BIOLOGICAL RESOURCES TECHNICAL REPORT

West Elizabeth Corridor Concept Design

Prepared for:

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LIST OF ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
BMPs	best management practices
BRT	bus-rapid-transit
CDA	Colorado Department of Agriculture
CDOT	Colorado Department of Transportation
CPW	Colorado Parks and Wildlife
CSU	Colorado State University
CWA	Clean Water Act
FHU	Felsburg Holt & Ullevig
FTA	Federal Transit Administration
IPaC	Information, Planning, and Conservation System
NRCS	Natural Resource Conservation Service
ROW	right-of-way
SAM	Species Activity Mapping
SWMP	stormwater management plan
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

I.0 INTRODUCTION

The City of Fort Collins is completing preliminary engineering design for multi-modal improvements along the West Elizabeth Corridor from Overland Trail to Mason Street in Fort Collins, Colorado. Felsburg Holt and Ullevig (FHU), acting on behalf of the City of Fort Collins, performed a biological resources survey in the environmental study area along the right-of-way (ROW) of West Elizabeth from Overland Trail to Shields Street and on Plum Street from Shields Street to the Colorado State University (CSU) campus to Mason Street (see **Figure I**). FHU staff conducted the survey to identify biological resources within the study area, including noxious weeds, wetlands, migratory birds, special status species (including threatened, endangered, proposed, candidate and state concern), and vegetation resources. **Appendix A** includes a photo log of the existing conditions within the environmental study area at the time of the field surveys.

I.I Project Description

The West Elizabeth Corridor Concept Design Project (Project) consists of design services for the Project between Overland Trail and Mason Street. The Project is approximately three miles long and involves increasing transit use and streamlining transit operations by establishing a new bus-rapid-transit (BRT) system from CSU's Foothills Campus to the existing MAX BRT system. Safety improvements to pedestrian and bicycle infrastructure will feature better Americans with Disabilities Act (ADA) facilities, high-comfort bike facilities, traffic calming measures as well as enhanced parkways and planted medians. The preliminary design will establish the project footprint and determine ROW, drainage, utility, and traffic requirements such that the City of Fort Collins will seek grant funding through the Federal Transit Administration (FTA) to complete final design and construction.

I.2 Project Location

The Project is located along West Elizabeth in Fort Collins, Larimer County, Colorado. A map of the project location can be found on **Figure 1**. The project lies on the U.S. Geological Survey (USGS) 7.5minute Horsetooth Reservoir and Fort Collins, Colorado quadrangles, in Sections 14, 15, 16, and 17 in Township 7 North, Range 69 West. The approximate coordinates of the center of the project are latitude 40.576173° and longitude -105.101139° (WGS 84 datum).

I.3 Environmental Study Area

The environmental study area is approximately 123 acres and extends along West Elizabeth for two miles, Plum Street for 0.5 miles, through CSU campus to Mason Street, and extending north up to Myrtle Street. **Figure 2** shows the environmental study area, including the footprint for the proposed project improvements, construction access, and temporary disturbance. The study area includes the study area street corridors ROW within an additional buffer to include improvement areas.

2.0 EXISTING CONDITIONS

This section describes the biological resources (noxious weeds, vegetation, wildlife, nesting migratory birds, special status species habitat) of the study area. This section also includes resources identified from federal, state, and local agencies. Information is based on site conditions during field surveys conducted on August 20, 2021. A wetland delineation was also conducted as a part of this analysis and details can be found in the Wetland Delineation Technical Report. Photos from the field visit can be found in **Appendix A**.



Figure I. Project Location Map



Figure 2. Environmental Study Area Map

2.1 Vegetation

The overall natural quality of this study area is minimal when compared to a more pristine natural habitat with no human development. The study area has been extensively developed throughout the project corridor.

Ecoregions within the study area include Front Range Fans. The Front Range Fans ecoregion consists of soils that have more outwash gravels than regions farther east and occupy old terraces, benches, and alluvial fans. The soils are formed from materials weathered from arkosic sedimentary rock, gravelly alluvium, and redbed shales and sandstone. Land use is changing from mostly cropland and rangeland to more extensive urban development (USEPA, 2006).

Vegetation within the study area mostly consists of landscaped areas for homes and businesses along the street corridor. There is one vacant area on the northeast corner of Skyline Drive and West Elizabeth next to New Mercer Canal that consists of a more natural vegetated area. Wetland vegetation is present adjacent to the surface water resources found within the environmental study area. Wetland plant species observed include sandbar willow (*Salix exigua*), reed canarygrass (*Phalaris arundinacea*), and sedge (*Carex sp.*). Upland vegetation observed include smooth brome (*Bromus inermis*), tall wheatgrass (*Agropyron cristatum*), Siberian elm (*Ulmus pumila*), ponderosa pine (*Pinus ponderosa*), prickly lettuce (*Lactuca serriola*), Canada thistle (*Cirsium arvense*), leafy spurge (*Euphorbia esula*), and Kentucky bluegrass (*Poa pratensis*).

2.2 Noxious Weeds

The Colorado Noxious Weed Act requires the control of 79 plant species designated as "noxious weeds." According to the Colorado Department of Agriculture (CDA), noxious weeds are plants that replace native vegetation, reduce agricultural productivity, cause wind and water erosion, and pose an increased threat to communities from wildfire (CDA, 2021). The state has divided the 79 noxious weeds into three groups: Lists A, B, and C. In addition, the state also has a Watch List for newly introduced noxious weeds that may become listed in the future because they exhibit the same characteristics as listed noxious weeds.

List A includes 25 plant species with limited to no distribution in Colorado and designated for immediate eradication. List B includes 38 species that are locally common but are managed to stop continued spreading. List C includes 16 species that are generally widespread and are not managed to stop spreading but are identified for additional education, research, and biological control. The Watch List contains 19 plant species and is intended to serve as advisory and educational purposes only. It is used to locate and report distributions of these species for future designation as noxious weeds. FHU environmental observed the following noxious weeds in the study area:

Common Name	Scientific Name	CDA: List A, B, or C
Canada Thistle	Cirsium arvense	List B
Leafy Spurge	Euphorbia esula	List B
Field Bindweed	Convolvulus arvensis	List C

Table I. List of Observed Noxious Weeds

Species identified during the survey are located on **Figure 3**. The spread of noxious weeds can be partially attributed to the movement of seed and plant parts on motor vehicles, and noxious weeds are becoming an increasing maintenance problem on highway right-of-way in Colorado. The ground disturbance caused by construction projects is often colonized by noxious weed species, preventing the establishment of native vegetation.

Figure 3. Noxious Weeds



The List B species require management actions to stop the continued spreading of these species. Because the field survey was conducted during only one portion of the growing season, the species identified represent only the collection of plant species easily visible during that time and should not be considered comprehensive. Further field studies at a different time in the growing season could reveal other species. A separate noxious weed survey must be conducted, and mitigation activities must be identified (as either a Colorado Department of Transportation (CDOT) specification 217 or as a Noxious Weed Management Plan) before any construction activities occur.

2.3 Wildlife

Based on the urban environment and habitats present in the study area, some species of mammals, birds, reptiles, and amphibians could occur within the study area. However, it is most likely that the area is used as a travel corridor rather than an area where most species spend a significant portion of their lives due to the proximity of West Elizabeth and surrounding urban neighborhoods.

2.3.1 Mammals

Ungulate species known to occur in or near the environmental study area include mule deer (*Odocoileus hemionus*) and white-tailed deer (*Odocoileus virginianus*). According to the Colorado Parks and Wildlife (CPW) Species Activity Mapping (SAM) data, the study area lies within a resident population area as well as summer, winter, and overall range for mule deer and winter and overall range for white-tailed deer.

Several carnivore species occur or have a range that extends into the study area, the most common being raccoon (*Procyon lotor*), coyote (*Canus latrans*), red fox (*Vulpes vulpes*), and striped skunk (*Mephitis mephitis*). These animals are habitat generalists and occur frequently in urban/rural transition areas. They are likely to use the study area as a travel corridor, for hunting purposes, or for denning purposes.

Several bat and lagomorph species have the potential to occur in the study area. This group includes big brown bat (*Eptesicus fuscus*), little brown myotis (*Myotis lucifugus*), long-eared myotis (*Myotis evotis*), silverhaired bat (*Lasionycteris noctivagans*), and cottontail rabbits (*Sylvilagus* spp.). All of these animals use various habitats and are likely to use the study area for extended periods to fulfill their life-cycle needs. Several cottontails were observed during the field survey.

Many rodent species may occur in the environmental study area. This group is very large, and species common in the environmental study area include the deer mouse (*Peromyscus maniculatus*) and fox squirrel (*Sciurus niger*). Various mice (*Mus spp.*), voles (*Microtus spp.*), and woodrats (*Neotoma spp.*) would also use the study area.

Wildlife foraging and denning habitat could be directly impacted by vegetation that would be permanently removed due to the construction of impervious surfaces. Wildlife species in this area are adapted to human disturbance (noise and visual disturbance), however during construction there would be an increase in noise and disturbance. Because of the mobility of many species, they are generally capable of avoiding activities causing disturbance.

2.3.2 Reptiles/Aquatic Species

Potential reptile species that may occur in the study area include plains gartersnake (*Thamnophis radix*), terrestrial gartersnake (*Thamnophis elegans*), and North American racer (*Coluber constrictor*). There were no specific aquatic species that were observed during the August 2021 field survey. During peak flows, streams within the study area should be able to support a variety of aquatic insects, macroinvertebrates, and fish including largemouth bass (*Micropterus salmoides*), common carp (*Cyprinus carpio*), bluegill (*Lepomis macrochirus*), channel catfish (*Ictalurus punctatus*), and rainbow trout (*Oncorhynchus mykiss*).

During construction, there may be a temporary increase in sediment that could affect fish and other aquatic species, however a stormwater management plan (SWMP) and best management practices (BMPs) will be put into place prior to project construction to avoid and minimize any unnecessary impacts (erosion and sediment deposit) to streams within the study area.

2.4 Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 provides protection of birds classified as migratory birds by the USFWS. In Colorado, most birds, except for the European Starling (*Sturnus vulgaris*), House Sparrow (*Passer domesticus*), Rock Dove (*Columbia livia*) (Pigeon), and common grouse/pheasant species (Order *Galliformes*), are protected under the MBTA. The Migratory Bird Permit memorandum issued in April 2003 stipulates there is no prohibition against destruction of inactive nests. Additionally, any disturbance to these nesting areas must follow the stipulations outlined in the MBTA. Specific protection for Bald and Golden Eagles is authorized under the Eagle Protection Act (16 United States Code 668), which provides additional protection to these species from intentional or unintentional harmful conduct.

The study area contains suitable habitat that may provide opportunities for forage, roosts, and nesting to migrating birds, such as raptors and passerines. FHU environmental scientists completed an onsite nest survey on August 20, 2021, and no active nests were observed within the study area or vicinity. If construction-related activities occur between February 15 and August 31, then a qualified biologist must complete a pre-construction survey for nesting birds and raptors. Based on field observations, closer inspection of the potential for nests under the bridges along Cub Creek is warranted. If an active nest (eggs or fledglings) is found within 50 feet, work will need to cease until all the young fully fledge (fly away on their own). If any nesting raptors occur within the buffer area, then CPW "Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors" guidelines should be followed. The CPW may reduce the buffer requirements based on conditions of the study area and type of work being done but must be consulted for approval before beginning construction within the recommended buffer zone of an active nest.

2.5 Special Status Species

This section describes the special status species habitat and conditions of the study area. This section also includes resources identified from federal, state, and local agencies. Information is based on site conditions during the field survey conducted on August 20, 2021.

FHU used the U.S. Fish and Wildlife Service's (USFWS's) Information, Planning, and Conservation System (IPaC) and the CPW Species Profile website to identify the latest information on special status species that may occur in the study area. **Table 2** includes a complete list of federal and state-listed species, including state species of special concern that can be found in Larimer County (USFWS, 2021; CPW, 2021).

Common Name (Scientific Name)	Status	Habitat Description/Results of Assessment	
Mammals			
Canada Lynx (Lynx canadensis)	FT/SE	The Canada lynx is found in dense subalpine forest and willow-choked corridors along mountain streams and avalanche chutes, the home of its favored prey species, the snowshoe hare.	
		No suitable habitat present; therefore, this project will have <i>No Effect</i> on the Canada lynx.	

Table 2.Threatened and Endangered Species and StateSpecies of Concern Found within Larimer County

Biological Resources Technical Report

Common Name (Scientific Name)	Status	Habitat Description/Results of Assessment	
Preble's Meadow Jumping Mouse (Zapus hudsonius preblei)	FT/ST	Preble's meadow jumping mouse (PMJM) inhabits well developed riparian habitat with adjacent, relatively undisturbed grassland communities, and a nearby water source. Well-developed riparian habitat includes a dense combination of grasses, forbs, and shrubs; a taller shrub and tree canopy may be present. PMJM has been found to regularly use uplands at least as far out as 100 meters beyond the 100-year floodplain. No suitable habitat present; therefore, this project will have <i>No Effect</i> on the Preble's meadow jumping mouse.	
Townsend's Big- eared Bat (Corynorhinus townsendii pallescens)	SC	Townsend's big-eared bat is a western species occupying semidesert shrublands, pinyon-juniper woodlands, and open montane forests. Townsend's big-eared bat can be found throughout Colorado except on the eastern plains. Its distribution seems to be determined by availability of roosts, such as caves, mines, tunnels, crevices, and masonry structures with suitable temperatures. No suitable habitat present; therefore, this project will have no impact on the Townsend's big-eared bat.	
Black-tailed Prairie Dog (Cynomys ludovicianus)	sc	Black-tailed prairie dogs form large colonies or "towns" in shortgrass or mixed prairie. No suitable habitat present; therefore, this project will have no impact on the Black-tailed prairie dog.	
Birds			
Eastern Black Rail (Laterallus jamaicensis)	FT	The eastern black rail is a wetland dependent bird requiring dense overhead cover and soils that are moist to saturated (occasionally dry) and interspersed with or adjacent to very shallow water (typically ≤ 3 cm). No suitable habitat present; therefore, this project will have <i>No Effect</i> on the	
Piping Plover † (Charadrius melodus)	FT/ST	Piping Plovers occur as migrants, arriving around the first of April. Most have passed through by the end of May. They can be found in the eastern part of the state. Nesting habitat in Colorado is on sandy lakeshore beaches, sandbars within riverbeds, or even sandy wetland pastures. An important aspect of this habitat is that of sparse vegetation. Onsite sources of water will not be used for any construction activity.	
Whooping Crane† (Grus americana)	FE/SE	 Whooping Cranes live in mudflats around reservoirs and in agricultural areas. While wintering, they live on salt flats dominated by coastal salt grass. Their nesting grounds are wetland communities dominated by bulrush. Whooping Cranes have not been seen in Colorado since 2002. Onsite sources of water will not be used for any construction activity. Therefore, this project will have No Effect on the Whooping Crane. 	
Amphibians			
Northern Leopard Frog (Lithobates pipiens)	sc	Occurs between elevations of 3,000 and 12,000 feet in wet meadows and the banks and shallows of marshes, ponds, lakes, reservoirs, streams, and irrigation ditches. They are usually found at the water's edge, though they may roam far from permanent water in wet meadows or during mild, wet weather. Potential suitable habitat is present in riparian areas along streams within the	
		study area.	

Common Name (Scientific Name)	Status	Habitat Description/Results of Assessment		
Fish				
Greenback Cutthroat Trout (Oncorhynchus clarkia stomias)	FT	This species inhabits cold water streams and lakes with adequate stream spawning habitat present during spring. In general, trout require different habitat types for different life stages: juvenile (protective cover and low velocity flow, as inside channels and small tributaries); spawning (riffles with clean gravels); over-winter (deep water with low velocity flow and protective cover); and adult (juxtaposition of slow water areas for resting and fast water areas for feeding, with protective cover from boulders, logs, overhanging vegetation or undercut banks). Greenbacks generally require clear, cold, well- oxygenated water. No suitable habitat present; therefore, this project will have <i>No Effect</i> on the		
		Greenback cutthroat trout.		
Pallid Sturgeon †	FE	Pallid sturgeon require turbid water, diverse habitat types, and flow rates afforded by large, free-flowing rivers.		
(Scaphirhynchus albus)		Onsite sources of water will not be used for any construction activity. Therefore, this project will have <i>No Effect</i> on the Pallid Sturgeon.		
Insects				
Monarch Butterfly (Danaus plexippus)	FC	Monarchs pass through the Front Range between mid-June (heading north) and September (heading back south). During the breeding season, monarchs lay their eggs on their obligate milkweed host plant. No suitable habitat present; therefore, this project will have <i>No Effect</i> on the Monarch Butterfly		
Plants				
Ute Ladies'-tresses orchid	FT	Known primarily from moist meadows associated with perennial stream terraces, gravel bars, high flow channels floodplains, and oxbows at elevations between 4,300 - 6,850 feet.		
(Spiranthes diluvialis)		No suitable habitat present; therefore, this project will have <i>No Effect</i> on the Ute Ladies'-tresses Orchid.		
Western Prairie Fringed Orchid † (Platanthera praeclara)	FT	A perennial orchid of the tallgrass prairie and is found most often on unplowed, calcareous prairies and sedge meadows. Habitat is located downstream of the project and is associated with the South Platte River. Onsite sources of water will not be used for any construction activity.		
+ IPaC listed these species		Therefore, this project will have <i>No Effect</i> on the Western Prairie Fringed Orchid.		

† IPaC listed these species because portions of Larimer County fall within the South Platte River Basin. However, species needs to be considered if only the following condition applies: Water-related activities/use in the North Platte, South Platte and Laramie River Basins may affect listed species in Nebraska. It is not anticipated that this project will result in downstream depletions to the South Platte River basin.

FE = Federally Endangered	ST = State Threatened	SC = State Species of Special Concern		
FT = Federally Threatened	SE = State Endangered	FC = Federally Candidate		
References: CPW, 2021 and USFWS IPaC, 2021				

The threatened and endangered species listed by IPaC that are affected only by downstream depletions to the North Platte, South Platte, and Laramie River Basins are not anticipated to be affected by this project, as no downstream depletions are anticipated to the South Platte River basin.

While the vegetation and minimal undeveloped land in the study area does provide habitat for some species and potential wildlife movement corridors, no suitable habitat was identified within the study area for any federally listed or state listed species, with the exception of the northern leopard frog.

Potential suitable habitat for the northern leopard frog is present in riparian areas along streams within the study area. However, no confirmed records of northern leopard frog populations could be found near or within the study area and it is unlikely to be present. A SWMP and BMPs will be put into place prior to project construction to avoid and minimize any unnecessary impacts (erosion and sediment deposit) to streams and riparian areas within the study area.

3.0 CONCLUSIONS

Based on the results of the biological resources assessment, FHU makes the following conclusions:

- Two species of List B noxious weeds were observed during the survey (Canada Thistle and Leafy Spurge). List B species require management to prevent the further spread. One List C noxious weed species was observed during the survey (Field Bindweed). The project will follow CDOT's Standard Specification 217 (CDOT 2011) for treating noxious weeds.
- Wildlife foraging and denning habitat could be directly impacted by vegetation that would be
 permanently removed due to the construction of impervious surfaces. Wildlife species in this area
 are adapted to human disturbance (noise and visual disturbance), however during construction
 there would be an increase in noise and disturbance. Because of the mobility of many species,
 they are generally capable of avoiding activities causing disturbance.
- During construction, there may be a temporary increase in sediment that could affect fish and other aquatic species, however a SWMP and BMPs will be put into place prior to project construction to avoid and minimize any unnecessary impacts (erosion and sediment deposit) to streams within the study area.
- This project does not contain suitable habitat for any of the federally listed threatened and endangered species. Therefore, the project will have *No Effect* on Preble's meadow jumping mouse, Canada Lynx, Eastern Black Rail, Piping Plover, Whooping Crane, Greenback Cutthroat Trout, Pallid Sturgeon, Monarch Butterfly, Ute Ladies'-tresses, and Western Prairie Fringed Orchid.
- Potential suitable habitat for the northern leopard frog is present in riparian areas along streams within the study area. However, no confirmed records of northern leopard frog populations could be found near or within the study area and it is unlikely to be present. A SWMP and BMPs will be put into place prior to project construction to avoid and minimize any unnecessary impacts (erosion and sediment deposit) to streams and riparian areas within the study area.
- This project has the potential to impact migratory birds/raptors within and adjacent to the study area. If construction of the project occurs between April I and August 31, an additional migratory bird nest survey should be conducted at least one week before construction activities begin (clearing, grubbing, grading, culvert demolition, etc.). To avoid impacts and additional surveys within the study area, these activities should occur before April I. Construction activities around and near migratory bird nests will be based on CDOT's project special specification 240.
- If raptor nests are located within or adjacent to the study area, including red-tailed hawks, burrowing owls, and bald eagles, then coordination with CPW and USFWS must take place to identify potential impacts and mitigation. Mitigation would include using the CPW recommended buffer zones and seasonal restrictions for nesting raptors.

4.0 REFERENCES

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APPENDIX A. SITE PHOTOGRAPHS



Photo I: August 20, 2021 Typical Street View of Residential Area

(Located on the south side of West Elizabeth, west of Andrews Peak Drive, facing west)



Photo 2: August 20, 2021 Pleasant Valley and Lake Canal

(Located on the south side of West Elizabeth, south side of box culvert, facing south)



Photo 3:

August 20, 2021 Typical Street View of Residential Area on West Elizabeth

(Located on the south side of West Elizabeth, west of Ponderosa Drive, facing west)



Photo 4:

August 20, 2021 Typical Street View of Business Area on West Elizabeth

(Located on the north side of West Elizabeth, west of Taft Hill Road, facing west)





Photo 5:

August 20, 2021 New Mercer Canal

August 20, 2021 Larimer County Canal No. 2

(Located along New Mercer Canal on the north side of West Elizabeth, facing west) (Located on the north side of West Elizabeth, facing north)



Photo 7:

August 20, 2021 Larimer County Canal No. 2

(Located on the south side of West Elizabeth, facing south)

Photo 8:

August 20, 2021 Typical View of Plum Street

(Located on the south side of Plum Street, facing east)