

# Appendix A

## CO 71 Environmental Scan

### COLORADO HIGHWAY 71 *(Limon north to Colorado/Nebraska state line)* TRUCK FREIGHT DIVERSION FEASIBILITY STUDY

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# ENVIRONMENTAL SCAN TECHNICAL REPORT

State Highway 71 Super-2 Design  
Limon, Colorado to the Nebraska State Line

STA 071A-019

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Prepared for:  
Colorado Department of Transportation



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**ATKINS**



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## Acronyms

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
AST	Above-ground storage tank
BFE	Base flood elevation
BMP	Best Management Practice
CDA	Colorado Department of Agriculture
CDLE	Colorado Department of Labor and Employment
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CFR	Code of Federal Regulations
CNHP	Colorado Natural Heritage Program
COSTIS	Colorado Storage Tank Information System
CPW	Colorado Parks and Wildlife
dB	Decibels
dBA	A-weighted decibels
DWR	Colorado Division of Water Resources
ECOS	Environmental Conservation Online System
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
GIS	Geographical Information Systems
HMWMD	Hazardous Materials and Waste Management Division
Leq	Hourly equivalent noise level
LPG	Liquefied petroleum gas
LUST	Leaking underground storage tank
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act
NAC	Noise Abatement Criteria
NDIS	Natural Diversity Information Source

NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPL	National Priorities List
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NWP	Nationwide permit
OPS	Oil and Public Safety
OTIS	Online Transportation Information System
PBA	Programmatic Biological Assessment
ROW	Right-of-way
SHPO	State Historic Preservation Office
SPWRAP	South Platte Water Related Activities Program
SOQ	Small quantity generator
SSURGO	Soil Survey Geographic database
TMDL	Total maximum daily load
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground storage tank
WOUS	Waters of the U.S.

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## INTRODUCTION

The Colorado Department of Transportation (CDOT) is interested in making transportation improvements on the Colorado State Highway 71 (SH 71) corridor from approximately Main Street in the Town of Limon to the Colorado-Nebraska state line. This section of SH 71 is a two-lane highway that traverses four counties—including Lincoln, Washington, Morgan, and Weld counties—and two major municipalities—including the Town of Limon and the City of Brush. The study area extends 200 feet on both sides of the SH 71 centerline.

This Environmental Scan Technical Report identifies environmental resources and environmentally sensitive areas in the study area. It is comprised mostly of readily available data and field survey information. The purpose of this scan report is to:

- Develop a more thorough understanding of the existing uses and conditions of the corridor
- Identify sensitive environmental resources early in the planning process

The intent of this scan report is not to identify specific impacts to resources. Instead, the collected information will be used during subsequent study phases to avoid and minimize impacts to resources.

In the future, if a recommended package of improvements receives funding, the results will be carried forward at that time into project development; additional environmental review; and project design, construction, maintenance, and operations.

## Study Area

The environmental resource study area for this environmental scan, illustrated in Figure 1, is a 125-mile stretch of SH 71 from Limon to the Nebraska state line. To consider the potential for impacts to environmental or community resources, the study area is extended for a range of 200 feet on both sides of the SH 71 centerline. The study corridor runs through the unincorporated neighborhoods of four counties—Lincoln, Washington, Morgan, and Weld—where land use is predominantly agriculture.

## Methodology

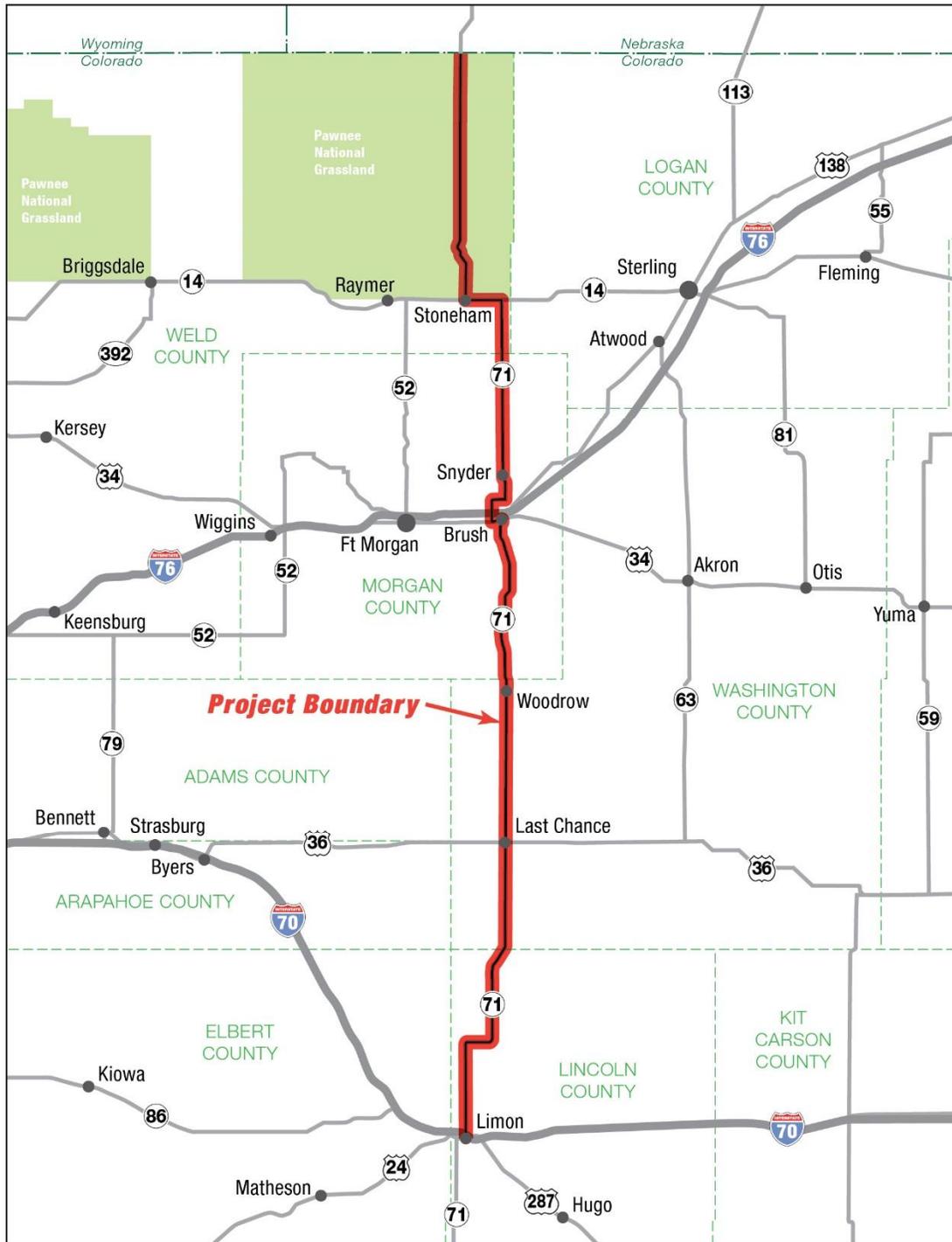
Data collection to identify the existing resources in the area was conducted during the summer of 2017 using readily available resources, such as evaluation of any previously completed reports and studies, existing resources, maps, data, and a limited windshield review of the resources adjacent to the existing roadway. The windshield field study was conducted on September 7, 2017 by a historian, a drainage engineer, and a planner traveling SH 71 from Limon, Colorado, to the Colorado/Nebraska border. During the survey, the project team stopped to collect photographs and document potential environmental resources identified in the study area. A map book, developed using ArcGIS, was used as a primary tool to record field notes.

Data were reviewed from the following agencies:

- City of Brush (Brush)
- Colorado Department of Public Health and Environment (CDPHE)
- Colorado Department of Labor and Employment (CDLE)
- CDOT
- Colorado Division of Water Resources (DWR)

- Colorado Parks and Wildlife (CPW)
- Federal Emergency Management Agency (FEMA)
- Lincoln County
- Morgan County
- National Park Service (NPS)
- State Historic Preservation Office (SHPO)
- Town of Limon (Limon)
- U.S. Environmental Protection Agency (EPA)
- U.S. Fish and Wildlife Service (USFWS)
- U.S. Department of Agriculture (USDA)
- U.S. Geological Survey (USGS)
- Washington County
- Weld County

Figure 1. Study Area



## RESOURCES EVALUATED

The following environmental and community resources are identified to be present in the study corridor and are summarized in the following sections:

- Farmlands
- Hazardous Materials
- Historic Resources
- Land Use
- Noise
- Parklands and Recreation
- Vegetation and Noxious Weeds
- Water Resources
- Wetlands and Waters of the U.S.
- Wildlife and Threatened, Endangered, and Other Special-Status Species

### Farmlands

The Farmland Protection Policy Act of 1981 (Title 7 United States Code [USC], Chapter 73) (Act) is intended "... to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure that federal programs are administered in a manner that, to the extent practicable, will be compatible with state, unit of local government, and private programs and policies to protect farmland."

Farmland is defined by the Act in Section 4201 as including:

- Prime farmland. Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses. They can be either non-irrigated or lands that would be considered prime if irrigated.
- Unique farmland. Land that is non-prime farmland which is used for production of high-value food and fiber crops, such as olives and cranberries.
- Farmland, other than prime or unique farmland, that is of statewide or local importance. Land that does not meet the criteria for prime or unique farmland, but nevertheless is farmland of statewide or local importance for the production of food, feed, fiber, forage, and oilseed crops, as defined by the appropriate state or local agencies.

### Methodology

To determine the presence of any prime farmland, unique farmland, and land of statewide or local importance in the study area, information on soils of the study area was obtained in August of 2017 from the Soil Survey Geographic (SSURGO) Database, compiled by the Natural Resources Conservation Service (NRCS).

### Existing Conditions

The NRCS data indicate that nearly half of the land within the study area is either prime farmland or farmland of statewide importance. There is no unique farmland identified in the study area. Table 1 shows the farmland types, acres, and the percentages identified in the study area.

Table 1. Farmland Type in the Study Area

Farmland Type	Acres in Study Area	Percentage of Study Area
Prime farmland if irrigated	1,933.9	29.0%
Prime farmland if irrigated and protected from flooding	43.3	0.6%
Prime farmland if irrigated and reclaimed of excess salts and sodium	102.6	1.5%
Farmland of statewide importance	1,183.9	17.8%
Not prime farmland	3,404.0	51.1%
Total	6,667.7	100.0%

Source: SSURGO, NRCS

### Next Steps

If a project has the potential to convert farmland to nonagricultural uses, the federal agency responsible for the project is required to coordinate with NRCS to determine potential farmland impacts. NRCS uses Form AD-1006, Farmland Conversion Impact Rating or Form NRCS-CPA-106 (for corridor-type projects) to inventory and evaluate farmland-related impacts associated with a federally funded and assisted project. To avoid any adverse effect on prime farmland and farmland with statewide importance resulting from a proposed project, ongoing coordination with the NRCS office, local technical staff, and the property owners will be a critical part of project development.

## Hazardous Materials

Hazardous materials are substances or chemicals that can potentially pose substantial threats to public health or the environment. Examples of hazardous materials include gasoline and diesel fuels, lead-based paint, propane, dry-cleaning solvents, and heavy metals. Hazardous materials may exist at facilities that generate, store, or dispose of these substances; or at locations where there may have been a past release of these substances, such as chemical production plants, oil refineries, and landfills. Many other types of businesses also may generate hazardous wastes, including dry cleaners, gas stations, hospitals, and automobile repair centers.

## Methodology

A hazardous materials record search was conducted to identify known and potential sites of hazardous materials located within the study area. Four databases were searched, including:

- (1) CDPHE environmental records
- (2) CDPHE Hazardous Materials and Waste Management Division (HMWMD) Geographic Information Systems (GIS) maps and data
- (3) CDLE Division of Oil and Public Safety (OPS) Colorado Storage Tank Information System (COSTIS)
- (4) CDLE OPS Petroleum Release Events Interactive Map

The databases were searched for storage tanks, leaking underground storage tank (LUST), landfills, brownfields, commercial composting facilities, recycling sites, Superfund sites (National Priorities List[NPL]), voluntary cleanup program sites, and Uranium mill tailings remedial action sites.

In addition, a windshield review of the resources adjacent to the existing roadway was conducted on September 7, 2017.

## Existing Conditions

The CDPHE records search listed no hazardous waste sites in the study area. COSTIS was reviewed for the study area to determine the locations of storage tanks, including above-ground storage tanks (ASTs), underground storage tanks (USTs), and liquefied petroleum gas (LPG). In the study area, those sites typically are associated with petroleum use at fueling stations, and they are shown in Table 2.

*Table 2. Hazardous Material Sites Identified in the Study Area*

Facility Name	Address	Category	Number of Tanks
Big R Farm & Ranch Supply	150 7th Street, Limon	Retail Store	1 LPG in use
Stone Oil Co.	345 1st Street, Limon	Bulk Plant	7 ASTs in total, 5 ASTs in use
Limon KOA Campground	575 Colorado Avenue, Limon	Public Area	1 LPG in use
Asphalt Plant	Corner of SH 71 & County Road 4D	Industrial	1 LPG in use
Minit Mart	1041 SH 71, Brush	Retail Gas Station	7 USTs in total, 4 USTs in use
Tomahawk Brush Travel Stop	1156 SH 71, Brush	Retail Gas Station	10 Tanks in total, 4 USTs and 1 LPG in use

Facility Name	Address	Category	Number of Tanks
Colorado Retail Ventures Services (CENEX)	315 E. Edison Street, Brush	Retail Gas Station	6 tanks in total, 4 USTs in use
CHS M&M Co-op Brush Bulk Plant	415 E. Edison Street, Brush	Bulk Plant	6 ASTs and 3 LPGs are in use

Source: COSTIS, August 2017

Table 3 lists the other locations for potential hazardous materials identified in the study area and the potential issues likely to be found based on the type of business.

*Table 3. Potential Hazardous Material Sites of Concern in the Study Area*

Facility Name	Address	Potential Issues
Limon Chrysler Dodge Jeep	1155 SH 71, Limon	Potential generator of small quantity of hazardous waste (SQG)
Parker Agricultural Services	53036 SH 71, Limon	Potential storage tanks and SQG
Pro Agricultural Solutions, LLC	53124 SH 71, Limon	Potential storage tanks and SQG
Brush Auto Salvage, LLC	17426 SH 71, Brush	SQG
A & R Automotive Service	203 Edison Street, Brush	SQG
Rudy's Tires	405 Edison Street, Brush	Potential storage tanks and SQG
U-pump-it	223 Colorado Avenue, Brush	Potential storage tanks and SQG
The Corner Carwash	249 Edison Street, Brush	Potential storage tanks and SQG
Lasting Images Photography Inc.	320 Colorado Avenue, Brush	SQG

Source: Google Maps, site reconnaissance, August 2017

The petroleum release events in the study area are shown in Table 4.

*Table 4. Petroleum Release Events in the Study Area*

Facility Name	Address	Status	Source of Release
Tomahawk Brush Travel Stop	1156 SH 71, Brush	Open	Install problem
A & R Automotive Service	203 Edison Street, Brush	Open	Historical contamination
Rudy's Tires	405 Edison Street, Brush	Open	Overfill
DJ Petroleum Inc.	201 Main Street, Limon	Closed	N/A
Stone Oil Co.	345 1st Street, Limon	Closed	Surface spill
Red Spur Inc./Nka Last Chance Junction	6025 SH 36, Woodrow	Closed	Unknown
Unocal	105 E Edison Street, Brush	Closed	Historical contamination

Facility Name	Address	Status	Source of Release
Colorado Retail Ventures Services	315 E Edison Street, Brush	Closed	Dispenser
U-pump-it	223 Colorado Avenue, Brush	Closed	N/A
Minit Mart	1041 SH 71, Brush	Closed	N/A
Mohrlang Manufacturing Inc.	1110 N. Cameron Street, Brush	Closed	N/A

Source: Petroleum releases (events), Colorado Division of Oil and Public Safety

The windshield review identified the following potential hazardous material sites:

- Oil and gas facility north of milepost 127
- Telecommunications facility at milepost 129
- Fire station north of milepost 138
- Oil and gas facilities south and north of milepost 141
- Telecommunications facility south of milepost 142
- Abandoned equipment house north of milepost 152
- Oil and gas facility north of milepost 153
- Electrical substation north of milepost 174
- Equipment junk yard at southeast corner of SH 71 and Business I-76
- ASTs just south of milepost 177
- Generator and AST south of milepost 220 (see Figure 2)
- Oil and gas facility north of milepost 230 (see Figure 3)

*Figure 2. Existing generator and AST in the Study Area*



*Figure 3. Existing oil and gas facility in the Study Area*



### **Next Steps**

In future project activities, additional assessment may be required. The purpose of conducting a more detailed hazardous material assessment is to provide the information needed to plan to avoid or minimize impacts on known and potential hazardous materials and contaminated sites. During the final planning and design process, the information provided in this environmental scan report can be used to identify avoidance options, when possible, and to assist with the development of specific contaminated soils/groundwater material management or mitigation measures. Properties to be acquired also may require individual site assessments and/or preliminary site investigations as part of the right-of-way (ROW) acquisition process.

## Historic Resources

The CDOT NEPA Manual notes that CDOT "...is required to ... to identify and evaluate the significance of historic properties before commencing work related to transportation construction and maintenance activities that could potentially impact historic and/or archaeological resources. <sup>1</sup>"

Section 106 of the National Historic Preservation Act (NHPA), states that any project receiving federal funding must consider the effects of the project (the undertaking) on properties eligible for the National Register of Historic Places (NRHP). To comply with Section 106, an agency must follow a consultative process that includes the following steps: identification, evaluation, effects determination, and resolution of effects.

Section 4(f) of the Department of Transportation Act of 1966, now codified at 23 U.S.C. § 138 and 49 U.S.C § 303 stipulates that the FHWA and other Department of Transportation agencies cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historic sites unless there is no feasible and prudent avoidance alternative to the use of the land or if the impact will be de minimis resulting in "no adverse effect to the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f)"<sup>2</sup>. In addition, the action must include all possible planning to minimize harm to the property resulting from this use.

Any proposed future projects may require review under the provisions of the National Environmental Policy Act (NEPA), Section 4(f), or Section 106, and this evaluation should serve as the basis for future consideration under these statutes. This section describes the historic resources found within the study area.

## Methodology

Dates of construction and eligibility status for all properties in the study area were established through review of the COMPASS database maintained by History Colorado. The COMPASS file search identified previously recorded historic resources within the study corridor. In addition, attempts were made to access data and records held by the Lincoln, Washington, Morgan, and Weld counties to identify any properties that may have reached the 50-year mark in age since previous surveys required for eligibility of a property for the NRHP.

## Existing Conditions

The COMPASS file search of the study area (consisting of the 200-foot corridor that follows the current route of SH 71). This review found that 63 surveys have been conducted between the years of 1982 and 2014. Within the study area, 59 historic sites have been identified, and 15 of these sites have been recommended as eligible or have officially been determined to be eligible for the NRHP.

In addition, a windshield survey of the study area identified numerous farms and properties along the length of the study area, many of which appears to contain historic buildings (more than 150). Other resources such as irrigation ditches, sheds, windmills, and other agricultural related features were also seen in the study area.

Finally, several sites maintained by the U.S. Air Force are found within the northern end of the study area. These sites consist of automated Minuteman missile silos, as well as a large facility that oversees maintenance and security of the silos. Any potential road widening could impact these sites, which could be assumed to be eligible for the NRHP. Similar sites in Nebraska and Wyoming have been found eligible.

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<sup>1</sup> Colorado Department of Transportation. National Environmental Policy Act Manual, Version 5 Update. Denver: 2017.

<sup>2</sup> US Federal Highway Administration. Section 4(f) Tutorial. Internet document, accessed September 15, 2017.

No assessor's data was found for Morgan or Washington counties nor were requests for such data responded to. It is assumed that a large number of historic-age buildings or properties in study area have not yet been evaluated for historical significance or NRHP eligibility.

### Next Steps

Historical and archaeological sites are not renewable; as such, the best resource management is to avoid impacts to properties listed or evaluated as eligible for inclusion on the NRHP. Avoiding or minimizing impacts to historic and archaeological resources can be accomplished by the following methods:

- Avoid direct and indirect impacts to known NHRP-eligible or listed resources during development and design of improvement projects.
- Develop improvement projects that are consistent with the historic character of the area.
- Mitigate unavoidable impacts to NRHP-eligible resources through data recovery, analysis, and publication of findings.

If future proposed projects result in a NEPA or Section 106 Review, the following steps should be followed:

- Consult with the SHPO to define an appropriate Area of Potential Effects (APE) for historic and archaeological resources.
- Identify and invite relevant government agencies, organizations, and tribes to participate as consulting parties in the Section 106 process.
- Conduct intensive-level field surveys in all areas that may be subject to project impacts. Undetected resources—primarily archaeological sites—may exist within the study area. Evaluate or re-evaluate all identified cultural resources for NRHP eligibility and submit documentation to the SHPO for concurrence.
- Evaluate effects to NRHP-eligible or listed properties from the project by applying the federal Criteria of Adverse Effect.
- Consult with the SHPO and other consulting parties to resolve any adverse effects through project redesign/avoidance, minimization of impacts, or mitigation.
- Involve the Advisory Council on Historic Preservation (ACHP) if any adverse effects cannot be resolved through consultation.
- Document the resolution of any identified adverse effects and mitigation prescriptions in a Memorandum of Agreement signed by the Federal Highway Administration (FHWA), CDOT, SHPO, and, if appropriate, consulting parties.
- Implement the specified mitigation measures. Mitigation of impacts to historic sites may include: permanent recording by historical narrative, medium, or large format black-and-white photography, measured drawings, and public interpretation. Mitigation of impacts to archaeological sites typically involves data recovery.

Next steps for impacts to Section 4(f) resources during the NEPA process include:

- Perform a detailed analysis of impacts of the project design on cultural resources
- Perform a Section 4(f) evaluation, including avoidance, mitigation, and measures to minimize harm; feasible and prudent avoidance alternatives; and coordination with FHWA.

## Land Use

Planning for land use is an important local government responsibility. A community's land use plan reflects its vision and goals for future growth and development. When planning future projects, it is important to understand and take into consideration the community's vision identified in the land use plans.

## Methodology

A variety of datasets from different sources were obtained and reviewed for Lincoln, Washington, Morgan, and Weld Counties, the City of Brush, and the Town of Limon, including Comprehensive Plans, Master Plans, Land Use Plans, and land use maps. In addition, a windshield review of the resources adjacent to the existing roadway was conducted on September 7, 2017.

## Existing Conditions

The existing land use within the study area is predominantly agricultural. Rural and low-density residential uses are interspersed and found along the corridor. Within the small towns such as Last Chance, Woodrow, and Snyder, there are institutional/public land uses that include schools, churches, and post offices identified within the study area.

Land uses are more diversified within the Town of Limon and the City of Brush. In Limon, the existing land uses in the vicinity of SH 71/1st Avenue consist of commercial, multi-family residential, and open space. In Brush, current land uses include low-density residential, commercial, agricultural, and industrial. The commercial land uses include grocery stores, gas stations, hotels, and restaurants.

The northern end of the study corridor is within the Pawnee National Grassland. The Pawnee National Grassland provides a variety of recreational resources for hikers and tourists. Table 5 summarizes the current and future land uses in the study area.

*Table 5. Current and Future Land Uses in the Study Area*

Jurisdiction	Source	Current Land Use	Future Land Use
Town of Limon	<ul style="list-style-type: none"> <li>• Town of Limon Zoning Map (1994)</li> <li>• Town of Limon Comprehensive Plan</li> <li>• Future Land Use map</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial Highway</li> <li>• Multi-Family Residential</li> <li>• Open Space</li> </ul>	<ul style="list-style-type: none"> <li>• Future land use pattern will be largely the same as the current land use</li> <li>• Infill and opportunity areas were identified along SH 71 with great potential for commercial development</li> </ul>

Jurisdiction	Source	Current Land Use	Future Land Use
Lincoln County (Unincorporated)	Lincoln County Comprehensive Plan (2000)	Agricultural	<ul style="list-style-type: none"> <li>• Future land use will remain as agricultural</li> <li>• Rural residential, limited commercial and industrial development may occur in this area subject to the Lincoln County Zoning Resolution</li> </ul>
Washington County (Unincorporated)	Washington County Master Plan (2002)	Agricultural	Agricultural
City of Brush	<ul style="list-style-type: none"> <li>• City of Brush Comprehensive Plan 2007</li> <li>• City of Brush Zoning Map (2015)</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial</li> <li>• Low-Density Residential</li> <li>• Industrial</li> <li>• Agriculture</li> </ul>	<ul style="list-style-type: none"> <li>• Retain downtown as a key commercial core</li> <li>• Implementation of “cluster concept” that includes mixed-density residential and neighborhood commercial nodes</li> <li>• Employment area</li> </ul>
Morgan County (Unincorporated)	<ul style="list-style-type: none"> <li>• Morgan County Comprehensive Plan 2008</li> <li>• Morgan County Zoning Interactive Map</li> </ul>	Agricultural, with some rural residential and planned developments	<ul style="list-style-type: none"> <li>• Agricultural</li> <li>• Agri-Business</li> <li>• Planned Development</li> <li>• Estate Residential</li> <li>• Rural Residential</li> <li>• Commercial</li> </ul>
Weld County (Unincorporated)	<ul style="list-style-type: none"> <li>• Weld County Comprehensive Plan</li> <li>• Weld County Property Portal</li> </ul>	Agricultural	Agricultural

### Next Steps

Ongoing coordination with local planners and other city and county officials will be an important part of future development to ensure that proposed projects are consistent with the community's vision and goals. It is possible that additional assessment may be required for future project activities. Ongoing conversation with property owners and businesses also will be a critical part of the planning process. During the final planning and design process, the information provided in the environmental scan report can be used to identify mitigation measures to assist with concerns as a result of construction and ongoing operations.

## Noise

Noise is defined generally as unwanted sounds. Sound levels are expressed in dimensionless units called decibels (dB). The range of noise normally encountered can be expressed by values between 0 (threshold of hearing) dB and 120 dB. A 3-dB change in sound level generally represents a barely noticeable change in noise level, whereas a 10-dB change typically is perceived as a doubling of loudness. Because sensitivity to sound varies from person to person, the A-weighted system—expressed as dBA—is used to provide a value that represents human response. Leq(h) is the hourly equivalent noise level; the equivalent steady-state sound level that contains the same amount of acoustic energy as the time-varying sound level over a one-hour period.

Traffic noise is an important issue for residents and business owners located near highways. A noise sensitive receptor is any property where frequent human use occurs and highway traffic noise may be detrimental to the enjoyment and/or functional use of the property. This description includes residences, schools, parks, hospitals, and businesses. CDOT has established acceptable noise levels for noise sensitive receptors based on activity categories. These measures are called Noise Abatement Criteria (NAC) (see Table 6), and they are referenced in CDOT's *Noise Analysis and Abatement Guidelines* (CDOT, 2015).

Table 6. CDOT Noise Abatement Criteria

Activity Category	Activity Leq(h)*	Evaluation Location	Activity Description
A	56 dBA	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	66 dBA	Exterior	Residential.
C	66 dBA	Exterior	Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	51 dBA	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	71 dBA	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in Activity Category A through D or F.
F	N/A	N/A	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, ship yards, utilities (water resources, water treatment, electrical), and warehousing.

Activity Category	Activity Leq(h)*	Evaluation Location	Activity Description
G	N/A	N/A	Undeveloped lands that are not permitted for development.

\* Leq(h) is the hourly equivalent noise level; the equivalent steady-state sound level that contains the same amount of acoustic energy as the time-varying sound level over a one-hour period; the noise threshold level that is used for all traffic noise analyses for CDOT projects.

## Methodology

A review of noise conditions, using primarily desktop tools such as Google Earth, was performed to identify noise sensitive receptors within the study area. In addition, a windshield review of the resources adjacent to the existing roadway was conducted on September 7, 2017.

## Existing Conditions

A large portion of the study area is located within the unincorporated areas of Lincoln, Washington, Morgan, and Weld Counties. The land use is predominantly agricultural (farms, cropland, pastureland) with interspersed rural residences, schools, and churches along the highway. Within the Town of Limon and the City of Brush, land uses are more diversified with commercial developments and medium-density residential uses along the corridor. Existing noise sensitive receptors within the study area were identified and summarized for each NAC Activity Category.

- NAC A receptor was not identified.
- NAC B residential land uses were identified by cluster. There are single-family houses located intermittently along SH 71, primarily related to agricultural use. The noise impact level for this category is 66 dBA.
  - Smokey Trail of Limon Apartments (510 Smoky Trail, Limon)
  - Limon Apartments (420 1st Ave, Limon)
  - Approximately 15 houses are located along SH 71 just south of Brush
  - Approximately 30 houses are located along SH 71/Colorado Avenue between Eaton Street and Mill Street in Brush
  - North of Mill Street, approximately 10 houses are located along SH 71/Colorado Avenue on the west in Brush
  - North of First Street, approximately 20 houses are located along SH 71 on the east in Snyder
- NAC C receptors require a threshold of 66 dBA as the noise impact level for this category. Those identified NAC C receptors within the study area include:
  - Bob Smith Memorial Park (2nd Avenue and 5th Street in Limon)
  - Cemetery between milepost 116 and 117
  - Methodist Church (5919 US 36 #224, Woodrow)
  - U.S. Postal Service Office (28999 SH 71, Woodrow)
  - Woodrow Baptist Church (28996 SH 71, Woodrow)
  - East Morgan County Library (500 Clayton Street, Brush)
  - Rankin Presbyterian Church (420 Clayton Street, Brush)
  - Immanuel Congregational Church (209 Everett Street, Brush)
  - Brush Middle School (401 Howard Street, Brush)
  - Snyder Bible Church (22622 Fisher Avenue, Snyder)
  - Cemetery just north of milepost 212

- Chapel of the Plains (41921 Marble Avenue, Stoneham)
- NAC D (interior evaluation) receptor was not identified.
- NAC E commercial areas were evaluated based on exterior areas of frequent human use. If a commercial property does not include outdoor noise-sensitive uses—for example, a restaurant with a patio—then it is not considered a noise sensitive receptor. Within the study area, commercial parcels do not have outdoor uses and are not considered noise sensitive receptors.
- NAC Activity Categories F and G are considered non-sensitive to traffic noise.

### Next Steps

CDOT's *Noise Analysis and Abatement Guidelines* (2015) describes that "Under 23 CFR 772, it is mandatory for all states to comply with the regulations for projects that are classified as Type I projects that may result in increased noise levels at sensitive receptors." This regulation applies to all federal or federal-aid highway projects. In general, Type I highway projects consist of capacity increases; alignment changes; or the addition of weigh stations, rest stops, ride-share lots, and toll plazas. When a project is identified as Type I, a noise analysis study using the FHWA Traffic Noise Model v2.5 is required if noise sensitive receptors are present within the environmental study area or a 500-foot study zone. Noise abatement still must be considered for Type I projects where impact level noise has been identified at noise sensitive receptors, even though the project itself may not cause or contribute to an increase in traffic noise.

During construction of a project, an approach to controlling the noise impact of construction equipment and activities should be considered. Economical steps can be taken to minimize the effect of construction noise on residents and sensitive receptors while not affecting construction schedules.

## Parklands and Recreation

This section describes the parklands and recreational areas in the study area. Section 4(f) of the Department of Transportation Act of 1966, now codified at 23 U.S.C. § 138 and 49 U.S.C § 303 stipulates that FHWA and other Department of Transportation agencies cannot approve the use in a transportation project of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historic sites unless there is no feasible and prudent avoidance alternative to the use of the land. In addition, the action must include all possible planning to minimize harm to the property resulting from the use.

The Land and Water Conservation Fund (LWCF) Act of 1965 established a federal funding program to assist states in developing outdoor recreation sites. Section 6(f) of the act prohibits the conversion of property acquired or developed with these funds into a non-recreational use without the approval of the National Park Service (NPS, 2008).

## Methodology

Several datasets were referenced to identify parks and recreational facilities within the study area. These include:

- Google Earth and Google Maps
- Colorado Parks and Wildlife
- City of Brush Comprehensive Plan
- City of Brush Land Use Map
- Lincoln County Comprehensive Plan
- Morgan County Comprehensive Plan
- CDOT's Online Transportation Information System (OTIS)
- Town of Limon Comprehensive Plan
- Washington County Master Plan
- Weld County Master Plan

## Existing Conditions

These parks and recreational areas are located within the study area, and are potential Section 4(f) resources:

- Bob Smith Memorial Park (baseball field) at 2nd Avenue and 5th Street, Limon
- Multi-use trail in Limon
- Brush Middle School (volleyball area and baseball field)
- Pawnee National Grassland—four natural-surface trails were identified within the study area
  - Horsetail (USFS RD 723.0)
  - Road 116 (USFS RD 116.5)
  - Road 149 (USFS RD 149.1)
  - Road 120 (USFS RD 120.4)

Based on the LWCF list available on OTIS, no Section 6(f) resources are located within the study area.

## Next Steps

All future projects should avoid impacts to parks and recreational resources wherever possible. Next steps for impacts to Section 4(f) resources during the NEPA process include:

- Perform a detailed analysis of impacts of the project on parklands and recreational resources.

- Perform a Section 4(f) evaluation, including avoidance, mitigation, and measures to minimize harm; feasible and prudent avoidance alternatives; and coordination with FHWA and officials with jurisdiction (OWJ).

## Vegetation and Noxious Weeds

Noxious weeds are invasive, non-native plants introduced to Colorado by accident or which spread after being planted for another purpose such as agriculture, erosion control, and revegetation. Some noxious weeds are extremely hardy and competitive and are able to permanently alter the structure, composition, and function of native plant communities.

The Colorado Noxious Weed Act of 2003 (CRS 35-5.5) requires the control of designated noxious weeds and recognizes that “certain undesirable plants constitute a threat to the continued economic and environmental value of the lands of the state and if present in any are of the state must be managed.” Under the revised Colorado Noxious Weed Act of 2003, state designated noxious weeds are categorized as high (List A), medium (List B), or low (List C) priority for management. The noxious weed lists are updated annually and maintained by the Colorado Department of Agriculture in the following document: *Rules Pertaining to the Administration and Enforcement of the Colorado Noxious Weed Act* (Colorado Department of Agriculture Plant Industry Division 8 CCR 1206-2).

## Methodology

Noxious weed occurrences data were evaluated within the study area using the following desktop data sources:

- Colorado Department of Agriculture Noxious Weed List (CDA, 2017)
- Noxious weed 2012-2014 GIS data from the CDOT Online Transportation Information System (OTIS) (CDOT, 2014)
- Noxious weed 2016 occurrence data viewed on the CDOT OTIS Map Viewer (CDOT, 2016)

## Existing Conditions

### *Vegetation*

The study area consists primarily of agriculture land (irrigated and dryland) and native prairie with small pockets of urban and developed areas. Narrow bands of riparian vegetation are present along many streams and some irrigation canals. Trees are sparse and were observed along fence lines and windbreaks, and infrequently within upper riparian areas such as along the South Platte River. The majority of the study area is located within the High Plains Level III Ecoregion with the southernmost twelve miles of the corridor extending into the Southwestern Tablelands Ecoregion (Chapman 2006).

The High Plains Ecoregion is characterized as a dry grassland, receiving 12 to 20 inches of annual precipitation. Smooth, irregular plains are characteristic of this ecoregion, with a high percentage of land cover converted to cropland. The dominant native vegetation within the High Plains Ecoregion are various grasses, such as blue grama, (*Bouteloua gracilis*), little bluestem (*Schizachyrium scoparium*), buffalograss (*Bouteloua dactyloides*), and western wheatgrass (*Pascopyrum smithii*).

The Southwestern Tablelands Ecoregion is characterized by sub-humid grassland and semiarid rangeland. Unlike most adjacent Great Plains ecological regions, very little of the Southwestern Tablelands Ecoregion is in cropland because it is generally more rugged and less arable land. The native vegetation is mostly blue grama and buffalograss, with some juniper (*Juniperus* sp) and scrub oak (*Qurecus gambelii*).

The northern end of the project (approximately 31 miles) is located within the Pawnee National Grassland in northeast Weld County. The Pawnee National Grassland comprises approximately 193,000 acres administered by the US Forest Service that includes short grass and mixed prairie habitat in the vicinity of SH71.

### Noxious Weeds

The Colorado listed and Lincoln, Washington, Morgan, and Weld County noxious weeds are placed into one of three categories:

- List A species are noxious weeds that are designated for eradication;
- List B species are weeds that are managed through state noxious weed management plans to prevent continued spread of the species; and,
- List C species are weeds that the state has allocated funds for additional education, research and biological control resources to jurisdictions that choose to require management of List C species.

A review of CDOT Noxious weed occurrence data from 2012-2014, and 2016 identified the following species within the study area, listed in Table 7.

Table 7. CDOT Noxious Weed Species Mapped Within the Study Area

Common Name/Scientific Name	Colorado Noxious Weed Category	County of Occurrence
African rue ( <i>Peganum harmala</i> )	A	Lincoln, Washington
Bouncingbet ( <i>Saponaria officinalis</i> )	B	Morgan
Canada thistle ( <i>Cirsium arvense</i> )	B	Lincoln, Washington, Morgan, Weld
Common burdock ( <i>Arctium minus</i> )	C	Lincoln, Washington
Common mullein ( <i>Verbascum thapsus</i> )	C	Lincoln, Washington, Morgan, Weld
Diffuse knapweed ( <i>Centaurea diffusa</i> )	B	Lincoln, Washington
Downy brome ( <i>Bromus tectorum</i> )	C	Lincoln, Washington, Morgan, Weld
Field bindweed ( <i>Convolvulus arvensis</i> )	C	Lincoln, Washington, Morgan, Weld
Hoary cress ( <i>Cardaria draba</i> )	B	Lincoln, Washington, Morgan
Houndstongue ( <i>Cynoglossum officinale</i> )	B	Weld
Jointed goatgrass ( <i>Aegilops cylindrica</i> )	B	Morgan
Moth mullien ( <i>Verbascum blattaria</i> )	B	Morgan
Musk thistle ( <i>Carduus nutans</i> )	B	Washington
Puncturevine ( <i>Tribulus terrestris</i> )	C	Lincoln, Washington, Morgan, Weld
Russian knapweed ( <i>Acroptilon repens</i> )	B	Lincoln, Washington, Morgan
Russian olive ( <i>Elaeagnus angustifolia</i> )	B	Lincoln, Morgan, Weld
Salt Cedar ( <i>Tamarix</i> Spp.)	B	Lincoln
Scotch thistle ( <i>Onopordum acanthium</i> )	B	Lincoln, Washington, Morgan, Weld
Spotted knapweed ( <i>Centaurea stoebe</i> )	B	Lincoln

### Next Steps

An assessment of vegetation types and location, including common and rare species present, should be performed to assist in assessing direct, indirect, and cumulative effects in the study area. Additionally, an updated, project-specific weed survey should be performed within the growing season prior to construction. Because there are weeds in the study area, CDOT is also expected to require preparation of an Integrated Noxious Weed Management Plan that would include steps to control existing noxious weeds. Regardless of whether an Integrated Noxious Weed Management Plan is required, the construction contractor for any approved project would be required to follow the revised Section 217 of the *CDOT Standard Specifications* and implement the standard CDOT Best Management Practices (BMPs).

## Water Resources

Construction or reconstruction of a roadway over a drainage crossing can have detrimental flooding effects on properties and structures upstream of the crossing. Because of this, FEMA closely monitors all construction over or near established - and insured - flood paths.

The goal of this study was to determine the current state of the major flood crossings of SH 71. The concerns were:

- Signs of scour.
- Signs of previous flood elevation (whether the roadway appeared to have been overtopped since its construction).
- General condition of the drainage crossing structure (bridge or culvert).

## Methodology

A search for FEMA Flood Zones was performed on the FEMA Flood Map Service Center website. There are four counties in the project area: Lincoln, Washington, Morgan, and Weld.

Morgan County is mapped for FEMA Flood Zones, but while large portions of Weld County are FEMA Flood Zone mapped, the portions of Weld County that SH 71 traverses are not. Lincoln and Washington Counties are not FEMA Flood Zone mapped. The exception to this within Lincoln County is that the Town of Limon is FEMA Flood Zone mapped.

All comments regarding bridges are made by a drainage engineer and not a bridge engineer. These comments should not be considered an actual bridge inspection.

A windshield review was performed on September 7, 2017. At major crossings of 100-year floodplains, the project team stopped to collect photographs and directly inspect the structures for conveyance under SH 71.

## Existing Conditions in Limon, CO

*Limon, Colorado Flood Insurance Rate Map SH 71 Crossings*

Mile Marker 102-103

Limon, Colorado

Main Street (SH 71) crosses over a bridge between 3rd Avenue and 4th Avenue. This bridge crosses over the main tributary for Big Sand Creek. The FEMA Flood Zone here is from the main tributary for Big Sandy Creek into Limon.

The landscape continually rises eastward from this bridge until the road reaches 1st Avenue and has ascended to an elevation above the 100-year floodplain. At this point, SH 71 turns from east-west (Main Street) to north-south (1st Avenue).

The landscape appears consistent with regulatory contours and therefore the 100-year flood still would reach the anticipated boundary. The housing within the floodplain does not, however, show any signs of flooding.

Interstate 76 (I-76)

The 100-year flood plain here conveys under SH 71 along I-76. The embankment matches the contour from the floodplain. The structure appears in a well-maintained state and the roadway (I-76) and shoulder show no signs of previous flooding.

## Morgan County Flood Insurance Rate Map (FIRM) SH 71 Crossings

### Mile Marker 158-159

The FEMA Flood Zone here appears to cross SH 71 from the east side to the west side (as its flow conveys along the eastern side of the roadway). There is well maintained farmland on either side of the roadway and no signs of nearby flood flows. There also does not appear to be any bridges or culverts under the roadway to convey the anticipated flows.

The contours of the roadway do not appear to match the FEMA Flood Zone. The roadway elevation is clearly above the surrounding landscape. The 100-year floodplain should not be able to cross the highway in its current condition.

### Mile Marker 165-166

The 100-year flood plain here actually reaches about 300 feet farther north of mile marker 166.

The 100-year flood plain is well maintained farmland on either side and is conveyed under the roadway via what appears to be a historic waterway. There was no flow on the day of the field study. The waterway is conveyed under Bridge D 22 C. The bridge structure is made of lumber and the abutments are a combination of lumber and concrete. The bridge shows no structural problems and appears to be weathering the environment well. There are some cracks in the concrete portions of the abutments, but no significant shifting.

The lumber support structures show normal wear and the mud on them from water flows is only a few inches high. The ground is relatively smooth and shows no signs of scouring. The supports also show no signs of scouring. The condition of the bridge on the day of the field study can be seen in Figure 4, Figure 5, and Figure 6.

Figure 4. Bridge D 22 C Pictures



Figure 5. Bridge D 22 C Pictures



Figure 6. Bridge D 22 C Pictures



#### Mile Marker 171-172

Here the 100-year flood plain is conveyed along the western side of the roadway. The land on either side of the roadway appears to be uncultivated. The foliage appears natural. There are two natural drainage scars (possibly gulches) on the eastern side of the roadway that convey under the roadway through two culverts. The culverts appear in good condition.

The contours of the drainage scars on the east, their connections to the nearby stream bed on the west, and the general landscape of the surrounding area appear to match the FEMA Flood Zone.

#### Mile Marker 174-177

##### Brush, Colorado

Here SH 71 comes into the south side of Brush, Colorado as a north-south highway. It turns east-west at Edison Street until it reaches Colorado Avenue to the west. SH 71 then turns north-south on Colorado Avenue and continues north over Interstate 76 (I-76) and then out of the north side of Brush, Colorado.

There is a small (approximately 40 feet wide) 100-year floodplain crossing of SH 71 between the railroad tracks to the south and Edison Street (onto which SH 71 turns west at this point) to the north. There is no conveyance under SH 71, but the landscape is relatively flat, suggesting the 100-year flood plain sheet flows over the roadway.

The land from approximately 200 feet west of the SH 71 and Edison Street interchange until just inside the south end of the SH 71 and I-76 interchange (approximately two miles of roadway) is within the FEMA Flood Zone. This flood zone is made by Beaver Creek.

The conveyance of the 100-year flood under SH 71 is by Bridge C 22 BS. Most of the 100-year flood plain, however, conveys over SH 71 as sheet flow. Figure 7 below is a picture of Colorado Avenue within Brush, looking north.

*Figure 7. Colorado Avenue within 100-year Flood Plain*



Bridge C 22 BS is concrete and steel construction. The bridge generally is in very good condition. There is minimal degradation of the structure. There are four concrete structures bearing the bridge that define five segments under the bridge. Slow moving flow runs through the center segment while the other segments are merely wet, grassy areas.

The exception is the western most segment. Here, there is a standing pool of water under the bridge. While this appears to be the result of scouring, the pool appears to be only of deposited materials. This implies that the scouring only brought the elevation back down to the natural elevation.

Upon visual inspection, the depth of scouring appears similar to the surrounding elevation and the abutment does not appear exposed below its original construction depth.

Figure 8 below, shows the condition of Bridge C 22 BS on the day of the field study.

Figure 8. Bridge C 22 BS Pictures



A portion (approximately 200 feet) of the 100-year flood plain conveys under SH 71 along I-76. The embankment matches the contour from the 100-year floodplain. The structure appears in a well-maintained state and the roadway (I-76) and shoulder show no signs of previous flooding.

#### Mile Marker 181-183

#### South Platte River

The 100-year flood plain here actually reaches about 150 feet further south of mile marker 181.

It conveys under SH 71 via Bridge C 22 BT. The bridge generally is in very good condition. There is minimal degradation of the structure, most of the paint is intact even to within inches of the stream bed. There are

eight concrete structures bearing the bridge that define nine segments under the bridge. There is slow moving flow through the fourth and fifth segments (as viewed from the south). The other segments are wet, grassy areas with thick foliage.

The condition of the bridge on the day of the field study can be seen in Figure 9 and Figure 10.

*Figure 9. Bridge C 22 BT Pictures*



Figure 10. Bridge C 22 BT Pictures



As this 100-year flood plain is two miles long, it is impractical to attempt to compare the actual contours to that of the FEMA Flood Zone. One sign that the FEMA Flood Zone matches the actual topography is the vegetation. The foliage within the space delineated by the FEMA Flood Zone appears to be thicker and much more of the wet land variety while just outside the FEMA Flood Zone the foliage returns to prairie-type grasses.

#### Available Reports

There are three (3) Flood Insurance Studies that address flood flows within the project. They are:

- Town of Limon, Colorado *Lincoln County* (May 1, 1984) – 080109V000
  - Updated February 2, 1999 by: Letter of Map Revision No. 98-08-329P
- City of Brush, Colorado *Morgan County* (February 1977) – 080130V000
- Morgan County, Colorado *Unincorporated Areas* (September 29, 1989) – 080129V000

Because these studies were performed decades ago, relevant models are not readily available for these studies.

#### Next Steps

Any construction that is done at these FEMA Flood Zone crossing should be analyzed to ensure that there is no rise in Base Flood Elevation (BFE) above the current regulatory elevations. A request for relevant hydraulic models from the FEMA Engineering library will need to be done to allow for comparison.

Additionally, there will need to be coordination with Weld County to administer any possible new FEMA Flood Mapping.

Bridges along this corridor will still need a thorough inspection by a bridge engineer.

## Wetlands and Waters of the U.S.

The protection and regulation of wetlands, open waters, and other waters of the U.S. is guided by Section 404 of the Federal Water Pollution Control Act amendments of 1972, as amended by the Clean Water Act of 1977. These regulations set the basic structure for regulating discharge of pollutants to waters of the U.S. Section 404 of the Clean Water Act established a program to regulate the discharge of dredged and fill material into waters of the U.S., including wetlands. Any dredge or fill activity proposing to impact waters of the U.S. must request a permit from the U.S. Army Corps of Engineers (USACE). Under the guidance of these and other regulations, it is FHWA and CDOT policy to mitigate for all wetland impacts, regardless of their jurisdictional status.

Wetlands are specifically defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and other similar areas. Wetland boundaries are delineated (defined) by the presence of hydrophytic vegetation (plant life that thrives in wet conditions), hydric soil, and hydrological indicators (USACE, 1999).

The term “waters of the U.S.” (WOUS) generally is defined as all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce. According to 33 CFR §328, this includes the territorial seas, intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, wetlands adjacent to waters, sloughs, wet meadows, natural ponds, and all tributaries of those waters. These waters are referred to as jurisdictional waters. The boundaries of WOUS, other than wetlands, are delineated by their bed, bank, and ordinary high water mark.

### Methodology

Wetlands and other WOUS, including rivers and lakes, were identified within the study area using GIS data including the USFWS National Wetland Inventory (NWI) and USGS topographic maps. A cursory field review for locations of wetlands and other waters was also performed on September 7, 2017.

### Existing Conditions

According to the USFWS NWI, the following wetland types are mapped within the study area:

- PEM1A: palustrine, emergent, persistent, temporarily flooded
- PEM1C: palustrine, emergent, persistent, seasonally flooded
- PEM1J: palustrine, emergent, persistent, intermittently flooded
- Pf: Other
- PFOA: palustrine, forested, temporarily flooded
- PFOC: palustrine, forested, seasonally flooded
- PUBF: palustrine, unconsolidated bottom, semi-permanently flooded
- PUSA: palustrine, unconsolidated shore, temporarily flooded
- PUSC: palustrine, unconsolidated shore, seasonally flooded
- PUSJ: palustrine, unconsolidated shore, intermittently flooded
- R2UBH: riverine, lower perennial, unconsolidated bottom, permanently flooded
- R4SBA: riverine, intermittent, streambed, temporarily flooded
- R4SBC: riverine, intermittent, streambed, seasonally flooded
- R5UBFx: riverine, unknown perennial, unconsolidated bottom, semi-permanently flooded, excavated

- R5UBH: riverine, unknown perennial, unconsolidated bottom, permanently flooded

The NWI-mapped wetlands within the study area occur consistently along both sides of SH 71. The majority of NWI-mapped wetlands within the study area are small drainages (streams and irrigation canals) and their associated palustrine wetlands. In total, the study area includes approximately 32.8 acres of riverine wetlands and 41.5 acres of palustrine wetlands identified from NWI. However, during the field review numerous wetland features were observed to be located within land that was drained, cleared, or otherwise manipulated for agricultural purposes and likely no longer supports wetland plants or hydrology. In other instances, wetlands and other WOUS have been impacted because of recent development activities (wind farms, local roadway improvements, etc.).

Based on USGS topographic mapping, the following named streams occur in the study area (listed from north to south): Twomile Creek, Spring Creek, Horsetail Creek, Cottonwood Creek, North Pawnee Creek, South Pawnee Creek, Riverside Canal, Tremont Canal, Snyder Canal, South Platte River, Lower Platte and Beaver Ditch, Beaver Creek, Wetzel Creek, West Fork Plum Bush Creek, Vega Creek, Arikaree River, and Lake Creek. Both Beaver Creek and West Plum Bush Creek are crossed by the study area at more than one location. All named streams are identified as intermittent streams except for the South Platte River and Beaver Creek which are perennial. The South Platte River crosses through the SH 71 study area just north of I-76 and crosses the SH 71 study area from southwest to northeast. The South Platte River is not designated as a National Wild and Scenic River.

The portion of Beaver Creek extending from the confluence of the South Platte River in Morgan County (WBID COSPLS02b), which includes the study area, is listed on the Colorado 2010 Section 303(d) list of impaired waters. The listed impairments are selenium and *Escherichia coli* (*E. coli*) bacteria, but a total maximum daily load (TMDL) has not yet been developed.

### Next Steps

Section 404 of the Clean Water Act regulates impacts to WOUS, including wetlands and open water features. To ensure there is no net loss of functionality or values to the wetlands, impacts must be avoided, minimized, or mitigated. To the greatest extent practicable, future planning and design would incorporate avoidance and minimization of impacts to known wetland areas. Where avoidance and minimization would not be practicable, a Section 404 permit would likely be required from the USACE to authorize placement of dredge and fill material in any WOUS, including wetlands. Impacts under 0.5 acre often are permitted under existing Nationwide Permits (NWP), such as NWP 14, which covers linear transportation projects. Impacts greater than 0.5 acre would require obtaining an Individual Permit. An Individual Permit includes a public notice and would trigger a NEPA clearance for the USACE. Generally, mitigation would be required under either permit type for impacts exceeding 0.1 acre of jurisdictional waters of the U.S., including wetlands. Prior to application for a permit, a project-specific wetland delineation survey and report would need to be conducted to document wetland boundaries.

CDOT regulates wetlands regardless of USACE jurisdiction. A CDOT Wetland Finding Report may be required if permanent wetland impacts exceed 500 square feet or if temporary impacts exceed 1,000 square feet, regardless of whether USACE has jurisdiction.

## Wildlife and Threatened, Endangered, and Other Special-Status Species

Wildlife—both native and exotic—include mammals, birds, reptiles, amphibians, and fish. Special-status species (both wildlife and vegetation) are those that are listed or are candidates for listing as threatened or endangered under the federal Endangered Species Act of 1973 by the USFWS, and species in Colorado designated as endangered, threatened, or of special concern by CPW.

### Methodology

A literature and records review was conducted, including a review of the Natural Diversity Information Source (NDIS) (CPW, 2017a) and the Colorado Natural Heritage Program (CNHP) Mapped Occurrences Data, provided by Colorado State University (CNHP, 2017) to determine species habitat and records of species presence in the study area. Federal and state listed species in the study area were identified through the USFWS Information, Planning, and Conservation System (USFWS, 2017a) and the CPW Threatened and Endangered List (CPW, 2017b).

In addition, a review of wildlife-vehicle collisions (WVCs) was completed for the previous five years (2013 to 2017) to identify “hot spots” for WVCs. Hot spots are locations where WVCs occur at higher rates than in the rest of the study area. Hot spots are usually located where vegetation is closest to the highway or where drainages cross the highway. CDOT has completed previous road and roadside enhancements where safety concerns occur due to wildlife collisions and to provide enhancements for wildlife connectivity across the landscape.

Atkins staff reviewed information from CDOT’s C-Plan website (CDOT, 2018a) and information obtained from CDOT’s OTIS website (CDOT, 2018b) on SH 71 as part of a general review of WVCs. For additional information, refer to sections below on WVCs.

### Existing Conditions

#### *Raptors and Other Migratory Birds*

Raptors and other migratory birds are protected by the federal Migratory Bird Treaty Act (MBTA) enacted in 1918. Currently, the bald eagle (*Haliaeetus leucocephalus*) is listed as a state species of special concern by CPW (CPW, 2015) and is still protected by the Bald and Golden Eagle Protection Act of 1940, as amended, and the Migratory Bird Treaty Act of 1918, as amended (USFWS, 2014), both of which prohibit “taking” (killing, selling, or otherwise harming) of eagles, their nests, or eggs.

According to the NDIS data, no mapped raptor nests occur within one mile of the study area, despite the vegetation communities in the study area that provide habitat to support a variety of nesting migratory birds. The nearest mapped raptor nest is a bald eagle nest located approximately 2.3 miles west of the study area. The South Platte River riparian corridor just north of I-76 in Morgan County is known to be part of the bald eagle’s winter concentration range and summer foraging habitat. Canada geese (*Branta canadensis*), great blue heron (*Ardea herodias*), wild turkey (*Meleagris gallopavo*), and white pelican (*Pelecanus erythrorhynchos*) also have foraging habitat along the South Platte River riparian corridor at the SH71 crossing.

#### *Big Game*

The study area occurs within the overall range for white-tailed deer (*Odocoileus virginianus*) and mule deer (*Odocoileus hemionus*); however, no occurrences of deer were observed during the field visit. The study area also occurs within the overall range for pronghorn (*Antilocapra americana*), and concentration areas for pronghorn occur in numerous locations within and adjacent to the study area.

*Wildlife-Vehicle Collisions*

There is a potential for numerous areas for WVCs to occur throughout the study area where white-tailed deer, mule deer, and pronghorn have migration routes that cross SH 71 along with numerous other small to medium-sized wildlife species.

While SH 71 crosses long expanses of flat terrain that allow animals to easily cross the highway at-grade, there are also numerous drainages through the corridor where wildlife focus their movements. High traffic volumes on highways can also act as a barrier to wildlife trying to cross roadways (eg. I-70 in the mountains). SH 71 has low average annual daily traffic (AADT) volumes throughout the corridor, which is another reason for the lower number of reported WVCs. Volumes for SH 71 range from 320 vehicles in the more rural areas up to 1,900 vehicles daily as SH 71 passes through Brush, Colorado.

Based on available crash data between 2013 and 2017, there were 53 reported WVCs on SH 71 between Milepost 113 and Milepost 200. Table 8 below provides a summary on the species of wildlife that were reported being hit.

*Table 8. Wildlife-Vehicle Collisions in the Study Area*

Wildlife Species	Crashes
Badger	2
Coyote	2
Domestic Cat	2
Deer	19
Fox	1
Hawk	1
Pronghorn	1
Rabbit	6
Raccoon	7
Skunk	7
Unknown	5
Total	53

Source: CDOT Crash Reporting 2013 - 2017

Deer are the most commonly reported species. This is likely because they are more visible and cause more damage to vehicles than the smaller wildlife species present. In general, WVCs are usually under-reported across the state, as wildlife will typically move away from the scene of an accident if they are still able to. Other reasons for under-reporting can also be due to if a collision doesn't cause damage to a vehicle or injury to a person.

Based on a review of available crash data, WVC's are spread out across 87 miles of the study area and no WVC's were reported on Route 071F (north of SH 14 to the Nebraska state line). The largest increase in WVCs occurs between Mile Post 172 and 175, south of the Town of Brush where SH 71 enters a more built-up environment and where there are curves that may reduce visual site-distance for drivers to avoid hitting wildlife. There are other WVCs along SH 71 that are located along similar curves that likely occurred due to similar site-distance limitations. Figures 11 and 12 below identify WVC occurrences at mileposts along SH 71 between 2013 and 2017.

Figure 11. Wildlife-vehicle Collisions Reported on SH 71 between 2013 and 2017.

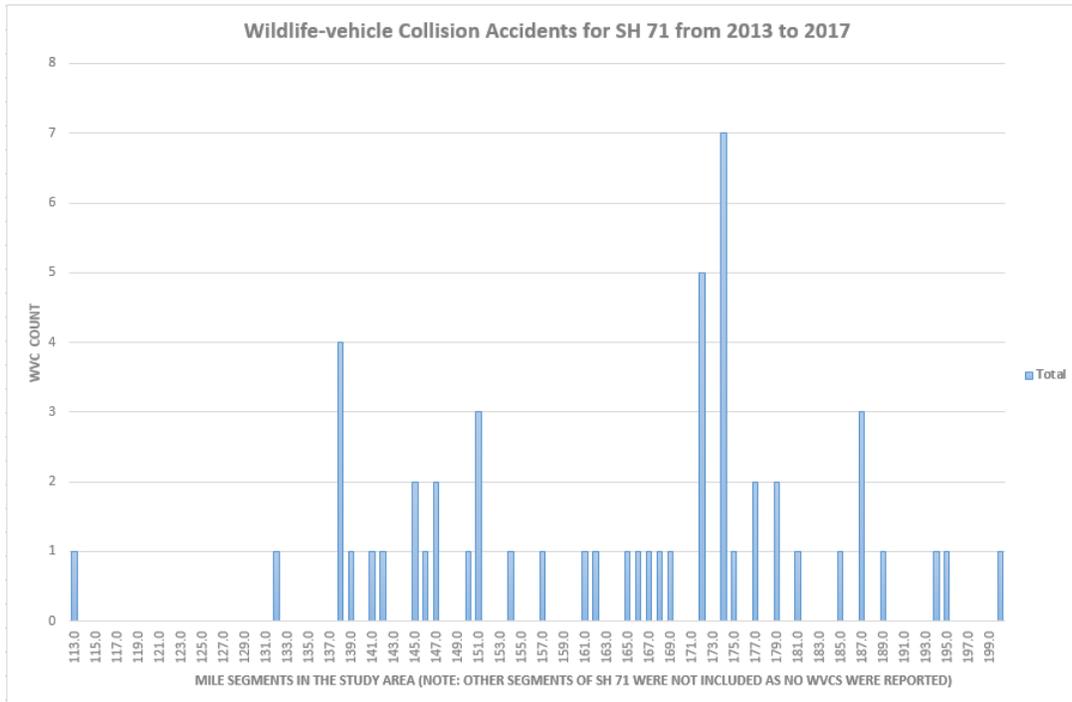
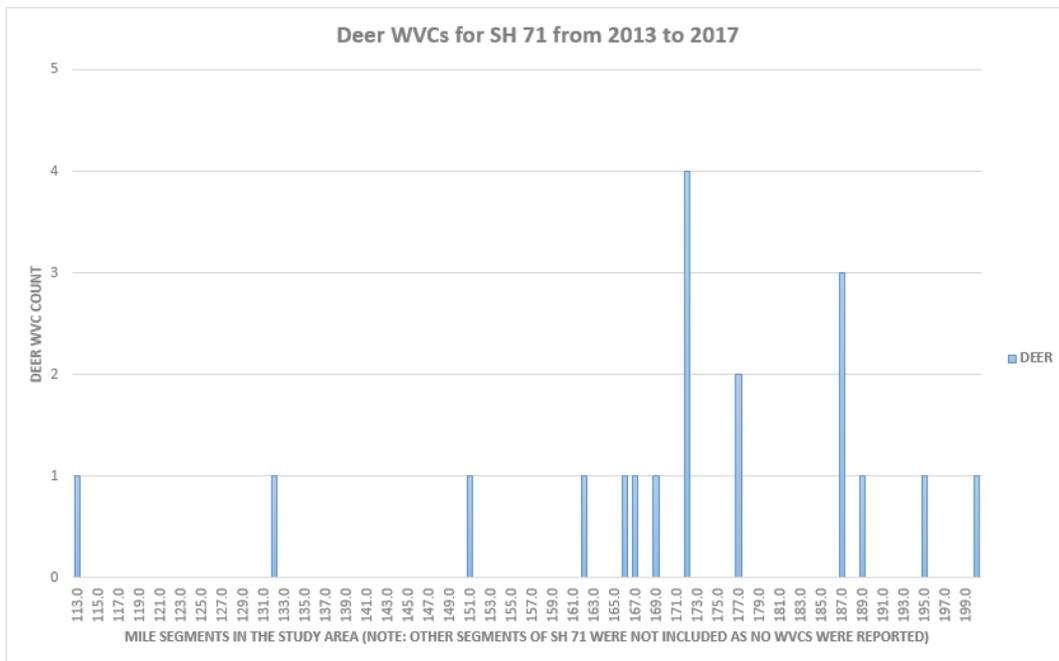


Figure 12. Deer WVCs Reported on SH 71 between 2013 and 2017.



While WVCs occur in the study area, they are at lower levels than on other highways in the state and it is likely due to the overall flat terrain, high permeability of the roadway, and lower traffic volumes.

A more detailed analysis of WVCs and carcass data is recommended during future project design/NEPA stages for improvements to SH 71 as this analysis will inform on target species, design elements, and potential mitigation plans.

### *Wildlife Refuges*

No wildlife refuges are located in the study area. The nearest wildlife refuge is Rocky Mountain Arsenal National Wildlife Refuge, located approximately 60 miles west of the study area. The northernmost portion of the study area (approximately 31 miles) is located within the Pawnee National Grassland in northeast Weld County. Although Pawnee National Grassland is not managed under the USFWS National Wildlife Refuge System, the area is a valuable habitat that supports a variety of wildlife, and is an internationally known birding area.

### *Federal-Listed Threatened and Endangered Species*

According to the USFWS official species list, the following nine species are listed for Lincoln, Washington, Morgan, and Weld Counties, Colorado:

- Colorado butterfly plant (*Gaura neomexicana* var. *coloradensis*)—Threatened
- Ute ladies'-tresses orchid (*Spiranthes diluvialis*)—Threatened
- Western prairie fringed orchid (*Platanthera praeclara*)—Threatened
- Preble's meadow jumping mouse (*Zapus hudsonius preblei*)—Threatened
- Mexican spotted owl (*Strix occidentalis lucida*)—Threatened
- Piping plover (*Charadrius melodus*)—Threatened
- Least tern (*Sterna antillarum*)—Endangered
- Whooping crane (*Grus americana*)—Endangered
- Pallid sturgeon (*Scaphirhynchus albus*)—Endangered

No critical habitat for any federal-listed species occurs within the study area (USFWS, 2017a).

Five of the federal-listed species (Western prairie fringed orchid, pallid sturgeon, piping plover, whooping crane, and least tern) are listed because they occur downstream of the study area and could be impacted by projects that would result in water depletions to the Platte River system. In order to address the effects this depletion will have on federally-listed species downstream that depend on the river for their survival, CDOT, as a state agency, is participating in the South Platte Water Related Activities Program (SPWRAP). CDOT is cooperating with the FHWA which provides a federal nexus for the project. In response to the need for formal consultation for the water used from the South Platte basin, FHWA has prepared a Programmatic Biological Assessment (PBA) that will estimate total water usage from 2012 until 2019. Should the project cause a depletion to the South Platte River basin, the quantity of water used for the project would be recorded and reported to the USFWS: therefore, no additional mitigation or conservation measures would be necessary.

### *Colorado Butterfly Plant*

Habitat for Colorado butterfly plant consists of sub-irrigated alluvial soils on level or slightly sloping floodplains and drainage bottoms at elevations ranging from 5,000 feet to 6,400 feet. Colonies often are found in low depressions or along bends in wide, active, meandering stream channels a short distance upslope of the actual channel. The Colorado butterfly plant requires early- to mid-succession riparian habitat and typically habitat is open, lacking dense vegetation cover. The species is a regional endemic and is only known to occur in Larimer, Jefferson, and Weld Counties (USFWS, 2017b). The study area crosses the 100-year flood plain of the South Platte River in Morgan County but is located at an elevation below the preferred range for the Colorado Butterfly Plant.

### Ute Ladies'-Tresses

Ute ladies'-tresses orchid is dependent on wetland and riparian communities and occupies moist meadows associated with perennial stream terraces, floodplains, and oxbows at elevations ranging from 4,300 feet to 6,850 feet above sea level. Additional vegetation and hydrologic conditions that may support Ute ladies'-tresses include seasonally flooded river terraces, sub-irrigated or spring-fed abandoned stream channels and valleys, gravel bars, and lake shores. Ute ladies'-tresses are typically found in relatively open habitats lacking dense canopy cover and they require a relatively high water table (within 18 inches of the ground surface). Ute ladies'-tresses typically are found in soils with alluvial deposits and sandy or gravelly material predominating. Potential habitat for Ute ladies'-tresses may occur within the 100-year flood plain along the South Platte River and other streams.

### Preble's Meadow Jumping Mouse

Habitat for Preble's meadow jumping mouse consists of riparian vegetation with adjacent, preferably undisturbed, grassland and nearby water sources. Typically, riparian areas supportive of the Preble's meadow jumping mouse are composed of a mixture of grasses, forbs, and shrubs, with a taller canopy of shrubs and trees. In Colorado, the Preble's meadow jumping mouse lives along creeks, rivers, and other waterbodies in Larimer, Weld, Boulder, Douglas, Jefferson, El Paso, Teller, and Arapahoe Counties (CNHP, 2015). The occupied range of the Preble's meadow jumping mouse (area where species is known) does not occur within the study area (CPW, 2017a). The nearest known range is located approximately 12 miles west of the study area.

### Mexican Spotted Owl

Habitat for Mexican spotted owls consist of old-growth or mature forests with complex structural components. Suitable habitat for the Mexican spotted owl is not located in or near the study area.

### State-Listed Species

The CPW maintains a list of species that Colorado has designated as state-threatened, state-endangered, and state special-concern. Habitat preferences for state-listed species were reviewed along with overall species range and documented occurrences. According to the CNHP L4 element occurrences database (currently, potentially, or historically present) from CNHP (CNHP, 2017) and the CPW NDIS data (CPW, 2017a), the following state-listed species were identified with the potential to occur within the study area:

- Arkansas darter (*Etheostoma cragini*) – Threatened; CNHP Element Occurrence
- Ferruginous hawk (*Buteo regalis*) – Special Concern, CNHP Element Occurrence
- Long-billed curlew (*Numenius americanus*) - Special Concern; CNHP Element Occurrence
- Mountain plover (*Charadrius montanus*) - Special Concern; CNHP Element Occurrence
- Plains sharp-tailed grouse (*Tympanuchus phasianellus jamesii*); Endangered, study area overlaps overall range
- Black-footed ferret (*Mustela nigripes*) – Endangered; CNHP Element Occurrence
- Black-tailed prairie dog (*Cynomys ludovicianus*) - Special Concern; study area overlaps overall range
- River Otter (*Lontra canadensis*) – Threatened; study area overlaps overall range
- Swift fox (*Vulpes velox*) - Special Concern; CNHP Element Occurrence
- Massasauga (*Sistrurus catenatus*) - Special Concern; study area overlaps overall range
- Common garter snake (*Thamnophis sirtalis*) - Special Concern; study area overlaps overall range

## Next Steps

In addition to the literature and records review discussed above, the study area should be field-evaluated for potential habitat for federal and state-listed species, and general wildlife use. Effect determinations should be conducted for federal threatened and endangered species that have the potential to occur within the study area. Consultation with the USFWS is required for any actions which “may affect” a listed species or critical habitat. CDOT’s Shortgrass Prairie Initiative addresses impacts to habitat for listed species that may occur in the study area, including the Colorado Butterfly Plant and Ute ladies’-tresses orchid. Assuming the Shortgrass Prairie Initiative is still in effect when construction begins, no additional conservation measures would be necessary.

There is potential for raptors to nest within riparian habitat along the South Platte River and other streams. In Colorado, most nesting and rearing activities occur between April 1 and August 31, but raptors may nest as early as February 15. These dates are guidelines for non-disturbance; however, nesting birds are protected at all times. Pre-construction surveys for nesting birds should be completed and should follow the methods set forth by the USFWS, CPW, or CDOT *Standard Specifications*, Section 240, Protection of Migratory Birds (CDOT, 2011). Construction activities for any recommended project must schedule clearing and grubbing operations and work on structures to avoid taking (pursuing, hunting, taking, capturing, or killing; attempting to take, capture, kill, or possess) migratory birds protected by the MBTA.

The study area crosses numerous streams, including the South Platte River, which fall under jurisdiction of Senate Bill 40. This legislation requires any agency of the state of Colorado to obtain wildlife certification from CPW when an agency plans construction in any stream that is considered SB 40 jurisdictional. Prior to construction, an inventory of riparian trees should be performed in accordance with SB 40 guidelines and an application submitted to CPW for impacts to riparian areas resulting from the project. The application should incorporate the applicable SB 40 general conditions, but during their review CPW may provide additional recommendations to avoid or minimize any impacts to surface waters and associated riparian habitat.

Prior to construction, a site visit of the project corridor and more detailed WVC analysis is recommended to identify improvements that would minimize WVCs and enhance permeability for target wildlife species.

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