

**PROJECT SUMMARY SHEET****PROJECT TITLE:** Soil Health Improvement and Planning Project Segment 2**PROJECT PERIOD:** September 1, 2020 – August 31, 2022**Amendment 1 September 1, 2022-August 31,2023****NAME, ADDRESS, PHONE AND E-MAIL OF LEAD PROJECT SPONSOR**

South Dakota Soil Health Coalition

Chairman: Dennis Hoyle

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E-mail: [sdsoilhealth@gmail.com](mailto:sdsoilhealth@gmail.com)**CONTACT PERSON:** Cindy Zenk**PHONE:** 605-265-0335**E-MAIL:** [cindy.soilhealth@sdconservation.net](mailto:cindy.soilhealth@sdconservation.net)**319 NONPOINT SOURCE FUNDS:** \$130,000 **\$123,000****WATER QUALITY FUNDS:** \$100,000**MATCH:** \$144,000 **86,500****OTHER FEDERAL FUNDS:** \$65,000 **\$9,000****TOTAL PROJECT COST:** \$439,000 **\$657,500****WATERSHED:** Statewide**HYDROLOGIC UNIT CODE:** Statewide**HIGH PRIORITY WATERSHED:** YES**TMDL Development:** No **TMDL Implementation:** Yes**PROJECT TYPE:** Watershed**NPS CATEGORY:** Agriculture**NPS FUNCTIONAL CATEGORY:** BMP IMPLEMENTATION , INFORMATION AND EDUCATION**NPS POLLUTANTS TO BE ADDRESSED:**

EXCESS NITROGEN, EXCESS PHOSPHORUS, SEDIMENTATION, PESTICIDES

**PROJECT LOCATION:** State of South Dakota **START DATE:** 9/1/2020 **Amendment 1 9/1/2022****SUMMARIZATION OF MAJOR GOALS:**

The goal of this two-year project is to improve water quality through planning and implementation of soil health agricultural best management practices (BMPs) and outreach to producers in selected 303(d) listed water bodies in South Dakota. Implementing and promoting best management practices in the watershed that reduce sediment loading and prevent bacterial contamination working to attain total maximum daily loads (TMDLs) developed for the rivers, tributaries and lakes and meet the designated beneficial uses. Outreach will include planning and holding workshops and field demonstration tours to educate and inform producers of ways to manage land to reduce runoff and improve nutrient cycling which will ultimately improve water quality. The project will also provide information and education to local landowners and the general public to provide a better understanding of water quality and its relationship to soil health benefits.

**PROJECT SUMMARY:**

The project will provide continued support for one full-time project coordinator to manage the project on a day-to-day basis. The South Dakota Soil Health Coalition (SDSHC) Coordinator in partnership with the South Dakota Association of Conservation Districts (SDACD), Natural Resources Conservation Service (NRCS), and Section 319 Watershed Projects will cooperatively work to achieve project success. Local conservation districts will provide office space as needed or as agreed to by the Natural Resources Conservation Service (NRCS). The NRCS will provide the SDSHC staff training in NRCS standardized planning practices and Farm Bill related documentation. NRCS will also allow the SDSHC staff access to their office files, with producer permission, so they can locate maps, soils data, and check existing planning. The South Dakota Department of Environment and Natural Resources (DENR) will provide the coordinator with funding for salary, travel, BMPs, and watershed targeting information. The Coordinator will work with targeted 12-digit Hydrologic Units (HUs) within selected 303(d) listed water bodies statewide with special emphasis on the Lower Big Sioux River, the Vermillion River, and the Lower James River to develop and implement conservation plans and BMPs. The project will provide information and education to local landowners and the general public to provide a better understanding of water quality benefits and the relationship to soil health practices. Assistance will be provided through an agreement between South Dakota State University (SDSU) and the South Dakota Soil Health Coalition to provide an Outreach Coordinator/Information Specialist. This position is 0.10 FTE of an SDSU Department of Natural Resource Management staff person assigned to provide leadership to the Soil Health Coalition and project staff for planning and coordination of information transfer and outreach activities.

SDSHC will work to compliment the established projects as well as promote partner available programs to effectively improve water quality within the chosen watersheds.

FTE's: 1.10

**EPA 319:** \$130,000 **\$123,000**    **SRF-WQ:** \$100,000    **Other Federal:** \$65,000 **\$9,000**    **Match:** \$144,000 **\$86,500**    **Total project cost:** \$439,000 **Amendment \$218,500**    **Overall:** \$657,500

**2.0 STATEMENT OF NEED**

Previous Section 319 Watershed project experience in South Dakota indicates that one-on-one technical assistance is a critical factor in improving landowner participation in conservation innovations and programs that improve water quality through watershed projects. Landowners residing in watersheds with impaired waterbodies are often willing to install agricultural BMPs and management practices which improve water quality, but they do not understand the importance of soil health improvement activities and how they affect water quality, water infiltration, reduce runoff, and improved soil characteristics.

According to the 2018 SD DENR Integrated Report, improving water quality is evident by the waterbodies listed as high priority in South Dakota. Table 1 illustrates the location of the waterbody and the cause for the listing.

Table 1:

AUID	Waterbody Name	Location Description	Cause	Year First Listed	TMDL Schedule	TMDL Priority
SD-BA-R-BAD_01	Bad River	Stanley County line to mouth	ESCHERICHIA COLI	2016	2029	High
SD-BA-R-BAD_01	Bad River	Stanley County line to mouth	TOTAL SUSPENDED SOLIDS	2004	2030	High
SD-BF-R-BELLE_FOURCHE_03	Belle Fourche River	Whitewood Creek to Willow Creek	ESCHERICHIA COLI	2016	2029	High
SD-BF-R-DEADWOOD_01	Deadwood Creek	Rutabaga Gulch to Whitewood Creek	ESCHERICHIA COLI	2014	2018	High
SD-BF-R-HORSE_01_USGS	Horse Creek	Indian Creek to mouth	ESCHERICHIA COLI	2016	2029	High
SD-BF-R-WHITEWOOD_04	Whitewood Creek	Spruce Gulch to Sandy Creek	ESCHERICHIA COLI	2012	2024	High
SD-BF-R-WHITEWOOD_06	Whitewood Creek	I-90 to Crow Creek	ESCHERICHIA COLI	2014	2019	High
SD-BF-R-WHITEWOOD_07	Whitewood Creek	Crow Creek to mouth	ESCHERICHIA COLI	2016	2029	High
SD-BF-R-WHITEWOOD_07	Whitewood Creek	Crow Creek to mouth	TOTAL SUSPENDED SOLIDS	2010	2022	High
SD-BS-R-BIG_SIOUX_01	Big Sioux River	S28, T121N, R52W to Lake Kampeska	DISSOLVED OXYGEN	2004	2015	High
SD-BS-R-BIG_SIOUX_01	Big Sioux River	S28, T121N, R52W to Lake Kampeska	ESCHERICHIA COLI	2010	2014	High
SD-BS-R-BIG_SIOUX_02	Big Sioux River	Lake Kampeska to Willow Creek	ESCHERICHIA COLI	2016	2029	High
SD-BS-R-BIG_SIOUX_02	Big Sioux River	Lake Kampeska to Willow Creek	ESCHERICHIA COLI	2016	2029	High
SD-BS-R-BIG_SIOUX_05	Big Sioux River	Near Volga to Brookings	TOTAL SUSPENDED SOLIDS	2004	2022	High
SD-BS-R-BIG_SIOUX_05	Big Sioux River	Near Volga to Brookings	TOTAL SUSPENDED SOLIDS	2004	2022	High
SD-BS-R-BIG_SIOUX_06	Big Sioux River	Brookings to Brookings/Moody County Line	TOTAL SUSPENDED SOLIDS	2004	2022	High
SD-BS-R-BIG_SIOUX_06	Big Sioux River	Brookings to Brookings/Moody County Line	TOTAL SUSPENDED SOLIDS	2004	2022	High
SD-BS-R-BIG_SIOUX_07	Big Sioux River	Brookings/Moody County Line to S2, T104N, R49W	ESCHERICHIA COLI	2016	2029	High
SD-BS-R-BIG_SIOUX_07	Big Sioux River	Brookings/Moody County Line to S2, T104N, R49W	ESCHERICHIA COLI	2016	2029	High
SD-BS-R-BIG_SIOUX_13	Big Sioux River	Above Brandon to Nine Mile Creek	ESCHERICHIA COLI	2012	2014	High
SD-BS-R-BIG_SIOUX_13	Big Sioux River	Above Brandon to Nine Mile Creek	TOTAL SUSPENDED SOLIDS	2004	2022	High
SD-BS-R-BIG_SIOUX_13	Big Sioux River	Above Brandon to Nine Mile Creek	ESCHERICHIA COLI	2012	2014	High
SD-BS-R-BIG_SIOUX_13	Big Sioux River	Above Brandon to Nine Mile Creek	TOTAL SUSPENDED SOLIDS	2004	2022	High
SD-BS-R-BIG_SIOUX_14	Big Sioux River	Nine Mile Creek to near Fairview	TOTAL SUSPENDED SOLIDS	2004	2020	High
SD-BS-R-BIG_SIOUX_14	Big Sioux River	Nine Mile Creek to near Fairview	TOTAL SUSPENDED SOLIDS	2004	2020	High
SD-BS-R-BRULE_01	Brule Creek	Big Sioux River to confluence of its east and west forks	ESCHERICHIA COLI	2014	2018	High
SD-BS-R-BRULE_01	Brule Creek	Big Sioux River to confluence of its east and west forks	ESCHERICHIA COLI	2014	2018	High
SD-BS-R-EAST_BRULE_01	East Brule Creek	confluence with Brule Creek to S3, T95N, R49W	TOTAL SUSPENDED SOLIDS	2008	2009	High
SD-BS-R-EAST_BRULE_01	East Brule Creek	confluence with Brule Creek to S3, T95N, R49W	TOTAL SUSPENDED SOLIDS	2008	2009	High
SD-BS-R-FLANDREAU_01	Flandreau Creek	Big Sioux River to Minnesota Border	ESCHERICHIA COLI	2014	2029	High
SD-BS-R-FLANDREAU_01	Flandreau Creek	Big Sioux River to Minnesota Border	ESCHERICHIA COLI	2014	2029	High
SD-BS-R-SIXMILE_01	Six Mile Creek	Big Sioux River to S30, T112N, R48W	ESCHERICHIA COLI	2014	2020	High
SD-BS-R-SIXMILE_01	Six Mile Creek	Big Sioux River to S30, T112N, R48W	ESCHERICHIA COLI	2014	2020	High
SD-BS-R-SKUNK_01	Skunk Creek	Brandt Lake to Big Sioux River	ESCHERICHIA COLI	2014	2018	High
SD-BS-R-SKUNK_01	Skunk Creek	Brandt Lake to Big Sioux River	ESCHERICHIA COLI	2014	2018	High
SD-BS-R-UNION_01	Union Creek	Big Sioux River to confluence with East and West Forks	TOTAL SUSPENDED SOLIDS	2008	2010	High
SD-BS-R-UNION_01	Union Creek	Big Sioux River to confluence with East and West Forks	TOTAL SUSPENDED SOLIDS	2008	2010	High
SD-CH-L-NEW_WALL_01	New Wall Lake	Pennington County	MERCURY IN FISH TISSUE	2018	2020	High
SD-CH-L-NEW_WALL_01	New Wall Lake	Pennington County	MERCURY IN FISH TISSUE	2018	2020	High
SD-CH-R-BOX_ELDER_01	Box Elder Creek	Cheyenne River to S22, T2N, R8E	ESCHERICHIA COLI	2016	2029	High
SD-CH-R-BOX_ELDER_01	Box Elder Creek	Cheyenne River to S22, T2N, R8E	ESCHERICHIA COLI	2016	2029	High
SD-CH-R-CHEYENNE_01	Cheyenne River	WY border to Beaver Creek	TOTAL SUSPENDED SOLIDS	2012	2024	High
SD-CH-R-CHEYENNE_01	Cheyenne River	WY border to Beaver Creek	TOTAL SUSPENDED SOLIDS	2012	2024	High
SD-CH-R-CHEYENNE_02	Cheyenne River	Beaver Creek to Cascade Creek	SPECIFIC CONDUCTIVITY	2004	2013	High
SD-CH-R-CHEYENNE_02	Cheyenne River	Beaver Creek to Cascade Creek	TOTAL SUSPENDED SOLIDS	2004	2022	High
SD-CH-R-CHEYENNE_02	Cheyenne River	Beaver Creek to Cascade Creek	SPECIFIC CONDUCTIVITY	2004	2013	High
SD-CH-R-CHEYENNE_02	Cheyenne River	Beaver Creek to Cascade Creek	TOTAL SUSPENDED SOLIDS	2004	2022	High
SD-CH-R-CHEYENNE_03	Cheyenne River	Fall River to Cedar Creek	TOTAL SUSPENDED SOLIDS	2004	2013	High
SD-CH-R-CHEYENNE_03	Cheyenne River	Fall River to Cedar Creek	TOTAL SUSPENDED SOLIDS	2004	2013	High
SD-CH-R-CHEYENNE_04	Cheyenne River	Cedar Creek to Belle Fourche River	TOTAL SUSPENDED SOLIDS	2004	2013	High
SD-CH-R-CHEYENNE_04	Cheyenne River	Cedar Creek to Belle Fourche River	TOTAL SUSPENDED SOLIDS	2004	2013	High
SD-CH-R-CHEYENNE_05	Cheyenne River	Belle Fourche River to Bull Creek	TOTAL SUSPENDED SOLIDS	2004	2013	High
SD-CH-R-CHEYENNE_05	Cheyenne River	Belle Fourche River to Bull Creek	TOTAL SUSPENDED SOLIDS	2004	2013	High
SD-CH-R-CHEYENNE_06	Cheyenne River	Bull Creek to Lake Oahe	TOTAL SUSPENDED SOLIDS	2004	2013	High
SD-CH-R-CHEYENNE_06	Cheyenne River	Bull Creek to Lake Oahe	TOTAL SUSPENDED SOLIDS	2004	2013	High
SD-CH-R-SPRING_01	Spring Creek	S5, T25, R3E to Sheridan Lake	ESCHERICHIA COLI	2014	2021	High
SD-CH-R-SPRING_01	Spring Creek	S5, T25, R3E to Sheridan Lake	ESCHERICHIA COLI	2014	2021	High
SD-JA-L-ROY_01	Roy Lake	Marshall County (formerly SD-BS-L-ROY_01)	MERCURY IN FISH TISSUE	2018	2020	High
SD-JA-R-FIRESTEEL_01	Firesteel Creek	West Fork Firesteel Creek to mouth	ESCHERICHIA COLI	2010	2022	High
SD-JA-R-FIRESTEEL_01	Firesteel Creek	West Fork Firesteel Creek to mouth	TEMPERATURE	2004	2029	High
SD-JA-R-FIRESTEEL_01	Firesteel Creek	West Fork Firesteel Creek to mouth	TOTAL DISSOLVED SOLIDS	2004	2029	High
SD-JA-R-JAMES_03	James River	Columbia Road Reservoir	TOTAL SUSPENDED SOLIDS	2016	2029	High
SD-JA-R-JAMES_04	James River	Columbia Road Reservoir to near US HWY 12	TOTAL SUSPENDED SOLIDS	2016	2029	High
SD-JA-R-JAMES_09	James River	Sand Creek to I-90	TOTAL SUSPENDED SOLIDS	2004	2009	High
SD-JA-R-JAMES_11	James River	Yankton County line to mouth	TOTAL SUSPENDED SOLIDS	2004	2009	High
SD-JA-R-JAMES_11	James River	Yankton County line to mouth	ESCHERICHIA COLI	2016	2029	High
SD-JA-R-WOLF_01	Wolf Creek	Wolf Creek Colony to S5, T103N, R56W	ESCHERICHIA COLI	2012	2014	High
SD-JA-R-WOLF_02	Wolf Creek	Just above Wolf Creek Colony to the mouth.	ESCHERICHIA COLI	2012	2017	High
SD-LM-R-	Little Missouri River	Montana border to North Dakota border	TOTAL SUSPENDED SOLIDS	2010	2022	High
SD-MI-R-CROW_01	Crow Creek	Bedashosha Lake to Jerauld County line	ESCHERICHIA COLI	2016	2029	High
SD-MI-R-CROW_01	Crow Creek	Bedashosha Lake to Jerauld County line	TOTAL SUSPENDED SOLIDS	2016	2029	High
SD-MI-R-MEDICINE_01	Medicine Creek	Lake Sharpe to US Hwy 83	ESCHERICHIA COLI	2016	2029	High
SD-MI-R-PONCA_01	Ponca Creek	SD/NE border to US Hwy 183	ESCHERICHIA COLI	2016	2029	High
SD-MI-R-SHARPE_01	Missouri River (Lake Sharpe)	Oahe Dam to Big Bend Dam	TEMPERATURE	2010	2029	High
SD-MN-R-LAC QUI PARLE_W_BR_01	Lac Qui Parle River, West Branch	SD/MN border to S8, T115N, R47W	ESCHERICHIA COLI	2016	2029	High
SD-MN-R-WHETSTONE_S_FORK_01	South Fork Whetstone River	Headwaters to Lake Farley	ESCHERICHIA COLI	2012	2014	High
SD-MN-R-WHETSTONE_S_FORK_02	South Fork Whetstone River	Lake Farley to mouth	ESCHERICHIA COLI	2012	2014	High
SD-MN-R-YELLOW_BANK_N_FORK_01	North Fork Yellow Bank River	SD/MN border to S27, T120N, R48W	ESCHERICHIA COLI	2012	2014	High
SD-MN-R-YELLOW_BANK_S_FORK_01	South Fork Yellow Bank River	SD/MN border to S33, T118N, R49W	ESCHERICHIA COLI	2012	2014	High
SD-VM-R-VERMILLION_WEST_FORK_01_USGS	West Fork Vermillion River	Vermillion River to McCook-Miner County Line	ESCHERICHIA COLI	2010	2019	High
SD-VM-R-LONG_01	Long Creek	Vermillion River to Highway 44	ESCHERICHIA COLI	2010	2018	High
SD-VM-R-VERMILLION_E_FORK_01	East Fork Vermillion River	McCook/Lake County line to Little Vermillion River	ESCHERICHIA COLI	2016	2019	High

To address this need, SDSHC staff will provide planning, design and BMP installation technical assistance that will improve soil health and water quality in targeted watersheds. SDHSC staff will be trained in the use of NRCS conservation planning and related documentation. NRCS will allow SDSHC staff access to NRCS training courses, and agency materials such as maps, soils information, and existing conservation plans pending producer's approval. DENR will provide watershed assessment information and training in the use of water quality assessment techniques. Certified Technical Service Providers (TSPs) and Consultants will be used to provide engineering design and installation and conservation planning assistance when needed.

All Activities completed will be compiled and used in the development of annual reports and the final project report.

## **2.1 Project Need and Problems**

Most of the research and data collection within the state has shown that South Dakota's soil health continues to deteriorate while waterbodies continue to be listed or remain on the impaired list. The 2018 South Dakota Integrated Report for Surface Water Quality includes 62 lakes and 904 river/stream segments that are impaired. In most cases, soil health management practices and implementation of agricultural BMPs may help reduce the listed source of water quality impairment(s) through the reduction of nutrients, sediment, and bacteria draining from cropland and grasslands in the identified watersheds, while improving the soil health of those acres. With the increased rainfall amounts across the state in recent years, some areas have experienced more than double their normal rainfall amounts which calls for a need in increased water holding capacity on agricultural land. Improving soil health can be the answer to this need.

Many South Dakota producers are not aware of the benefits of improving soil health as it relates to water quality. Educating on no-till and reduce tillage farming methods, multispecies cover crop mixes, diverse crop rotations, livestock integration, rest-oriented grassland management, and deep-rooted perennials in crop rotations can help improve water quality and soil health. The information will be provided to producers within identified 303d listed watersheds and other areas of the state using a team of technical experts and experienced producers. The technical experts will explain implementation and benefits of new land management methods. Experienced producers will validate these methods by sharing the results from their operations.

South Dakota uses a partnership approach to address soil health and water quality in the state's watersheds. The approach includes integration of watershed assessment and implementation process along with Information and Education (I&E) activities. The process begins with soil health and water quality monitoring, followed by modeling, and ends with watershed project planning and implementation. The watershed assessment segments of the process are three or more years in duration with implementation taking six to ten years, or longer, depending on the scope of the work required.

Many of the sources of Nonpoint Source Pollution (NPS) are known in the later stages of the watershed assessment process. This project will use planning, I&E, and installation of best management practices in critical areas in a manner that ensures the partnership process strengthens and is implemented in an efficient manner for the citizens of South Dakota.



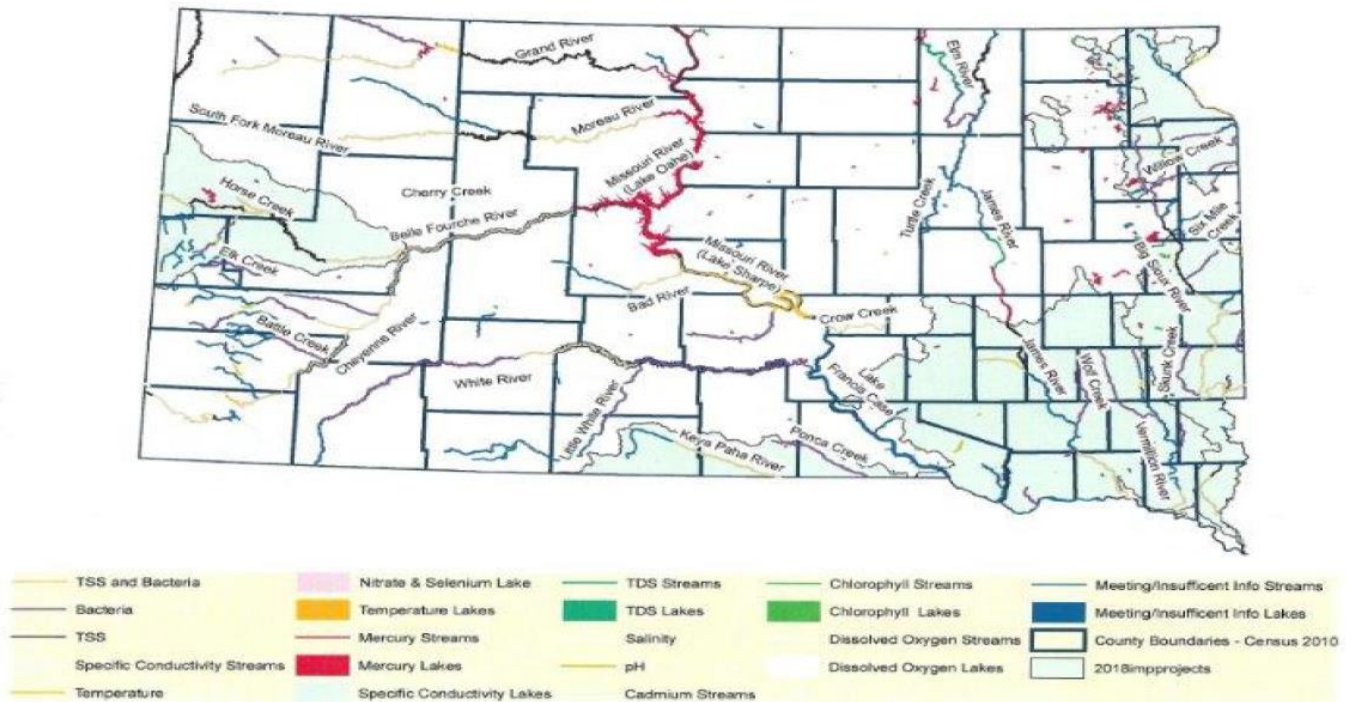
## 2.2 Active 319 Project Areas

Active Section 319 watershed projects in the state include the SouthCentral Watershed project, Northeast Glacial Lakes Watershed project, Little Minnesota River Basin, Belle Fourche River, Vermillion River, and the entire Big Sioux River watershed. This project will provide soil health assistance to these projects by providing funding and installation of soil health related BMPs, conservation planning, and I&E in targeted 12-digit HUs within those areas.

Programs that will be used to fund BMP installation, in addition to 319 funds, are anticipated to be: Conservation Reserve Program (CRP), Continuous Sign-up Conservation Reserve Program (CCRP), Environmental Quality Incentives Program (EQIP), Regional Conservation Partnership Program (RCPP), Agricultural Conservation Easement Program (ACEP), Conservation Stewardship Program (CSP), SD GFP, SD Dept of Ag, Coordinated Conservation Grants, Partners for Fish & Wildlife, Ducks Unlimited, and Pheasants Forever.

## 2.3 Maps

Current 319 Projects and Current WQ Impairments



DENR will provide the following maps:

- Watershed projects that will be partnered with by this project,
- County priority maps for targeting critical areas.

## 2.4 General Watershed Information

Watershed information is provided through assessment project implementation plans for the named watersheds. The watersheds are mainly agricultural and have a combination of row crops, small grains, grazing and hay land operations.

## **3.0 PROJECT DESCRIPTION**

In the initial two-year project, the Soil Health Coalition placed a project coordinator in the Big Sioux River watershed to provide one-on-one technical assistance to landowners. The individual was located in this watershed area so they could provide timely and efficient technical assistance; however, the Coordinator and other SDSHC staff and volunteers provided I&E and facilitated technical assistance statewide with an emphasis on 303(d) listed 12-digit HUs.

SDSHC staff will contact land owners and managers to provide them information about potential water quality benefits with soil health improvements and how management practices or BMPs could improve their operation. SDSHC staff will assist landowners by providing funding, technical assistance, BMP information, and planning and preparing applications for financial assistance when needed. Engineering design services and other specialized technical assistance services will be provided using NRCS Engineers and other specialists or contractual services with certified TSPs. Active 319 implementation project coordinators will also provide assistance when the Soil Health staff are working within the boundaries of their project.

Soil Health Project staff will be provided access to computers and software compatible with NRCS computer systems so that information can be readily shared. Landowner confidentiality will be maintained to NRCS standards.

### 3.1 Project Goal

The project goal is to restore and protect the beneficial uses of South Dakota waterbodies with a primary focus on high priority areas designated by SD DENR by implementing and promoting best management practices (BMP) within designated watersheds that reduce sediment, nutrient, and bacteria loadings and improve water quality by applying on the ground soil health type BMPs. The project will also provide information and education to local landowners, youth, communities, agency personnel, consultants and the general public to provide a better understanding of the importance, function and technical design of agricultural soil health practices and related water quality benefits.

### 3.2 Project Objectives and Tasks

#### **OBJECTIVE 1: Soil Health**

Install BMPs that will reduce nutrient, sediment, and fecal coliform bacteria loadings in watershed critical areas that will protect and restore the beneficial uses of waterbodies in South Dakota. Actively locate producers within 319 watershed boundaries with assistance from 319 watershed project coordinators, NRCS, or conservation district staff.

## Task 1: Plan and implement cropland best management practices

Technical and financial assistance will be provided to producers to reduce nonpoint source pollution. BMPs will be installed with landowner funds along with USDA programs (EQIP/CRP/WHIP), Wildlife agency programs such as Partners for Wildlife, Ducks Unlimited, Pheasants Forever, US Fish & Wildlife Service, and SD Game Fish & Parks), and SD DENR Section 319 NPS funds. Establishing a soil health system into farms and ranches can have great benefits to both soil health and water quality. Soil organic matter can be increased through implementation of soil health system. This system can increase soil resilience to changes in climate and reduce runoff thereby increasing the capacity of the soil to retain water throughout the year, benefiting the water, land and producer. Adding cover crops to a crop rotation provides known benefits to the producer and increases water quality by reducing erosion, increasing infiltration, increasing soil biodiversity and organic matter, and scavenging essential nutrients. Cover crops also buffer precipitation extremes by reducing excessive moisture during high precipitation events and retaining subsurface moisture during low precipitation/high temperature periods. Reducing or eliminating tillage on cropland and increasing crop diversity provides similar benefits to soil structure and hydrology and subsequent benefits to producers and watersheds.

### Product 1: Crop rotation

To benefit soil health and water quality, a crop rotation must include a minimum of three different crop rotations (cool season grass, cool season broadleaf, warm season grass, warm season broadleaf, wheat, corn, sunflowers, etc.—see attachment for lists). The rotation should contain high residue crops for maximum ground cover. Diversity increases soil water holding capacity and increasing soil organic matter by 1% increases the soils ability to capture increased gallons of water per acre, thus reducing run-off. It was determined that organic matter holds 10 times its weight in water. Funding for crop rotation practices will be sought through USDA and other partners.

Milestones: Increase crop rotations: 1000 acres **500 acres**  
 Cost: \$11,000      **319:** \$0      **USDA:** \$11,000      **Local:** \$0 **\$5500**

### Product 2: Reduced and tillage management/No-till

The 2017 cropping systems inventory, conducted by the NRCS and partners in South Dakota, showed the use of no-till on cropland acres remains under 50% across the state. However, priority watersheds having low no till acres coincide. The same cropping systems inventory showed that areas with low adoption rates of no-till are also areas with a lack of diversity in the crop rotation, including cover crops. Failure to manage additional water, groundcover, or compaction through diversity, including cover crops, can result in discouragement and loss of interest in no-till systems. Funding for crop rotation practices will be sought through USDA and other partners.

Milestones: Reduce tillage/no-till: 1,000 acres **500 acres**  
 Cost: \$18,000      **319:** \$0      **USDA:** \$18,000 **\$9,000**      **Local:** \$0

### Product 3: Cover Crops

Implementing cover crops on cropland can reduce soil erosion, increase soil moisture, and improve soil health. Cover crops produce more vegetation biomass than volunteer plants; these crops do transpire water, increase water infiltration, and decrease surface runoff and runoff velocity. Cover crops help reduce total suspended solids (TSS) and improve water quality. Cover-crop species selection and its management determine the benefits and returns.

Milestones: Cover crop plantings: 2,000 acres **1,000 acres**  
 Cost: \$112,000    **319:** \$31,000 **\$28,000** **SRF-WQ:** \$25,000    **Local:** \$56,000 **\$28,000**

### Product 4: Cropland Grazing

Grazing can occur on crop aftermath (high residue crops) and cover crops provided 60 percent residue is maintained to ensure that there is adequate remaining plant material for the benefit of soil health and water quality. Adequate resting of native grasslands and pastures increases their ability to infiltrate water which reduces runoff.

Milestones: Grazing management: 2,000 acres **1000 acres**  
 Cost: \$0    **319:** \$0    **SRF-WQ:** \$0    **Local:** \$0 **\$10,000**

### Responsible Agencies

- South Dakota Soil Health Coalition
- South Dakota Association of Conservation Districts
- South Dakota Department of Environment and Natural Resources
- Watershed Projects
- Natural Resources Conservation Service

### Task 2: Plan and implement grassland best management practices

Technical and financial assistance will be provided to producers to reduce nonpoint source pollution to nearby waters. BMPs will be installed with landowner investments along with funding from Section 319 NPS funds, USDA programs (EQIP/CRP/WHIP), as well as Wildlife agency programs (Partners for Wildlife, etc., DU, PF, US F&W and SD GF&P).

### Product 5: Forage/Biomass planting

Establish plantings of tame grass and legumes or native grass and forbs will be established. Establish grass plantings in perennial or intermittent riparian areas within 319 project areas to improve water quality. The width of the riparian area must be at least 20-feet. Staff will monitor the establishment of plantings prior to cost-share of the BMP. Before and after photo verification and upload to the State's Tracker database will be completed to demonstrate the effectiveness of the BMP. Seed variety will be determined by the SDSHC with help from local experts in the project area. 319 project funds reimbursed by this project can cover up to 50% of the cost for the seed to be planted.



Milestones: Grass plantings: 130 acres **50 acres**  
 Cost: \$13,000      **319:** \$2,000 **\$5,000** **USFWS:** \$1,000      **Local:** \$10,000

Product 6: Pollinator planting

Establish plantings of a variety of grasses, forbs and legumes along field boundaries to reduce soil erosion. Funding will be sought through USDA and other partners.

Milestones: Pollinator plantings: 5 acres **2 acres**  
 Cost: \$7,000      **319:** \$0      **SRF-WQ:** \$0      **Local:** \$7,000 **\$2,000**

Product 7: Pasture Grazing

Riparian Buffers, stock watering BMPs, and fencing. Work directly with landowners and if additional assistance is needed, coordination with partners will be sought to apply needed practices to alleviate resource concerns and protect water quality. Staff will monitor the establishment of plantings prior to cost sharing the BMP. Before and after photo verification and upload to the State's Tracker database will be completed to demonstrate the effectiveness of the BMP. Funding for Grazing Management will be sought through USDA and other partners.

Milestones: Riparian grazing management: 1,000 acres **1100 acres**  
 Cost: \$ 70,000      **319:** \$20,000 **\$10,000** **USFWS:** \$10,000      **Local:** \$40,000 **\$15,000**

## **OBJECTIVE 2. Develop and Distribute Information & Education**

### **Task 3: Create an awareness of project goals and objectives**

SDSHC and its partners are creating an awareness of water quality and soil benefits from soil health practices through media presentations in local news sources, mailings, and web-based information. Staff will also attend and deliver presentations at meetings of young producer workgroups, co-op meetings, local work groups, water development districts, USDA State Technical Committee, NPS Task Force, 319 Watershed project board meetings, Conservation Commission, etc.

Product 8: Presentation

Milestones: Presentations: 4 **2**  
 Cost: \$1,000      **319:** \$0      **SRF-WQ:** \$0      **Local:** \$1,000 **\$500**

Product 9: News articles

Milestones: News articles: 3 **1**

Cost: \$4,000      **319:** \$0      **USDA:** \$3,000      **Local:** \$1,000 **\$1000**

#### **Task 4: Demonstration plot/tour/workshops**

SDSHC and partners hold demonstration tours of soil health practices applied highlighting effective water quality benefits.

Product 10: Tours/workshops.

Four tours/workshops will be conducted to demonstrate the results of diverse rotations and deep-rooted perennials, methods of applying cover crops in row crops to including inter-seeding or aerial applications, and proper placement of fertilizer, testing for soil fertility and the economics of these activities.

Milestones: Tours/workshops: 4 **2**  
 Cost: \$10,000      **319:** \$0      **USDA:** \$4,000      **Local:** \$6,000 **\$2500**

Product 11: No-till Demonstration Plots.

Secure land for demonstration plot of no till farming totaling 40 acres in 12- digit HUs where no-till farming is uncommon and demonstration plots totaling 40 acres of cover crops installed in 12-digit HUs.

Milestones: No-till Demonstration Plots: 80 acres **20 acres**  
 Cost: \$15,000      **319:** \$0      **USDA:** \$4,000      **Local:** \$11,000 **\$5,000**

#### Responsible Agencies

- South Dakota Soil Health Coalition
- South Dakota Association of Conservation Districts
- Local Conservation Districts
- Local Stakeholders
- Department of Environment and Natural Resources
- Natural Resources Conservation Service

### **OBJECTIVE 3. Project Management and Administration**

**Task 5: Develop Communication plan with all watershed coordinators within South Dakota complimenting the established projects in the watersheds. Communication will be key to success with the project achieving water quality on impaired waterbodies. Working together for the benefit of the lakes, streams and all waterbodies in South Dakota.**

Product 12: Project communications.

Contact all 319 watershed coordinators on at least bimonthly basis informing of producer contacts and outreach projects planned and inform them of any activities occurring in their

watersheds or throughout the state. The cost to complete the contacts will be salary costs for project SDSHC staff.

Milestones: Coordinator contacts: 24 **36**  
 Cost: \$0                      **319:** \$0                      **SRF-WQ:** \$0                      **Local:** \$0

**Task 6: Coordinate partner communication**

Product 13: Board Meetings.

Inform all partners to SDSHC monthly board meetings for updates.

Milestones: Board meetings: 24 **36**  
 Cost: \$0                      **319:** \$0                      **SRF-WQ:** \$0                      **Local:** \$0

**Task 7: Monitor project progress and evaluate project**

Project progress will be monitored to determine the soil health and water quality impacts of the project and to provide information to DENR. The location of BMPs designed and installed will continue to be mapped and provided to DENR using ARCmap, CD, CART and the Tracker database. NPS load reductions expected from the BMPs will be calculated and provided to DENR through Tracker. The programs used to determine the load reduction are those approved by DENR for this purpose which include the DENR Tracker database, STEPL and RUSLE2. When tracking BMPs installed in a watershed, a unique identifier is used. Progress in building partnerships and developing nonpoint source abatement plans will be gauged by the milestones achieved and the number of contacts or partnerships developed. Annual project status reports will be prepared and submitted to DENR for entry into GRTS. The cost to complete the monitoring, reporting and location maps will primarily be salary costs of project staff.

Product 14: Reports.

Milestones: GRTS reports: 2 **1**  
                     Final report: 1  
 Cost: \$0                      **319:** \$0                      **SRF-WQ:** \$0                      **Local:** \$0

Annual GRTS & Final Reports

Responsible Agencies

- South Dakota Soil Health Coalition
- South Dakota Association of Conservation Districts
- South Dakota Department of Environment and Natural Resources

**3.3 Milestone Table** (attached Appendix B)

- 3.4 Permits are not required for planning activities. When a BMP is ready for installation, project staff will assist the producer with securing any required water rights, building permits, 401, 404 and storm water construction permits. They will also ensure compliance with all local, state or federal requirements such as the threatened and endangered species act and historic/cultural resources requirements.
- 3.5 The South Dakota Soil Health Coalition is the project sponsor. While the Soil Health Coalition is a new organization to South Dakota, they are working closely with the South Dakota Association of Conservation Districts to implement this project which has been awarded and successfully completed, several Section 319 Grants. Among these are the Bootstraps Project, animal nutrient management and buffer teams. The Association has also provided management services and/or staff for several other Section 319 grants which includes the, South Central, Central Big Sioux, Upper Big Sioux, Northeast Glacial Lakes, and Belle Fourche.
- 3.6 The project or partner that contracts with the landowner/operator will be responsible for ensuring compliance with BMP operation and maintenance requirements for the life of the practice in accordance with NRCS technical standards.

#### **4.0 COORDINATION PLAN**

##### **4.1 Agencies and their responsibilities:**

*South Dakota Soil Health Coalition* – The Project Sponsor which will extend its contract with the SDSHC (project) coordinator through SDACD. South Dakota Soil Health Coalition staff includes Coordinator, Communications Coordinator, and Soil Health Technicians directed by the SDSHC Board of Directors. The SDSHC Coordinator will facilitate and organize project activities, report on project activities and progress, voucher for grant funds, and provide record keeping. Project staff will give presentations at meetings with local work groups, the State Technical Committee, NPS Task Force, the Conservation Commission, etc.

*South Dakota Association of Conservation Districts* – Will assist the project sponsor by entering into a contract with SDSHC to carry out the project activities. SDACD staff includes the executive director, supervised by a Board of Directors. SDACD will assist the project sponsor in coordinating project activities, reporting, vouchering for grant funds, and providing record keeping. SDACD will solicit local conservation district staff and other local interest groups in targeting the delivery of technical assistance to landowners.

*Conservation Districts* – Will provide technical assistance for BMP installation, assist with BMP prioritization, public information assistance, host local meetings, and coordinate with local work groups for USDA funding.

*South Dakota Department of Game, Fish & Parks* – Will provide technical and financial assistance through several private lands wildlife habitat programs they administer; these programs also provide nonpoint source pollution control benefits. The SDGF&P Private Lands Program will coordinate with the Second Century Program and Every Acre Counts project.

*Natural Resources Conservation Service* – Will provide technical assistance and training access to records and maps, cost share assistance for BMP installation through those USDA programs authorized in the Farm Bill, and assistance with Information and Education.

*Farm Service Agency* – Will provide financial assistance through those USDA cost-share or land retirement programs authorized in the Farm Bill.

*US Fish and Wildlife Service* – Will provide technical and financial assistance including necessary grazing practices on cropland system through programs they administer such as Partners for Fish and Wildlife and the North American Wetlands Conservation Act.

*US Environmental Protection Agency* – Will provide Section 319 grant funds to South Dakota DENR.

*Ducks Unlimited Inc.* – Will provide technical and financial assistance through cost share and technical staff promoting project and coordinating project.

*Pheasants Forever and Quail Forever Inc.* – Will provide technical and financial assistance through cost share technical staff promoting and coordinating project.

*SD DENR* – Will administer SRF-NPS Water Quality Funds, EPA Section 319 grant funds, and will provide technical assistance for project planning and management and training.

*SDSU Extension* – Will provide contractual services for a portion of an FTE (0.10) to coordinate/assist with information transfer and soil health school; management and coordination of demonstration sites; and serve as an important point of contact for producers.

#### 4.2 **Project Support**

Application for this project is supported by the USDA-Natural Resources Conservation Service, USDA-Farm Services Agency, USDI-Fish and Wildlife Service, South Dakota State University Extension, South Dakota Department of Agriculture, SD Game Fish and Parks, South Dakota Department of Environment and Natural Resources, SDACD and all involved Conservation Districts.

#### 4.3 **Non-duplication of Effort**

This project is a partnership of local, state, and federal agencies that provide technical and financial assistance for the implementation of NPS TMDLs in South Dakota. The project is managed to maximize the delivery of technical assistance and minimizes duplication of effort. For example, Pheasants Forever working in partnership with NRCS and the South Dakota Department of Game, Fish and Parks and Pheasants Forever has placed wildlife habitat specialists in several areas of South Dakota to assist in these agencies with wildlife habitat planning. Their activities will be coordinated with this project to avoid duplication of effort. The project compliments established watershed projects to avoid duplication and establish practices in priority areas.

#### 4.4 **Assumption of the Responsibilities of Other Entities**

Every Acre Counts and Second Century Program will compliment the project with opportunities to establish financial assistance on additional acres.



Pheasants Forever and Ducks Unlimited, in partnership with the Natural Resources Conservation Service and the South Dakota Department of Game, Fish and Parks, has placed wildlife habitat specialists in seven areas of South Dakota to assist in wildlife habitat planning. Program activities will be coordinated with these project teams to avoid overlap and duplication of contacts. These entities indicate they expect their project to continue.

The South Dakota Association of Conservation Districts will provide information to and coordinate with the NRCS State Technical Committee and subcommittees to coordinate the funding through those USDA programs authorized in the Farm Bill. The Association will also work with other Section 319 projects to coordinate and augment their efforts.

## **5.0 EVALUATIONS AND MONITORING PLAN**

- 5.1 The evaluation and monitoring plan includes documentation of project activities and BMPs installed. Load reductions and BMP implementation information will be provided to DENR as part of the GRTS report and provided to Section 319 projects in the areas serviced. STEPL will be used to evaluate the load reductions calculated from the BMP's implemented. Load reductions of BMP's implemented with financial assistance from this project will be credited to this project .
- 5.2 Water quality sampling is not included in the project work plan. Therefore, a sampling and analysis plan will not be developed. Any sampling near implemented practices will be completed by the respective implantation project staff.
- 5.3 The project staff will document all project activities and report these activities to the South Dakota Soil Health Coalition and SDACD executive director who will submit the annual report for this project. The annual report will be prepared by October 31 of each year during the period of performance of the award. The annual reports will be available to all local, tribal, state, and federal agencies and organizations in the project area. Annual reports will also be posted on the SDACD and SDSHC web site.

Project activities that will be documented include:

- On-farm visits and landowner/operator contacts and follow-ups, plans developed as result of visits/contacts, and BMPs implemented
- Partnership building contacts/presentations and report of results
- Workshop and tour attendance and activities generated through workshops or tours
- News releases and other media contacts (TV/Radio) and indications of activities generated as result of releases or contacts
- Presentations/attendance at meetings where project activities are discussed (conservation boards, local governments, tribal governments, lake associations) and reports of activities generated as result of presentations
- Before and after photos of certain best management practices implemented
- Project expenditures and receipts for all funds spent
- Local cash match and in-kind contributions
- A final project report

Data collected during this project, and documentation of project activities and expenditures will be compiled and used to draft a final report prepared following guidance provided by DENR. The report will focus on this project and contain a comparison of planned versus completed activities, estimate of load reductions achieved, and an evaluation of success in relation to the project goal. Copies of the report will be provided to the Association's project partners.

**6.0 BUDGET** (attached Appendix A)

**7.0 PUBLIC INVOLVEMENT** (see objective 5)

6.0: SDSHC Budget - Appendix A to Exhibit A September 1, 2020 to August 31, 2022 Amendment	Project Funding																		
	2020	2021-	2022-	Total	319		SRF-WQ	Federal	Federal	State	State	Federal	Local	Local	Local	Local-	Local	Local-	
	2021	2022	2023			319		(USDA)	(USDA)	SDGFP	SDGFP	USFWS	PF, DU, JRWDD	PF, DU	SDSHC	SDSHC	Producers	Producers	
Project Coordinator (1.0) wages & benefits	\$ 60,000	\$ 61,000	\$ 63,000	\$ 184,000	\$ 51,000	\$ 63,000	\$ 60,000	\$ 10,000										\$ 0	
Expenses (Travel, mileage, Per diem, office supplies)	\$ 15,000	\$ 15,000	\$ 12,000	\$ 42,000	\$ 20,000	\$ 12,000	\$ 10,000											\$ 0	
Contract Management	\$ 5,000	\$ 5,000	\$ 5,000	\$ 15,000	\$ 5,000	\$ 5,000	\$ 5,000												
Audit		\$ 1,000	\$ 0	\$ 1,000	\$ 1,000	\$ 0												\$ 0	
SDSU Extension Outreach Coordinator/Information Specialist (Indirect included)	\$ 8,000	\$ 8,000	\$ 8,000	\$ 24,000		\$ 0	\$ 4,000								\$ 8,000	\$ 12,000			
<b>Objective 1 - Install BMP's</b>				\$ 0															
<i>Task 1. Plan and implement cropland best management practices</i>				\$ 0															
Product 1: Crop rotation (1000 acres x\$11.00/ac) 500	\$ 5,500	\$ 5,500	\$ 5,500	\$ 16,500	\$ 0	\$ 0	\$ 11,000											\$ 5,500	
Product 2: Reduce tillage management and No-till (1000 acres x\$18/ac) 500	\$ 9,000	\$ 9,000	\$ 18,000	\$ 36,000	\$ 0	\$ 0	\$ 18,000	\$ 9,000										\$ 9,000	\$ 0
Product 3: Cover Crop (2000 acres x \$28/ac) 1000	\$ 56,000	\$ 56,000	\$ 56,000	\$ 168,000	\$ 31,000	\$ 28,000	\$ 25,000						\$ 15,000					\$ 13,000	\$ 56,000
Product 4: Cropland grazing (2000 acres) 1000	\$ 0	\$ 0	\$ 10,000	\$ 10,000	\$ 0													\$ 10,000	\$ 0
<i>Task 2: Plan and implement grassland best management practices</i>				\$ 0															
Product 5: Forage/biomass planting (130 acres x\$100/ac) 50 ac x 100/ac	\$ 6,500	\$ 6,500	\$ 5,000	\$ 18,000	\$ 2,000	\$ 5,000			\$ 5,000	\$ 1,000				\$ 1,500					\$ 3,500
Product 6: Pollinator Planting (5 acres x\$100/ac) 2acx100ac	\$ 3,500	\$ 3,500	\$ 2,000	\$ 9,000	\$ 0	\$ 0			\$ 2,250				\$ 1,000	\$ 2,250				\$ 1,000	\$ 2,500
Product 7: Pasture grazing	\$ 35,000	\$ 35,000	\$ 25,000	\$ 95,000	\$ 20,000	\$ 10,000			\$ 10,000	\$ 10,000	\$ 10,000		\$ 5,000	\$ 10,000					\$ 20,000
<b>Objective 2 - Develop and distribute I &amp; E</b>				\$ 0															
<i>Task 3: Create awareness of project goals and objectives</i>				\$ 0															
Product 8: Presentations (4) (2)	\$ 500	\$ 500	\$ 500	\$ 1,500											\$ 500	\$ 1,000			
Product 9: News articles (3) (1)	\$ 2,000	\$ 2,000	\$ 1,000	\$ 5,000			\$ 3,000								\$ 1,000	\$ 1,000			
<i>Task 4: Demonstration plot/tour/workshops</i>				\$ 0															
Product 10: Tour/workshops (4) (2)	\$ 5,000	\$ 5,000	\$ 2,500	\$ 12,500			\$ 4,000								\$ 2,500	\$ 2,000			\$ 4,000
Product 11: Demonstration plots no-till (40 acres) (20) and cover crop (40acres) 20acres	\$ 7,500	\$ 7,500	\$ 5,000	\$ 20,000			\$ 4,000								\$ 2,500			\$ 2,500	\$ 11,000
<b>TOTALS</b>	\$ 218,500	\$ 220,500	\$ 218,500	\$ 657,500	\$ 130,000	\$ 123,000	\$ 100,000	\$ 54,000	\$ 9,000	\$ 17,250	\$ 10,000	\$ 11,000	\$ 21,000	\$ 13,750	\$ 14,500	\$ 16,000	\$ 41,000	\$ 97,000	
Ineligible for match								\$ 54,000	\$ 9,000			\$ 11,000							
319 portion					43.36%														
Matching portion					49.61%														
																		<b>Matching Total:</b>	<b>\$ 583,500</b>

3.3: Milestone Table--Appendix B to Exhibit A																	
Soil Health Improvement and Planning Segment 2 Amendment 1			Year 1					Year 2					Year 3				
September 1, 2020–August 31, 2022 September 1 2022–August 31, 2023			2020		2021			2022			2022		2023				
Goal/Objective/Task	Groups	Quantity	Sept	Oct-Dec	Jan-Mar	Apr-June	July-Sept	Oct-Dec	Jan-Mar	Apr-June	July-Aug	Sept	Oct-Dec	Jan-Mar	Apr-June	July-Aug	
<b>Project Management</b>																	
Coordinator	1,2,3,4,6	1	1														
SDSU Information Specialist	1,2,3,4,6	1	1														
<b>Objective 1: Install BMP's</b>																	
Task 1: Plan and implement cropland best management practices																	
Product 1: Crop rotation	1,2,3,4,5,6	0	0	0	0	0	0	0	0	0	0						
Product 2: Reduce tillage management and No-till	1,2,3,4,5,6	0	0	0	0	0	0	0	0	0	0						
Product 3: Cover crops	1,2,3,4,5,6	3000	750			500	750					500				500	
Product 4: Cropland grazing	1,2,3,4,5,6	0	0	0	0			0									
Task 2: Plan and implement grassland best management practices																	
Product 5: Forage/biomass planting	1,2,3,4,5,6	180	20	70				40								50	
Product 6: Pollinator Planting	1,2,3,4,5,6	7	1			2				2						2	
Product 7: Pasture grazing	1,2,3,4,5,6	2100		700				700					200			200	
<b>Objective 2: Develop and Distribute I &amp; E</b>																	
Task 3: Create Awareness of project goals and objectives																	
Product 8: Presentations	1,2,3,4	6			1	1		1		1			1			1	
Product 9: News articles	1,2,3	4		1		1			1					1			
Task 4: Demonstration plot/tour/workshops																	
Product 10: Tour/workshops	1,2,3,6	6	1			1	1			1		1			1		
Product 11: Demonstration plots no-till and cover crops																	
No-till demonstration plots (40 acres)	1,2,4,5,6	60			20			20								20	
Cover crop demonstration plots (40 acres)	1,2,4,5,6	60	10		10			10				10				10	
<b>Objective 3: Project Management and Administration</b>																	
Task 5: Develop Communication plan																	
Product 12: Contact watershed coordinators 12 times per year	1,2,4,5,6	36	2	3	3	3	3	3	3	3	2	2	1	3	3	3	
Task 6: Coordinate partner communication																	
Product 13: Monthly meetings																	
Invite partners to monthly meetings for updates	1,2,4,6	36	2	3	3	3	2	3	3	3	2	2	1	3	3	3	
Task 7: Monitor project progress and evaluate project																	
Product 14: GRTS reports	1,2,4			1				1						1			
Product 15: Final Report	1,2,4										1					1	
Groups: 1. South Dakota Association of Conservation Districts 2. South Dakota Soil Health Coalition 3. USDA-Natural Resources Conservation Service/Farm Service A			4. SD Department of Environment and Natural Resources 5. Private Consultants and /or TSPS 6. South Dakota State University														