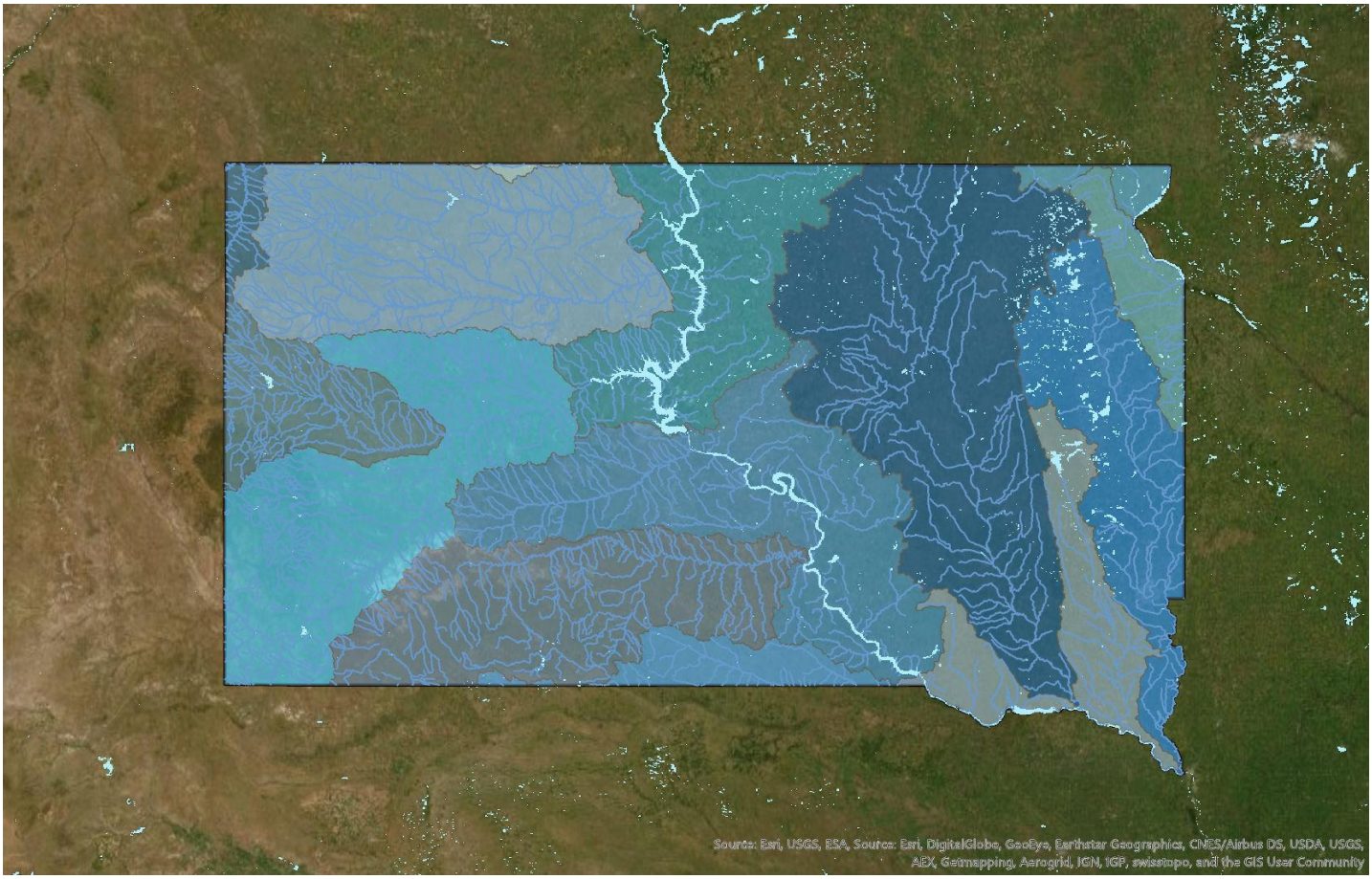

Watershed Resiliency Projects

Programmatic Environmental Assessment
South Dakota | ***November 2021***

FEMA

Federal Emergency Management Agency
U.S. Department of Homeland Security

Denver Federal Center
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Denver, CO 80225-0267

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ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
ARSD	Administrative Rules South Dakota
ASFMP	Association of State Floodplain Managers
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
BNSF	Burlington North Santa Fe Railway
BRIC	Building Resilient Infrastructure and Communities
BUILD	Brownfields Utilization, Investment, and Local Development Act
CDBG-DR	Community Development Block Grant – Disaster Recovery
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CWA	Clean Water Act
DANR	Department of Agriculture and Natural Resources
DHS	Department of Homeland Security
DOI	Department of the Interior
DRRA	Disaster Recovery Reform Act of 2018
EA	Environmental Assessment
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
EWP	Emergency Watershed Protection
FEMA	Federal Emergency Management Agency
FFRMS	Federal Flood Risk Management Standard
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
GPD	Grants Program Directorate
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HUD	U.S. Department of Housing and Urban Development
LANDFIRE	Landscape Fire and Resource Management Planning Tools
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1996
NPA	National Parks Service
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NVC	National Vegetation Classification
NWI	National Wetlands Inventory
OEM	Office of Emergency Management
OSHA	Occupational Health and Safety Administration
OFD	One Federal Decision
PA	Public Assistance
PDM	Pre-Disaster Mitigation Program
PEA	Programmatic Environmental Assessment
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Compliance
ROD	Record of Decision
ROW	Right of Way
SEA	Supplemental Environmental Assessment
SDCL	South Dakota Codified Law
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Officer
SRIA	Sandy Recovery Improvement Act
SWPPP	Storm Water Pollution Prevention Plan
THPO	Tribal Historic Preservation Officer
TRI	Toxics Release Inventory
UFR	United Federal Review
USACE	United States Army Corps of Engineers
USC	United States Code
USCB	United States Census Bureau
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

SECTION ONE | INTRODUCTION

1.1 OVERVIEW

The mission of the Federal Emergency Management Agency (FEMA) is to reduce the loss of life and property and protect our institutions from all hazards by leading and supporting the nation in a comprehensive, risk-based emergency management program of mitigation, preparedness, response, and recovery. This Programmatic Environmental Assessment was prepared in accordance with Unified Federal Review as outlined in The Sandy Recovery Improvement Act (SRIA) of 2013, Section 6: Unified Federal Review mandates the establishment of an "…expedited and unified interagency review process to ensure compliance with environmental and historic requirements under Federal law relating to disaster recovery projects, in order to expedite the recovery process, consistent with applicable law." [i] [ii] [iii] *The Disaster Recovery Reform Act of 2018, Section 1220, requires FEMA to report on the Unified Federal Environmental and Historic Preservation review process, established pursuant to Stafford Act Section 429—Unified Federal Review, and report on an analysis of whether and how the unified process has expedited the interagency review process to ensure compliance related to disaster recovery projects; conduct a survey and analysis of categorical exclusions used by other federal agencies that may be applicable to any activity related to a major disaster or emergency; and provide recommendations on further actions, including legislative proposals, to expedite and streamline the review process.*

The Federal Government, through multiple agencies and their programs, proposes to perform comprehensive watershed resiliency actions through river restoration, bank stabilization, structure demolition, relocation, or alteration, and hydraulic capacity mitigation measures for restoring watershed function. These actions may be implemented under funding programs from various federal agencies. [iv] [v] [vi] [vii] [viii]

Issued on August 15, 2017, Executive Order (EO) 13807: Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects requires Federal agencies to process environmental reviews and authorization decisions for "major infrastructure projects" as One Federal Decision (OFD). The EO sets a government-wide goal of reducing the average time to complete required environmental reviews and authorization decisions for major infrastructure projects to not more than two years from publication of a notice of intent to prepare an environmental impact statement (EIS) to issuance of a record of decision (ROD) prepared under the National Environmental Policy Act (NEPA). The EO also requires all Federal authorization decisions for the construction of these projects to be completed within 90 days of the issuance of a ROD. One of the goals of the EO is to ensure that the Federal environmental review and permitting process for infrastructure projects is coordinated, predictable, and transparent. Specifically, the EO directs Federal agencies with a role in the environmental review and permitting process for a major infrastructure project.

The Federal Emergency Management Agency (FEMA) has prepared this Programmatic Environmental Assessment (PEA) to analyze the potential environmental consequences associated with the proposed actions, while providing a framework for the evaluation of Federal and State laws and regulations. The proposed action and no action alternative(s) are being analyzed in accordance with the National Environmental Policy Act of 1969 (NEPA)[1], the Council on Environmental Quality (CEQ) implementing regulations[2] and the Emergency Management and Assistance Code of Federal Regulations (CFR)[3]. This analysis is programmatic in nature and does not address individual site-specific impacts, which will be evaluated for individual projects prior to approval.[ix]

This PEA evaluates typical actions undertaken by federal agencies, or any entity responsible for federal level environmental compliance, (referred to hereafter as 'The Agencies'), to provide financial support or technical assistance to these coalitions, or to any disaster recovery or hazard mitigation project, covered by the scope of this document in the state of South Dakota. This includes preparing for, and recovering from, future major disaster events such as flooding, fires, and tornados, which result in similar impacts to watershed environments. This PEA also provides the public and decision-makers with the information required to understand and evaluate the potential environmental consequences of these actions, and to consider these impacts in decision making. For wildfire recovery actions that do not affect watersheds, but are not categorically excluded from NEPA review, the *Wildfire Hazard Mitigation Projects in the State of South Dakota - September 2019* PEA can be utilized.

1.2 BACKGROUND

Over the last twenty years, South Dakota has experienced ongoing substantial damage from flooding and severe storms. From 2001 through 2021, over thirty Presidential Major Disaster Declarations have been issued for storms and flooding in the State of South Dakota and related Tribes. Above normal soil moisture throughout the state, compounded by two decades of flooding and additional precipitation, have resulted in overland, river, and flash flooding on a near-annual basis. Exacerbated by climate change, flooding throughout the state has resulted in expanding the area and volume of wetlands immediately adjacent to structures, and has widened riverbanks and rerouted flow patterns, causing damage to watersheds. As an indirect result of these weather events and combined with slow drainage due to the unique flat terrain of low-lying areas of South Dakota, the rise in wetland water levels causes inundation of infrastructure, submerging many of the structures under an average of 0.5 to 2 feet of water from spring until fall freeze. Many are also inundated with flood waters for extended periods of time, from several months or up to several

[1] 42 United States Code [USC] 55 parts 4321 et seq., 2000
[2] 40 Code of Federal Regulations [CFR] 30 parts 1500 et seq., 2004
[3] 44 Code of Federal Regulations [CFR] Ch. I Part 10, and 23 CFR 771., 2013

years, with the existence of damages impeding traditional watershed functionality as a result of major disaster events.

1.3 PROCESS FOR USE OF PEA

NEPA and its implementing regulations direct federal agencies to take into consideration the consequences of proposed actions on the human and natural environment during the decision-making process. All federal agencies must comply with NEPA before making Federal funds available. FEMA has taken the lead in determining that the projects under consideration for funding have reached the level where an Environmental Assessment is required and can be grouped by type of action or location. FEMA proposes that the groups of actions related to restoring watershed function can be evaluated in a PEA for compliance with NEPA and its implementing regulations without the need to develop an individual agency Environmental Assessment (EA) for every action.

In accordance with Unified Federal Review, as outlined in the SRIA, DRRA, and the One Decision EO #13807, FEMA is required to coordinate with other federal agencies in order to facilitate a comprehensive strategy to address recovery and mitigation efforts.

The interagency environmental analysis found that the project types identified in this PEA will not have a significant impact on the quality of the environment. Compliance with all other federal, tribal, state, and local laws, regulations, Executive Orders, etc. is required and will be evaluated on a project-specific basis. If the description of the site-specific project work and the levels of analysis are fully and accurately described in this PEA, then the Agencies will take no further action other than what is necessary to support and document that conclusion in a Record of Environmental Consideration (REC). All projects reviewed using this PEA must use the Compliance Checklist (Appendix D) to document the project specific information and that the project is consistent with this PEA. If a specific project is expected to (1) create impacts not described in this PEA; (2) create impacts greater in magnitude, extent, or duration than those described in this PEA; or (3) require mitigation measures to keep impacts below significant levels that are not described in this PEA; then a Supplemental Environmental Assessment (SEA) is to be prepared by the grantee, to address the specific action. The SEA would be tiered from this PEA, in accordance with 40 CFR Part 1508.28. Actions determined during the preparation of the SEA to require a more detailed or broader environmental review than covered in this document will be subject to a project specific EA.

1.4 AREA OF STUDY

The project area of this PEA encompasses the State of South Dakota, including 66 Counties and nine Tribal Reservations (**Figure 1-1**).

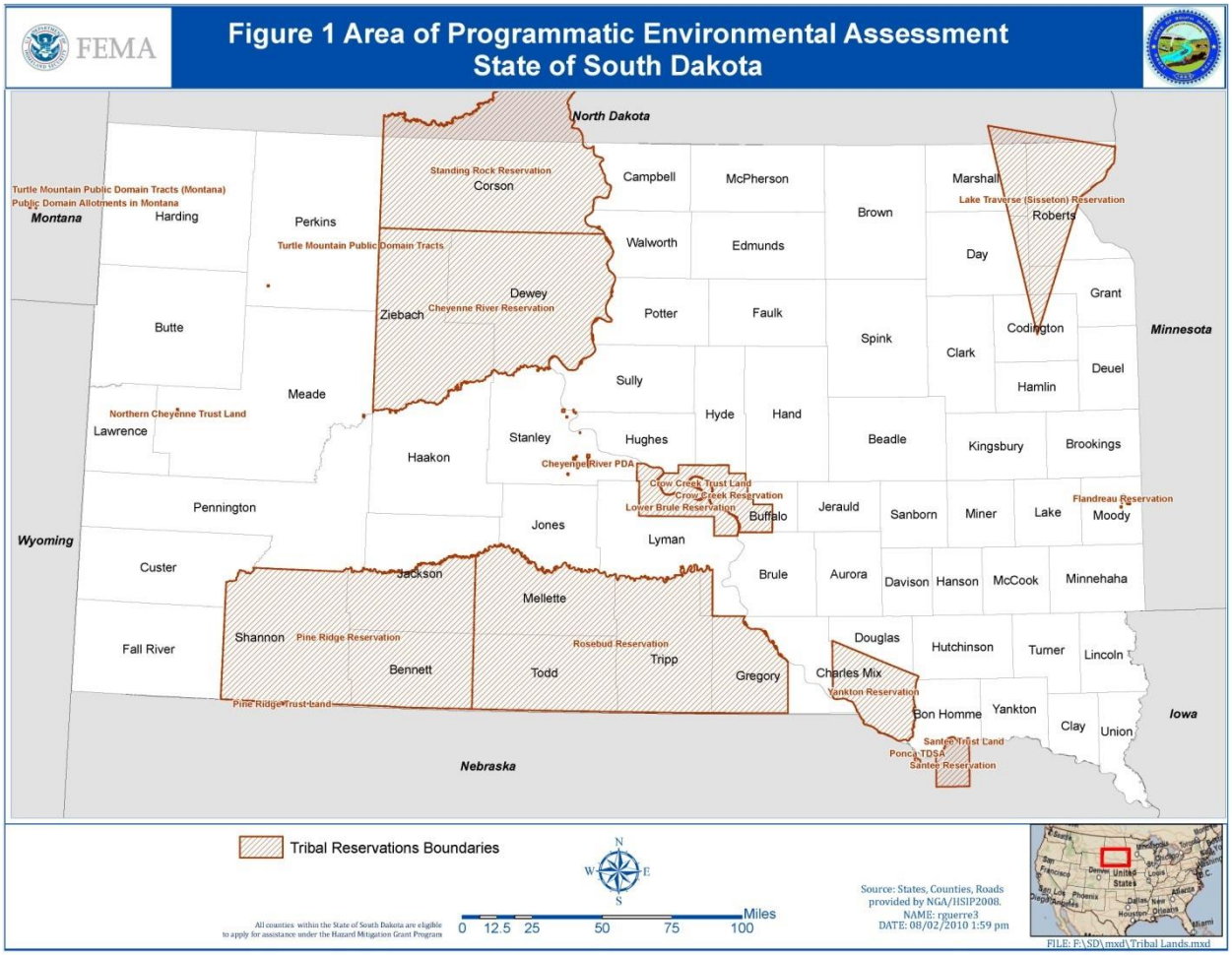

Figure 1-1: Area of Programmatic Environmental Assessment - State of South Dakota

SECTION TWO | PURPOSE AND NEED

2.1 PURPOSE AND NEED

This PEA addresses numerous individual projects where comprehensive watershed resiliency actions will be undertaken by the agencies to provide permanent restoration of function to facilities impacted by losses to watersheds. It also addresses hazard mitigation activities that reduce disaster losses to watersheds from future disaster damages and protect life and property. These actions are applicable to all proposed alternatives described in this document. This PEA also provides the public and decision-makers with the information required to understand and evaluate the potential environmental consequences of these actions, and to consider these impacts in decision making. The purpose of this action is to help agencies fulfill and expedite the environmental review process required by NEPA.

The Agencies will use this PEA to determine the level of environmental analysis and documentation required under NEPA for any of the proposed alternatives. Projects will be funded with a variety of federal sources, including but not limited to: grants provided by FEMA, the Federal Highways Administration (FHWA), Natural Resources Conservation Service (NRCS) and U.S. Department of Agriculture (USDA), and the U.S. Department of Housing and Urban Development (HUD). Other Federal Agency (OFA) grant programs may also be applicable. The U.S. Army Corps of Engineers (USACE) will be responsible for issuing appropriate Clean Water Act (CWA) Section 404 permits as required. These agencies all have programs that share a similar goal of helping state, local, or tribal governments recover from disasters and mitigate future losses. The purpose of the proposed projects is to meet these programs' goals.

During the increasingly long periods of inundation following disaster events, residents may not have access to their homes and local governments may be unable to provide emergency services, including fire, police, and ambulance, creating a potential threat to life, public health, and safety. The gradual rise in water level elevations has resulted in hundreds of millions of dollars in damage due to the inundation of facilities, including roads, utilities, land, and homes, and has created the need for this action. Structures become inundated by water in wetland areas that have no natural outlet for water to drain, resulting in indeterminate durations of inundation, even without additional precipitation. Federal funds may be used in an effort to make structures safe and useable, and the watersheds functional and more resilient.

These projects will satisfy the need to restore watershed hydraulic capacity and floodplain capacity in the State of South Dakota through:

- Nature-based and biologically inspired mitigation measures such as bank stabilization using natural materials and re-vegetation in combination with hard armoring, referred to as bioengineering;[4]
- Multi-objective project design of hydraulic control elements such as fish-passage friendly drop structures, energy dissipating fish ladders or the creation of recreational open space to preserve watershed functions;[5]
- Demolition, relocation, or transfer of function for structures, including public utilities and roads, that currently impede, or threaten to impede, watershed functions; and
- Watershed restoration and mitigation including channel shaping or re-profiling, floodplain construction, overflow channel construction, riparian re-vegetation, and in-stream habitat improvement.

All actions must comply with all applicable Federal, Tribal, State, and local laws, regulations, ordinances, and requirements. Other Federal agencies may use this document to demonstrate compliance with NEPA at their discretion and under their own authorities.

[4] See Sections 4.8 and 4.9 of this PEA and Appendix F: *Engineering with Nature*

[5] See Sections 4.8 and 4.9 of this PEA and https://www.fema.gov/emergency-managers/risk/hazard-mitigation-planning/best-practices and Appendix F: Engineering with Nature. Another useful, though dated, resource is Using Multi-Objective Management to Reduce Flood Losses in Your Watershed prepared by the Association of State Floodplain Managers Inc (ASFPM), in 1996. https://cdn.ymaws.com/floodplain.org/resource/resmgr/old_website_files/Using_MOM_in_Watershed.pdf

SECTION THREE | ALTERNATIVES

3.1 INTRODUCTION

The following alternatives are being considered for further evaluation in this PEA. These alternatives represent classes of actions that may be implemented individually or in combination with one another. Depending upon the action determined necessary by the Agencies to restore and improve watershed function, and the individual characteristics of the specific site, some options may not be viable.

3.2 ALTERNATIVES CONSIDERED

Alternative 1: No Action

A "No Action" alternative is required to be included in this environmental assessment in accordance with the Council on Environmental Quality (CEQ) regulations implementing NEPA. The "No Action Alternative" is defined as maintaining the status quo with no Agency involvement. This alternative is used to evaluate the effects of not performing watershed resiliency activities and so provides a benchmark against which other alternatives may be evaluated.

Existing watershed conditions enable chronic infliction of damages to infrastructure, properties, and watershed elements in future overtopping events. Additionally, the existing watershed deposition features shallow drainage corridors that run through flat low-lying areas, presenting threats to adjacent communities. Conveyance of large debris can destroy emergency access to communities and cause destruction of private property. In this scenario, communities will become isolated and suffer delayed emergency response actions and medical services. The conveyance of large debris combined with infrastructure damage can also block or destroy safe egress for evacuations, creating the potential for loss of life.

In this alternative there is likelihood that recovery projects would still be completed by locals or private landowners and may be approached in an uncoordinated manner that does not appropriately consider environmental impacts. Individual projects may accomplish inconsistent hydraulic capacity, creating upstream or downstream impacts. Unpredictable downstream flows could lead to chronic infrastructure and property damages and unpredictable flood events. Infrastructure with insufficient hydraulic capacity could lead to structural failure and risk loss of life. A lack of watershed capacity coordination could have lasting effects on South Dakota agricultural resources.

For the purpose of this programmatic environmental analysis, under the "No Action Alternative" the State of South Dakota and individual project proponents would have to rely on savings, insurance, loans, or other forms of assistance to restore watersheds.

Alternative 2: Watershed Resiliency Activities

This alternative applies to restoration, replacement, and mitigation of existing watershed elements. It differs from "No Action", in that it includes watershed restoration activities with natural and cultural resource consideration, bioengineering and multi-objective design considerations as outlined in section four of this PEA. Watershed flood hazards would be mitigated without major relocation of watershed elements. In some locations leaving watershed features in post-flood locations may be the safest and/or most cost-effective option.

Changes to materials and dimensions are included in this alternative. This includes upgrades to meet existing codes and standards as well as upgrades warranted to address conditions that have changed since the original construction. Structures, such as public roads, utilities, and buildings may be demolished or relocated. In the case of stream corridors that no longer serve as functional drainage, bank stabilization and/or grade control may be needed to restore stream corridor function and stability.

"Alternative 2" will result in the redistribution of sediment, rock, woody debris, and other materials within watersheds to reestablish appropriate hydraulic capacity of stream corridors, river channels and accompanying floodplains. Engineering plans, which define the appropriate geometry and elevations to reestablish desired hydraulic capacity, and a monitoring plan of action that oversees all contractor activity utilized to complete the scope of work, will be required. Local standard Best Management Practices (BMP), to prevent erosion, sedimentation, contamination, and the spread of noxious weeds must be implemented. Standard BMPs are available from local municipal authorities and technical documentation can be found through the South Dakota Department of Agriculture & Natural Resources (DANR).

Watershed restoration generally involves the following activities:

- General construction activities within previously defined right of ways (ROW).
- Creation of access and staging areas when needed to move trucks and heavy equipment
- Dewatering to allow operations in-stream
- Use of heavy equipment within a floodplain, stream bank or in-stream position
- Establishment of temporary low-flow channels
- Grading, shaping, and re-vegetation of watersheds by seeding or planting
- Restoration of floodplain dimension, pattern, and profile

Creating access may require removing riparian vegetation, excavating and bank filling, grading, and stabilization. The number of access routes should be minimized. Access routes and staging areas should be located within un-vegetated and previously disturbed areas. Existing riparian vegetation should not be disturbed or buried. Dewatering diverts water within a stream, resulting in dry conditions needed to perform work. Some projects will require usage of heavy equipment either from the bank or in-stream.

In establishing a low-flow channel, heavy equipment is used to excavate an impaired streambed to restore the stream's channel on its outside bends. The low-flow channel maintains the base flow (normal stream flow during average periods of rainfall) of the stream, aids in transporting fine sediment, and reduces impacts to aquatic habitats. Grading and shaping affected stream banks may be necessary during the finishing phase of a job to create slopes with a gradient suitable for sustaining vegetative growth. Reestablishing vegetation is accomplished by hand or mechanical seeding or planting. Any disturbed areas should be restored using native riparian plant species and weed-free mulch and fertilizers.

Debris use or disposal involves a number of choices, and the advantages and disadvantages of each option are affected by feasibility and cost. The method selected depends on the circumstances at the disposal site and an evaluation of how disposal may affect the environment. Debris can be used for a number of purposes either on-site or off-site. Construction and demolition debris or any debris containing hazardous materials requires special consideration. Disposal should follow all applicable State and local regulations regarding handling and disposal. Regulations can be found through the South Dakota Department of Agriculture & Natural Resources Solid Waste - Waste Management Program.[6]

Cobbles or boulders may be used to stabilize banks, although retention of cobbles on site may contribute to the debris load in flood events. Where practical, cobbles and debris will be removed from the floodplain. Cobble and gravel can be used to restore fish habitat and/or to dissipate energy. Root wads (tree trunks with root structure intact) and tree trunks can also be used to stabilize stream banks but must be anchored in a way to prevent release back into the waterway.[7] Further technical documentation on seed and plant sources and Riparian and Bioengineering can be found through the Natural Resources Conservation Service (NRCS) Plant Materials Program.[8]

3.3 ALTERNATIVES NOT CONSIDERED

Applicants for federal grant funding may repair watershed elements to pre-disaster condition or have mitigation upgrades under programs like FEMA Public Assistance (PA), Building Resiliency Infrastructure (BRIC), Hazard Mitigation Grant Programs (HMGP), and/or additional programs that fall into Categorical Exclusion under NEPA, and will be evaluated accordingly. No further review of these types of projects will be considered in this PEA.

[6] South Dakota Department of Agriculture & Natural Resources | Solid Waste - Waste Management Program: https://danr.sd.gov/Environment/WasteManagement/SolidWaste/default.aspx
[7] See Sections 4.8 and 4.9 of this PEA and https://www.fema.gov/emergency-managers/risk/hazard-mitigation-planning/best-practices and Appendix F: Engineering with Nature for more information on the types of bank stabilization and fish passage required by this alternative.
[8] Plant Materials Program | Riparian and Bioengineering | Natural Resources Conservation Service: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/plantmaterials/technical/publications/?cid=stelprdb1043002

SECTION FOUR | AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the affected environment or existing conditions for each resource area and evaluates the environmental consequences of the "No Action" alternative and the proposed action. Each subsection analyzes a resource area and includes a description of the relevant laws that impact the analysis and a discussion on whether additional consultation and coordination would be required on a project-specific basis when tiering from this PEA. The evaluation of the proposed action describes the potential impacts of each eligible activity and provides potential mitigation measures and BMPs that may be employed to avoid, minimize, or mitigate impacts. Post-project implementation of maintenance activities under potentially required operations and maintenance plans is analyzed under each subsection.

4.1 PHYSICAL RESOURCES

4.1.1 Affected Environment

Geology and Soils

South Dakota can be split into three main regions: East River, West River, and the Black Hills. The state has a diverse geology, ranging from the western black hills; lifted and folded by tectonics and then eroded, to the eastern plains; overlain by glacial till and dissected by wind and water. Upper Cretaceous, Mesozoic, and Tertiary formations largely make up the western half of South Dakota, while Pleistocene glacial deposits make up the east, bisected by the Missouri River that runs generally through the middle of the State.[x]

South Dakota is mostly flat with an average elevation of 2,200 feet, the highest point being Black Elk Peak (7,242 feet) in the black hills, and the lowest point being Big Stone Lake (966 feet) on the border of Minnesota. Black Elk Peak is the highest point in the U.S. East of the Rockies.[xi]

The South Dakota State soil is "Houdek Loam", and consists of very deep, well drained, loamy soils that were formed under the influence of prairie grass. Houdek soils are found throughout the state.[xii]

Soil types present in a specific project area will vary widely depending on the location of the project. South Dakota contains 17 soil taxonomic suborders, as shown in **Figure 4-1** and summarized in **Table 4-1.**[xiii]

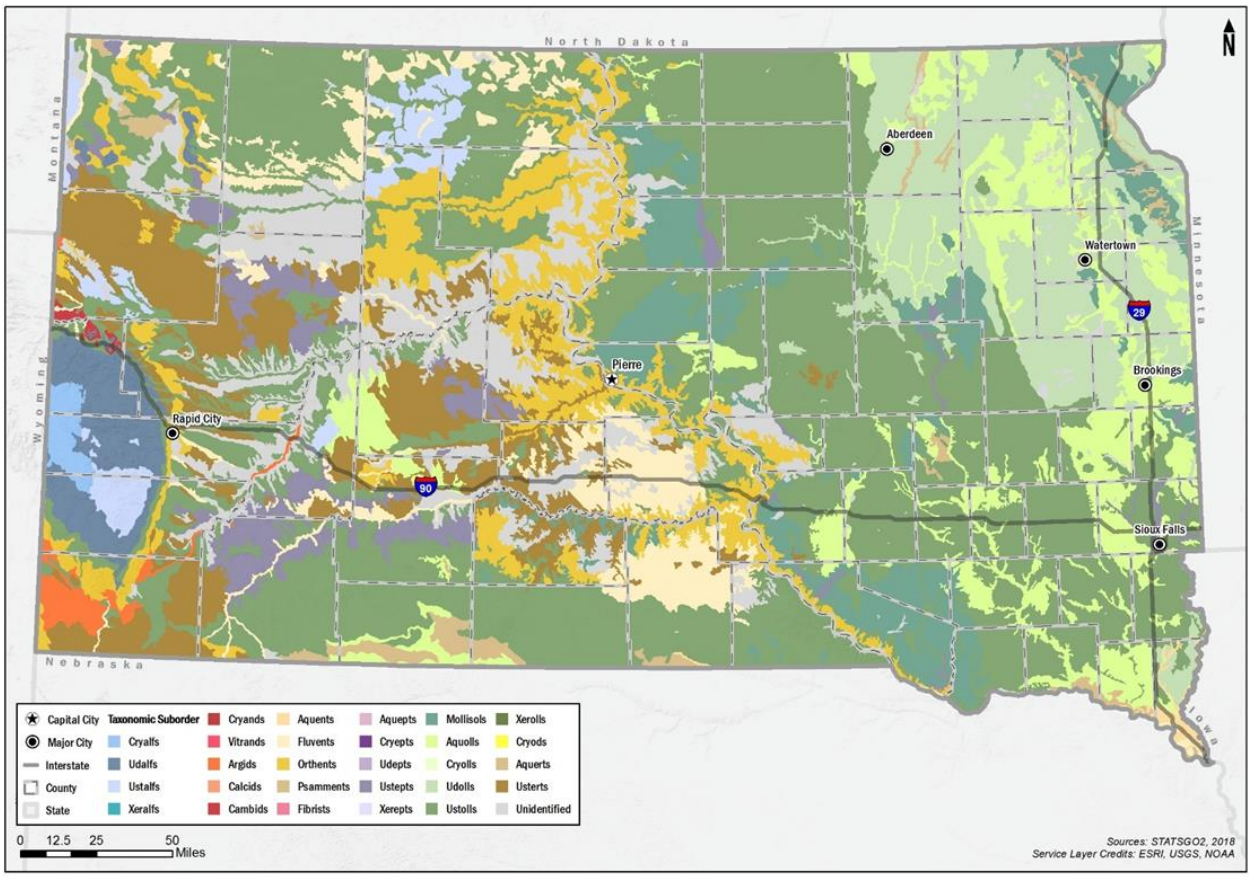

Figure 4-1: Soil Taxonomy Suborders

Table 4-1: Soil Taxonomy Suborders

Taxonomic Suborder	Area (Acres)	Percent of Total
Ustolls	18,797,712	38.5%
Udolls	4,401,415	9.0%
Unidentified	4,301,188	8.8%
Aquolls	3,885,708	7.9%
Usterts	3,875,826	7.9%
Orthents	3,439,390	7.0%
Albolls	3,044,860	6.2%
Fluvents	2,371,261	4.9%
Ustepts	1,487,736	3.0%
Udalfs	1,060,295	2.2%
Ustalfs	846,629	1.7%
Psamments	421,631	0.9%
Argids	312,544	0.6%
All Other Suborders	635,726	1.3%
Total	**48,881,920**	**100.0%**

Source: NRCS 2019

In some areas of the state, the underlying geology leads to the formation of important aquifers or may form important habitats for listed species, such as the karst geology critical to cave-obligate species. Water resources, including sole source aquifers, are discussed in section **4.8 WATER RESOURCES**. Wildlife habitats and listed species are discussed in section **4.9 BIOLOGICAL RESOURCES**.

Topography in the state varies substantially and is shown in **Figure 4-2**. Although a project area may cover a relatively small horizontal distance, the topography may still vary widely from essentially level areas, to vertical cliffs and rock outcrops.

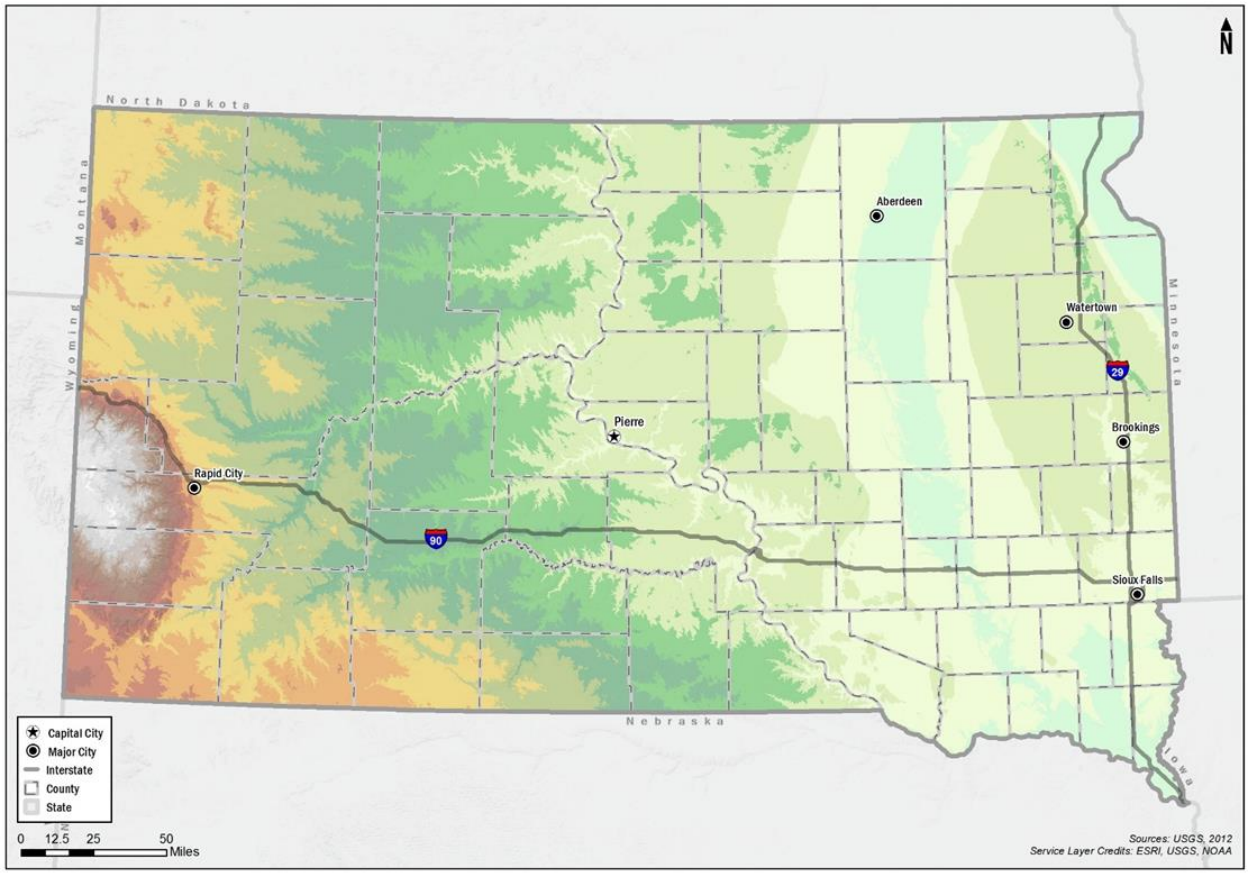

Figure 4-2: Topography

Land Use

South Dakota has a total area of 75,811 square miles, including 1,305 square miles of water. It has a population density of 11.7 people per square mile, which is lower than the national average of 86.1 persons per square mile.[xiv] Major cities in the state include: Sioux Falls, Rapid City, and Aberdeen. Common land uses were evaluated using EPA ecoregion data and are summarized in **Table 4-2**.[l] In general, land uses in South Dakota include cattle grazing and ranching, farming, and wildlife habitat. South Dakota has two national parks – Badlands and Wind Cave.[xv]

Table 4-2: Common Land Uses by EPA Ecoregion

Ecoregion	Common Land Uses
Northwestern Great Plains	Cattle grazing and ranching, farming, and some wildlife habitat
Northern Glaciated Plains	Extensive farming, grazing; some wildlife habitat
Northwestern Glaciated Plains	Cattle grazing and farming; some wildlife habitat
Middle Rockies	Grazing, recreation, hunting, timber production, some suburban development
Western Corn Belt Plains	Farming and grazing; transportation corridor
High Plains	Cattle grazing; some farming and timber production
Nebraska Sand Hills	Cattle ranching and some hayland
Lake Agassiz Plain	Farming, grazing, and some wildlife habitat

Source: EPA 2021

Land use in South Dakota consists primarily of Great Plains mixed grass and Fescue Prairie areas (35.39%) and Agricultural Cultivated Cropland (34.66%) according to the National Land Cover Data. Developed urban areas cover 2.82% of South Dakota's land. Land cover composition is shown in **Table 4-3**.[xvi]

Table 4-3: Land Cover of South Dakota

Land Cover Classes	State Totals Units in Square Miles	Percentage
Forest & Woodland	4,168	5.4%
Temperate Grassland & Shrubland	8,619	11.2%
Northwestern Great Plains Mixed-grass Prairie	26,848	34.8%
Desert & Semi-Desert	531	0.7%
Open Rock Vegetation	594	0.8%
Orchards Vineyards and Other High Structure Agriculture	0	0.0%
Cultivated Cropland	26,725	34.7%
Pasture/Hay	4,054	5.3%
Developed, High Intensity	1,334	1.7%
Developed, Low Intensity	147	0.2%
Developed, Medium Intensity	47	0.1%
Developed, Open Space	650	0.8%
Quarries, Mines, Gravel Pits and Oil Wells	9	0.0%
Introduced Upland Vegetation - Annual Grassland	115	0.1%
Introduced Upland Vegetation - Perennial Grassland and Forbland	935	1.2%
Modified/Managed Southern Tall Grassland	14	0.0%
Recently Disturbed or Modified	53	0.1%
Fresh Water	2,272	2.9%
Total	**77,115**	**100.0%**

Source: USGS 2011

According to the Economic Research Service of the U.S. Department of Agriculture, there were 43,243,742 acres in South Dakota classified as farmland and 29,968 farms in 2017. [xvii] Prime farmland is found throughout the state. Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to food, feed, forage, fiber, and oilseed crops. South Dakota had approximately 6,479,100 acres of nonfederal prime farmland recorded in 2017. This represents over 13 percent of the State's total land area, or 14 percent of the non-federal land in South Dakota. Nationally, 65 percent of soils classified as prime farmland are being used for cropland. In South Dakota, 85 percent of the soils classified as prime farmland are being utilized. There has been a gradual loss of prime farmlands overall in South Dakota; approximately 108,800 acres of prime farmland were converted for urban or rural development between 1982 and 2017.[xviii]

4.1.2 Environmental Consequences

Alternative 1: No Action

This alternative does not include any federal action. "Alternative 1" has potential to pose safety threats, permanently displace residents, further economic strains on the State of South Dakota, alter drainage and flow rates, and change land use if watersheds are not restored to functional capacity. Loss in residential, commercial, agricultural, or recreational land use may occur.

Alternative 2: Watershed Resiliency Activities

This alternative applies to restoration or replacement of watershed features and as such, a hydrologic and hydraulic study will be used to determine the best redistribution for watersheds. Although this will affect the physical environment, the "No Action" alternative is expected to alter stream corridors at a more significant rate than the proposed actions. Watershed features are expected to remain within the previous ROW, thus no changes in land use are anticipated.

4.2 TRANSPORTATION FACILITIES

4.2.1 Affected Environment

South Dakota has a diverse transportation network composed of roadways, railways, and airports. South Dakota's road network comprises 81,969 miles of public roadways, of which 2,431 miles are federally owned. South Dakota has two major interstates that provide connections for intercity and interstate travel (**Table 4-4**).[xix] Additionally, 10 U.S. highways provide access throughout South Dakota (**Figure 4-3**).

Table 4-4: Major Interstates and Cities Served in South Dakota

Interstate	Major Cities Served (Population larger than 5,000)
I-29	Brookings, Sioux City, Sioux Falls, Watertown
I-90	Brandon, Mitchell, Rapid City, Sioux Falls, Spearfish

Source: Federal Highway Administration 2018

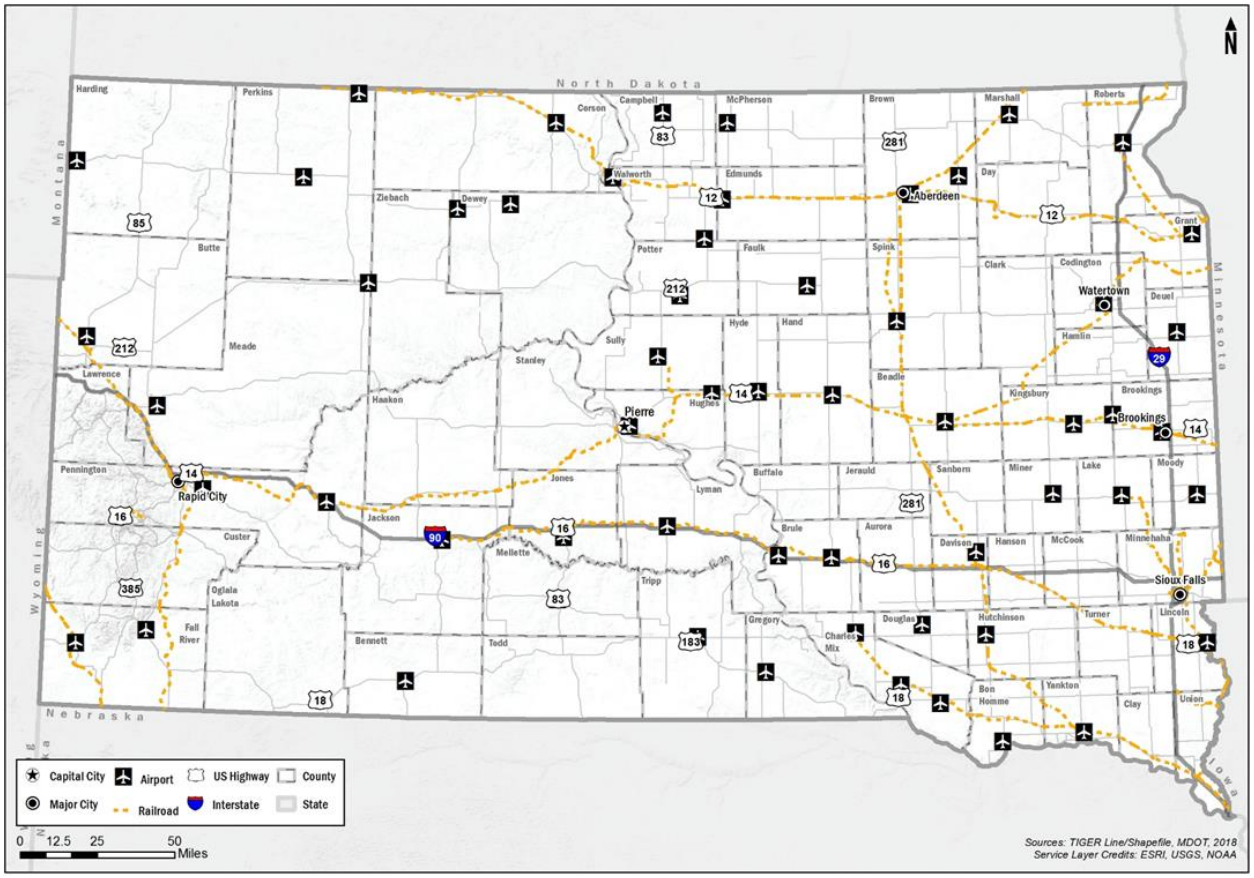

Figure 4-3: Transportation Network

The Burlington Northern Santa Fe (BNSF) Railway owns approximately 900 miles of track in South Dakota, and the Rapid City, Pierre & Eastern Railroad owns nearly 600 miles. Combined, these two railroads encompass nearly 80 percent of the rail system in South Dakota.[xx] There are no Amtrak lines or stations within the State[xxi]. Five commercial service airports in South Dakota serve the cities of Sioux Falls, Watertown, Aberdeen, Pierre, and Rapid City. The remaining airports in the state provide services for general aviation, which includes all aviation activity not related to military or scheduled airline operations.[xxii]

4.2.2 Environmental Consequences

Alternative 1: No Action

This alternative does not include any federal action. Immediate threats would persist unless actions to restore watershed function would be provided by the State and/or local municipalities. This alternative may result in significant adverse impacts due to increased travel times and traffic volumes, as damages to transportation facilities would remain.

Alternative 2: Watershed Resiliency Activities

This alternative applies to restoration or replacement of existing watershed elements in the existing location, or relocation of transportation facilities. Short term impacts would be expected during construction as traffic delays and alternate routes may be required. No significant adverse long-term impacts are expected to the transportation volume, capacity, and time of transit. The transportation facilities would be more resilient and less likely to experience substantial damage from future severe weather events.

4.3 SAFETY AND OCCUPATIONAL HEALTH

4.3.1 Affected Environment

Safety and occupational health issues include exposure to natural hazards; one-time and long-term exposure to asbestos, lead, radiation, chemicals, and other hazardous materials; and injuries or deaths resulting from a one-time accident. Safety and occupational health concerns could impact personnel working on the project and in the surrounding area, as well as travelers near the project sites. Buildings and infrastructure that are damaged or isolated in the streambed can create public safety issues. Structures constructed prior to 1978 have the potential to contain lead-based paint or asbestos.

Lead exposure can result from paint chips or dust, or inhalation of lead vapors from torch-cutting operations. Lead exposure can adversely affect the human nervous system. Exposure to lead based paint is especially dangerous to small children. Occupational Health and Safety Administration (OSHA) considers all painted surfaces in which lead is detectable to have a potential for occupational health exposure.

Asbestos exposure can result from the inhalation of dust from a plethora construction materials or household products. In 1988 the EPA issued regulations requiring certain companies to report the asbestos used in their products. However, to this day, these products can easily be found anywhere in the United States. Asbestos fibers cannot be seen with the naked eye, and when inhaled, can cause asbestosis that often progresses to disability and death. [xxiii]

4.3.2 Environmental Consequences

Alternative 1: No Action

This alternative does not include any federal action. Residents, communities, and properties would be left susceptible to significant future damages. Materials could be washed downstream impacting other structures. These materials may have the potential to cause both lead and asbestos exposure. A "No Action" alternative may also result in restricted access for emergency, police, and fire services, causing the potential for significant delay. The "No Action" alternative provides a significant adverse safety affect to residents of the State of South Dakota.

Alternative 2: Watershed Resiliency Activities

"Alternative 2" would have no significant impact to public safety or occupational health. Communities are expected to benefit from watershed resiliency activities. Removal or redistribution of materials with painted surfaces or containing asbestos may be required and construction workers are required to follow OSHA regulations to provide appropriate asbestos abatement and avoid release of lead from paint. Construction workers and equipment operators are required to wear appropriate personal protective equipment (PPE) and be properly trained for the work being performed. All solid or hazardous wastes that might be generated during restoration or replacement must be removed and disposed of at a permitted facility or designated collection point (e.g., for solid waste, a utility or construction company's own dumpster). Standard construction traffic control measures will be used to protect workers, residents, and the travelling public.

4.4 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.4.1 Affected Environment

South Dakota had an estimated population of 886,667 persons in 2020. A summary of the racial composition in the state is provided in **Table 4-5,** based on the 2019 American Community Survey 5-year estimates.[xxiv]

Table 4-5: Racial Composition

Race	Number of Persons	Percent of Total
One race	847,801	97.4%
Two or more races	22,837	2.6%
Total population	**870,638**	**100%**
White	733,719	84.3%
Black or African American	17,531	2.0%
Hispanic or Latino (of any race)	33,024	3.8%
American Indian and Alaska Native	76,190	8.8%
Asian	12,627	1.5%
Native Hawaiian and Other Pacific Islander	504	0.1%
Some other race	7,230	0.8%
Total population	**870,638**	**100%**

Source: USCB 2019

In 2019, the poverty rate in South Dakota was 11.9 percent, which was higher than the national rate of 10.5 percent. According to the U.S Census, the population of South Dakota in 2010 was 816,463; in 2013 it was 844,877, with an estimated 884,659 in 2020. The five largest cities in South Dakota according to 2019 Census data were: Sioux Falls with 183,793; Rapid City with 77,503; Aberdeen with 28,257; Brookings with 24,415; and Watertown with 22,174. The Majority of the Census respondents (97%) identified themselves as being of one race. Of those who identified themselves as being of one race, 84.3% identified themselves as being White and 8.8% identified themselves as being American Indian or Alaska Native. [xxv]

There are nine federally recognized American Indian tribes in South Dakota: Cheyenne River Sioux Tribe of the Cheyenne River Reservation, Crow Creek Sioux Tribe of the Crow Creek Reservation, Flandreau Santee Sioux Tribe of South Dakota, Lower Brule Sioux Tribe of the

Lower Brule Reservation, Oglala Sioux Tribe (previously listed as Oglala Sioux Tribe of the Pine Ridge Reservation), Rosebud Sioux Tribe of the Rosebud Indian Reservation, Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, Standing Rock Sioux Tribe (North Dakota and South Dakota), and the Yankton Sioux Tribe of South Dakota.[xxvi]

4.4.2 Environmental Consequences

Alternative 1: No Action

This alternative does not include any federal action. There is no requirement for compliance with Executive Orders (EO) 12898: Environmental Justice, 13045: Protection of Children from Environmental Health Risks and Safety Risks, or 13985: Advancing Racial Equity and Support for Underserved Communities Through the Federal Government since there are no federal actions. "Alternative 1" has potential to result in significant adverse impact to the socioeconomics of a community if watershed elements are left in disrepair, leaving infrastructure and private property vulnerable to major disaster events. Residents may be isolated from their homes and businesses by roadway damages. The "No Action" alternative may cause significant damages to property and compromise infrastructure.

Alternative 2: Watershed Resiliency Activities

During the construction period, this alternative may provide some short-term benefits by providing construction jobs and a multiple effect of increased expenditures in the local economy. There may be effects to populations during construction periods due to road detours, to provide access to watershed features.

Efforts would be made during any construction to minimize short-term disruption to the local transportation system. This alternative also likely benefits underserved populations, as decreased watershed function can disproportionally affect these communities. Any adverse impacts to low income or minority populations are expected to be minor and short-term.

4.5 AIR QUALITY

4.5.1 Affected Environment

Air quality is regulated by EPA under the jurisdiction of the Clean Air Act (CAA) of 1970 and its amendments. EPA has generally applied a two-pronged approach to controlling air pollution: 1) setting National Ambient Air Quality Standards (NAAQS) that define maximum pollution levels in the air that is still protective of human health and welfare and 2) developing emission standards for sources of air pollutants to reduce pollutant emissions to the atmosphere. Pollutants for which NAAQS have been established are called criteria pollutants, which include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and particulate matter (PM). EPA designates locations that do not meet or persistently exceed one or more of the NAAQS as nonattainment areas for each pollutant that does not meet the standards.

The CAA requires that state implementation plans (SIPs) be prepared and implemented by the applicable state or local regulatory agency for each criteria pollutant in nonattainment in an air basin. EPA may develop a federal implementation plan, and Native American tribes may develop their own tribal implementation plans. These plans are intended to achieve air quality standards, typically through the use of rules and agreements. The DANR is the state agency responsible for regulating air quality and developing the SIP for South Dakota. There are currently no approved federal implementation plans or tribal implementation plans for air quality in the state.[xxvii]

On November 30, 1993, EPA promulgated a set of regulations known as the "general conformity rule" that included procedures and criteria for determining whether a proposed federal action would conform to the applicable SIPs. The purpose of the general conformity rule is to ensure that federal activities do not cause or contribute to new violations of the NAAQS, ensure that actions do not worsen existing violations of the NAAQS, and ensure that attainment of the NAAQS is not delayed. Before any approval is given for federal action, an applicability analysis must be conducted to determine whether the general conformity rule applies.

The general conformity rule does not apply to any federal action occurring in counties designated as attainment for all criteria pollutants. The general conformity rule does apply in areas the EPA has designated "nonattainment" or "maintenance" to ensure that a federal action does not interfere with a state's plans to meet national standards for air quality.

South Dakota Codified Law (SDCL) 34A-1-18 authorizes the state's Board of Minerals and Environment to establish emission control requirements and requirements for open burning. Under state law, open burning requirements are generally made at the local level, to account for local conditions, and are tailored to address specific problems. General prohibitions against all open burning are determined at the municipal or county (local) level.[xxviii] State air quality regulations prohibit the open burning of any materials that generate hazardous air pollutants such as oils, railroad ties, coated electrical wire, rubber, tires, tarpaper, asphalt shingles, and wood products treated with inorganic chemicals (ARSD 74:36:06:07). SDCL 34-35 is the section of state law

relating to range and forest fire prevention, including establishment of the Black Hills Forest Fire Protection District. The Black Hills Forest Fire Protection District is an area of unusual fire danger, located in the southwest part of the state, where open burning permits must be obtained from the South Dakota Department of Agriculture and Natural Resources (SDCL 34-35-16).

Currently, all counties in South Dakota are in attainment for all criteria pollutants.[xxix]

4.5.2 Environmental Consequences

Alternative 1: No Action

This alternative does not include any federal action. Vehicle emissions may increase due to alternative transportation routes.

Alternative 2: Watershed Resiliency Activities

Watershed resiliency actions will require heavy construction equipment to reshape watershed elements. During construction there may be temporary increases in equipment exhaust emissions and fugitive dust. However, the temporary increase in equipment exhaust is expected to be negligible as long as the equipment is well maintained, and idling is minimized. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner. The contractor would be required to keep all equipment in good working order to minimize air pollution.

Where bank stabilization/construction within the stream corridor is required there would be some short-term increase in fugitive dust and vehicular emissions. Mitigation of fugitive dust, if necessary, can be accomplished by periodic watering of the demolition site.

After construction, there would be no change in air quality as this alternative would not change roadway length, and therefore would not change the amount of vehicle emissions.

4.6 NOISE

4.6.1 Affected Environment

Sounds that disrupt normal activities or otherwise diminish the quality of the environment are considered noise. Noise events that occur during the night (10 p.m. to 7 a.m.) are considered more annoying than those that occur during regular waking hours (7 a.m. to 10 p.m.). Assessment of noise impacts includes consideration of the proximity of the noise sources to sensitive receptors. A sensitive receptor is defined as an area of frequent human use that would benefit from a lowered noise level. Typical sensitive receptors in developed areas include residences, schools, churches, hospitals, and libraries. In more sparsely developed areas, noise-sensitive receptors would include recreational development such as parks, campgrounds, water access sites, and trails. Recreational areas are areas, such as parks, campsites, water access sites, and trails, that rely on quiet settings as an essential part of their character. Typical noise sources in residential or recreational areas are associated with climatic conditions (wind, rain), transportation (traffic on roads, airplanes), and "life sounds" (people talking, children playing, yard maintenance).

Sources of noise can include construction equipment including motorized tools, equipment, and vehicles.

Urban environments are likely to have high noise levels from vehicular traffic and construction. Typical highways produce noise levels that range from 80 to 100 A-weighted decibels (dBA), and construction produces noise levels between 93 and 108 dBA (DOI 2008).

Airports generate high levels of noise from aircraft activities that increase ambient noise levels in nearby communities. Commercial aircraft generally emit between 70 to 100 dBA.[xxx] Jet airplanes can produce sounds up to 140 dBA.[xxxi] South Dakota has 5 commercial airports and 7 large general aviation airports.

Highways produce noise levels ranging from 70 to 80 dBA 50 feet from the highway.[xxxii] Major highways in South Dakota include I-29 and I-90.

Railways can produce higher noise levels that range from 70 to 115 dBA.[xxxiii] There are 1,977 miles of rail in South Dakota.

National and state parks generally have lower average noise levels due to their location in wilderness areas away from human infrastructure. Typical noise levels for national and state parks can be as low as 10 dBA.[xxxiv]

4.6.2 Environmental Consequences

Alternative 1: No Action

This alternative does not include any federal action. There is the potential that overall noise levels in the immediate area may increase due to locally funded temporary construction. However, noise impacts are not expected to be significant.

Alternative 2: Watershed Resiliency Activities

Watershed resiliency activities are anticipated to carry a similar noise level to that which existed at pre-disaster damage levels. Noise from construction activities may have short term adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise impacts on residences can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours. Noise levels of construction equipment (70 to 72 dBA) at the distance in which affected parties would likely be located (>200 feet/60 meters) will not be of a duration to be significant.

4.7 PUBLIC SERVICES AND UTILITIES

4.7.1 Affected Environment

Utilities

Natural Gas and Electricity: Major gas and electric utility providers in South Dakota include six investor-owned electric utilities, several electric cooperatives, several municipal electric utilities, three investor-owned natural gas utilities, and three municipal gas utilities.[xxxv] A majority of South Dakota's electricity is generated by hydroelectric power and nonhydroelectric renewables. In 2016, South Dakota's two largest energy producers were biofuels and renewable energy sources, and the industrial and transportation end-use sectors used the most energy (40.1 percent and 26.3 percent respectively). The highest energy consumption in South Dakota was natural gas (85 trillion Btu) and biomass (62 trillion Btu) in 2016. [xxxvi]

Water and Wastewater: Potable water and wastewater facilities in South Dakota are managed, owned, and operated at the local level. There are approximately 645 active public drinking water systems in South Dakota, including community, non-transient non-community, and transient non-community water systems. Most of the systems (74 percent) serve populations of less than 500; fifteen systems serve populations of 10,000 or more. DANR is responsible for the enforcement of the federal Safe Drinking Water Act, which establishes drinking water standards, source water protection, water, and wastewater operator system certifications. DANR issues permits to construct, modify, or upgrade water systems. [xxxvii]

Solid Waste: DANR's Solid Waste Management Program regulates storage, treatment, and disposal of solid waste in South Dakota. Currently, the program permits 15 landfills in the state.[xxxviii]

Public Safety Services

South Dakota had 155 state and local law enforcement agencies with 2,669 full-time employees.[xxxix] Across South Dakota, there are 294 registered fire departments. Registered fire department staff may include career, volunteer, paid-per-call firefighters, civilian staff, or non-firefighting employees.[xl] South Dakota has approximately 550 non-volunteer firefighters and 90 first-line firefighter supervisors.[xli]

Emergency response time standards frequently exist in contractual obligations between communities and emergency service organizations. As a result, there is typically considerable variation between standards in one community and another.

4.7.2 Environmental Consequences

Alternative 1: No Action

This alternative does not include any federal action. "Alternative 1" has the potential to affect public services and utilities, as watershed hazards can undermine, damage, or destroy facilities in subsequent events if not removed. Fire, emergency, law enforcement, and school services would be delayed as a result of continued inaccessibility of the route, due to closed roads or bridges. Depending on the length of detour required, these services could be significantly impacted. In addition, utility repair crews may not be able to reach damaged utility lines, resulting in lengthy service outages.

Alternative 2: Watershed Resiliency Activities

During construction, delays in fire, emergency, law enforcement and school services may continue, but these impacts would be short-term. Once completed, public services would be restored to pre-disaster levels. Utilities that cross or run along the watershed may be temporarily interrupted, but this would be a short-term impact. No long-term impacts would occur under this alternative.

4.8 WATER RESOURCES

4.8.1 Affected Environment

Surface waters in South Dakota are divided into 14 water basins, such as the Big Sioux, Grand River, and White River basins. South Dakota has approximately 9,726 miles of perennial rivers and 87,780 miles of intermittent streams. Major rivers include the Big Sioux, James, and Cheyenne. The Missouri, Big Sioux, and Bois de Sioux Rivers are border rivers shared with neighboring states. In addition to rivers and streams, South Dakota has 575 classified lakes, ponds, and reservoirs totaling approximately 213,265 acres. Major lakes and reservoirs include Lake Oahe, Lake Francis Case, and Lake Sharpe. About 73.5 percent of all assessed stream miles in the state are considered impaired and do not support one or more beneficial uses (e.g. domestic water supply, fish life propagation waters, and recreation waters). Common sources of impairment include total suspended solids and *E. coli* contamination from livestock and wildlife. Approximately 36 percent of assessed lakes, reservoirs, and ponds are impaired. A common source of impairment in lakes, reservoirs, and ponds is the global atmospheric disposition of mercury, which contributes to mercury buildup in fish tissue. [xlii]

The majority of South Dakota's drinking water systems, including 79 percent of public water supply systems, rely on groundwater. DANR aims to protect groundwater resources by issuing permits for groundwater discharge and injection wells. There are many potential sources of groundwater contamination in South Dakota, including hazardous spills, waste sites, mining and milling operations, agricultural activities such as concentrated animal feeding operations, and land application of wastes.[xliii]

Wild and Scenic Rivers

The U.S. Congress has designated one portion (93 miles) of the Missouri River in South Dakota as a Wild and Scenic- less than 1% of the state's river approximately 9,513 miles of river.[xliv] Major rivers and streams in the state, including designated wild and scenic rivers, are shown in **Figure 4-4**. Details of the Wild and Scenic River in South Dakota are summarized in **Table 4-6.**

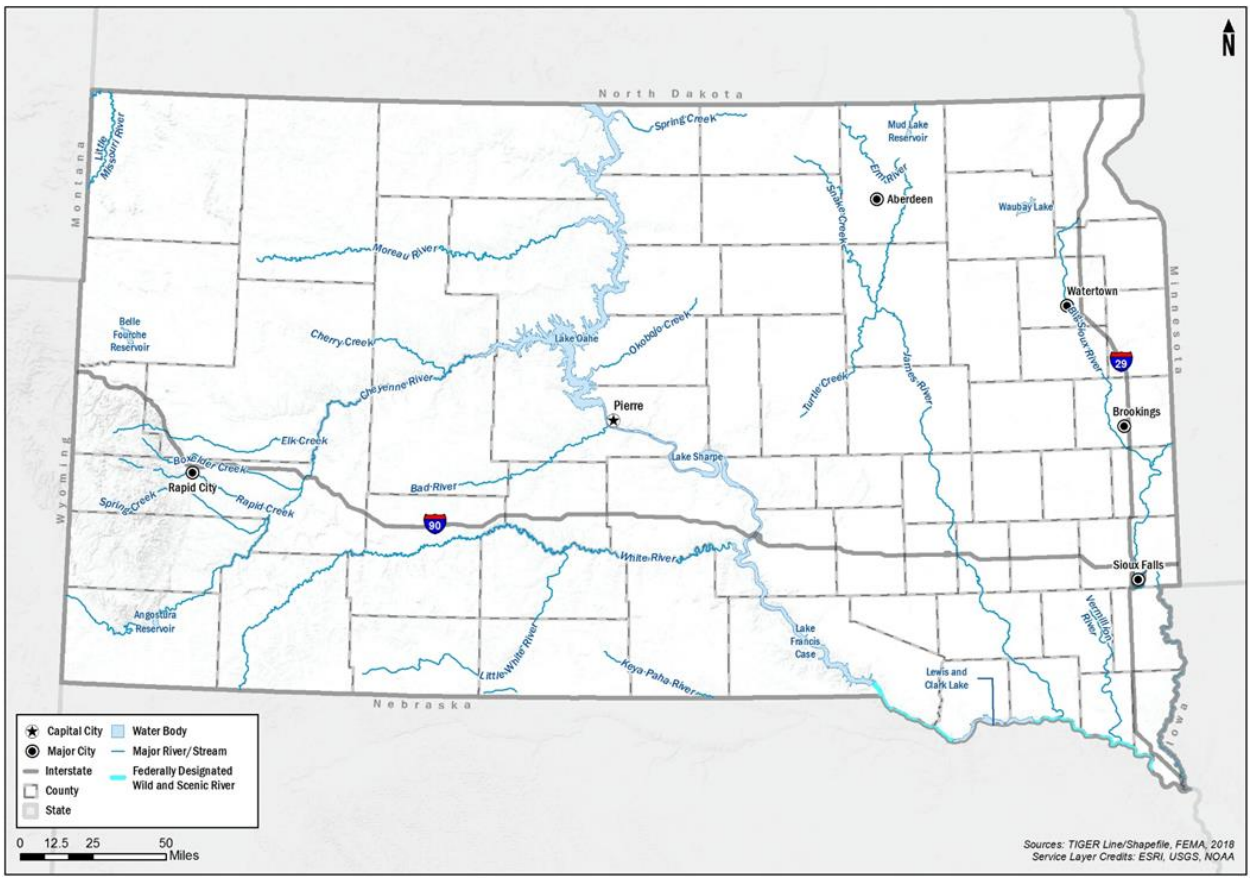

Figure 4-4: Rivers and Streams

Table 4-6: South Dakota Wild and Scenic River

Name	Managing Agency	Location	Description	Total Length (Miles)
Missouri River	National Park Service (NPS)	Gregory, Charles Mix, Bon Homme, Yankton, Clay, and Union	From Fort Randall Dam to Lewis and Clark Lake. From Gavins Point Dam, South Dakota, downstream to Ponca State Park, Nebraska.	93

Source: National Wild and Scenic Rivers System 2021

Floodplains

Executive Order (EO) 11988 requires federal agencies to consider the effect of their actions on the floodplain, evaluate alternatives to taking action in the floodplain and to provide opportunity for public comment if there is no practicable alternative. Under requirements established in 44 CFR Section 60.3, participating communities shall require permits for all development, including temporary development, in the Special Flood Hazard Areas (SFHA). Development is defined as "any man-made change to improved and unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials" and includes both permanent and temporary actions such as stream crossings and conveyance structures (public and private), sediment removal, channel restoration or relocation, etc. A local floodplain development permit may include, but is not limited to, plans in duplicate drawn to scale showing the location, dimensions, and elevation of proposed landscape alterations, existing and proposed structures, including the placement of manufactured homes, and the location of the foregoing in relation to the SFHA. Floodplains provide a variety of ecological benefits, including flood storage, reduction in flood velocities, filtration of stormwater, habitat for plants and wildlife, and supporting biodiversity.[xlv] EO 11988, Floodplain Management, requires federal agencies to take actions to minimize occupancy of and modifications to floodplains. FEMA regulations in 44 CFR Part 9, Floodplain Management and Protection of Wetlands, set forth the policy, procedures, and responsibilities to implement and enforce EO 11988 and prohibit FEMA from funding improvements in the 100-year floodplain unless no practicable alternative is available. FEMA also has a responsibility under EO 13690 to establish a Federal Flood Risk Management Standard (FFRMS) and a Process for Further Soliciting and Considering Stakeholder Input. Regulations are currently being developed on this mandate.

Under the National Flood Insurance Act, 42 U.S.C. 4001 et seq., and its implementing regulations, 44 CFR 60, communities must meet certain floodplain development standards to participate in the National Flood Insurance Program (NFIP). Currently, South Dakota has 234 communities that participate in the NFIP and regulate floodplain development activities.[xlvi] At the state level, OEM

assists FEMA in the administering of the NFIP by providing technical assistance and information to local communities.[xlvii]

Based on a review of the National Flood Hazard Layer, approximately 1,275,258 acres of land in South Dakota was located in the 100-year floodplain (Zone A, AE, AH, or AO) as of 2019.[xlviii] Floodplains represent about 3 percent of the total land area in the state (approximately 48,881,920 acres). Floodplain areas are primarily located along major rivers such as the Cheyenne, James, and Big Sioux Rivers.

Wetlands

EO 11990 requires federal agencies minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. To meet these objectives, the order requires federal agencies, in planning their actions, to consider project alternatives to sites with wetlands and limit potential damage if an activity affecting a wetland cannot be avoided. South Dakota has lost approximately 35% of its naturally occurring wetlands since settlement. Wetlands provide flood control, recharge groundwater, stabilize stream flows, improve water quality, and provide habitat for wildlife. Though, the Federal Clean Water Act (CWA) requires that impacts to wetlands be avoided, then minimized, and finally mitigated if no practicable alternative exists for some wetland filling projects, wetlands continue to be impacted and lost as roads are expanded, land is developed and due to cumulative impacts from numerous activities such as draining, changes in land management and landowner preference for open water ponds.

The National Wetlands Inventory (NWI) estimates that wetlands encompassed approximately 1,967,942 acres in South Dakota as of 2019, which is about 4 percent of the total land area. As summarized in **Table 4-7,** the NWI indicates that most wetlands in the state are freshwater emergent wetlands (97 percent) but also include freshwater forested/shrub wetlands.[xlix]

Table 4-7: Wetlands by Type

Wetland Type	Total (Acres)	Percent of Total
Freshwater Emergent	1,901,240	96.6%
Freshwater Forested/Shrub	66,703	3.4%
TOTAL	**1,967,942**	**100.0%**

Source: USFWS 2019

4.8.2 Environmental Consequences

Alternative 1: No Action

In the "No Action" alternative watershed resiliency activities would not be completed. No work would occur in water, thus there would be no direct impact to water resources due to the proposed action. Hazards may cause a flow impediment, potentially causing significant impacts to stream and floodplain hydraulics and function.

Alternative 2: Watershed Resiliency Activities

Under this alternative watershed resiliency activities will be performed within waterways and floodplains. Excavation, redistribution, and fill materials may be necessary for the proposed project thus impacting waters of the U.S. Discharge into surface water may provide a temporary alteration of surface water quality including but not limited to temperature, dissolved oxygen, or turbidity.

Mitigation Best Practices

Watershed resiliency activities include bioengineering inspired bank stabilization (**Figure 4-5**), utilization of engineering woody debris (**Figure 4-6** and **Figure 4-7**), re-vegetation, and in-stream grade control (**Figure 4-8**) that does not restrict aquatic species passage. Additionally, watershed resiliency activities are composed primarily of multi-objective design projects such as reactional usages for floodplains.[9]

Activities that result in hardened channelization or the creation of new impervious surfaces are not covered in this alternative. For examples of the types of biologically inspired engineering covered in alternative two, see Mitigation Best Practices | FEMA.gov and Appendix F: *Engineering with Nature | Alternative Techniques to Riprap Bank Stabilization*.

[9] Another useful, though dated, resource is Using Multi-Objective Management to Reduce Flood Losses in Your Watershed prepared by the Association of State Floodplain Managers Inc (ASFPM), in 1996. https://cdn.ymaws.com/floodplain.org/resource/resmgr/old_website_files/Using_MOM_in_Watershed.pdf

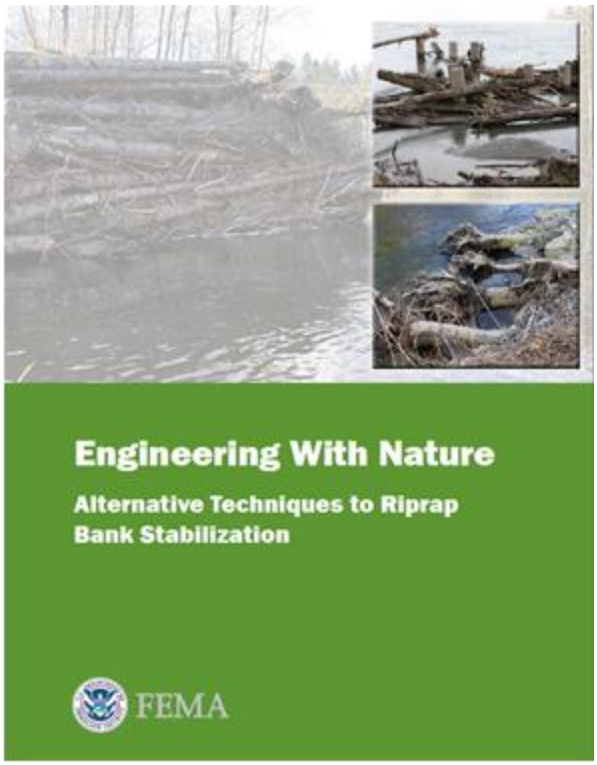

Figure 4-5: Engineering with Nature Publication

Figure 4-6: Bioengineering Using Engineered Woody Debris

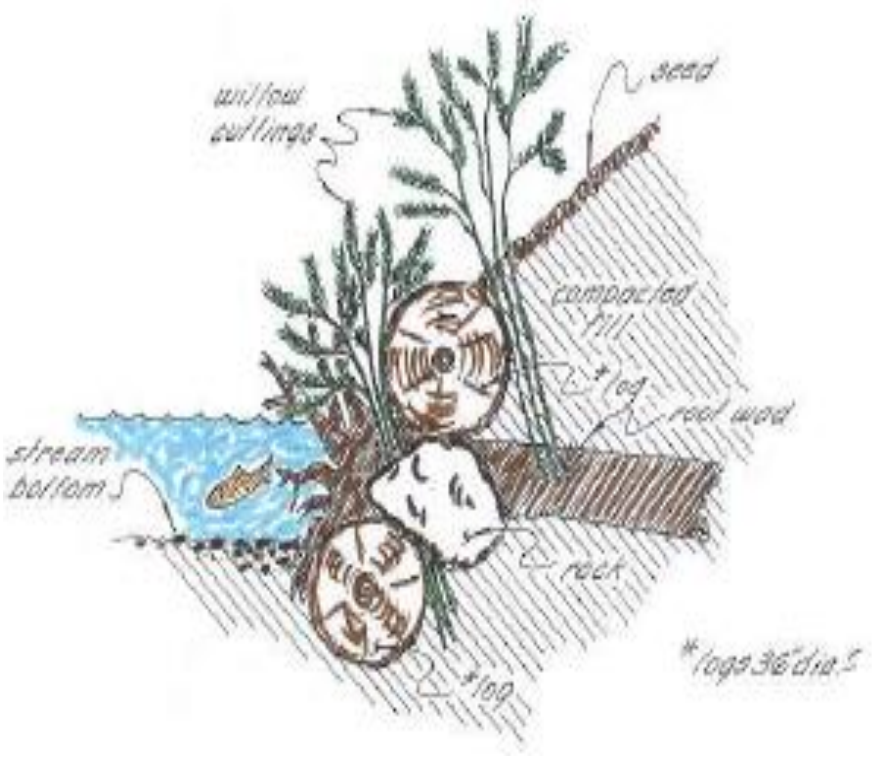

Figure 4-7: Woody Debris Bank Stabilization Cross-Section

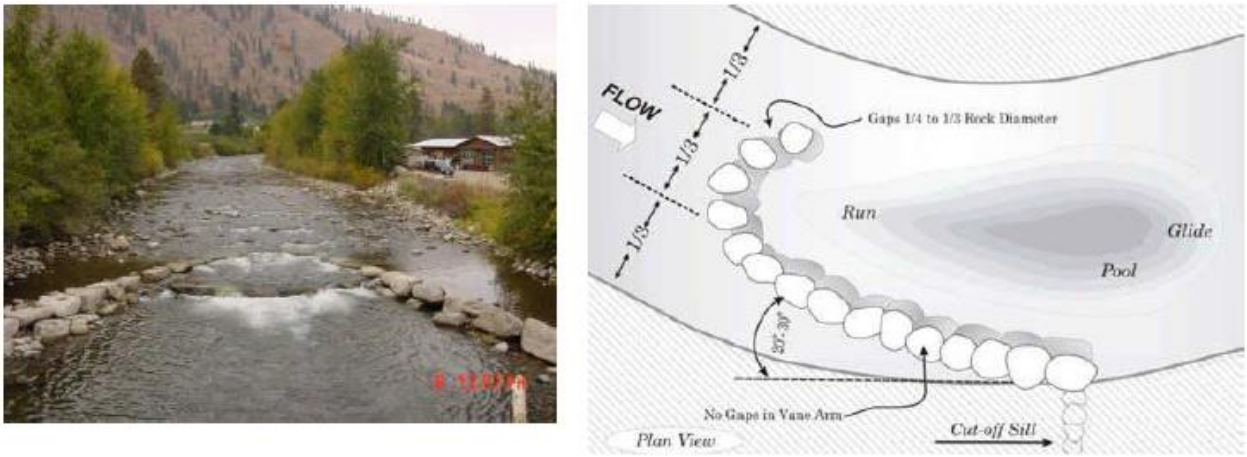

Figure 4-8: Grade Control

Through the NRCS, myriad bioengineering resources and case studies are available (**Figure 4-9**):[10] [11] [12] [13]

- Riparian and Bioengineering
- Bioengineering Seed and Plant Sources,
- The Practical Stream Bank Bioengineering Guide
- Stream Restoration Design (National Engineering Handbook 654)
- Federal Stream Corridor Restoration Handbook (National Engineering Handbook 654)
- Emergency Watershed Protection Program Final Programmatic Environmental Impact Statement.

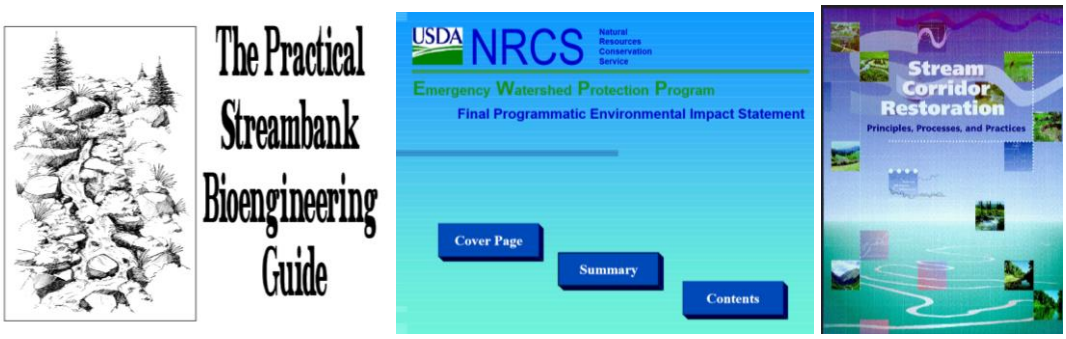

Figure 4-9: Bioengineering Resources

[10] U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) http://www.nrcs.usda.gov/wps/portal/nrcs/detail/plantmaterials/technical/publications/?cid=stelprdb1043002
[11] U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/water/quality/?cid=stelprdb1044707
[12] U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/national/water/quality/?cid=stelprdb1043244
[13] U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/ecosciences/ec/?cid=nrcs143_008451

Waters of the U.S. are heavily regulated. Watershed resiliency activities will require a hydrologic and hydraulic analysis to determine magnitude and frequency of flows. During construction the Agencies would mitigate impacts by requiring the applicant to apply local BMPs to reduce sediment and fill material from entering the water. The applicant may be required to prepare a Storm Water Pollution Prevention Plan (SWPPP).[14] The applicant may also be required to obtain a Section 404 permit from the USACE[15] and a Section 401 Water Quality Certification permit from SD DANR Surface Water Quality Division or the Environmental Protection Agency (EPA).[16] Discharges of water encountered during excavation or work in wet areas may require a Temporary Discharge Permit.[17] The applicant is responsible for complying with any conditions outlined within these permits. Compliance with local floodplain ordinances will also be required.

Certain activities could result in new construction, materials or fill being placed in a floodplain or a wetland. Wetland boundaries would be determined in accordance with the latest regulatory guidance from the USACE and the USFWS.[18] Regulatory floodplain boundaries and designations can be found at the FEMA Map Service Center.[19] In these situations, agency projects are required to implement the Eight-step Process to evaluate effects.[20]

Water quality may be adversely affected through the transmission of sediment, debris, oils, and hazardous substances into surface waters. During construction, agencies would mitigate these impacts by requiring the applicant to apply local BMPs to reduce impacts on wetlands and waterways.

For any work completed within the designated section of the Missouri River that is listed as Wild and Scenic, agencies would confer with the regulatory agency overseeing that section.

[14] Environmental Protection Agency: Storm Water Pollution Prevention Plans for Construction Activities: http://water.epa.gov/polwaste/npdes/stormwater/Stormwater-Pollution-Prevention-Plans-for-Construction-Activities.cfm
[15] Environmental Protection Agency: Clean Water Action Section 404 Permits to Discharge Dredge or Fill Material: https://www.epa.gov/cwa-404
[16] South Dakota Department of Agriculture and Natural Resources 401 Certification: https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/waterqualitystandards/401Certifications.aspx
[17] South Dakota Department of Agriculture and Natural Resources Temporary Discharge Permit: https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/TempDischarge.aspx
[18] U.S. Fish and Wildlife Service: National Wetlands Inventory: http://www.fws.gov/wetlands/data/mapper.HTML
[19] Federal Emergency Management Agency (FEMA) Map Service Center (MSC) - https://msc.fema.gov/
[20] Federal Emergency Management Agency: Eight Step Planning Process for Floodplain/Wetland Management: https://www.fema.gov/pdf/plan/ehp/final_e.pdf

4.9 BIOLOGICAL RESOURCES

Biological resources include native or naturalized plants and animals and the habitats (e.g., wetlands, forests, and grasslands) in which they exist. Protected and sensitive biological resources include federally listed (endangered or threatened), proposed, and candidate species designated by the United States Fish and Wildlife Service (USFWS). Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the Endangered Species Act (ESA), and sensitive ecological areas as designated by state or federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, and crucial summer and winter habitats).

4.9.1 Affected Environment

Ecoregions

EPA has developed a system to evaluate "ecoregions" to structure and implement ecosystem management strategies across federal agencies, state agencies, and nongovernmental organizations. Ecoregions are ecosystems that have similar characteristics, environmental conditions, ecosystem types, functions, and qualities. EPA characterizes ecoregions using geology, landforms, soils, vegetation, climate, land use, wildlife, and hydrology. Each ecoregion would support a characteristic diversity of fish and wildlife species and thus are a useful tool for describing the diversity that may occur within a large area such as a state. South Dakota contains eight EPA-designated "Level III" ecoregions, which are shown in **Figure 4-10** and summarized in **Table 4-8**.[1]

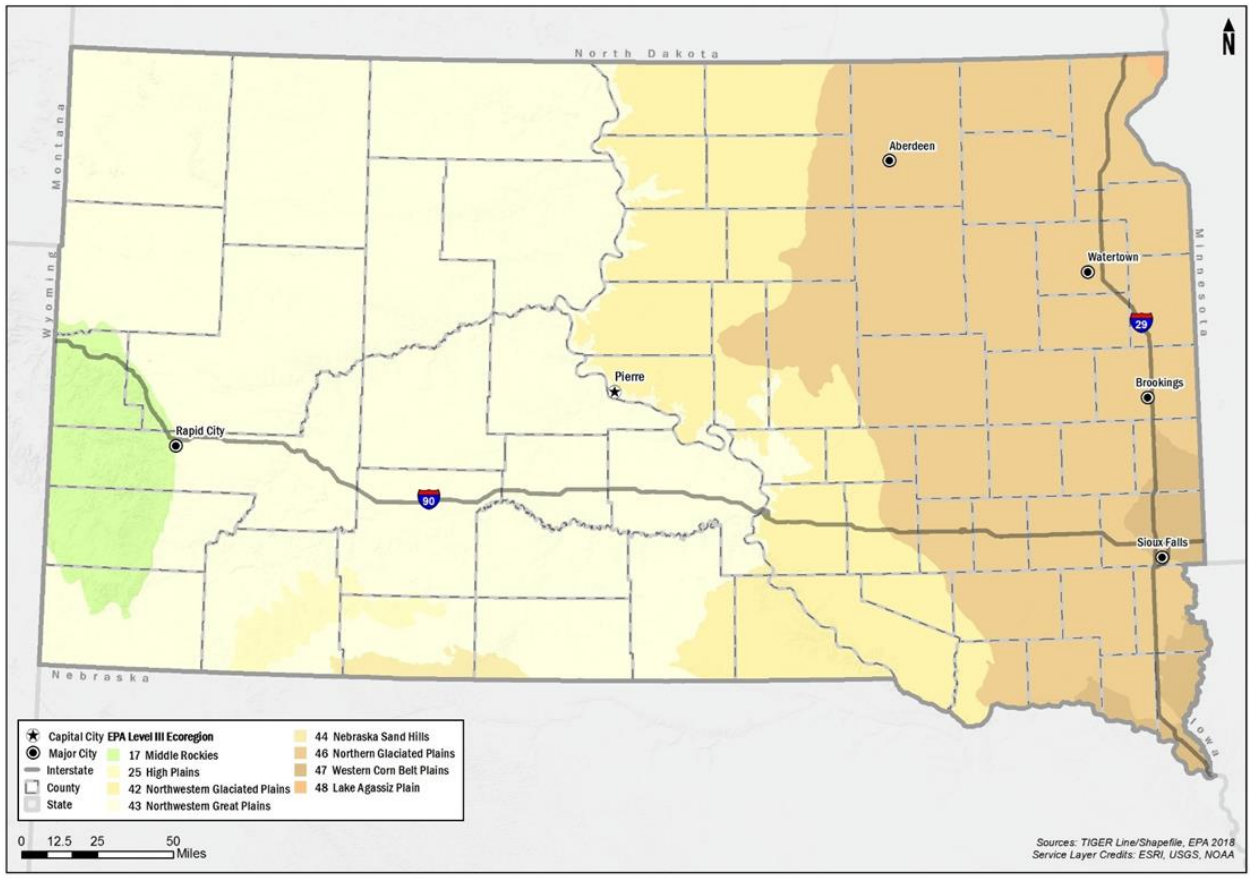

Figure 4-10: Level III Ecoregions

Table 4-8: Level III Ecoregions

Ecoregion	EPA ID	Size (Acres)	Percent of Total
Northwestern Great Plains	43	23,329,465	47.7%
Northern Glaciated Plains	46	13,957,946	28.6%
Northwestern Glaciated Plains	42	7,786,598	15.9%
Middle Rockies	17	1,953,221	4.0%
Western Corn Belt Plains	47	928,738	1.9%
High Plains	25	606,498	1.2%
Nebraska Sand Hills	44	280,489	0.6%
Lake Agassiz Plain	48	38,966	0.1%
TOTAL	---	**48,881,920**	**100.0%**

Source: EPA 2003

The "Northwestern Great Plains ecoregion" is comprised of semi-arid rolling plains of shale, siltstone, and sandstone interrupted by occasional buttes and badlands. Spring wheat and alfalfa have replaced most of the native grasslands, but some persist in areas of steep or broken topography. Erratic precipitation patterns and limited irrigation opportunities limit agriculture production in this region.[l] This ecoregion supports common wildlife species such as white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), sharp-tailed grouse (*Tympanuchus phasianellus*), and greater prairie grouse (*Tympanuchus cupido*), as well as federally listed species such as the black-footed ferret (*Mustela nigripes*) and pallid sturgeon (*Scaphirhynchus albus*).[li]

The "Northern Glaciated Plains" ecoregion consists of a gently rolling to flat landscape composed of glacial drift, which fosters a grassland transition between shortgrass and tallgrass prairies. Annual climatic fluctuations limit agriculture success, and a high concentration of temporary and seasonal wetlands produce advantageous conditions for duck nesting and migration.[l] Wildlife species such as American beavers (*Castor canadensis*), muskrats (*Ondatra zibethicus*), and mink (*Neovison vison*) inhabit the wetland areas of this ecoregion, while badgers (*Taxidea taxus*), mule deer, white-tailed deer, and ring-necked pheasants (*Phasianus colchicus*) can be found in the uplands. The federally listed Topeka shiner (*Notropis topeka*) can also be found in the waters of this ecoregion.[li]

The "Northwestern Glaciated Plains" ecoregion is characterized by a semiarid climate, mixed-grass prairies, and a high concentration of wetlands. Land use in the eastern part of this ecoregion

is dominated by dryland farming, while cattle-ranching and farming dominate the western portion.[l] Common wildlife species of the ecoregion include mule deer, white-tailed deer, red fox (*Vulpes vulpes*), coyotes (*Canis latrans*), and sharp-tailed grouse. Federally listed threatened or endangered species that reside within this ecoregion include the pallid sturgeon and the piping plover (*Charadrius melodus*).[li]

The "Middle Rockies" ecoregion is characterized by the black hills in the southwestern part of the state and includes foothills, plateaus, and highlands. The foothills form a lower elevation concentric circle around the plateaus and highlands. The plateaus are a relatively flat, elevated expanse covering mid-elevation slopes and grasslands. The higher elevation highlands see cooler temperatures and increased rainfall while supporting boreal tree species such as white spruce (*Picea glauca*), quaking aspen (*Populus tremuloides*), and paper birch (*Betula papyrifera*). This ecoregion supports activities such as ranching, grazing, logging, recreation, and mining.[l] Common wildlife species include elk (*Cervus canadensis*), mountain lion (*Puma concolor*), porcupine (*Erethizon dorsatum*), and red squirrel (*Tamiasciurus hudsonicus*), and the federally listed northern long-eared bat (*Myotis septentrionalis*).[li]

The "Western Corn Belt Plains" ecoregion consists of fertile soil, temperate climate, and adequate precipitation during the growing season, which leads to high agricultural productivity in the region. The topography consists of level to gently rolling glacial till plains with areas of morainal hills and loess deposits. Intensive row-crop agriculture of corn, soybeans, and feed grains has replaced almost all the original tallgrass prairie that dominated this ecoregion.[l] Common wildlife species of the Western Corn Belt Plains ecoregion are mule deer, white-tailed deer, coyotes, ring-necked pheasants, and the federally endangered Topeka shiner.[li]

The" "High Plains" ecoregion consists of tablelands and rolling plains created by erosion of the Rocky Mountains. Low rainfall results in drought-resistant shortgrass prairie dominating the ecoregion, while a mixed-grass prairie dominates the northern extremity of the high plains.[l] This ecoregion supports a variety of wildlife species including mule deer, wild turkey (*Meleagris gallopavo*), and black-tailed prairie dogs (*Cynomys ludovicianus*).[li]

The "Nebraska Sandhills" ecoregion is characterized by a large grass-stabilized dune. The region lacks tilled agriculture and is relatively treeless. The prairie grass associations are specific to the sandy environment, but the delicate vegetative cover is vulnerable to blowouts. The predominant land use in the region is cattle ranching.[l] Some wildlife species that reside in this ecoregion include black-tailed jackrabbits (*Lepus californicus*), upland sandpipers (*Bartramia longicauda*), and greater prairie grouse.[li]

The "Lake Agassiz Plain" ecoregion has an extremely flat landscape with fewer lakes and pothole wetlands than other ecoregions in the area. Intensive agriculture has replaced the historic tallgrass prairie that utilized the thick lacustrine sediments underlain by glacial till that make up this ecoregion.[l] Common wildlife species that can be seen in this ecoregion include white-tailed deer, raccoons (*Procyon lotor*), and red fox.[li]

Vegetation

EO 13112: Invasive Species, requires federal agencies to prevent the introduction of invasive species and provide for their control to minimize the economic, ecological, and human health impacts that invasive species cause. EO 13112 defines invasive species as an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health, including noxious weed plant species. Invasive species often outcompete the species that historically occurred in a particular ecosystem, altering the species composition of the plant community and its functions.

Noxious weeds are regulated under the state's Weed and Pest Control law (SDCL 38-22). The law is enforced by the state's Weed and Pest Control Commission under the supervision of the South Dakota DANR (ARSD 12:62). The law authorizes the Weed and Pest Control Commission to establish a list of "statewide noxious weeds" (ARSD 12:62:03:01.06). The law also established weed control boards, which are responsible for the control of noxious weeds at the local (county) level. The boards are responsible for implementation of programs to control both county- and state-designated noxious weeds. The boards also have the power to designate certain species as "locally noxious weeds" (ARSD 12:62:03:01.07).

The Landscape Fire and Resource Management Planning Tools (LANDFIRE) is a vegetation, fire, and fuel characteristics mapping and modeling system sponsored by the USFS. The LANDFIRE "Vegetation Type" spatial dataset was used to evaluate existing vegetation cover in the state. Existing vegetation is shown in **Figure 4-11**.

The Vegetation Type dataset is based on the current distribution of the U.S. National Vegetation Classification (NVC) system circa 2016. The NVC is an 8-level hierarchy that is used to describe vegetation throughout the United States. **Table 4-9** summarizes the subclass category of the NVC. A subclass is the second level of the NVC hierarchy characterized by combinations of general dominant and diagnostic growth forms that vary by latitude and continental position, or that reflect overriding substrate/aquatic conditions. There are 18 vegetation subclasses in the NVC. LANDFIRE data indicate that most of South Dakota is encompassed within 11 of the subclasses.[lii]

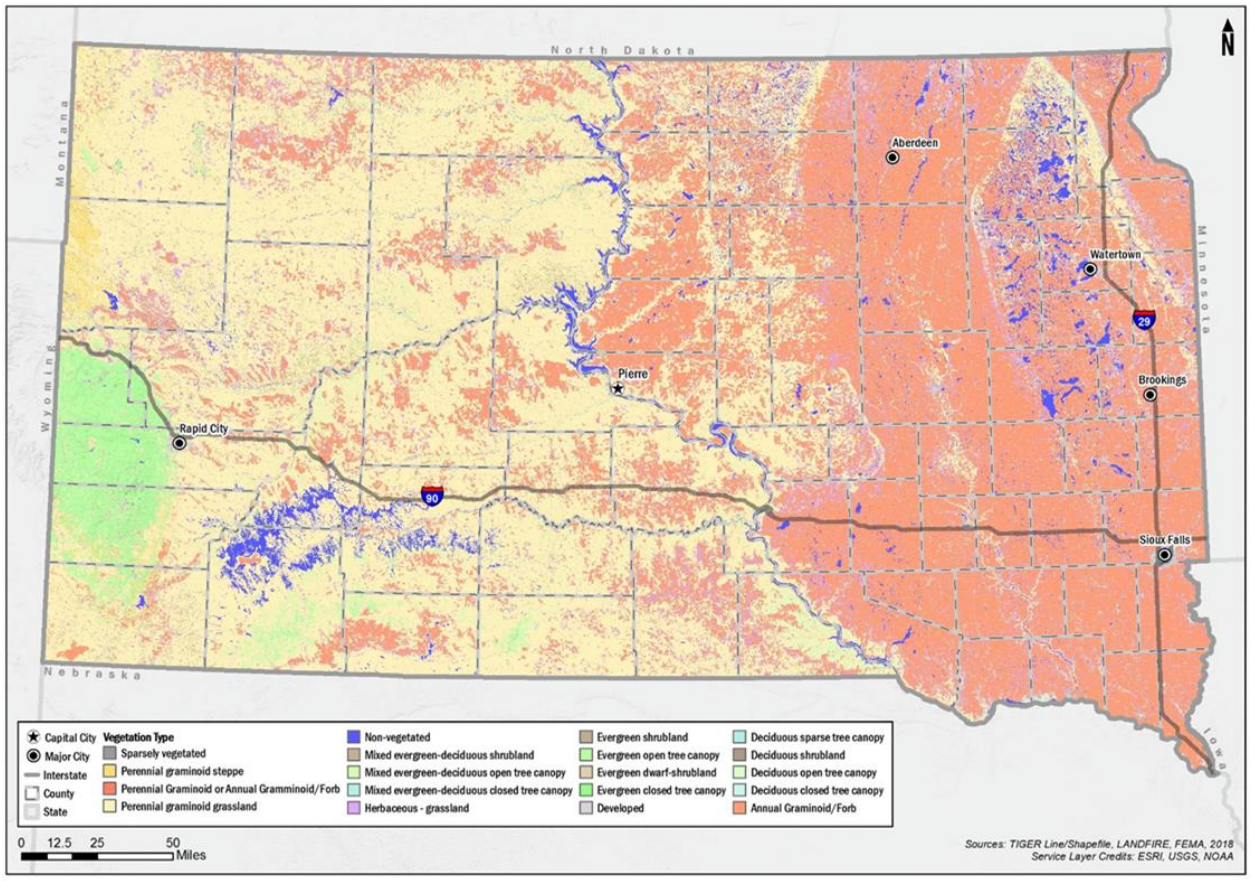

Figure 4-11: Existing Vegetation

Table 4-9: Existing Vegetation Cover (LANDFIRE)

Vegetation Class	Area (Acres)	Percent of Total
Perennial graminoid grassland	22,390,399	45.8
Annual Graminoid/Forb	17,219,245	35.2
Herbaceous – grassland	3,163,562	6.5
Non-vegetated	1,850,073	3.8
Evergreen open tree canopy	1,482,695	3.0
Developed	974,090	2.0
Deciduous open tree canopy	656,727	1.3
Mixed evergreen-deciduous shrubland	456,230	0.9
Perennial graminoid steppe	307,689	0.6
Mixed evergreen-deciduous open tree canopy	218,887	0.4
Deciduous closed tree canopy	68,680	0.1
All other classes	93,647	0.2
TOTAL	**48,881,920**	**100.0**

Source: USFS 2016

Eight vegetation classes represent over 98 percent of all vegetation in the state**.** These include:

- Perennial graminoid grassland
- Annual Graminoid/Forb
- Herbaceous - grassland
- Non-vegetated
- Evergreen open tree canopy
- Developed
- Deciduous open tree canopy
- Mixed evergreen-deciduous shrubland

"Perennial graminoid grassland" represents the largest vegetation subclass in the state at 45.81 percent of total land area. This subclass is made up of perennial grasslands that include both native and non-native species. The subclass also may contain some forb vegetation such as flowering plants and spore-bearing ferns, horsetails, lycopods, and whisk-ferns.[liii]

"Annual Graminoid/Forb" is the second largest subclass, making up 35.23 percent of the total land area. Annual grasslands are a class of herbaceous vegetation dominated by annual grasses. Annual grasses generally contribute to greater than 60 percent of total herbaceous canopy cover, exclusive of drought years when annual vegetation growth is greatly diminished. [liii]

The "herbaceous-grassland" subclass includes lands where herbs (mostly graminoids, forbs, and ferns) form at least 25 percent cover, and woody vegetation has less than 25 percent cover, or areas dominated by graminoid vegetation form greater than 50 percent of total herbaceous canopy cover. [liii]

"Non-vegetated" is a vegetation subclass where there is typically less than one percent vegetative cover. These lands have limited capacity to support life and include urban, industrial areas, extraction areas, and transportation/energy features. [liii]

"Evergreen open tree canopy" is a vegetation subclass where there are open tree canopy conditions dominated by evergreen species contributing to more than 75 percent of the total tree cover. The "open tree canopy" subclass is characterized by 25 and 60 percent crown cover).[liv]

"Developed" is a vegetation subclass where the lands have been altered to support urban or industrial development, excavation areas, or transportation, communication, or energy linear features. [liii]

"Deciduous open tree canopy" is a subclass of vegetation where there is an open tree canopy condition dominated by deciduous tree species. Seventy-five percent of the total tree cover is comprised of deciduous tree species. [liii]

"Mixed evergreen-deciduous shrubland" is a subclass of vegetation defined by areas dominated by shrubs with individuals or clumps not touching to interlocking. This subclass includes vegetation types where trees (for forests and woodlands) or shrubs (for shrublands) are the dominant life form, and neither deciduous nor evergreen species represent more than 75 percent of the cover present. [liii]

Noxious Weeds

The state has declared seven statewide noxious weeds and allows each county to list up to six additional "locally noxious weeds" on a countywide basis. **Table 4-10** summarizes noxious weeds in South Dakota as identified by ARSD 12:62:03.

Table 4-10: South Dakota Noxious Weed List

Common Name	Scientific Name	Class
Leafy Spurge	*Euphorbia esula*	State
Canada thistle	*Cirsium arvense*	State
Perennial sow thistle	*Sonchus arvensis*	State
Hoary cress	*Cardaria draba*	State
Russian knapweed	*Centaurea repens*	State
Purple loosestrife	*Lythrum salicaria*	State
Salt cedar	*Tamarix sp.*	State
Absinth wormwood	*Artemisia absinthium*	County
Black henbane	*Hyoscyamus niger*	County
Bull thistle	*Cirsium vulgare*	County
Chicory	*Cichorium intybus*	County
Common Burdock	*Arctium minus*	County
Common mullein	*Verbascum thapsus*	County
Common tansy	*Tanacetum vulgare*	County
Dalmation toadflax	*Linaria dalmatica*	County
Diffuse knapweed	*Centaurea diffusa*	County
Field bindweed	*Convolvulus arvensis*	County
Giant knotweed	*Polygonum sachaliense*	County
Houndstongue	*Cynoglossum officinale*	County
Musk thistle	*Carduus nutans*	County
Ox eye daisy	*Leucanthemum vulgare*	County
Phragmites	*Phragmites australis*	County
Plumeless thistle	*Carduus acanthoides*	County
Poison hemlock	*Conium Maculatum*	County
Puncturevine	*Tribulus terrestris*	County
Scotch thistle	*Onopordum acanthium*	County
Spotted knapweed	*Centaurea maculosa*	County
Sulfur cinquifoil	*Potentilla*	County
St. Johnswort	*Hypericum perforatum*	County
White Horehound	*Marrubium vulgare*	County
Yellow toadflax	*Linaria vulgaris*	County

Source: ARSD 12:62:03

Fish and Wildlife

Fish and wildlife include the species that occupy, breed, forage, rear, rest, hibernate, or migrate through the project areas. Regulations relevant to fish and wildlife include the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA), and the Endangered Species Act (ESA).

Bald and Golden Eagles

Bald eagles and golden eagles are found throughout South Dakota. Breeding and wintering habitats may be different, and activities that would affect nesting areas or winter roosts could result in significant impacts.

Bald eagles live near rivers, lakes, and marshes where they can find fish, their staple food. Bald eagles also feed on waterfowl, turtles, rabbits, snakes, and other small animals and carrion. Bald eagles require a good food base, perching areas, and nesting sites. Their habitat includes large lakes, reservoirs, and rivers. In winter, the birds congregate near open water in tall trees for spotting prey and night roosts for sheltering.[lv]

Golden eagles build nests on cliffs or in the largest trees of forested stands that often afford an unobstructed view of the surrounding habitat. Their nests are usually made of sticks and soft material added to existing nests or new nests that are constructed to create strong, flat, or bowl-shaped platforms. Golden eagles avoid nesting near urban habitat and do not generally nest in densely forested habitat. Individuals will occasionally nest near semi-urban areas where housing density is low and in farmland habitat; however, golden eagles have been noted to be sensitive to some forms of human presence (USFWS 2017).[lv]

The BGEPA as amended, 16 U.S.C. 5A-II 668 et seq., provides for the protection of bald and golden eagles by prohibiting the take, possession, sale, purchase, barter, transport, export, or import of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit. This Act requires consultation with the USFWS to ensure that proposed federal actions do not adversely affect bald or golden eagles. [lv]

Migratory Birds

The Migratory Bird Treaty Act (MBTA), passed in 1918, protects more than 1,000 native migratory and certain native non-migratory bird species that are listed in 50 Code of Federal Regulations (CFR) § 10.13. It implements conventions between the U.S. and Great Britain (on behalf of Canada), Mexico, Japan, and Russia for the protections of migratory birds. The law makes it illegal for anyone to take, possess, carry, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter any covered bird, unless permitted by regulation. These prohibitions also apply to the removal of nests, eggs, and parts, such as feathers. The USFWS webpage on migratory bird conservation (https://www.fws.gov/birds/policies-and-regulations/executive-orders.php) states that federal agencies are subject to the prohibitions in the MBTA and are required to possess permits before purposefully taking migratory birds.

The MBTA prohibits the "taking" and "killing" of migratory birds. “Take” has been defined differently for the purposes of different laws. The MBTA does not define take, but the USFWS has defined it via regulations as “pursue, hunt, shoot, wound, kill, trap, capture, or collect” any migratory bird or any part, nest, or egg of a migratory bird, or to attempt those activities. Neither the MBTA, nor its legislative history, addresses whether the MBTA was intended to prohibit both intentional and unintentional take of migratory birds, though at the time of this writing these definitions and the scope of MBTA prohibitions are undergoing revisions.

On April 11, 2018, USFWS issued “Guidance on the Recent M-Opinion affecting the Migratory Bird Treaty Act,” with an attachment addressing “Frequently Asked Questions Regarding Implementation of the M-Opinion.” On April 14, 2018, a USFWS memorandum to its Regional Directors on “Destruction and Relocation of Migratory Bird Nest Contents” clarified the application of the MBTA to migratory bird nests. Permits are required for relocating or possessing nests, but destroying inactive nests without a permit is allowed, as is destroying active nests “when the intent of the action is not to kill migratory birds or destroy their nests or contents.” Also, if an active nest is about to be destroyed incidentally or unintentionally, a landowner or their designee may collect eggs or chicks under the “Good Samaritan Provision” outlined in the memorandum.

On January 7, 2021 USFWS published this final rule defining the scope of the Migratory Bird Treaty Act (MBTA) as it applies to conduct resulting in the injury or death of migratory birds protected by the MBTA. This document outlines current FWS practice with respect to implementing the MBTA. On March 8, 2021, DOI rescinded the 2017 Solicitor’s Opinion M-37050 on the MBTA. On May 7, 2021 USFWS published a proposed rule in the federal register to revoke the January 7, 2021 rule for the reasons set forth in 86 FR 24573, 50 CFR 10, pages 24573-24581. On September 30, 2021, the USFWS announced that they were formally revoking the M-

Opinion and returning to implementing the MBTA as prohibiting incidental take, with this rule going into effect December 4, 2021. Public comment is currently available through the *Federal Register*.

Removal of vegetation in the project area, and construction work within species specific buffers have the potential to impact migratory birds and raptors. The proposed actions are subject to compliance with the Migratory Bird Treaty Act (MBTA) and the Bald or Golden Eagle Protection Act (BGEPA). In accordance with US Fish and Wildlife (USFWS) guidelines, the applicant is responsible for obtaining and complying with any necessary permits from USFWS. To avoid impacts to migratory birds and raptors, the project area should be surveyed for nesting activity prior to the removal of vegetation. If active nests are observed in the project area, appropriate USFWS buffer zones and/or seasonal restrictions may be required. See https://www.fws.gov/birds/policies-and-regulations.php. Alternatively, work can be completed outside of the nesting season. For nesting season dates please contact USFWS South Dakota Ecological Services Field Office (605-224-8693).

Threatened and Endangered Species and Critical Habitat

The ESA of 1973, 16 U.S.C. 1531–1544, directs federal agencies to protect threatened and endangered species in consultation with the USFWS. This protection includes a prohibition against direct take (e.g., killing, harassing) and indirect take (e.g., destruction of habitat). Section 7 of the ESA requires federal agencies to aid in the conservation of listed species and to ensure the activities of federal agencies will not jeopardize the continued existence of listed species or adversely modify designated critical habitat.

FEMA has a standing Programmatic Biological Opinion with the U.S. Fish and Wildlife Service that meets the requirements of section 7 of the Endangered Species Act for federal actions in South Dakota, so long as certain project conditions are met. This document is in place through 2024, with the potential to be renewed, and may be used to streamline the section 7 process in South Dakota.

As of July 2021, USFWS has listed 14 plant and animal species as threatened, endangered, or experimental in the State of South Dakota, as summarized in **Table 4-11**.[lvi]

Table 4-11: Federally Listed Species

Common Name	Scientific Name	Federal Status	Critical Habitat	Habitat Requirements/Notes
Black-footed ferret	*Mustela nigripes*	EXPN, E	No	Habitat consists of grasslands, steppe, and shrub steppe. Requires prairie dog colonies for prey and shelter, utilizes prairie dog burrows for resting and birthing sites. Range includes Western South Dakota.
Northern long-eared bat	*Myotis septentronalis*	T	No	Hibernates in caves and abandoned mines in winter. During summer, roosts singly or in colonies underneath bark, in cavities, or in crevices of live trees and snags. Typically associated with late-successional forests with a high number of old trees. Black Hills and along the Missouri River.
Piping plover	*Charadrius melodus*	T	Yes	Sparsely vegetated shores and islands of shallow lakes, reservoirs, industrial ponds, and river islands. Requires wide sandy beaches with highly clumped vegetation, having less than 5 percent overall vegetation cover and/or with extensive gravel. Missouri River at Lake Oahe and below Fort Randall and Gavin's Point dams.
Red Knot	*Calidris canutus rufa*	T	No	Sandy shorelines and marshes along large lakes in South Dakota may be used as stopover locations during migration; does not nest in the state.
Whooping Crane	*Grus Americana*	E	Yes-Not in South Dakota	During migration, requires large, shallow (less than 1 foot) lakes, emergent wetlands, and grain and stubble fields with good horizontal visibility. May occur in suitable habitat throughout the state during migration.
Pallid sturgeon	*Scaphirhynchus albus*	E	No	Occupies the bottom of large, silty rivers with a natural hydrograph. Can utilize a diversity of depths and velocities formed by braided channels, sand bars, sand flats and gravel bars. Missouri River basin.
Topeka shiner	*Notropis topeka*	E	Yes-Not in South Dakota	Quiet, open, permanent pools of small, clear, high-quality headwaters and creeks that drain upland prairie areas, including tiny spring-fed pools in headwater streams and larger streams. Eastern South Dakota tributaries.
Higgins eye (pearlymussel)	*Lampsilis higginsii*	E	No	Medium to large rivers with stable substrates that vary from sand to boulders, but not firmly packed clay, flocculent silt, organic material, bedrock, concrete, or unstable sand. Missouri River basin in southern South Dakota.
Scaleshell mussel	*Leptodea leptodon*	E	No	Medium to large rivers with low to moderate gradients in a variety of stream habitats including

				gravel, cobble, boulders, and occasionally mud or sand substrates. Tributaries to the Missouri River basin.
American burying beetle	*Nicrophorus americanus*	E	No	Various habitats from grassland, old field shrubland, and hardwood forests. Requires suitable soils for burying and available carrion such as small birds and rodents. South-central South Dakota in Gregory, Tripp, and Todd counties.
Dakota skipper	*Hesperia dacotae*	T	Yes	Restricted to unplowed native prairie on dry to mesic calcareous gravelly soils. Can occur in moderately grazed prairie pastures. Northeastern South Dakota.
Poweshiek skipperling	*Oarisma poweshiek*	E	Yes	Primarily found in virgin tallgrass prairie but can also occurs in fens and grassy lakeshores. Northeastern South Dakota.
Leedy's roseroot	*Rhodiola integrifolia ssp. leedyi*	T	No	North or east-facing talus slopes or cliff ledges where groundwater or cool air constantly seep through the strata or between the rocks, maintaining a cool, wet environment throughout the summer.
Western prairie fringed orchid	*Platanthera praeclara*	T	No	Tallgrass prairies and sedge meadows. Eastern and southern South Dakota.

Source: USFWS 2021
Endangered (E) – Any species that is in danger of extinction throughout all or a significant portion of its range.
Threatened (T) – Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Non-Essential Experimental Population (EXPN) - A population of a listed species reintroduced into a specific area that receives more flexible management under the ESA.

Four listed species currently have designated critical habitat in South Dakota: piping plover (*Charadrius melodus*), Topeka shiner (*Notropis topeka*), Dakota skipper (*Hesperia dacotae*), and Poweshiek skipperling (*Oarisma poweshiek*) as shown in **Figure 4-12.** Their designated critical habitat is described below.

Piping plover: Designated critical habitat for the piping plover occurs along the Missouri River. For the northern Great Plains breeding population, designated critical habitat includes the following physical primary constituent elements:

- On prairie alkali lakes and wetlands, shallow, seasonally to permanently flooded, mixosaline to hypersaline wetlands with sandy to gravelly, sparsely vegetated beaches, salt-encrusted mud flats, and/or gravelly salt flats; springs and fens along edges of alkali lakes and wetlands; and adjacent uplands 200 feet above the high-water mark of the alkali lake or wetland.

- On rivers, sparsely vegetated channel sandbars, sand and gravel beaches on islands, temporary pools on sandbars and islands, and the interface with the river.
- On reservoirs, sparsely vegetated shoreline beaches, peninsulas, islands composed of sand, gravel, or shale, and their interface with the water bodies.
- On inland lakes (Lake of the Woods), sparsely vegetated and windswept sandy to gravelly islands, beaches, and peninsulas, and their interface with the water body.

Dakota skipper: Designated critical habitat for the Dakota skipper is located in eastern South Dakota. Primary constituent elements are outlined below.

- Wet-mesic tallgrass or mixed-grass remnant untilled prairie that occurs on near-shore glacial lake soil deposits or high-quality dry-mesic remnant untilled prairie on rolling terrain consisting of gravelly glacial moraine soil deposits. Specifically, these prairie environments contain a predominance of native grasses and native flowering forbs and glacial soils that provide the soil surface or near surface (between soil surface and 0.8 inches in depth) micro-climate conditions conducive to Dakota skipper larval survival and native-prairie vegetation. If present, trees or large shrub cover is less 5 percent in dry prairies and less than 25 percent in wet-mesic prairies and, if present, nonnative invasive plant species occur in less than 5 percent of area.
- At least one of the following native grasses can provide food and shelter sources during Dakota skipper larval stages: prairie dropseed (*Sporobolus heterolepis*) or little bluestem (*Schizachyrium scoparium*). One or more of the following forbs in bloom can provide nectar and water sources during the Dakota skipper flight period: purple coneflower (*Echinacea angustifolia*), bluebell bellflower (*Campanula rotundifolia*), white prairie clover (*Dalea candida*), upright prairie coneflower (*Ratibida columnifera*), fleabane (*Erigeron spp.*), blanketflower (*Gaillardia spp.*), black-eyed Susan (*Rudbeckia hirta*), yellow sundrops (*Calylophus serrulatus*), prairie milkvetch (*Astragalus adsurgens*), or common gaillardia (*Gaillardia aristata*).
- Dispersal grassland habitat within 0.6 miles of native high-quality remnant prairie (as defined in Primary Constituent Element 1) that connects high-quality wet-mesic to dry tallgrass prairies or moist meadow habitats. Dispersal grassland habitat consists of undeveloped open areas dominated by perennial grassland with limited or no barriers to dispersal including tree or shrub cover less than 25 percent of the area and no row crops such as corn, beans, potatoes, or sunflowers.

Poweshiek skipperling**:** Designated critical habitat is located in eastern South Dakota and includes the following primary constituent elements:

- Wet-mesic to dry tallgrass remnant untilled prairies or remnant moist meadows containing a predominance of native grasses and native flowering forbs and undisturbed (untilled) glacial soil types including, but not limited to, loam, sandy loam, loamy sand, gravel, organic soils (peat), or marl that provide the edaphic features conducive to larval survival and native-prairie vegetation. If present, depressional wetlands or low wet areas within or adjacent to prairies that provide shelter from high summer temperatures and fire; trees or large shrubs that cover less than 5 percent of area in dry prairies and less than 25 percent in wet- mesic prairies and prairie fens; and nonnative invasive plant species occurring in less than 5 percent of area can be constituent elements for critical habitat.
- Prairie fen habitats that contain a predominance of native grasses and native flowering forbs; undisturbed (untilled) glacial soil types including, but not limited to, organic soils (peat), or marl that provide the edaphic features conducive to larval survival and native-prairie vegetation; depressional wetlands or low wet areas, within or adjacent to prairies that provide shelter from high summer temperatures and fire; and hydraulic features necessary to maintain prairie fen groundwater flow and prairie fen plant communities. If present, trees, or large shrubs cover less than 25 percent of the unit; and nonnative invasive plant species occur in less than 5 percent of area.
- Native grasses and native flowering forbs provide larval and adult food and shelter. For native grasses, at least one of the following species must be available to provide food and shelter sources during larval stages: Prairie dropseed, little bluestem, sideoats grama (*Bouteloua curtipendula*), or mat muhly (*Muhlenbergia richardsonis*). For flowering forbs, at least one of the following forbs in bloom must be available to provide nectar and water sources during the flight period: Purple coneflower, black-eyed Susan, smooth ox-eye (*Heliopsis helianthoides*), stiff tickseed (*Coreopsis palmata*), palespike lobelia (*Lobelia spicata*), sticky tofieldia (*Triantha glutinosa*), or shrubby cinquefoil (*Dasiphora fruticosa ssp. floribunda*).
- Dispersal grassland habitat that is within 0.6 miles of native high-quality remnant prairie (as defined in Primary Constituent Element 1) that connects high-quality wet-mesic to dry tallgrass prairies, moist meadows, or prairie fen habitats. Dispersal grassland habitat consists of the following physical characteristics appropriate for supporting Poweshiek skipperling dispersal: Undeveloped open areas dominated by perennial grassland with limited or no barriers to dispersal including tree or shrub cover less than 25 percent of the area and no row crops such as corn, beans, potatoes, or sunflowers.

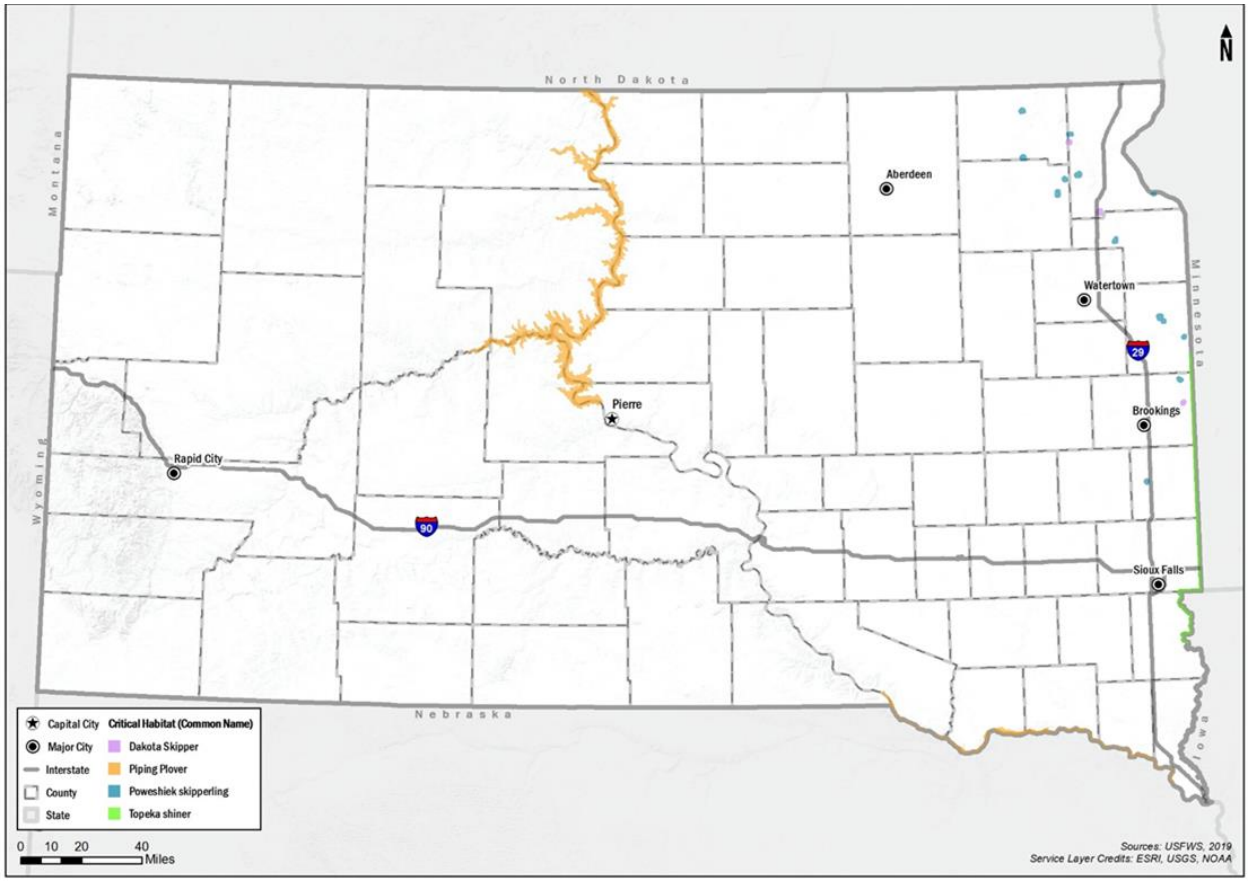

Figure 4-12: Federally Designated Critical Habitat

4.9.2 Environmental Consequences

Alternative 1: No Action

Under the "No Action" alternative, no localized or regional effects to threatened or endangered species are expected. This alternative does not include any action. Therefore, the applicants would not be required to consult with USFWS to comply with the ESA, Migratory Bird Treaty Act (MBTA), Fish and Wildlife Coordination Act (FWCA), or state laws. Damaged structures left in the stream may cause a flow impediment, potentially causing impacts to species habitats and individuals.

Alternative 2: Watershed Resiliency Activities

The actions under this alternative may have the potential to affect sensitive biological resources, wetlands, or natural waterways due to construction activities; a review of available information on the potential for species and critical habitat occurrence in the area will be conducted. The proposed action requires the redistribution or removal of hazards, materials, and possibly structures from the waterway. Embankment work and in-water work will occur. Federal Agencies will coordinate with USFWS and will review the project and make a determination of effect. If an Agency determines that a project has the potential to affect sensitive biological resources it will initiate the review process under Section 7 of the ESA, MBTA, or FWCA, the results of this consultation with USFWS would be documented in a memorandum to this PEA or in a SEA. If work occurs on U.S. Forest Service (USFS) or Bureau of Land Management (BLM) land additional coordination with these agencies will be required.

Because migratory birds nest on many substrates (e.g., ground, shrubs, trees, utility boxes), should the proposed work occur during the breeding season (May 1st to August 15th) , the Service recommends: the required cutting of trees or shrubs occur between August 16th and April 30th to remove potential nesting surfaces prior to project commencement; and the removal of swallow nests as they are built, but prior to egg laying, from the utility structures that are to be removed; and/or netting of the affected structures or implementation of other measures to prevent swallow nesting prior to the breeding season. In addition, some migratory birds are known to nest outside of the aforementioned primary nesting season period. For example, raptors can be expected to nest during February 1 through July 15. For actions within 0.5 mile of occupied eagle nests coordination with USFWS should occur as a Bald and Golden Eagle Protection Act (BGEPA) permit may be required. Implementation of the National Bald Eagle Management Guidelines would be applied as necessary.[21] If a nest or bird is taken outside the specified timeframe, that take is considered a violation of the MBTA.

[21] U.S. Fish and Wildlife Service | National Bald Eagle Management Guidelines, https://www.fws.gov/migratorybirds/pdf/management/nationalbaldeaglenanagementguidelines.pdf

Watershed restoration and replacement activities have the potential to affect federally listed threatened and endangered (T&E) species and their habitat. In order to avoid and minimize potential impacts applicants should implement conservation measures provided by USFWS to the extent possible. Conservation measures include, but are not limited to:

- Locate access routes, staging areas, etc. within previously disturbed areas
- Avoid disturbing or burying any existing riparian (streamside) habitat
- Implement local BMPs for control of erosion and sedimentation
- Incorporate consideration of fish passage into project design
- Restore any disturbed areas using native riparian plant species to prevent erosion
- Integrate native vegetation into rip rap slope protection
- Avoid fragmenting or isolating riparian corridors or wetlands
- Identify areas of ground disturbance and conservation measures implemented
- Contact U.S. Fish and Wildlife Service immediately by telephone at (303) 236–4773 if any T&E species is found alive, dead, injured, or hibernating within the project area.

Sample ESA Consultation Letter

U.S. Department of Homeland Security
FEMA DR-4145-CO
9200 E. Mineral Ave
Centennial, CO 80112

2014I0628 EM: CCunnigh

U.S. FISH AND WILDLIFE SERVICE
☐ NO CONCERNS
☒ CONCUR NOT LIKELY TO ADVERSELY AFFECT
☐ NO COMMENT
MAY 19 2014
SUSAN C. LINNER — DATE
COLORADO FIELD SUPERVISOR

May 16, 2014

MEMORANDUM TO: United States Fish and Wildlife Service

FROM: Federal Emergency Management Agency, Region VIII

SUBJECT: Concurrence on Not Likely to Adversely Affect Determination for Anderson Ditch, Boulder County, CO

The Federal Emergency Management Agency (FEMA) requests concurrence from the U.S. Fish and Wildlife Service (USFWS) on the finding of "may effect, but not likely to adversely affect" for the Anderson Ditch project in Boulder County, Colorado. Beginning on September 11, 2013, Colorado experienced a series of widespread rainstorms that resulted in damage to dozens of roads, bridges, ditches, and other structures. The President signed the Disaster Declaration for FEMA-4145-DR-CO on September 14, 2013. This request for concurrence letter is to obtain clearance for the proposed project from the USFWS.

…

4.10 CULTURAL RESOURCES

4.10.1 Affected Environment

Cultural resources include the physical evidence or place of past human activity: site, object, landscape, and structure or a site, structure, landscape, object, or natural feature of significance to a group of people traditionally associated with it.

Section 106 of the NHPA, 54 U.S.C. 300101 et seq., and its implementing regulations, 36 CFR 800, require federal agencies to consider the effects of their undertakings on historic properties and give the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), Native American tribes, and other interested parties an opportunity to comment on such undertakings. A historic property (or historic resource) is defined in the NHPA as any "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on, the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such a property or resource."

The NRHP is the nation's official list of cultural resources worthy of preservation and is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our cultural resources. For a historic property to be listed in the NRHP, it must meet one of four criteria and have sufficient integrity. Integrity is the ability of the property to convey this significance through physical features and context. Significant historic properties include districts, structures, objects, or sites that are at least 50 years of age and meet at least one National Register criterion. Criteria used in the evaluation process are specified in the NRHP (36 CFR 60.4). National Historic Landmarks are historic places that hold national significance. The Secretary of the Interior designates these places as exceptional because of their abilities to illustrate U.S. heritage. National Historic Landmarks are also listed in the NRHP.

Under Section 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural significance to an Indian tribe or Native Hawaiian Organization may be deemed eligible for listing on the NRHP. FEMA treats resources that are eligible for or listed on the NRHP equally. In addition to the NHPA, the Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001–3013, establishes the rights of Native American lineal descendants, Indian tribes, and Native Hawaiian Organizations for the treatment, repatriation, and disposition of Native American human remains funerary objects, sacred objects, and other Traditional Cultural Property. A Traditional Cultural Property is a historic property that is eligible for inclusion in the NRHP based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community.

The ACHP is an independent federal agency established by the NHPA. The ACHP mission focuses on the preservation of cultural resources and the development of federal policy related to historic preservation. The NHPA established SHPOs in each state and territory and Tribal Historic

Preservation Offices (THPOs) for federally recognized Native American tribes. The SHPOs reflect the interests of the state and its citizens in the preservation of their cultural heritage. The SHPO is a program of the South Dakota Historical Society (SDHS) under the Department of Education. The SDHS manages five programs related to cultural resources, including the state archives. The state archive is located at the Cultural Heritage Center in Pierre and contains over 12,000 cubic feet of historic records.[lvii]

Native American tribes can participate in this process if they chose. For a tribe that has assumed the responsibilities of the SHPO for activities on tribal land, the THPO is the official representative to ensure a project complies with Section 106 of the NHPA (36 CFR 800.2(c)(2)). In these situations, FEMA consults with the THPO instead of the SHPO regarding undertakings occurring on or affecting historic properties on tribal lands. Non federally recognized tribes can participate in the Section 106 processes as interested parties.

The National Park Service (NPS) administers a Tribal Historic Preservation Program pursuant to the NHPA. As part of the program, NPS maintains a directory of THPOs throughout the country.[lviii] Because the term of office for the THPO position varies depending on the tribal government, FEMA should consult the NPS directory, as well as the SHPO, to identify any THPOs that could be involved in the Section 106 process for a particular project. There are currently seven federally recognized Native American tribes in the state with established THPO programs: Oglala Sioux Tribe, Sisseton Wahpeton Oyate, Rosebud Sioux Tribe of Indians, Flandreau Santee Sioux Tribe, Crow Creek Sioux Tribe, Yankton Sioux Tribe, and Cheyenne River Sioux Tribe.

SHPO and THPO activities can include identifying, nominating, or administering applications for historic properties deemed eligible for listing on the NRHP, maintaining data on historic properties that have been identified but not yet nominated, and providing technical information. Federal agencies consult with the SHPO about federal actions, and the SHPO either concurs or does not concur with the federal agency's findings.

As of June 2019, South Dakota had 16 National Historic Landmarks; 1,349 properties listed in the NRHP, and 45 properties listed in the South Dakota Register of Historic Places. Among the National Historic Landmarks are numerous fortified Native American villages, as well as a Native American burial mound complex, the Wounded Knee Battlefield, an historic gold mining town, and a nineteenth century cattle ranch. Ten of the 16 National Historic Landmarks are located along the Missouri, James, or Big Sioux Rivers. Most NRHP-listed historic properties are aboveground buildings (842), districts (148), or structures (127). There are also 220 archaeological sites and twelve objects listed on the NRHP (NPS 2019a). NRHP-listed archeological resources include a wide range of Native American and Euro-American property types distributed throughout the state. [lviii]

To guide the management of cultural resources, the SHPO published a 2016 Historic Preservation Plan, and in 2018, an update to the State Plan for Archaeological Resources. The State Plan for Archaeological Resources describes the known sites and districts in terms of particular periods, regions, and site types throughout the state, and is intended to help cultural resource managers identify, analyze, and determine the historic significance of groups of related archaeological resources. The document includes detailed site distribution maps and identified priority site types for preservation.[lix]

Archaeological Sites

Prehistoric (ca. 13,500 Before Present – 1861)

Prehistoric Native American culture history in the state extends from the period of early Holocene Paleoindian exploration circa 13,500 years before present to the Protohistoric period. The Protohistoric period (ca. 1700 – 1861) corresponds with the introduction of European trade goods to Native American groups, including horses, but before permanent settlement of the region by non-Indians. Prehistoric sites in South Dakota are associated with 24 physiographic zones defined by a combination of major drainage basins and landform types, such as the White River Badlands, Black Hills, Missouri River Trench, and Missouri Coteau. The northern Great Plains prehistoric cultural chronology is divided into seven major overlapping subdivisions from the Paleoindian period to the Protohistoric period, including Early, Middle, and Late Archaic, Woodland, Late Prehistoric, and Plains Village periods. The Protohistoric period falls within the Plains Village period, which spans the last approximately 1,000 years.

Prehistoric site types in the state commonly include artifact scatters, hearths, villages, fortifications, burials, bison/antelope kill sites, eagle-trapping pits, tool-stone procurement and tool manufacture sites, rock cairns, shelters, circles and alignments, rock art, vision quest locales, timber lodges, and Traditional Cultural Properties. Some prehistoric site types are ubiquitous and widespread across the state, some are associated with specific time periods or culture groups, and some are associated with the locations of specific natural resources or landscape features. Examples of natural resources where prehistoric sites may be found nearby include rock outcrops used in stone tool making, and major and minor river drainages that served as transportation corridors through Great Plains agricultural land. Prehistoric archaeological sites may also be found in proximity to springs and lakes, specific forest and plant communities, trail networks, and prominent landscape features.

The distribution of Woodland and Plains Village sites, including mounds, is largely confined to the major rivers of eastern and central South Dakota. Stone circles (also known as tipi rings) and artifact scatters represent campsites and food processing areas that occurred in valleys, on toe-slopes, and on mesa tops. Deposits of animal bones (bone beds) resulting from game drives occur

in deep soils of draws, alluvial fans, and toe slopes, whereas vision quest markers, cairns, and eagle-trapping pits occur on the rimrocks. Rock art sites (petroglyphs and pictographs) are commonly found in the rock overhangs below the rim and on sandstone outcroppings. [lix]

Historic (Post 1861)

Prior to the Euro-American settlement of South Dakota, various groups traversed the land beginning in the mid-1700s. Notable historic events include the Lewis and Clark Expedition of 1804, the establishment of French and Spanish trading posts along the Missouri River, and the European exchange of horses and guns for buffalo robes and pelts. The fur trade ended in the late 1850's and, as the federal government began to negotiate Native American tribal reservations, the first white settlements reached eastern South Dakota. The Dakota War of 1862 was a failed revolt by a band of Dakota Indians who resisted confinement to reservations.

White settlement in the western part of the state was largely confined to the Oregon Trail by Lakota Indians until a gold rush in 1875-1876 prompted the federal government to take control of the Black Hills, opening the region up for exploration and settlement. Open-range cattle and sheep ranching was a primary historic development in South Dakota during the 1880's, however severe winters proved devastating to herds. South Dakota became a state in 1889.Through the turn of the century it remained largely agricultural in the east with expansive public land in the west, including Indian reservations, National and State parks, forests, and monuments. During this time, Scandinavian, Russian, German, Dutch, Czech, and Bohemian emigrants settled in various parts of South Dakota.

The SHPO identifies 17 historic contexts, 11 historic property nomination forms, and 14 multiple-property documentation forms associated with broad or specific topics in the state's historic development. The contexts describe historic themes in the state's development over time and identify historic archaeological sites as well as above-ground architectural resources. [lvii]

Historic archaeological property types are listed and described in the State Plan for Archaeological Resources. They include farmsteads, roads, railroads, foundations, depressions, alignments, burials, cairns, cabins, trading posts, school foundations, town sites, dams, dumps, earthworks, fence-lines, forts, mines, quarries, industrial sites, monuments, and wells or cisterns. Generally mining sites are concentrated in the Black Hills, farming sites in the east, and ranching sites in the west. [lix]

Historic Architectural Sites

NRHP-listed historic architectural properties in South Dakota are predominantly buildings and districts that had a range of historic functions. For example, ranches, residences, rural institutional buildings, public community buildings, ethnic enclaves, bridges, barns, schools, churches, libraries, recreational facilities, as well as other above-ground property types are included. The South Dakota Statewide Preservation Plan provides a list of threatened historic property types the

State is interested in preserving and considers important historic resources. These include historic downtown commercial buildings that make up the central business district of many small towns. Other property types include homesteading and agricultural buildings such as farms and ranches, rural institutional building, public buildings, and rural buildings associated with ethnic enclaves. Historic architectural building types in South Dakota are described by Rogers and Schwan (2000) in a technical brief (https://history.sd.gov/preservation/SHPOdocs.aspx).

The SHPO has developed additional historic contexts for historic architectural resources that are dependent on the structure's (historical) function and location. Some resources are present throughout the state and some are location dependent. Examples of contexts found in South Dakota include Indian Housing, Steel Water Towers from 1894 – 1967, Ranches, German Russian Folk Architecture, Historic Hutterite Colonies, and Federal Relief Construction from 1929-1941.[lx]

4.10.2 Environmental Consequences

Alternative 1: No Action

No federal action would occur under this alternative. However, new impacts to historic resources are possible as exposed or otherwise disrupted cultural resources would remain vulnerable to future events and accelerated deterioration.

Alternative 2: Restoration or Replacement of Watershed Functions

This alternative has the potential to affect historic or cultural resources. Destruction or alteration of any site, structure, or object of historic, prehistoric, or paleontological importance may occur as a result of watershed resiliency activities. Redistribution of alluvium or other watershed elements may have exposed areas of high archaeological sensitivity. Physical change could affect unique cultural values. There could be effects on existing religious or sacred uses of a site or area and archeological resources may be present. For non-tribal lands any agencies that have entered into Programmatic Agreements with the South Dakota State Historic Preservation Office (SHPO) or a Tribal Historic Preservation Office (THPO) will determine if a project meets any outlined programmatic allowances. If so, The Agencies would consider the project to be in compliance with Section 106 of NHPA and no further review would occur.

If a project does not fall within an allowance, or a Programmatic Agreement does not exist, The Agencies will make a determination of effect in accordance with NHPA section 106 and consult with the SHPO. Additional archaeological surveys of ground disturbing activities or architectural surveys of projects impacting built environments may be required depending on consultation with Tribal Historic Preservation Office (THPO) and SHPO. Wealth of section 106 compliance

resources are available at South Dakota State Historical Society (sd.gov) and by contacting South Dakota State Historical Society staff members. [22]

Sample NHPA Section 106 Consultation Letter

Centennial, CO 80112

FEMA

July 7, 2014

Mr. Edward C. Nichols
State Historic Preservation Officer
History Colorado
1200 Broadway
Denver, Colorado 80203

Re: City of Lyons – Public Works Storage Facility (PW800)
Class III Cultural Resource Inventory
Limited Results Report

Dear Mr. Nichols:

The Federal Emergency Management Agency (FEMA) submits this request for consultation in response to a Public Assistance application prepared by the Lyons Fire Protection District. This request is prepared in accordance with your agency's **Revised Consultation Guidance for Section 106**, issued in September 2012.

Project Description
The Federal agency involved is FEMA. The local staff contact is Mark Serour, Historic Preservation Specialist. The Federal program is Federal Disaster Public Assistance, pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, P.L. 93-288, as amended. During the September 2013 flood event severe storms and flooding caused severe damage to the existing Public Works Facility building and contents. Floodwaters in the St. Vrain and South St Vrain River eroded the existing channel and bank undermining the building's integral ground and concrete slab. Channel realignments and the previous location of the building within the flood way has made rebuilding the Public Works Facility building in its previous location not

...

[22] South Dakota State Historical Society: https://history.sd.gov/preservation/

4.11 HAZARDOUS MATERIALS

4.11.1 Affected Environment

Hazardous materials and hazardous wastes include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present a substantial danger to public health or the environment when released or otherwise improperly managed. Hazardous materials are regulated by state and federal law including the following:

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly referred to as the Superfund Program. Superfund sites are contaminated because of hazardous waste being dumped, left out in the open, or otherwise improperly managed. These sites include manufacturing facilities, processing plants, landfills, and mining sites.

- Brownfields Utilization, Investment, and Local Development (BUILD) Act (EPA Brownfields Program). The EPA Brownfields Program provides grants and technical assistance to communities, states, tribes, and others to assess, safely clean up, and sustainably reuse contaminated properties.

- Toxics Release Inventory (TRI) Program established by the Emergency Planning and Community Right-to-Know Act. The TRI maintains data on industrial facilities that use, manage, and store potentially toxic chemicals into the environment, including Pb, polycyclic aromatic, and zinc compounds.

- The Resource Conservation and Recovery Act (RCRA) regulates hazardous and nonhazardous wastes and provides a system for managing hazardous waste from the time it is generated until its disposal. Sites designated "RCRA Corrective Action" are involved with the cleanup of current environmental problems caused by the mismanagement of waste.

Based on the June 2019 search of EPA's Cleanups in My Community database, South Dakota has two RCRA Corrective Action site, 358 brownfield sites, and two final National Priorities List sites regulated through the Superfund Program.[lxi]

4.11.2 Environmental Consequences

Alternative 1: No Action

The "No Action" alternative would not disturb any hazardous materials or create any potential hazard to human health**.**

Alternative 2: Watershed Resiliency Activities

The proposed action would not disturb any known hazardous materials or create any potential hazard to human health. If hazardous constituents are encountered during the proposed

construction operations, appropriate measures for the proper assessment, remediation and management of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials.

4.12 CUMULATIVE IMPACTS

The CEQ regulations[23] implementing the procedural provisions of NEPA of 1969, as amended[24] defines cumulative effects as: "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or local) or person undertakes such other action".[25] Based on these regulations, if the alternative does not have direct or indirect effects there can be no cumulative effects resulting from the project because there would be no impacts added to past, present, or reasonably foreseeable actions. CEQ regulations also describe cumulative impacts as impacts that "can result from individually minor but collectively significant actions taking place over a period of time." On a programmatic level and combined with other actions affecting watersheds alternatives could lead to cumulative impacts depending on the scale (number of projects) or geography (localized area) in which the actions are performed.

4.12.1 Summary of Cumulative Impacts

Individual projects proposed under this Programmatic Environmental Assessment have the potential to cause significant impacts when compounded and undocumented. In an effort to track and mitigate cumulative impacts any official usage of this PEA must be documented by the completion of the Compliance Checklist found in Appendix D. All supporting documentation, completed project specific compliance checklists and SEAs, must be submitted to the Region at FEMA-R8EHP@fema.dhs.gov and to the FEMA Region 8 Deputy Regional Environmental Officer at Richard.Myers2@fema.dhs.gov.

Cumulative impacts can be reduced, and project streamlining realized, by coordinating natural and cultural resource compliance review responsibilities with nearby projects, exploring multi-objective design, utilizing bioengineering techniques and incorporating effective mitigation strategies.

[23] 40 Code of Federal Regulations [CFR] Section 1500-1508
[24] 42 United States Code [USC] Section 4321
[25] 40 Code of Federal Regulations [CFR] Section 1508.7

Multi-objective Design

Bioengineering:

By utilizing the techniques discussed in section **4.8 WATER RESOURCES**.

Mitigation:

By considering project components that increase watershed function and provide community resilience. Mitigation Best Practices | FEMA.gov

Under the Watershed Resilience Activities Alternative project impacts that are implemented at an individual or cumulative scale, such as to produce significant impacts may potentially be reduced below a level of significance by mitigating for individual impacts using the Mitigation Measures outlined in the next section. A Supplemental Project Specific Environmental Assessment will be completed for any projects that are anticipated to surpass the scope of this document, such that impacts cannot be contained utilizing the Mitigation Measures outlined in the next section.

SECTION FIVE | MITIGATION MEASURES

Project impacts that are implemented at an individual or cumulative scale such as to produce significant impacts can generally be reduced below the level of significance through avoidance, minimization, or by mitigating for individual impacts using mitigation measures as described below. If impact avoidance cannot be achieved, specific mitigation measures including agency consultation will be undertaken by the Agencies to reduce any potentially significant impacts to less than significant levels. **Table 5-1** lists the specific mitigation measures the Agencies will use if necessary.

Table 5-1: Mitigation Measures by Resource Area

Resource Area	Mitigation Measure
Physical Resources, Water Resources	For projects where wetland areas will be impacted, The Agencies will evaluate individual and cumulative impacts and implement avoidance, minimization and/or mitigation measures as necessary to reduce impacts below level of significance.
Physical Resources, Water Resources	For projects in which soil erosion potential is determined to be significant, a project erosion control plan to minimize soil loss, including the use of Best Management Practices, to isolate the construction site and minimize adverse effects of soil loss and sedimentation on soil and water resources will be implemented.
Physical Resources, Water Resources	To mitigate for impacts to floodplain, a hydrology and hydraulics study will be completed to ensure the flow of flood waters. The project must not serve as a dam or otherwise impede water movement thus aggravating flooding upstream of the roadway.
Physical Resources, Water Resources	The Agencies will consult with US Fish and Wildlife Service and/or Natural Resources Conservation Service for any project which extends outside of the original right of way and has the potential to affect land use, including Fish and Wildlife Service easements, prime farmland, or farmland of state/local significance.
Safety and Occupational Health	To minimize any potential to occupation health and safety, construction workers and equipment operators are required to wear appropriate PPE and to be properly trained for the work being performed, including removal and disposal of asbestos and lead-based paint for demolition projects.
Safety and Occupational Health	All waste material associated with the project must be disposed of properly and not placed in identified floodway or wetland areas or in habitat for threatened or endangered species. All hazardous material resulting from demolition activities, including asbestos and lead paint will be disposed of in hazardous waste landfill.
Air Quality	To mitigate for fugitive dust during construction periodic watering of active construction areas, particularly in areas close to sensitive receptors (e.g. hospitals, senior citizen homes, and schools) will be implemented.
Noise	Construction noise levels will be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Impact to noise levels will be minimized by limiting construction activities that occur during early morning or late evening hours.

Biological Resources	The Agencies will consult with USFWS, who is the regulatory authority, on any actions that have the potential to affect biological resources including Threatened and Endangered species and will include measures to avoid or minimize potential impacts. Coordination will include measures to avoid or minimize potential impacts as grant conditions. This includes migratory birds and raptors.
Biological Resources	Fill material must not come from nor be deposited in threatened and/or endangered species habitat.
Biological Resources	The Agencies will coordinate with SD DANR concerning guidelines regarding impacts to State species of interest. Coordination may include measures to avoid or minimize potential impacts as grant conditions. This includes migratory birds and raptors.
Cultural Resources	Unless a project is covered under a programmatic agreement exemption all other ground disturbing projects must consult with the SHPO or THPO under Section 106 of the NHPA. The absence of cultural property documentation in the area does not mean they do not exist, but rather may reflect the absence of any previous cultural resource inventory in the area. If during the course of any ground disturbance related to this project, cultural materials are inadvertently discovered, the project would be immediately stopped and the SHPO/THPO and Agency notified.
Cultural Resources	To avoid impacts to cultural resources from material borrow source, borrow material source will be reviewed and approved by SHPO or THPO prior to use.
Cultural Resources	The Agencies will consult with the State/Tribal Historic Preservation Office on project specific activities for any project that has the potential to affect previously undisturbed areas or historic properties.

SECTION SIX | SUMMARY OF IMPACTS

The following table summarizes the potential impacts of each alternative on the resource areas discussed in **SECTION FOUR | AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**. **Table 6-1** is organized by each resource area for each alternative. Permits and conditions are summarized, as well as best construction practices.

Table 6-1: Summary of Impacts

Resource Area	Alternative 1: No Action	Alternative 2: Replacement	Permits and Conditions Required	Best Construction Practices	Conditions
Physical Resources	This alternative does not include any federal action. Alternative 1 has potential to pose safety threats, permanently displace residents, further economic strains on the State of South Dakota, alter drainage and flow rates, and change land use if watersheds are not restored to functional capacity. Loss in residential, commercial, agricultural, or recreational land use may occur.	This alternative applies to restoration or replacement of watershed features and as such, a hydrologic and hydraulic study will be used to determine the best redistribution for watersheds. Although this will affect the physical environment, the "No Action" alternative is expected to alter stream corridors at a more significant rate than the proposed actions. Watershed features are expected to remain within the previous ROW so no changes in land use are anticipated.	USACE Permit	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	The applicant is responsible for verifying and compliance with all permit requirements, including permit conditions, pre-construction notification requirements and regional conditions as provided by the US Army Corps of Engineers (USACE). The applicant is responsible for implementing, monitoring, and maintaining all Best Management Practices (BMP's) and Pre-Construction Notification (PCN) conditions of applicable Nation Wide Permits (NWP). This is to include any requirements per the Colorado Department of Public Health and Environment 401 Water Quality Certification for Clean Water Act permits. To the extent possible, keep equipment and construction within previously disturbed area and ROW.
Transportation Facilities	This alternative does not include any federal action. Immediate threats would persist unless actions to restore watershed function would be provided by the State and/or local municipalities. This alternative may result in significant adverse impacts due to increased travel times and traffic volumes, as damages to	Alternative 2: Watershed Resiliency Activities This alternative applies to restoration or replacement of existing watershed elements in the existing location, or relocation of transportation facilities. Short term impacts would be expected during construction as traffic delays and alternate routes may be required. No significant adverse long-term	none	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified	Applicant shall, to the extent possible, follow best construction practices to minimize impacts to transportation facilities.

	transportation facilities would remain.	impacts are expected to the transportation volume, capacity, and time of transit. The transportation facilities would be more resilient and less likely to experience substantial damage from future severe weather events.		Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	
Safety and Occupational Health	This alternative does not include any federal action. Residents, communities, and properties would be left susceptible to significant future damages. Materials could be washed downstream impacting other structures. These materials may have the potential to cause both lead and asbestos exposure. A "No Action" alternative may also result in restricted access for emergency, police and fire services causing the potential for significant delay. The "No Action" alternative provides a significant adverse safety affect to residents of the State of South Dakota.	Alternative 2 would have no significant impact to public safety or occupational health. Communities are expected to benefit from watershed resiliency activities. Removal or redistribution of materials with painted surfaces or containing asbestos may be required and construction workers are required to follow OSHA regulations to provide appropriate asbestos abatement and avoid release of lead from paint. Construction workers and equipment operators are required to wear appropriate personal protective equipment (PPE) and be properly trained for the work being performed. All solid or hazardous wastes that might be generated during restoration or replacement must be removed and disposed of at a permitted facility or designated collection point (e.g., for solid waste, a utility or construction company's own dumpster). Standard construction traffic control measures will be used to protect workers, residents, and the travelling public.	none	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	For any "Asbestos Containing Material", lead-based paint and/or other hazardous materials found during remediation or repair activities, the applicant must comply with all Federal, State, and local abatement and disposal requirements. Applicants are responsible for ensuring contracted removal of hazardous debris also follows these guidelines.
Socioeconomic and Environmental Justice	This alternative does not include any federal action. There is no requirement for compliance with Executive Orders (EO) 12898: Environmental Justice and 13045: Protection of Children from Environmental Health Risks and Safety Risks since there are no	During the construction period, this alternative may provide some short-term benefits by providing construction jobs and a multiple effect of increased expenditures in the local economy. There may be major effects to populations during construction periods due to	none	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified	Applicant shall, to the extent possible, follow best construction practices to minimize impacts to low income and minority populations.

	federal actions. "Alternative 1" has potential to result in significant adverse impact to socioeconomics of a community if watershed elements are left in disrepair leaving infrastructure and private property vulnerable to major disaster events. Residents may be isolated from their homes and businesses by roadway damages. The "No Action" alternative may cause significant damages to property and compromise infrastructure.	road detours, to provide access to watershed features. Efforts would be made during any construction to minimize short-term disruption to the local transportation system. Low income and minority populations may benefit during the construction process through the provision of construction jobs and multiplier effects of expenditures in the local economy. Any adverse impacts to low income or minority populations are expected to be short-term and not significant.		Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	
Air Quality	This alternative does not include any federal action. Vehicle emissions may increase due to alternative transportation routes.	Watershed resiliency actions will require heavy construction equipment to reshape watershed elements. During construction there may be temporary increases in equipment exhaust emissions and fugitive dust. However, the temporary increase in equipment exhaust is expected to be negligible as long as the equipment is well maintained, and idling is minimized. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner. The contractor would be required to keep all equipment in good working order to minimize air pollution. Where bank stabilization/construction within the stream corridor is required there would be some short-term increase in fugitive dust and vehicular emissions. Mitigation of fugitive dust, if necessary, can be accomplished by periodic watering of the demolition site. After construction, there would be no change in air quality as this alternative would not change roadway length, and therefore would not change the amount of vehicle emissions.	none	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	Applicant shall, to the extent possible, follow best construction practices to minimize impacts to air quality. The contractor should keep all equipment in good working order to minimize air pollution.

Noise	This alternative does not include any federal action. There is the potential that overall noise levels in the immediate area may increase due to locally funded temporary construction. However, noise impacts are not expected to be significant.	Watershed resiliency activities are anticipated to carry a similar noise level to that which existed at pre-disaster damage levels. Noise from construction activities may have short term adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise impacts on residences can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours. Noise levels of construction equipment (70 to 72 dBA) at the distance in which affected parties would likely be located (>200 feet/60 meters) will not be of a duration to be significant.	none	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	Applicant shall, to the extent possible, follow best construction practices to minimize noise impacts.
Public Services and Utilities	This alternative does not include any federal action. Alternative one has the potential to affect public services and utilities, as watershed hazards can undermine, damage, or destroy facilities in subsequent events if not removed. Fire, emergency, law enforcement, and school services would be delayed as a result of continued inaccessibility of the route, due to closed roads or bridges. Depending on the length of detour required, these services could be significantly impacted. In addition, utility repair crews may not be able to reach damaged utility lines, resulting in lengthy service outages.	During construction, delays in fire, emergency, law enforcement and school services may continue, but these impacts would be short-term. Once completed, public services would be restored to pre-disaster levels. Utilities that cross or run along the watershed may be temporarily interrupted, but this would be a short-term impact. No long-term impacts would occur under this alternative.	none	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	Applicant shall, to the extent possible, follow best construction practices to minimize any impacts on public services and utilities.

Biological Resources	Under the "No Action" alternative, no localized or regional effects to threatened or endangered species are expected. This alternative does not include any action. Therefore, the applicants would not be required to consult with USFWS to comply with the ESA, Migratory Bird Treaty Act (MBTA), Fish and Wildlife Coordination Act (FWCA), or state laws. Damaged structures left in the stream may cause a flow impediment, potentially causing impacts to species habitats and individuals.	The actions under this alternative may have the potential to affect sensitive biological resources, wetlands, or natural waterways due to construction activities; a review of available information on the potential for species and critical habitat occurrence in the area will be conducted. The proposed action requires the redistribution or removal of hazards, materials, and possibly structures from the waterway. Embankment work and in-water work will occur. Federal Agencies will coordinate with USFWS and will review the project and make a determination of effect. If an Agency determines that a project has the potential to affect sensitive biological resources it will initiate the review process under Section 7 of the ESA, MBTA, or FWCA, the results of this consultation with USFWS would be documented in a memorandum to this PEA or in a SEA. If work occurs on U.S. Forest Service (USFS) or Bureau of Land Management (BLM) land additional coordination with these agencies will be required. Because migratory birds nest on many substrates (e.g., ground, shrubs, trees, utility boxes), should the proposed work occur during the breeding season (May 1st to August 15th) , the Service recommends: the required cutting of trees or shrubs occur between August 16th and April 30th to remove potential nesting surfaces prior to project commencement; and the removal of swallow nests as they are built, but prior to egg laying, from the utility structures that are to be removed; and/or netting of the affected structures or implementation of other measures to prevent swallow nesting prior to the breeding season. In addition, some migratory birds are known to nest outside of the aforementioned primary nesting season period. For example, raptors can be expected to nest during February 1 through July 15. For actions within 0.5 mile of occupied eagle nests coordination with USFWS should occur as a	Consultation with USFWS may be necessary to assess permanent and temporary impacts. Compliance with Senate Bill 40 may be required.	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	Applicant shall, to the extent possible, follow best construction practices to minimize impacts to any species. Should any threatened or endangered species be discovered during construction work in the subject area shall be halted and the applicant should contact USFWS for further guidance. Proposed work should not occur during the avian breeding season (April 1st to August 30th), the Service recommends: the required cutting of trees or shrubs occur between August 30th and April 1st to remove potential nesting surfaces prior to project commencement; the removal of swallow nests as they are built, but prior to egg laying, from the bridge structures that are to be removed; and/or netting of the affected bridge structures to prevent swallow nesting prior to the breeding season.

		Bald and Golden Eagle Protection Act (BGEPA) permit may be required. Implementation of the National Bald Eagle Management Guidelines would be applied as necessary. If a nest or bird is taken outside the specified timeframe, that take is considered a violation of the MBTA. Watershed restoration and replacement activities have the potential to affect federally listed threatened and endangered (T&E) species and their habitat. In order to avoid and minimize potential impacts applicants should implement conservation measures provided by USFWS to the extent possible. Conservation measures include, but are not limited to: Locate access routes, staging areas, etc. within previously disturbed areas Avoid disturbing or burying any existing riparian (streamside) habitat Implement local BMPs for control of erosion and sedimentation Incorporate consideration of fish passage into project design Restore any disturbed areas using native riparian plant species to prevent erosion Integrate native vegetation into rip rap slope protection Avoid fragmenting or isolating riparian corridors or wetlands Identify areas of ground disturbance and conservation measures implemented Contact U.S. Fish and Wildlife Service immediately by telephone at (303) 236–4773 if any T&E species is found alive, dead, injured, or hibernating within the project area.			

Water Resources	In the no action alternative watershed resiliency activities would not be completed. No work would occur in water, thus there would be no direct impact to water resources due to the proposed action. Hazards may cause a flow impediment, potentially causing significant impacts to stream and floodplain hydraulics and function.	Under this alternative watershed resiliency activities will be performed within waterways and floodplains. Excavation, redistribution, and fill materials may be necessary for the proposed project thus impacting waters of the U.S. Discharge into surface water may provide a temporary alteration of surface water quality including but not limited to temperature, dissolved oxygen, or turbidity. Watershed resiliency activities include bioengineering inspired bank stabilization (Figure 4 5), utilization of engineering woody debris (Figure 4 6 and Figure 4 7), re-vegetation, and in-stream grade control (Figure 4 8) that does not restrict aquatic species passage. Additionally, watershed resiliency activities are composed primarily of multi-objective design projects such as reactional usages for floodplains. Activities that result in hardened channelization or the creation of new impervious surfaces are not covered in this alternative. For examples of the types of biologically inspired engineering covered in alternative two, see Mitigation Best Practices | FEMA.gov and Appendix F: Engineering with Nature | Alternative Techniques to Riprap Bank Stabilization.	The applicant must coordinate with USACE as well as the CWCB to obtain and comply with all appropriate permits.	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	The applicant is responsible for verifying and compliance with all permit requirements, including permit conditions, pre-construction notification requirements and regional conditions as provided by the US Army Corps of Engineers (USACE). The applicant is responsible for implementing, monitoring, and maintaining all Best Management Practices (BMP's) and Pre-Construction Notification (PCN) conditions of applicable Nation Wide Permits (NWP). This is to include any requirements per the Colorado Department of Public Health and Environment 401 Water Quality Certification for Clean Water Act permits. Applicants must coordinate with local floodplain administrator to obtain and comply with the appropriate floodplain management permits.
Cultural Resources	No federal action would occur under this alternative. However, new impacts to historic resources are possible as exposed or otherwise disrupted cultural resources would remain vulnerable to future events and accelerated deterioration.	This alternative has the potential to affect historic or cultural resources. Destruction or alteration of any site, structure, or object of historic, prehistoric, or paleontological importance may occur as a result of watershed resiliency activities. Redistribution of alluvium or other watershed elements may have exposed areas of high archaeological sensitivity. Physical change could affect unique cultural values. There could be effects on existing religious or sacred uses of a site or area and archeological resources may be present. For non-tribal lands any agencies that have entered into Programmatic Agreements with the South Dakota State Historic	Consultation with the SHPO and/or THPO may be necessary to identify potential impacts for projects that do not fit into a Programmatic Agreement	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed	Applicant shall, to the extent possible, follow best construction practices to minimize impacts to any cultural resources. Should any historic or archaeological materials be discovered during construction, all activities on the site would be halted immediately and the applicant should contact the SHPO for further guidance.

		Preservation Office (SHPO) or a Tribal Historic Preservation Office (THPO) will determine if a project meets any outlined programmatic allowances. If so, The Agencies would consider the project to be in compliance with Section 106 of NHPA and no further review would occur. If a project does not fall within an allowance, or a Programmatic Agreement does not exist, The Agencies will make a determination of effect in accordance with NHPA section 106 and consult with the SHPO. Additional archaeological surveys of ground disturbing activities or architectural surveys of projects impacting built environments may be required depending on consultation with Tribal Historic Preservation Office (THPO) and SHPO. Wealth of section 106 compliance resources are available at history.sd.gov and by contacting South Dakota State Historical Society staff members.		areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	
Hazardous Materials	The "No Action" alternative would not disturb any hazardous materials or create any potential hazard to human health.	The proposed action would not disturb any known hazardous materials or create any potential hazard to human health. If hazardous constituents are encountered during the proposed construction operations, appropriate measures for the proper assessment, remediation and management of the contamination would be initiated in accordance with applicable federal, state, and local regulations. The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials.	CDPHE permits	Use vegetative stabilization measures/bioengineered alternatives to rip rap/armoring whenever possible Assess impacts to endangered species, historic buildings or cultural resources as specific projects are identified Consult with individual agencies including USFWS, USACE, EPA, etc. as needed on individual projects Implement USFWS conservation measures: locate access routes, staging areas, etc. within previously disturbed areas; avoid disturbing or burying any existing riparian (streamside) habitat; restore any disturbed areas using native riparian plant species to prevent erosion, integrate native vegetation into rip rap slope protection, avoid fragmenting or isolating riparian corridors or wetlands, and identify areas of ground disturbance	Hazardous Materials must be appropriately separated and disposed of in an approved disposal site or landfill. Asphalt must be recycled as a blended base material or appropriately separated and disposed of in an approved disposal site or landfill in accordance with the CDPHE authorized waste management regulations. For any "Asbestos Containing Material", lead-based paint and/or other hazardous materials found during remediation or repair activities, the Applicant must comply with all Federal, State, and local abatement and disposal requirements. Applicants are responsible for ensuring contracted removal of hazardous debris also follows these guidelines.

SECTION SEVEN | PUBLIC INVOLVEMENT

Public Notice of Availability Comment

The following document is being released for a 30-day public comment period spanning November 24th – December 24th, 2021.

NOTICE OF AVAILABILITY FOR PUBLIC REVIEW OF A PROGRAMMATIC ENVIRONMENTAL ASSESSMENT (PEA) FOR WATERSHED RESILIENCY PROJECTS IN SOUTH DAKOTA

The Federal Emergency Management Agency (FEMA) is providing notice that a Programmatic Environmental Assessment (PEA) to evaluate proposed watershed resiliency projects in the State of South Dakota is available for public review and comment. We issue this notice to provide the opportunity for other Federal and State agencies, Native American tribes, non-governmental organizations, and the public to comment on the proposed PEA. These actions are part of our effort to comply with the general provisions of the National Environmental Policy Act (NEPA); NEPA regulations; other Federal laws, regulations, and Executive Orders; and our policies for compliance with those laws and regulations including 44 C.F.R. Part 9 and FEMA Directive 108-1 & Instruction 108-1-1.

The PEA focuses on a variety of comprehensive watershed resiliency actions in South Dakota that require river restoration, bank stabilization, demolition, relocation, or alteration of buildings and infrastructure, and hydraulic capacity mitigation measures for restoring watershed function. Projects may be funded through FEMA's Public Assistance (PA) Program for damages sustained during disaster events, through FEMA's Hazard Mitigation Assistance (HMA) grant programs, as well as other FEMA grant programs. Other Federal agencies may adopt the PEA under their own authorities in accordance with the Unified Federal Review (UFR) process.

The recurring flood events in South Dakota have has resulted in hundreds of millions of dollars in damage due to the inundation of facilities, including roads, utilities, land, and homes. In an effort to restore these facilities or mitigate from future events, FEMA and other agencies may provide funds for restoration and upgrades of watershed hydraulic capacity and floodplain function. The purpose of the PEA is to provide an assessment of the expected environmental impacts associated with implementing these types of projects. It addresses the purpose and need of the proposed projects, project alternatives considered, affected environment, environmental consequences, and impact of mitigation measures. The PEA would not address site-specific impacts, which would be evaluated on a project-specific basis. All Federally funded projects will be completed in compliance with applicable Federal, tribal, state, and local laws, regulations, Executive Orders, etc. Some specific items of work may include, but are limited to:

- Nature-based and biologically inspired mitigation measures such as bank stabilization using natural materials and re-vegetation in combination with hard armoring, referred to as bioengineering;

- Multi-objective project design of hydraulic control elements such as fish-passage friendly drop structures, energy dissipating fish ladders or the creation of recreational open space to preserve watershed functions;

- Demolition, relocation, or transfer of function for structures, including public utilities and roads, that currently impede or threaten to impede watershed functions; and

- Watershed restoration and mitigation including channel shaping or re-profiling, floodplain construction, overflow channel construction, riparian re-vegetation, and in-stream habitat improvement.

The comment period for the draft PEA will remain open for thirty days following publication of this notice. After gathering public comments, the draft PEA will become final in accordance with FEMA Directive 108-1 & Instruction 108-1-1, FEMA's implementing procedures for NEPA.

You can provide comments or obtain more detailed information about the proposed PEA by contacting Richard Myers, FEMA Region VIII, Deputy Regional Environmental Officer at richard.myers2@fema.gov.

SECTION EIGHT | LIST OF PREPARERS

This PEA was prepared by:

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SECTION NINE | REFERENCES

[i] Library of Congress. *H.R.219 – Sandy Recovery Improvement Act of 2013 113th Congress (2013-2014)*. https://www.congress.gov/bill/113th-congress/house-bill/219. Accessed 07/09/2021.

[ii] Federal Emergency Management Agency. 2021. *Sandy Recovery Improvement Act of 2013*. https://www.fema.gov/disaster/sandy-recovery-improvement-act-2013. Accessed 07/09/2021.

[iii] Federal Emergency Management Agency. 2021. *Unified Federal Environmental and Historic Preservation Review for Presidentially Declared Disasters*. https://www.fema.gov/emergency-managers/practitioners/environmental-historic/review. Accessed 07/09/2021.

[iv] Federal Emergency Management Agency. 2021. *FEMA Grants*. https://www.fema.gov/grants. Accessed 07/09/2021.

[v] Federal Highway Administration. 2021. *Emergency Relief (ER) Program*. https://www.fhwa.dot.gov/programadmin/erelief.cfm. Accessed 07/09/2021.

[vi] Federal Highway Administration. 2021. *Emergency Relief for Federally Owned Roads (ERFO)*. http://flh.fhwa.dot.gov/programs/erfo/. Accessed 07/09/2021.

[vii] Natural Resources Conservation Service. *Emergency Watershed Protection (EWP) Program*. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/. Accessed 07/09/2021.

[viii] U.S. Department of Housing and Urban Development. *Community Development Block Grant - Disaster Recovery Program (CDBG-DR)*. https://www.hudexchange.info/cdbg-dr/ Accessed 07/09/2021.

[ix] Federal Emergency Management Agency. *National Environmental Policy Act (NEPA)*. https://www.fema.gov/emergency-managers/practitioners/environmental-historic/laws/nepa. Accessed 07/09/2021.

[x] South Dakota Department of Agriculture and Natural Resources. 2015. *South Dakota Geology*. http://www.sdgs.usd.edu/geologyofsd/geosd.html. Accessed 07/09/2021.

[xi] The Columbia Electronic Encyclopedia, 6th ed. Columbia University Press. 2012. *South Dakota: Geography*. https://www.infoplease.com/encyclopedia/places/north-america/us/south-dakota/geography. Accessed 07/09/2021.

[xii] Natural Resources Conservation Service. *South Dakota State Soil (Houdek).* https://www.nrcs.usda.gov/wps/portal/nrcs/detail/sd/soils/?cid=nrcs141p2_036600. Accessed 07/09/2021.

[xiii] Natural Resources Conservation Service. 2019. *Web Soil Survey*. https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed June 4, 2019.

[xiv] U.S. Census Bureau. 2020. *QuickFacts South Dakota*. https://www.census.gov/quickfacts/fact/table/SD/PST045218. Accessed 07/09/2021.

[xv] National Park Service. 2019. *National Register Database and Research*. https://www.nps.gov/subjects/nationalregister/database-research.htm. Accessed 07/09/2021.

[xvi] U.S. Geological Survey. 2011. *National Land Cover Database*. https://www.usgs.gov/centers/eros/science/national-land-cover-database?qt-science_center_objects=0#qt-science_center_objects. Accessed 07/09/2021.

[xvii] U.S. Department of Agriculture. 2021. *State Fact Sheets: South Dakota*. https://data.ers.usda.gov/reports.aspx?StateFIPS=46&StateName=South%20Dakota&ID=17854. Accessed 07/09/2021.

[xviii] Natural Resources Conservation Service. 2017. *National Resources Inventory*. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/nri/results/?cid=stelprdb1041876. Accessed 07/09/2021.

[xix] Federal Highway Administration. 2018. *National Highway System FHWA Route Log and Finder List*. https://www.fhwa.dot.gov/planning/national_highway_system/interstate_highway_system/routefinder/table01.cfm. Accessed 07/09/2021.

[xx] South Dakota Department of Transportation. 2021. *Current Rail System*. https://dot.sd.gov/transportation/railroads/current-rail-system. Accessed 07/09/2021.

[xxi] Amtrtak. 2021. *Train Routes*. https://www.amtrak.com/train-routes. Accessed 07/09/2021.

[xxii] South Dakota Department of Transportation. 2021. *Airport Information*. https://dot.sd.gov/transportation/aviation/airport-information. Accessed 07/09/2021.

[xxiii] Occupational Safety and Health Administration (OSHA) - *Asbestos*. https://www.osha.gov/asbestos. Accessed 07/09/2021.

[xxiv] U.S. Census Bureau. 2019. *American Community Survey Demographic and Housing Estimates*. https://data.census.gov/cedsci/table?tid=ACSDP5Y2019.DP05&g=0400000US46. Accessed 07/09/2021.

[xxv] U.S. Census Bureau. 2020. *QuickFacts United States; South Dakota*. https://www.census.gov/quickfacts/fact/table/US,SD/IPE120219. Accessed 07/09/2021.

[xxvi] National Conference of State Legislature. 2020. *Federally Recognized Tribes*. https://www.ncsl.org/legislators-staff/legislators/quad-caucus/list-of-federal-and-state-recognized-tribes.aspx#sd. Accessed 07/09/2021.

[xxvii] U.S. Environmental Protection Agency. 2021. *Approved Air Quality Implementation Plans in South Dakota*. https://www.epa.gov/sips-sd. Accessed 07/09/2021.

[xxviii] South Dakota Department of Agriculture and Natural Resources. 2021. *Air Quality In South Dakota*. https://danr.sd.gov/Environment/AirQuality/OpenBurning/default.aspx. Accessed 07/09/2021.

[xxix] U.S. Environmental Protection Agency. 2021. *Current Nonattainment Counties for All Criteria Pollutants*. https://www3.epa.gov/airquality/greenbook/ancl.html. Accessed 07/09/2021.

[xxx] Federal Aviation Administration. 2012. *Aircraft Noise Levels*. https://www.faa.gov/about/office_org/headquarters_offices/apl/noise_emissions/aircraft_noise_levels/. Accessed 07/09/2021.

[xxxi] Center for Disease Control and Prevention. 2017. *AIRCREW SAFETY & HEALTH Noise/Hearing Loss* https://www.cdc.gov/niosh/topics/aircrew/noise.html. Accessed 07/09/2021.

[xxxii] Federal Highway Administration Public Roads. 2003. *Living With Noise by Chris Corbisier*. https://www.fhwa.dot.gov/publications/publicroads/03jul/06.cfm. Accessed 07/09/2021.

[xxxiii] Federal Railroad Administration. 2020. *Horn Noise FAQ*. https://railroads.dot.gov/environment/noise-vibration/horn-noise-faq. Accessed 07/09/2021.

[xxxiv] National Parks Service. 2018. *Understanding Sound*. https://home.nps.gov/subjects/sound/understandingsound.htm. Accessed 07/09/2021.

[xxxv] South Dakota Public Utilities Commission. *South Dakota Utility Providers*. https://puc.sd.gov/consumer/sdutilityproviders.aspx. Accessed 07/09/2021.

[xxxvi] U.S. Energy Information Administration. 2021. *South Dakota State Profile and Energy Estimates*. https://www.eia.gov/state/?sid=SD. Accessed 07/09/2021.

[xxxvii] South Dakota Department of Agriculture & Natural Resources. 2020. *Drinking Water Program*. https://danr.sd.gov/OfficeOfWater/DrinkingWater/default.aspx. Accessed 07/09/2021.

[xxxviii] South Dakota Department of Agriculture & Natural Resources. 2020. *Permitted Municipal Solid Waste Landfills*. https://danr.sd.gov/Environment/WasteManagement/SolidWaste/Landfills.aspx. Accessed 07/09/2021.

[xxxix] U.S. Department of Justice. 2011. *2008 Census of State and Local Law Enforcement Agencies, by Brian A Reaves*. https://bjs.ojp.gov/content/pub/pdf/csllea08.pdf. Accessed 07/09/2021.

[xl] U.S. Fire Administration. 2021. South Dakota fire loss/fire department profile. https://www.usfa.fema.gov/data/statistics/states/southdakota.html. Accessed 07/09/2021.

[xli] U.S. Bureau of Labor Statistics. 2020. *State Occupational Employment and Wage Estimates South Dakota*. https://www.bls.gov/oes/current/oes_sd.htm. Accessed 07/09/2021.

[xlii] South Dakota Department of Environment and Natural Resources. 2020. *THE 2020 SOUTH DAKOTA INTEGRATED REPORT FOR SURFACE WATER QUALITY ASSESSMENT*. https://denr.sd.gov/documents/SD_2020_IR_final.pdf. Accessed 07/09/2021.

[xliii] South Dakota Department of Agriculture & Natural Resources. 2020. *Ground Water Discharge Permits*. https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/GroundWaterDischargePermits.aspx. Accessed 07/09/2021.

[xliv] National Wild and Scenic Rivers System. 2021. *South Dakota*. https://www.rivers.gov/south-dakota.php. Accessed 07/09/2021.

[xlv] Federal Emergency Management Agency. 2020. *Benefits of Natural Floodplains*. https://www.fema.gov/floodplain-management/wildlife-conservation/benefits-natural. Accessed 07/09/2021.

[xlvi] Federal Emergency Management Agency. 2021. *Community Status Book Report*. https://www.fema.gov/cis/SD.pdf. Accessed 07/15/2021.

[xlvii] South Dakota Department of Public Safety. 2017. *National Flood Insurance Program*. https://dps.sd.gov/emergency-services/emergency-management/mitigation/national-flood-insurance. Accessed 07/09/2021.

[xlviii] Federal Emergency Management Agency. 2019. *National Flood Hazard Layer (NFHL) Database*. https://hazards.fema.gov/femaportal/NFHL/searchResulthttps://hazards.fema.gov/femaportal/NFHL/searchRes11ult. Accessed 05/29/2019.

[xlix] U.S. Fish and Wildlife. 2019. *National Wetlands Inventory*. https://www.fws.gov/wetlands/index.html. Accessed 05/29/2019.

[l] U.S. Environmental Protection Agency. 2021. Level III and IV Ecoregions by State. https://www.epa.gov/eco-research/level-iii-and-iv-ecoregions-state. Accessed 07/09/2021.

[li] South Dakota Game, Fish, and Parks. 2019. *South Dakota Wildlife Action Plan Explorer*. https://gfp.sd.gov/wildlife-action-plan/ . Accessed 06/05/2019.

[lii] U.S. Forest Service. 2016. *LANDFIRE: Landscape Fire and Resource Management Planning Tools*. https://www.landfire.gov/index.php. Accessed 07/09/2021.

[liii] U.S. Bureau of Land Management. 2013. *Instruction Memorandum 2013-111: National Vegetation Classification and Associated Mapping Standards*. https://www.blm.gov/policy/im-2013-111. Accessed 07/09/2021.

[liv] U.S. Forest Service. 2021. *Open Tree Canopy*. https://fsapps.nwcg.gov/ravg/glossary/open-tree-canopy. Accessed 07/09/2021.

[lv] U.S. Fish and Wildlife Service. 2021. *Bald & Golden Eagle Information*. https://www.fws.gov/birds/management/managed-species/bald-and-golden-eagle-information.php. Accessed 07/09/2021.

[lvi] U.S. Fish and Wildlife Service. 2021. *IPaC Information for Planning and Consultation*. https://ecos.fws.gov/ipac/location/index. Accessed 07/09/2021.

[lvii] South Dakota State Historical Society. 2021. *State Archives*. https://history.sd.gov/archives/default.aspx. Accessed 07/09/2021.

[lviii] National Parks Service. 2021. *Tribal Historic Preservation Program*. https://www.nps.gov/thpo/index.html. Accessed 07/09/2021.

[lix] Sundstrom, Linea. 2018. *South Dakota State Plan for Archaeological Resources*, 2018 Update. https://history.sd.gov/preservation/docs/ArchaeologyStatePlan2018Update.pdf. Accessed 07/09/2021.

[lx] National Park Service. 2021. *National Register Database and Research*. https://www.nps.gov/subjects/nationalregister/database-research.htm. Accessed 07/09/2021.

[lxi] U.S. Environmental Protection Agency. 2021. *Cleanups in My Community*. https://ofmpub.epa.gov/apex/cimc/f?p=CIMC:LIST. Accessed 07/09/2021.