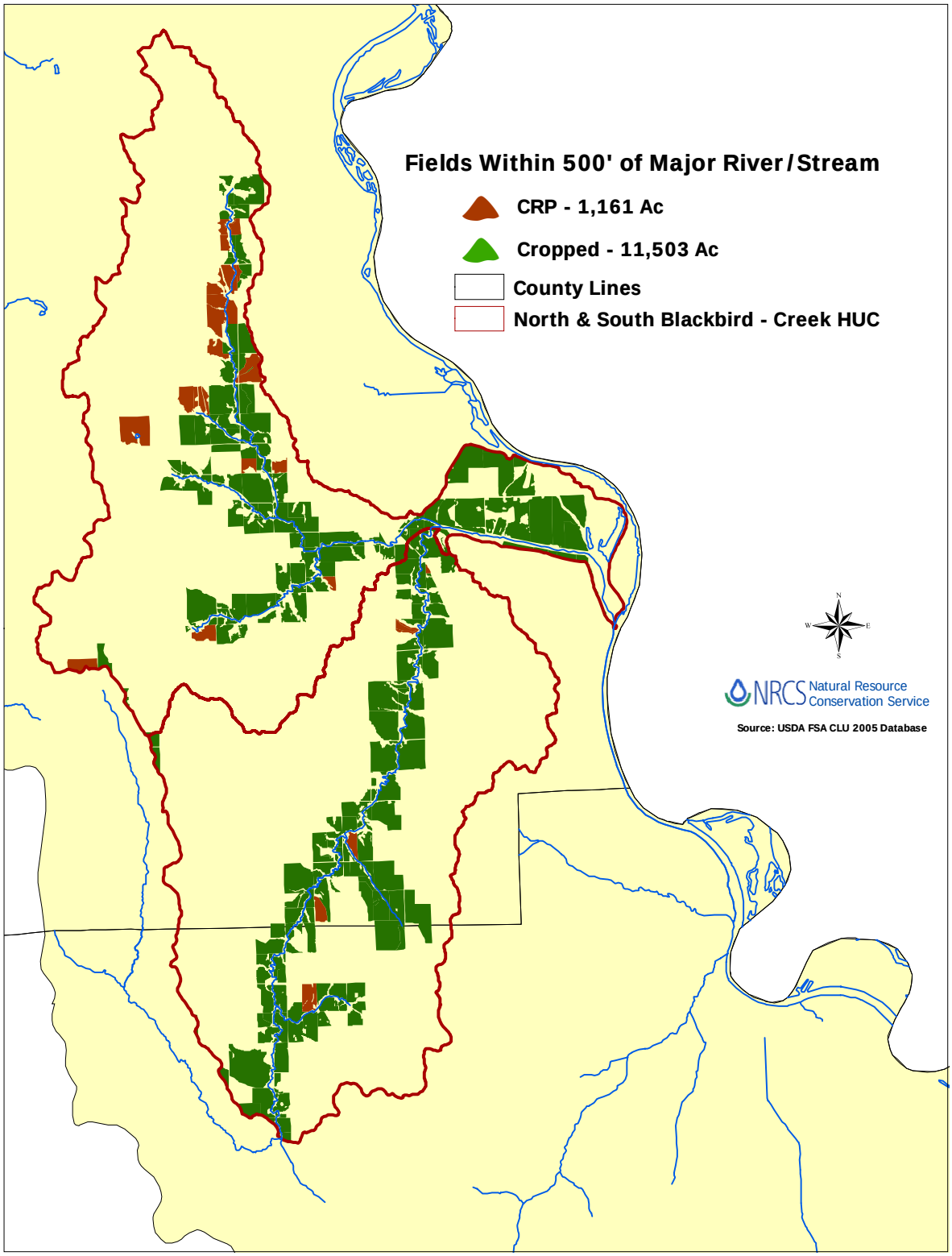
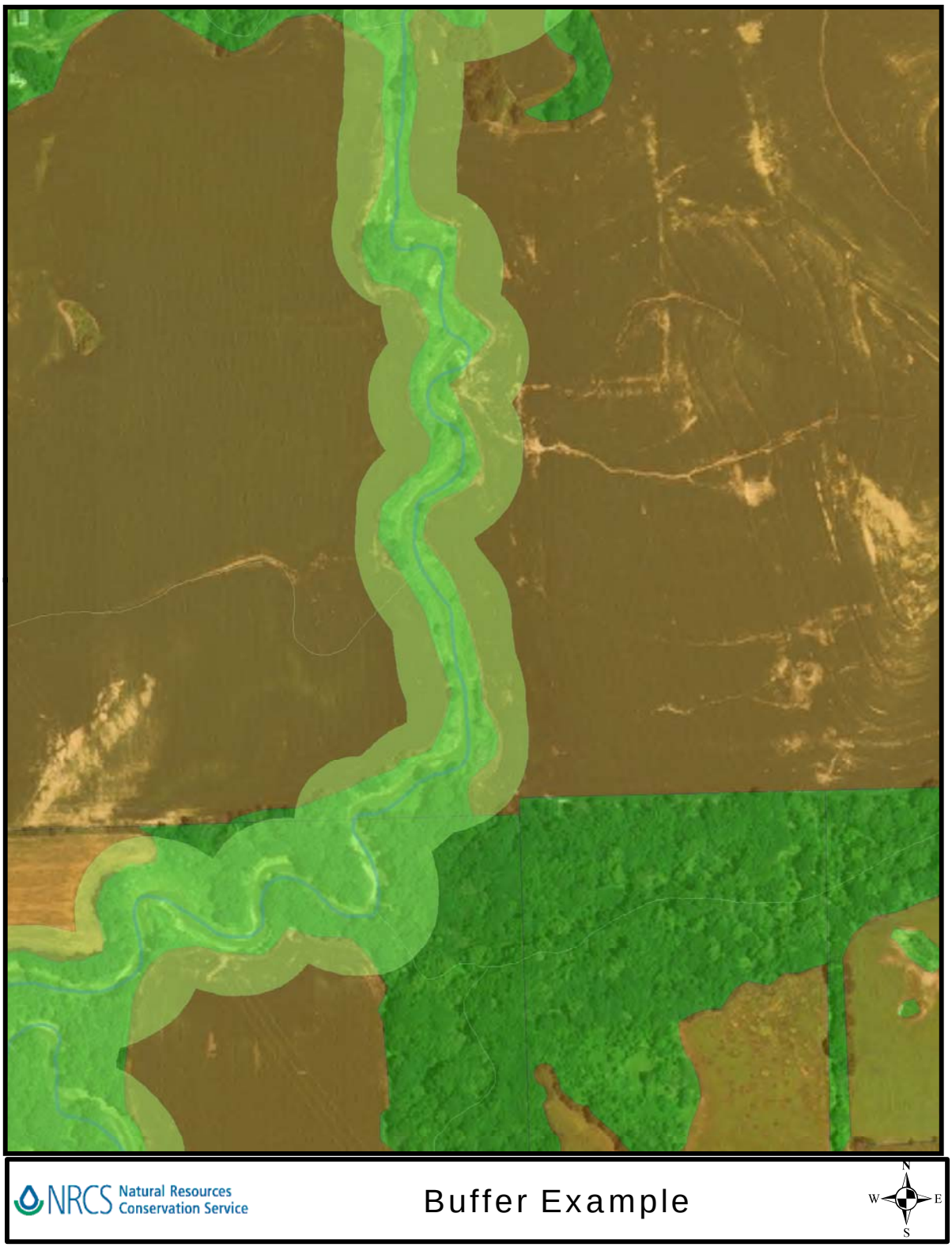

Fields Within 500' of Major River/Stream
CRP - 1,161 Ac
Cropped - 11,503 Ac
County Lines
North & South Blackbird - Creek HUC
N
W
E
S
NRCS Natural Resource Conservation Service
Source: USDA FSA CLU 2005 Database

Figure 20


NRCS Natural Resources Conservation Service
Buffer Example
N
W
E
S

APPENDIX B
USDA PROGRAMS
Programs Included with the 2002 Farm Bill

NRCS Conservation Programs

Environmental Quality Incentives Program (EQIP)

HOW EQIP WORKS IN NEBRASKA

Each application will include basic data such as applicant information, land use, treatment, and acres. Applicants will select from the following application options:

General
General ranking emphasizes both national and state priorities. The state priorities include the seven resource concerns developed from the State Technical Committee and EQIP Subcommittee. Qualifying practices that may address specific resource concerns are shown in the resource concern categories on the appropriate EQIP Conservation Practice List.

Ground & Surface Water Conservation
Ground & Surface Water Conservation ranking is used when the goal of the applicant is to maximize water savings on irrigated land. This includes conversion of irrigated land to non-irrigated land and conversion of irrigated land to more efficient irrigation systems.

Animal Feeding Operations (AFO) Initiative
Animal feeding operations ranking is used when the goal of the applicant is to address livestock waste resource issues. A Comprehensive Nutrient Management Plans (CNMP) needs to be developed before ranking an application.

Water Quantity Initiative
Water Quantity Initiative ranking is used when the goal of the applicant is to maximize water savings on irrigated land with Nebraska Department of Natural Resources identified emphasis goals. For 2007, emphasis is on converting irrigated land to non-irrigated land in the Republican River Basin, Pumpkin Creek, and Lodge Pole Creek.

Water Quality Initiative (NDEQ Impaired Watersheds)
Water Quality Initiative ranking is used when the goal of the applicant is to maximize water quality benefits on land with Nebraska Department of Environmental Quality identified emphasis goals. For 2007, emphasis is on impaired watersheds that have watershed management plans developed.

Wildlife Initiative (Tri-Basin NRD)
Tri-Basin NRD Wildlife Initiative is used when the goal of the application is to develop wildlife habitat on existing center pivot corners within the Tri-Basin NRD.

Wildfire Initiative
The Wildfire Special Initiative is used when the goal of the applicant is to restore grazing lands damaged by wildfires.

Available funding for General and GSWC is allocated to 23 natural resources areas based on the Nebraska Resources Assessment and size of the natural resources areas. Funding for the Animal Feeding Operations Initiative, Water Quantity Initiative, and Water Quality Initiative are allocated on a statewide basis.

District Conservationists, in consultation with their Local Work Group (LWG), have the option to modify the General and the Ground and Surface Water Conservation ranking templates to fit locally identified

resource concerns. Modification is allowed within general parameters to adjust ranking points, to add locally identified ranking factors, and to adjust cost share rates and incentive payments.

Wildlife Habitat Incentives (WHIP)

OVERVIEW

The Wildlife Habitat Incentives Program (WHIP) is a voluntary program that encourages creation of high quality wildlife habitats that support wildlife populations of National, State, Tribal, and local significance. Through WHIP, the Natural Resources Conservation Service (NRCS) provides technical and financial assistance to landowners and others to develop upland, wetland, riparian, and aquatic habitat areas on their property. WHIP is reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill). Through WHIP, NRCS works with private landowners and operators; conservation districts; and Federal, State, and Tribal agencies to develop wildlife habitat on their property. Funding for WHIP comes from the Commodity Credit Corporation.

Benefits

Since WHIP began in 1998, nearly 14,700 participants have enrolled more than 2.3 million acres into the program. Most efforts have concentrated on improving upland wildlife habitat, such as native prairie, but there is an increasing emphasis on improving riparian and aquatic areas. The 2002 Farm Bill greatly expands the available tools for improving wildlife habitat conditions across the Nation. Species that have benefited from WHIP activities include the grasshopper sparrow, bobwhite quail, swift fox, short-eared owl, Karner-blue butterfly, gopher tortoise, Louisiana black bear, Eastern collared lizard, Bachman's sparrow, ovenbird, acorn woodpecker, greater sage grouse, and salmon.

How WHIP Works

The State Technical Committee advises the State Conservationist in the development of a State WHIP plan. The State WHIP plan serves as a guide for the development of the State WHIP ranking criteria. Persons interested in entering into a cost-share agreement with the U.S. Department of Agriculture (USDA) to develop wildlife habitat may file an application at any time. Participants voluntarily limit future use of the land for a period of time, but retain private ownership. NRCS works with the participant to develop a wildlife habitat development plan. This plan becomes the basis of the cost-share agreement between NRCS and the participant. NRCS provides cost-share payments to landowners under these agreements that are usually 5 to 10 years in duration, depending upon the practices to be installed. There are shorter-term agreements to install practices that are needed to meet wildlife emergencies, as approved by the NRCS State Conservationist. NRCS also provides greater cost-share assistance to landowners who enter into agreements of 15 years or more for practices on essential plant and animal habitat. NRCS can use up to 15 percent of its available WHIP funds for this purpose. NRCS does not place limits on the number of acres that can be enrolled in the program or the amount of payment made; however, some WHIP Fact Sheet page 2 September 2004 States may choose to establish such requirements. NRCS welcomes projects that provide valuable wildlife habitat and does not want to discourage any landowner who desires to implement practices that will improve habitat conditions for declining species. NRCS continues to provide assistance to landowners after completion of habitat development activities. This assistance may be in the form of monitoring habitat practices, reviewing management guidelines, or providing basic biological and engineering advice on how to achieve optimum results for targeted species. Applications are accepted through a continuous sign-up process. Applications may be obtained and filed at any time with your local USDA Service Center or conservation district office. Applications also may be obtained through USDA's

e-gov Internet site at: www.sc.egov.usda.gov. Click on Register to open a USDA account and then have access to a WHIP application (CCC-1200) or other USDA programs. Applications also may be accepted by cooperating conservation partners approved or designated by NRCS.

Eligibility

Eligible lands under the program are:

- Privately owned land;
- Federal land when the primary benefit is on private or Tribal land;
- State and local government land on a limited basis; and
- Tribal land.

If land is determined eligible, NRCS places emphasis on enrolling:

- Habitat areas for wildlife species experiencing declining or significantly reduced populations;
- Practices beneficial to fish and wildlife that may not otherwise be funded; and
- Wildlife and fishery habitats identified by local and State partners and Indian Tribes in each State.

The Adjusted Gross Income provision of the 2002 Farm Bill impacts eligibility for WHIP and several other 2002 Farm Bill programs. Individuals or entities that have an average adjusted gross income exceeding $2.5 million for the three tax years immediately preceding the year the contract is approved are not eligible to receive program benefits or payments. However, an exemption is provided in cases where 75 percent of the adjusted gross income is derived from farming, ranching, or forestry operations.

Wetlands Reserve (WRP)

OVERVIEW

The Wetlands Reserve Program (WRP) is a voluntary program. It provides technical and financial assistance to eligible landowners to address wetland, wildlife habitat, soil, water, and related natural resource concerns on private lands in an environmentally beneficial and cost-effective manner. The program provides an opportunity for landowners to receive financial incentives to restore, protect, and enhance wetlands in exchange for retiring marginal land from agriculture. WRP was reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill). The Natural Resources Conservation Service (NRCS) administers the program. Funding for WRP comes from the Commodity Credit Corporation.

Benefits

WRP participants benefit by:

Receiving financial and technical assistance in return for restoring, protecting and enhancing wetland functions and values;

Seeing a reduction in problems associated with farming potentially difficult areas; and

Having incentives to develop wildlife recreational opportunities on their land. Wetlands benefit the nation by providing habitat for fish and wildlife, including threatened and endangered species; improving water

quality by filtering sediments and chemicals; reducing flooding; recharging groundwater; protecting biological diversity; as well as providing opportunities for educational, scientific, and recreational activities.

How WRP Works

Landowners and Tribes may file an application for a conservation easement or a cost-share restoration agreement with the U.S. Department of Agriculture (USDA) to restore and protect wetlands. Participants voluntarily limit future use of the land, but retain private ownership.

The program offers three enrollment options:

1. *Permanent Easement.* This is a conservation easement in perpetuity. Easement payments for this option equal the lowest of three amounts: the difference in the appraised fair market value of the larger parcel before the easement is in place and the appraised fair market value of the larger parcel after the easement is in place, an established payment cap, or an amount offered by the landowner. In addition to paying for the easement, USDA pays up to 100 percent of the cost of restoring the wetland.

2. *30-Year Easement.* Easement payments through this option are 75 percent of what would be paid for a permanent easement. USDA also pays up to 75 percent of restoration costs. For both permanent and 30-year easements, USDA pays all costs associated with recording the easement in the local land records office, including recording fees, charges for abstracts, survey and appraisal fees, and title insurance.

3. *Restoration Cost-Share Agreement.* This is an agreement (generally for a minimum of 10 years) to re-establish degraded or lost wetland habitat. USDA pays up to 75 percent of the cost of the restoration activity. This enrollment option does not place an easement on the property.

Other agencies, conservation districts, and private conservation organizations may provide additional incentive payments as a way to reduce the landowner's share of the costs. Such special partnership efforts are encouraged. NRCS and its partners, including conservation districts, continue to provide assistance to landowners after completion of restoration activities. This assistance may be in the form of reviewing restoration measures, clarifying technical and administrative aspects of the easement and project management needs, and providing basic biological and engineering advice on how to achieve optimum results for wetland dependent species.

Applications are accepted through a continuous sign-up process. Applications may be obtained and filed at any time at your local USDA Service Center or conservation district office. Applications also may be obtained through USDA's e-gov Internet site at: http:// forms.sc.egov.usda.gov/eforms/ formsearchservlet Enter "Natural Resources Conservation Service" in the Agency field, "Wetlands Reserve Program" in the Program Name field, and "AD-1153" in the Form Number field.

Eligibility

To offer a conservation easement, the landowner must have owned the land for at least 12 months prior to enrolling it in the program, unless the land was inherited, the landowner exercised the landowner's right of redemption after foreclosure, or the landowner can prove the land was not obtained for the purpose of enrolling it in the program. To participate in a restoration cost-share agreement, the landowner must show evidence of ownership. To be eligible for WRP, land must be restorable and be suitable for wildlife benefits. This includes:

- Wetlands farmed under natural conditions;

- Farmed wetlands;
- Prior converted cropland;
- Farmed wetland pasture;
- Land that has become a wetland as a result of flooding;
- Range land, pasture, or production forest land where the hydrology has been significantly degraded and can be restored;
- Riparian areas which link protected wetlands;
- Lands adjacent to protected wetlands that contribute significantly to wetland functions and values; and
- Previously restored wetlands that need long-term protection.

Ineligible Land

Ineligible land includes wetlands converted after December 23, 1985; lands with timber stands established under a Conservation Reserve Program contract; Federal lands; and lands where conditions make restoration impossible. The Adjusted Gross Income provision of the 2002 Farm Bill impacts eligibility for WRP and several other 2002 Farm Bill programs. Individuals or entities that have an average adjusted gross income exceeding $2.5 million for the three tax years immediately preceding the year the contract is approved are not eligible to receive program benefits or payments. However, an exemption is provided in cases where 75 percent of the adjusted gross income is derived from farming, ranching, or forestry operations.

Uses of WRP Land

On acres subject to a WRP easement, participants control access to the land and may lease the land for hunting, fishing, and other undeveloped recreational activities, provided such use does not impact the other restrictions listed in the warranty easement deed. At any time, a participant may request that additional prohibited activities be evaluated to determine if they are compatible uses for the site. This request may include such items as permission to cut hay, graze livestock, or harvest wood products. Compatible uses may be allowed if they both protect and enhance the wetland functions and values. NRCS retains the right to cancel an approved compatible use authorization if it is deemed necessary to protect easement functions and values.

Wetlands Reserve Enhancement Program (WREP)

OVERVIEW

The USDA Natural Resources Conservation Service (NRCS) has an opportunity for Nebraska landowners along the Missouri River floodplain from Ponca to Rulo - the Wetlands Reserve Enhancement Program (WREP). This voluntary program offers both financial and technical assistance to landowners and Tribes wishing to restore wetlands and increase wildlife habitat. Wetlands act as a water quality filter, reduce flooding, recharge groundwater, and provide fish and wildlife habitat, and educational or recreational opportunities.

Benefits and Goals of This Program

The goal of this program is to restore 18,800 acres of wetlands along the Missouri River floodplain in Nebraska. Other benefits are to create a wildlife habitat and floodplain corridors to link wetlands and non-wetlands together. These areas will help disperse habitat opportunity to reduce wildlife disease and provide increased recreational opportunities. These wetlands will also reduce flooding by absorbing high river flows. Involvement by other organizations will help reduce USDA costs as well. Landowner Benefits to consider: Landowner retains ownership and access; Land enrolled is typically marginal as cropland; Income opportunities from recreation; Tax advantages/tax deferred exchange; Wetlands may have income opportunities from grazing or haying.

How WREP Works

The first step is to sign a no-obligation application. The program offers three options:

Permanent Easement - is a conservation easement in perpetuity. The landowner receives the fair market value of the largest parcel *before* the easement minus the fair market value of the largest parcel *after* the easement. Plus, 100% of the restoration costs are paid by USDA or its conservation partners.

Thirty Year Easement - offers 75% of the fair market value of the largest parcel *before* the easement minus the fair market value of the largest parcel *after* the easement. Plus, 75% of the restoration costs are paid by USDA or its conservation partners. Sometimes partnering organizations help pay a portion of the landowners 25 % restoration costs, but this may vary by location. In both the permanent and 30-year option, USDA pays all costs with recording the easement, charges for abstracts, survey and appraisal fees and title insurance.

Ten Year Restoration Cost-Share Agreements - offers to re-establish degraded or lost wetland habitat. USDA pays 75% of the restoration cost. There isn't any easement payment. Sometimes partnering organizations may contribute to the landowner's restoration costs.

If I signed today, what are the steps and time?

There are several steps. Briefly, an inter-agency team evaluates the site with the landowner or Tribe. A restoration plan is proposed to the landowner or Tribe. If accepted, the application is ranked against other WREP applications. If approved for funding, an appraisal and offer is made. If accepted, the final engineering and easement process begins. The landowner or Tribe would receive payment about six months after start, assuming there aren't any legal challenges. Actual restoration start will vary on season, crops planted, etc.

Eligibility

The landowner must have owned the land at least 12 months prior to enrolling it in the program, with a few exceptions like inheritance or the new landowner can prove the land was not obtained for the purpose of enrolling it. To be eligible the land must be restorable and suitable for wildlife benefits. This includes: Wetlands farmed under natural conditions; Farmed wetlands; Prior converted wetlands; Farmed wetland pasture; Farmland that has become a wetland as a result of flooding; Range, pasture or production forest land where the hydrology has be significantly degraded and can be restored; Riparian areas linking protect wetlands; Lands adjacent to protected areas that contribute significantly to wetland functions and values; Previously restored wetlands that need long-term protection.

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Ineligible land

Ineligible land includes wetlands converted after Dec. 23, 1985; lands with timber stands established under the Conservation Reserve Program; Federal lands; and lands where conditions make restoration impossible.

FSA Conservation Programs

CONSERVATION RESERVE PROGRAM (CRP)

OVERVIEW

The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners. Through CRP, you can receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland.

The Commodity Credit Corporation (CCC) makes annual rental payments based on the agriculture rental value of the land, and it provides cost-share assistance for up to 50 percent of the participant's costs in establishing approved conservation practices. Participants enroll in CRP contracts for 10 to 15 years.

Benefits

CRP protects millions of acres of American topsoil from erosion and is designed to safeguard the Nation's natural resources. By reducing water runoff and sedimentation, CRP protects groundwater and helps improve the condition of lakes, rivers, ponds, and streams. Acreage enrolled in the CRP is planted to resource-conserving vegetative covers, making the program a major contributor to increased wildlife populations in many parts of the country.

CRP Administration

FSA administers CRP, while technical support functions are provided by:

- USDA's Natural Resource Conservation Service (NCRCS);
- USDA's Cooperative State Research, Education, and Extension Service;
- State forestry agencies;
- Local soil and water conservation districts;
- Private sector providers of technical assistance.

CRP General Sign-up

Producers can offer land for CRP general sign-up enrollment only during designated sign-up periods. For information on upcoming sign-ups, contact your local FSA office. To find your local office, visit FSA's Web site at: http://offices.sc.egov.usda.gov/locator/app?state=us&agency=fsa

CRP Continuous Sign-up

Environmentally desirable land devoted to certain conservation practices may be enrolled at any time under CRP continuous sign-up. Certain eligibility requirements still apply, but offers are not subject to competitive bidding. Further information on CRP continuous sign-up is available in the FSA fact sheet "Conservation Reserve Program Continuous Sign-up."

Eligible Producers

To be eligible for CRP enrollment, a producer must have owned or operated the land for at least 12 months prior to close of the CRP sign-up period, unless:

- The new owner acquired the land due to the previous owner's death;
- The ownership change occurred due to foreclosure where the owner exercised a timely right or redemption in accordance with state law; or
- The circumstances of the acquisition present adequate assurance to FSA that the new owner did not require the land for the purpose of placing it in CRP.

Eligible Land

To be eligible for placement in CRP, land must be either:

- Cropland (including field margins) that is planted or considered planted to an agricultural commodity 4 of the previous 6 crop years from 1996 to 2001, and which is physically and legally capable of being planted in a normal manner to an agricultural commodity; or
- Certain marginal pastureland that is suitable for use as a riparian buffer or for similar water quality purposes.

Additional Cropland Requirements

In addition to the eligible land requirements, cropland must meet one of the following criteria:

- Have a weighted average erosion index of 8 or higher;
- Be expiring CRP acreage; or
- Be located in a national or state CRP conservation priority area.

CRP Payments

FSA provides CRP participants with annual rental payments, including certain incentive payments, and cost-share assistance:

- Rental Payments - In return for establishing long-term, resource-conserving covers, FSA provides annual rental payments to participants. FSA bases rental rates on the relative productivity of the soils within each county and the average dry land cash rent or cash-rent equivalent. The maximum CRP rental rate for each offer is calculated in advance of enrollment. Producers may offer land at that rate or offer a lower rental rate to increase the likelihood that their offer will be accepted.
- Maintenance Incentive Payments - CRP annual rental payments may include an additional amount up to $4 per acre per year as an incentive to perform certain maintenance obligations.
- Cost-share Assistance - FSA provides cost-share assistance to participants who establish approved cover on eligible cropland. The cost-share assistance can be an amount not more than 50 percent of the participants' costs in establishing approved practices.

- Other Incentives - FSA may offer additional financial incentives of up to 20 percent of the annual payment for certain continuous sign-up practices.

Ranking CRP Offers

Offers for CRP contracts are ranked according to the Environmental Benefits Index (EBI). FSA collects data for each of the EBI factors based on the relative environmental benefits for the land offered. Each eligible offer is ranked in comparison to all other offers and selections made from that ranking. FSA uses the following EBI factors to assess the environmental benefits for the land offered:

- Wildlife habitat benefits resulting from covers on contract acreage;
- Water quality benefits from reduced erosion, runoff, and leaching;
- On-farm benefits from reduced erosion;
- Benefits that will likely endure beyond the contract period;
- Air quality benefits from reduced wind erosion; and
- Cost.

CONTINUOUS CRP PRACTICES

Eligible Land Criteria

- **Cropland planted or considered planted to an agriculture commodity during 4 of the 6 crop years 1996 - 2001**

  NOTE: **Infeasible to farm option applies to CP-21, CP-22 and allows COC to approve additional enrollment of up to 25% of enrolled acres if more than 50% of a field is enrolled as CP21 or CP22 on cropland**

- **Marginal pasture is eligible for CP22, CP29 and CP30 only (areas with existing tree canopy of >25% are not eligible as marginal pasture)**

Wellhead Protection Area Practices (10% & PIP)

- **CP1, CP2, CP3, CP3A, CP4B, CP4D & CP10**
- Wellhead areas are automatically eligible if cropping criteria is met
- Offered cropland must be within the wellhead boundary and within 2000 feet from the wellhead.

Field Windbreaks -- CP5A (20%, SIP, & PIP)

- Up to 5 rows if designed for wildlife - (only 2 rows of same species)
- Minimum cropping between is 10X the height of minimum 20 year height but not less than 150, 180, 220, 240 feet (depending on Vegetative Zone – I-IV respectively)

Grassed Waterway -- CP8A (20%, SIP, & PIP)

- Width can be up two times minimum design
- Maximum width not to exceed 100 feet
- Waterways that have been completed, or expanded within 12-month period previous to the offer

Shallow Water Area for Wildlife -- CP9 (PIP)

- Wetland creation (on non-wetland sites)
- Average depth: 6 - 18 inches
- Buffer width: Minimum 20 feet -- Maximum 120 feet
- Field shall not exceed 10.0 acres per tract

Contour Grass Strips -- CP15A (PIP)

- Fields without terraces (point rows can be eliminated)
- Field borders are also eligible with this practice (join strips together)

Contour Grass Strips On Terraces -- CP15B

- Seed down existing functioning terraces that are 10 years or older
- Grass the back/front slope (with an optional 10 foot addition on each side) not to exceed 60 feet wide

Shelterbelt Establishment -- CP16A (SIP & PIP)

- Farmstead and livestock protection with maximum of 12, 10, 8 rows (depending on Vegetative Zone – I&II, III, IV respectively)

Living Snow Fence -- CP17A (SIP & PIP)

- For protecting roads from snow blowing (need minimum setback)

Establish Permanent Vegetation to Reduce Salinity -- CP18B (PIP)

- Purpose is to establish vegetation on saline seeps and areas contributing to the seeps
- Technical recommendations must be based on a sound technical basis that will solve the resource problem

Establish Permanent Salt Tolerant Vegetative Cover -- CP18C (PIP)

- Purpose is to establish vegetation on eligible cropland with existing high water table
- Technical recommendations must be based on a sound technical basis that will solve the resource problem

Filter Strips -- CP21 (20%, SIP, & PIP)

- Minimum width - 20 feet
- Maximum average width - 120 feet (minus existing buffer grass) or minimum design width (if it exceeds 120 feet using 30:1 ratio)
- Outer edge can be straightened using 'maximum average width'
- Applies to seasonal or perennial streams; permanent lakes and ponds, and most wetlands
- Cost share on fence and water facilities

Riparian buffer -- CP22 (20%, SIP, & PIP)

- Minimum width - 35 feet of trees/shrubs
- Maximum average width - 180 feet
- Outer edge can be straightened using 'maximum average width'
- Marginal pasture sites must plant the entire offer to trees/shrubs (with up to 20 feet of grassed filter strip in zone 3)
- Natural regeneration only allowed if NRCS/TSP determines the appropriate cover will establish in 2 years under normal conditions
- Cost share on fence and water facilities

Wetland Restoration -- CP23 (25% to restore hydrology)

- Cropped wetlands adjacent to permanent streams and rivers
- No limit on size of wetland (within the 100-year floodplain)
- A buffer outside the 100-year flood plain may be enrolled if needed
- Up to a 3:1 ratio of upland to wetland may be enrolled as buffer

Wetland Restoration -- CP23A (25% to restore hydrology)

- Cropped wetlands outside of the 100-yr floodplain (i.e. playa or slope)
- Wetlands eligible for CP-27 are not eligible for CP-23A
- Up to a 4:1 ratio of upland to wetland may be enrolled as buffer

Cross Wind Trap Strips – CP24 (PIP)

- Only eligible on cropland with wind erosion EI $\geq$ 4
- Minimum of 2 strips and maximum of 10% of field
- Minimum width of strip is 15 feet – maximum width is 25 feet

Farmable Wetland FP- CP27 (20%, SIP, & PIP)

- Maximum wetland size: 10.0 acres (including any non-cropped area)
- Only 5.0 acres of wetland are eligible for CRP payment
- Eligibility: cropped wetlands, farmed wetlands, & prior converted wetlands outside of the 100 year floodplain
- Crop history meets minimum of 3 out of previous 10 crop years

Farmable Wetland Buffer -- CP28 (20%, SIP, & PIP)

- Must be associated with a CP-27 enrolled wetland
- Minimum buffer width: 30 feet
- Maximum buffer width/size: Cannot exceed the larger of a maximum average width of 150 feet or 3 times the size of the eligible wetland (not including any non-cropped wetland).

Marginal Pasture Wildlife Habitat Buffer -- CP29 (20%, SIP, & PIP)

- Marginal Pastureland must be adjacent to seasonal or perennial streams (use CP-30 for lakes, ponds, and wetlands)
- Minimum width - 20 feet and maximum average width - 120 feet
- Outer edge can be straightened using 'maximum average width'
- Cost share on fence and water facilities
- A minimum of 25% of enrolled acres must be enhanced (See Riparian Herbaceous Cover standard and design procedure for details)

Marginal Pasture Wetland Buffer -- CP30 (20%, SIP, & PIP)

- Applies to permanent lakes/ponds with an annual 'off-farm' outflow and most wetlands (seasonal to permanent)
- Minimum width - 20 feet and maximum average width - 120 feet
- Outer edge can be straightened using 'maximum average width'
- Cost share on fence and water facilities
- A minimum of 25% of enrolled acres must be enhanced (See Riparian Herbaceous Cover standard and design procedure for details)

Bottomland Timber Establishment on Wetlands -- CP31

- Must establish a minimum of 3 different varieties of mast producing hardwood tree and shrub species (not less than 75 percent of stand)
- Offer must be in the 100-year floodplain and contain 51% hydric soils
- Natural regeneration is not permitted under this practice
- Contract duration: 14 to 15 years

Habitat Buffer For Upland Birds – CP33 (SIP & PIP)

- Minimum width - 30 ft and maximum average width - 120 ft
- Minimum enrollment per tract is 5 acres of field border
- Outer edge can be straightened using 'maximum average width' and center pivot corners can be enrolled if connected by a buffer $\geq$ 30 feet
- Shrubs required if not existing within 1/8 mile – (not to exceed 10%)

Incidental Grazing only allowed on CP8A, CP15A/B, CP21 and CP33

Maintenance rate for new practices: CP5A, CP16A, CP17A - $6.00

Maintenance rate for new practices: CP21, CP29, CP30, and CP22

No fencing or water facility development $4.00

No fencing or water facility development (CP-22 only) $6.00

Permanent fencing with no water facility development $8.00

Permanent fencing and water facility development $9.00

CONTINUOUS CRP PRACTICES QUICK REFERENCE ONLY Revised (September, 2007)

PRACTICE CODE	PRACTICE NARRATIVE	CONTRACT LENGTH	C/S Fencing & Water Development	ANY ELIGIBLE ACRES	WELLHEAD ACRES ONLY	PERCENT RENTAL INCENTIVE	SIP (1)	PIP (2)	MAINTENANCE PAYMENTS (3)
CP1	INTRODUCED GRASSES AND LEGUMES	10 YR			YES	10%		YES	$4
CP2	NATIVE GRASSES	10 YR			YES	10%		YES	$4
CP3	BLOCK TREE PLANTING	10 YR			YES	10%		YES	$4
CP3A	HARDWOOD TREE PLANTING	10 – 15 YR			YES	10%		YES	$4
CP4B	WILDLIFE CORRIDORS	10 – 15 YR			YES	10%		YES	$4
CP4D	WILDLIFE HABITAT	10 YR			YES	10%		YES	$4
CP5A	FIELD WINDBREAKS	10 – 15 YR		YES		20%	$10	YES	$4 – $6 *
CP8A	GRASSED WATERWAY	10 YR		YES		20%	$10	YES	$4
CP9	SHALLOW WATER AREA FOR WILDLIFE	10 YR		YES				YES	$4
CP10	ESTABLISHED VEGETATION	10 YR			YES	10%		YES	$4
CP15A	CONTOUR GRASS STRIPS	10 YR		YES				YES	$4
CP15B	CONTOUR GRASS STRIPS ON TERRACES	10 YR		YES				NO	$4
CP16A	SHELTERBELTS (FARMSTEAD WINBREAKS)	10 – 15 YR		YES			$10	YES	$4 – $6*
CP17A	LIVING SNOW FENCES	10 –15 YR		YES			$10	YES	$4 – $6*
CP18B	VEGETATION TO REDUCE SALINITY (SEEPS & RECHARGE)	10 YR		YES				YES	$4
CP18C	SALT TOLERANT VEGETATION (HIGH WATER TABLE)	10 YR		YES				YES	$4

PRACTICE CODE	PRACTICE NARRATIVE	CONTRACT LENGTH	C/S Fencing & Water Development	ANY ELIGIBLE ACRES	WELLHEAD ACRES ONLY	PERCENT RENTAL INCENTIVE	SIP (1)	PIP (2)	MAINTENANCE PAYMENTS (3)
CP21	FILTER STRIPS	10 – 15 YR	YES	YES		20%	$10	YES	$4 - $8** - $9***
CP22	RIPARIAN BUFFERS	10 – 15 YR	YES	YES		20%	$10	YES	$6* - $8**- $9***
CP23	WETLAND RESTORATION – WETLANDS WITHIN THE 100-YR FLOODPLAIN	10 - 15 YR		YES				25%+	$4
CP23A	WETLAND RESTORATION – WETLANDS OUTSIDE OF THE 100-YR FLOODPLAIN	10 - 15 YR		YES				25%+	$4
CP24	CROSS WIND TRAP STRIPS	10 YR		YES				YES	$4
CP27	FARMABLE WETLANDS (WETLAND)	10 – 15 YR		YES		20%	$10	YES	$4
CP28	FARMABLE WETLANDS (BUFFER)	10 – 15 YR		YES		20%	$10	YES	$4
CP29	MARGINAL PASTURE WILDLIFE HABITAT BUFFER	10- 15 YR	YES	YES		20%	$10	YES	$4 - $8** - $9***
CP30	MARGINAL PASTURE WETLAND BUFFER	10 - 15 YR	YES	YES		20%	$10	YES	$4 - $8** - $9***
CP31	BOTTOMLAND TIMBER ESTABLISHMENT ON WETLANDS	14 - 15 YR		YES				NO	$4
CP33	HABITAT BUFFER FOR UPLAND BIRDS (QUAIL FIELD BORDER)	10 YR		YES			$10	YES	$4

(1) = Signing Incentive Payment (SIP) is a one-time payment of $10 per acre per year for each eligible acre enrolled up to $100/acre. (Par. 125)
(2) = Practice Incentive Payment (PIP) is a one-time payment that equals to 40% of the total eligible cost of practice installation. (Par. 125)
(3) = Annual Maintenance fee per acre not to exceed the amount listed. (Par. 124)

* = $6 per acre for new enrolled practices (not re-enrolled). (Par. 124)

** = $8 per acre with permanent fencing and no water facility. (Par. 124)

*** = $9 per acres with permanent fencing and water facility development. (Par. 124)

\+ = A one time payment equal to 25% of the cost of restoring the hydrology of the cropped wetland. (Exhibit 9, page 107)

RURAL DEVELOPMENT PROGRAMS

Native American Earmarks

Information regarding **USDA Rural Development NATIVE AMERICAN earmarked funds** availability for the following programs; Intermediary Relending Program (IRP), Rural Business Enterprise Grant (RBEG) and Rural Business Opportunity Grant (RBOG).

The Intermediary Relending Program (IRP) provides for business development in rural communities of less than 25,000 population. Loan funds are provided to an intermediary (borrower) who utilizes revolving loan concept to provide loan funds to ultimate recipients (businesses). As recipients repay loans, funds are re-lent to other qualifying eligible entities. Intermediary may be private non-profit corporation, public agency, Indian group, or cooperative. Visit www.rurdev.usda.gov/rbs/busp/irp.htm.

The Rural Business Enterprise Grant (RBEG) program supports the formation of small and emerging businesses in rural communities of less than 50,000 population. Eligible applicants include public bodies, non-profit organizations, and federally recognized Indian tribal groups. Grant funds are not provided directly to business instead, funds are used for support services for business development, expansion or enhancement. Visit www.rurdev.usda.gov/rbs/busp/rbeg.htm.

The Rural Business Opportunity Grant (RBOG) program promotes sustainable economic development in rural communities of less than 50,000 population. Public bodies, nonprofit corporations, Indian tribes or qualifying cooperatives are eligible to apply. Grant dollars may pay costs of providing economic planning for rural communities, technical assistance for rural businesses, or training for rural entrepreneurs or economic development officials. Visit www.rurdev.usda.gov/rbs/busp/rbog.htm.

Applicants for **NATIVE AMERICAN earmarked funds** need not be Native American; however, funds must be used for project where at least 75 percent of benefits of project will be received by members of Federally Recognized Native American Tribe.

To discuss a possible IRP, RBEG or RBOG application, receive application material and submit an application contact **Deborah Drbal** – in Lincoln, 402-437-5558 or deborah.drbal@ne.usda.gov.

APPENDIX C
SUPPORTING INFORMATION

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NE-CPA-52
March 2006

RESOURCE CONSIDERATIONS (Required)
Field Inventory Guide Sheet

Identify the resource concern(s) that need to be addressed and the assessment tool(s) used for the evaluation.

Client/Plan Information:

SOIL

Erosion

- ☑ Sheet and Rill
- ☑ Wind
- ☑ Ephemeral Gully
- ☑ Classic Gully
- ☑ Streambank
- ☐ Shoreline
- ☐ Irrigation Induced
- ☐ Mass Movement
- ☑ Road, Road Sides & Construction Sites
- ☐ Other: _____
- ☐ Other: _____

Condition

- ☐ Organic Matter Depletion
- ☐ Compaction
- ☐ Subsidence
- ☐ Contaminants-Salts & Other Chemicals
- ☐ Contaminants-Animal Waste & Other Organics
- ☐ Contaminants-Commercial Fertilizer
- ☐ Contaminants-Residual Pesticides
- ☐ Damage from Soil Deposition

Assessment tools, Problems & Notes:

WATER

Quantity

- ☐ Excessive Seepage
- ☑ Excessive Runoff, Flooding, or Ponding
- ☐ Excessive Subsurface Water
- ☐ Drifted Snow
- ☐ Inadequate Outlets
- ☐ Inefficient Water Use on Irrigated Land
- ☐ Inefficient Water Use on Non-Irrigated Land
- ☐ Reduced Capacity of Conveyances by Sediment Deposition
- ☐ Reduced Storage of Water Bodies by Sediment Accumulation
- ☐ Aquifer Overdraft
- ☐ Insufficient Flows in Water Courses
- ☐ Other: _____
- ☐ Other: _____

Quality

- ☑ Harmful Levels of Pesticides in Groundwater
- ☑ Excessive Nutrients and Organics in Groundwater
- ☐ Excessive Salinity in Groundwater
- ☐ Harmful Levels of Heavy Metals in Groundwater
- ☐ Harmful Levels of Pathogens in Groundwater
- ☐ Harmful Levels of Petroleum in Groundwater
- ☑ Harmful Levels of Pesticides in Surface Water
- ☑ Excessive Nutrients and Organics in Surface Water
- ☑ Excessive Suspended Sediment & Turbidity in Surface Water
- ☑ Excessive Salinity in Surface Water
- ☑ Harmful Levels of Heavy Metals in Surface Water
- ☑ Harmful Temperatures of Surface Water
- ☑ Harmful Levels of Pathogens in Surface Water
- ☑ Harmful Levels of Petroleum in Surface Water

Assessment tools, Problems & Notes:

AIR

Quality

- ☑ Particulate matter less than 10 micrometers in diameter
- ☑ Particulate matter less than 2.5 micrometers in diameter
- ☐ Excessive Ozone
- ☐ Excessive Greenhouse Gas - CO2
- ☑ Excessive Greenhouse Gas - N2O
- ☑ Excessive Greenhouse Gas - CH4
- ☑ Ammonia (NH3)
- ☑ Chemical Drift
- ☑ Objectionable Odors
- ☑ Reduced Visibility
- ☐ Undesirable Air Movement
- ☐ Adverse Air Temperature
- ☐ Other: _____
- ☐ Other: _____

Assessment tools, Problems & Notes:

PLANTS

- ☐ Plants are adapted or suited

Condition

- ☐ Productivity, Health and Vigor
- ☐ Threatened or Endangered Plant Species
- ☐ Noxious and Invasive Plants
- ☐ Wildfire Hazard
- ☐ Other: _____
- ☐ Other: _____

Assessment tools, Problems & Notes:

ANIMALS

Fish and Wildlife

- ☐ Inadequate Food
- ☑ Inadequate Cover/Shelter
- ☐ Inadequate Water
- ☐ Inadequate Space
- ☐ Plant Community Fragmentation
- ☐ Imbalance Among and Within Populations
- ☐ Threatened and Endangered Species

Domestic Animals

- ☐ Inadequate Quantities and Quality of Feed & Forage
- ☐ Inadequate Shelter
- ☐ Inadequate Stock Water
- ☐ Stress and Mortality
- ☐ Other: _____
- ☐ Other: _____

Assessment tools, Problems & Notes:

Completed by _____ **Date** _____