Wetland Delineation

US 24 West

CDOT Project No. NH 0242-040

Project Control No. 187824

Colorado Department of Transportation

January 2011

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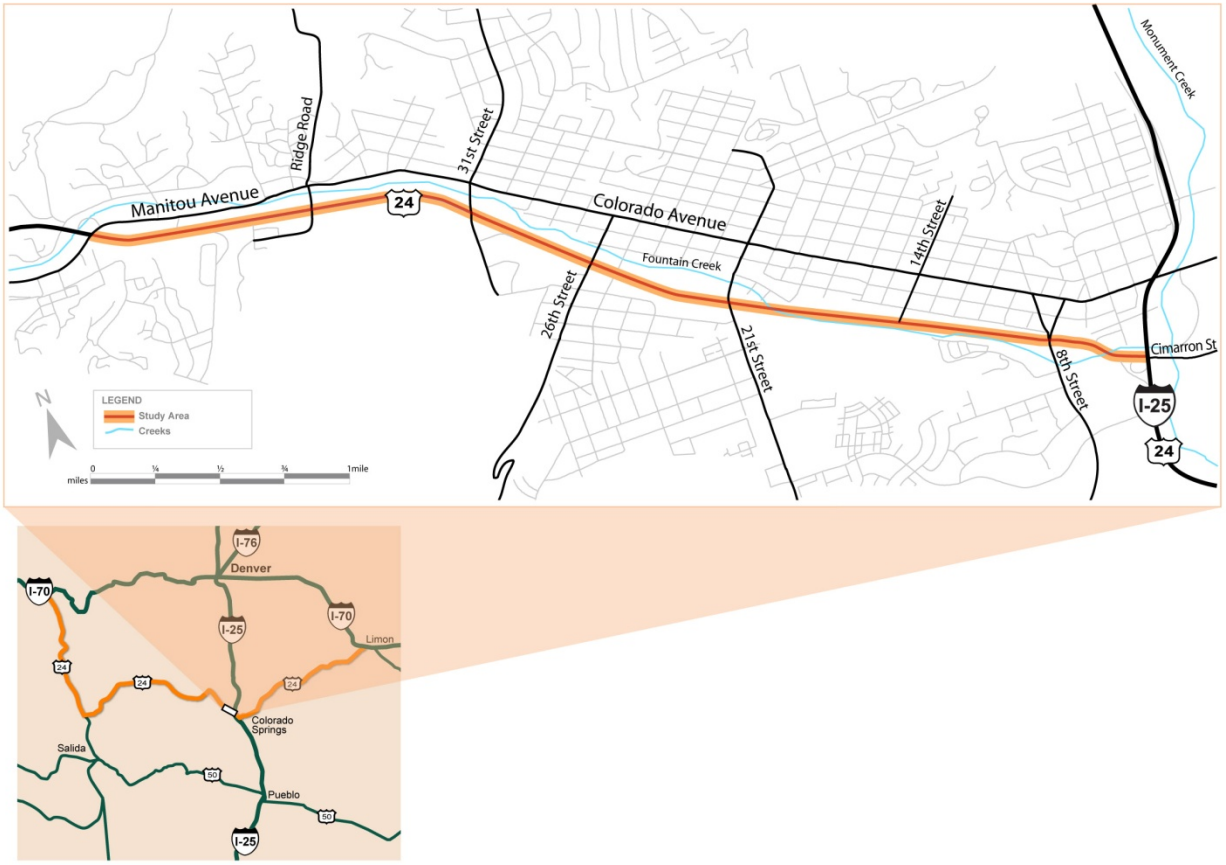
1.0 Introduction

The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), is preparing an Environmental Assessment (EA) for the US 24 West Project (project) in El Paso County, Colorado. The project would improve a 4-mile segment of United States Route 24 West (US 24) beginning on the east end of the Interstate 25 (I-25) and US 24 intersection near downtown Colorado Springs and extending west to the southeastern boundary of Manitou Springs (**Figure 1**). The legal location of the project is Township 14 south, Range 67 West, and Sections 14, 13, 11, 10, 4, and 3.

The purpose of this wetland delineation technical memorandum is to summarize potential impacts on existing wetlands and waters of the United States located within the project study area. Both the No Action Alternative and the Proposed Action (described in Sections 2.0 and 3.0, respectively) are evaluated. The analysis that follows has been prepared in accordance with Executive Order 11990, "Protection of Wetlands," 23 Code of Federal Regulations (CFR) 771, 23 CFR 777, and Technical Advisory T6640.8A.

FIGURE 1
Project Study Area



2.0 No Action Alternative

The No Action Alternative consists of existing transportation facilities and committed transportation projects that would occur regardless of whether the Proposed Action is constructed. The No Action Alternative would not make any improvements to the existing condition beyond those already planned and funded. The projects listed below are shown in existing adopted transportation plans and are locally funded projects.

- **8th Street Intersection Improvements.** Lengthens turn lanes and acceleration and deceleration lanes on US 24, and widens 8th Street north and south of US 24.
- **8th Street Bridge Replacement.** Replaces the existing four-lane bridge structure over Fountain Creek at 8th Street.
- **21st Street Roadway Improvements.** Includes the widening of 21st Street south of US 24 to four 12-foot travel lanes with dedicated turn lanes, extended acceleration lane, and curb and gutter. Geometric improvements to the US 24/21st Street intersection will also be constructed.
- **21st Street Bridge Replacement.** Replaces the existing four-lane bridge structure over Fountain Creek.
- **25th Street Bridge Replacement.** Replaces the existing two-lane bridge structure over Fountain Creek at 25th Street.
- **Midland Trail Extension.** Extends Midland Trail between 21st Street and Manitou Avenue to connect with Manitou Springs' Creekside Trail.

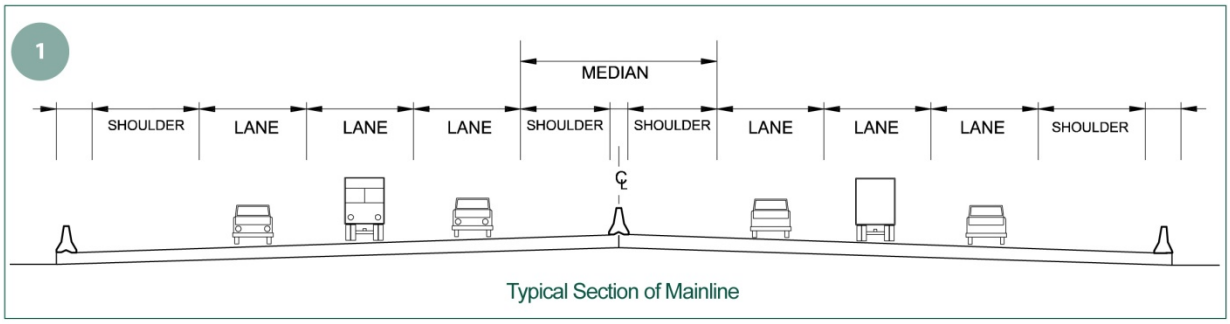
Under the No Action Alternative, improvements to intelligent transportation systems (for example, variable message signs) would be implemented as part of the congestion management program. Existing bus routes and service would continue as they are today, and bike and pedestrian facilities would only be extended or improved as local funds and grants allow.

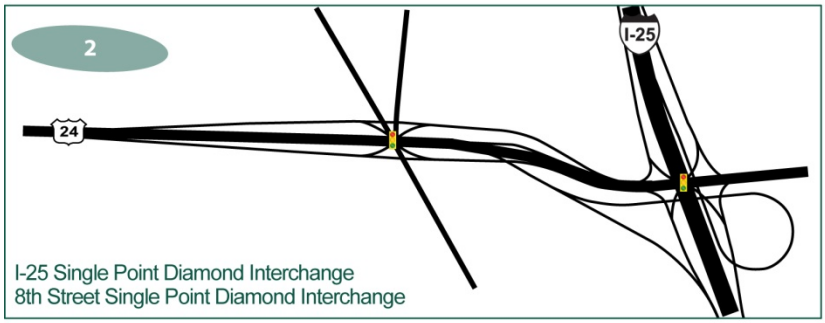
3.0 Proposed Action

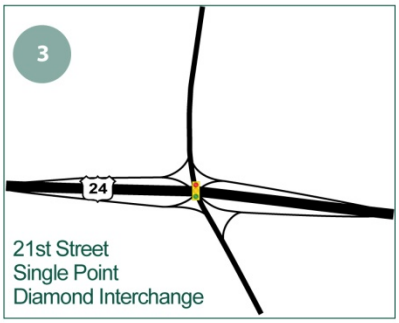
The Proposed Action would provide additional capacity on US 24 by building additional travel lanes, two new interchanges, and one new overpass. The Proposed Action includes rebuilding several cross-streets, replaces bridges over Fountain Creek, and includes modifications to Fountain Creek's channel at each bridge crossing. Sidewalks would be built at all intersections and interchanges. The Proposed Action would also accommodate a park and ride facility and two future local access points along the route, which would be built by others. The Proposed Action is illustrated in **Figure 2.**

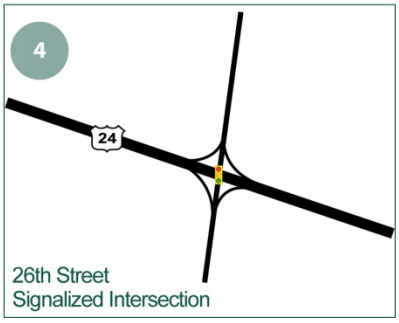
A single point diamond interchange is proposed at the Cimarron Interchange. This interchange design differs from what was originally presented in the *I-25 Improvements through the Colorado Springs Urbanized Area EA* (I-25 EA) (FHWA and CDOT, 2004). Since the I-25 EA was approved, new opportunities have been identified to improve existing and future traffic operations, making this improved design now feasible.

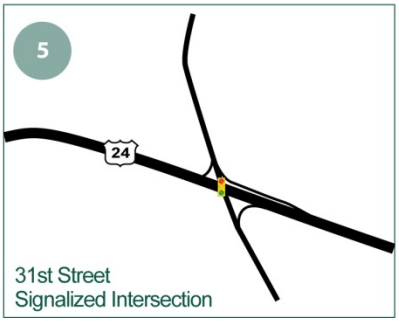
FIGURE 2
Proposed Action

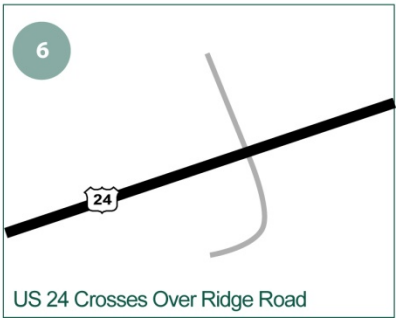












US 24 in the project area would be built to have eight through-lanes, four in each direction, east of 8th Street, and six through-lanes, three in each direction, from 8th Street to a point west of 31st Street. New interchanges are proposed at 8th and 21st Streets.

Intersection upgrades are proposed at 26th Street. The intersection of US 24 and 31st Street would be widened, as would the intersection with Colorado Avenue to the north. South of US 24, 31st Street would be rebuilt to align with the highway intersection.

At the west end of the corridor, an overpass would be built to carry US 24 over Ridge Road. Ridge Road would be widened between High Street and Colorado Avenue. The west end of the Proposed Action is approximately 1,800 feet west of the Ridge Road overpass where the overpass connects to the existing highway. Because there is not an existing or future congestion problem between Ridge Road and Manitou Avenue, no changes are proposed west of Ridge Road.

Accommodations would be made for the following features that will be built by others in the future:

- At 15th Street, an overpass would be constructed to carry 15th Street over US 24 and Fountain Creek, and connect to the street network of Old Colorado City and Gold Hill Mesa. This overpass would include ramps on the east side to connect to the 8th Street intersection. Between the ramps and Colorado Avenue, 15th Street would be reconstructed to provide pedestrian features such as sidewalks.
- At Ridge Road, ramps providing direct access to US 24 would be constructed to convert the overpass to a tight diamond interchange.
- At 31st Street, a park and ride facility would be constructed in the northeast quadrant of the intersection, with access from Colorado Avenue.

As described in Chapter 4 of the EA, the Proposed Action also includes various mitigation measures such as the construction of a greenway and the extension of some trails. The Proposed Action is illustrated in **Figure 2.**

4.0 Methodology

A wetland and waters of the United States delineation was conducted by CH2M HILL wetland scientists Bill Knapp and Brian Lee on January 15, 2009. A second wetland delineation was conducted near the proposed I-25/Cimmaron St. interchange in January 2011. Wetlands were identified and delineated following methods outlined in the 1987 United States Army Corps of Engineers (USACE) *Wetland Delineation Manual* (USACE, 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (USACE, 2008). The *Draft Interim Great Plains Supplement* was created by the USACE in March 2008, as part of a nationwide effort to address regional wetland characteristics and improve the accuracy and efficiency of wetland delineation procedures. This supplement is applicable to the Great Plains Region, which consists of all or significant portions of eleven states: Colorado, Kansas, Minnesota, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming. Wetland indicators as described in the Draft Great Plains Supplement (USACE, 2008) are used to assess the presence of wetlands within an area. The indicators include hydrophytic vegetation, hydric

soils, and wetland hydrology. The locations of wetlands and waters of the United States are provided in the Wetland Atlas in **Appendix A.** Site photographs are presented in **Appendix B**. Wetland determination data sheets are provided in **Appendix C**.

Wetland Vegetation

Hydrophytic (wetland) vegetation includes those plants typically adapted for life in saturated soil conditions. To determine if wetland vegetation is present, percent vegetative cover and Plant Indicator Status (Reed, 1988 and Reed et al., 1993) for dominant species are identified for plant species within the sample plot (2-meter radius). Vegetation canopy cover for all vegetative layers (tree, shrub, woody vine, and herbaceous) is estimated to determine the dominant vegetation and to characterize each plant community sampled. Dominant species within the sample area are classified using the Plant Indicator Status (Reed, 1988 and Reed et al., 1993) to determine if there is a predominance of wetland plants within the community. Plant indicator status is broken down into the following categories:

- **Obligate Wetland Plants (OBL).** Species that almost always (>99 percent probability) occur in wetlands.
- **Facultative Wetland Plants (FACW).** Species that usually (67 to 99 percent probability) occur in wetlands.
- **Facultative Plants (FAC).** Species that are equally likely (33 to 67 percent probability) to occur in wetlands or uplands.
- **Facultative Upland Plants (FACU).** Species that usually (67 to 99 percent probability) occur in uplands.
- **Not Listed.** Species with no designated wetland indicator status and assumed to be upland.
- **No Indicator.** Species for which insufficient information was available to determine an indicator status, or species that were not considered by the review panel.
- * – tentative assignment based on limited information or conflicting review.

If more than 50 percent of the dominant species within a sample plot are OBL, FACW, or FAC indicator, the hydrophytic vegetation criteria are satisfied (USACE, 2008)**.**

It is important to note that wetland plant communities in drainages may fail a test based on dominant species. Therefore, vegetation may be required to be re-evaluated with the Prevalence Index. The Prevalence Index, which takes into consideration all plant species in the community uses a weighted-average wetland indicator status for all plant species occurring within the sampling plot, where each indicator status category is given a numeric code and weighted by abundance (percent cover). This index is a more comprehensive analysis of the hydrophytic status of the community than one based on fewer dominant species (USACE, 2008). In addition, plant morphological adaptations can be used to distinguish certain wetland plant communities in the Great Plains region when hydric soil and wetland hydrology are present (USACE, 2008).

Following determination of wetland vegetation, plant communities were classified according to the United States Fish and Wildlife Service (USFWS) classification system (Cowardin et al., 1979).

Hydric Soils

Hydric soils were field identified on the basis of hydric soil indicators including gleying, low chroma colors, presence of redoximorphic features, sulfuric odor, and inundation and saturation levels. A Munsell Soil Color Chart was used to determine soil matrix and redox concentration colors at sample locations in consultation with the Field Indicators of Hydric Soils in the United States Manual (USDA, 2008 and NRCS, 2008).

In most cases, all mineral layers above any of the indicators must have a dominant chroma of 2 or less, or the layers with dominant chroma of more than 2 must be less than 6 inches thick to meet any hydric soil indicators. Hydric soil indicators pertaining to conditions within the Great Plains are present in three groups (all soil textures, sandy soils, and loam and clayey soils). Soil indicators associated with the three groups are as follows (USACE, 2008):

- **All soil textures**. Histosol, Histic Epipedon, Stratified Layers, Black Histic, Hydrogen Sulfide, 1 cm muck, Depleted Below Dark Surface, and Thick Dark Surface.
- **Sandy soils**. Textures of loamy fine sand and coarser, including Sandy Mucky Mineral, Sandy Gleyed Matrix, and Stripped Matrix.
- **Loamy and clayey soils**. Loamy very fine sand and finer textures, including Loamy Mucky Mineral, Loamy Gleyed Matrix, Depleted Matrix, Redox Dark Surface, Depleted Dark Surface, Redox Depressions, and Vernal Pools.

Wetland Hydrology

Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for sufficient duration during the growing season. Primary field indicators for wetland hydrology described in the 2008 Supplement (USACE, 2008) include the presence of standing water, saturated soil within 12 inches of the soil surface, high water table, water marks (nonriverine), sediment deposits (nonriverine), drift deposits (nonriverine), surface soil cracks, inundation visible on aerial imagery, water-stained leaves, salt crust, biotic crust, aquatic invertebrates, hydrogen sulfide odor, oxidized rhizospheres along living roots, presence of reduced iron, and recent iron reduction in plowed soils. Secondary indicators include water marks (riverine), sediment deposits (riverine), drift deposits (riverine), drainage patterns, dry-season water table, thin muck surface, crayfish burrows, saturation visible on aerial imagery, shallow aquitard, and FAC-neutral test. One primary wetland hydrology indicator or two secondary hydrology indicators are required to meet the wetland hydrology criteria (USACE, 1987 and USACE, 2008).

Data Collection and Processing

Wetland boundaries and locations were recorded using a hand-held Trimble Geo XT global positioning system (GPS) capable of sub-foot accuracy. Collected GPS data was differentially corrected using a geographical information system software program and

projected into established project mapping for use as representative figures and impact analysis.

5.0 Existing Conditions

The project study area is located within a well-established urban setting comprised of various residential and commercial properties including single-family homes, mobile homes, gas stations, motels, commercial retailers, and associated roadways. Urban development has been present in this location for more than 50 years. US 24 and Fountain Creek intersect a few times within the study area, but are parallel throughout the majority of the corridor.

Fountain Creek shows obvious signs of heavy erosion along portions of the stream banks and downcutting within the channel. Portions of this waterway have been altered through man-made improvements including concrete walls and boulder/concrete rip rap. A well established hardwood riparian zone is present along the banks of Fountain Creek throughout the majority of the study area that is primarily comprised of cottonwood species (*Populus deltoids*, ssp. *monilifera*, and *Populus angustifolia*), green ash (*Fraxinus pennsylvanica*), Siberian elm (*Ulmus pumila*), box-elder (*Acer negundo*), western snowberry (*Symphoricarpos occidentalis*), chokecherry (*Prunus virginiana*), peachleaf willow (*Salix amygdaloides*), sandbar willow (*Salix exigua*), and minor occurrence of ponderosa pine (*Pinus ponderosa*).

One wetland was identified within project boundaries during the January 2009 onsite survey. The wetland was comprised of a palustrine emergent complex primarily occurring within the floodplain of Fountain Creek. During an additional survey in January 2011, two additional wetlands were delineated along the banks of Monument and Fountain Creeks along the I-25 corridor.

Portions of Fountain Creek in the eastern end of the study corridor, near the intersection of US 24 and 8th Street, contained marginal wetland conditions. Fountain Creek and its floodplain were recently altered within this area during construction of the Springs Community Improvement Program (SCIP) Flood Control Project in 2003. The City of Colorado Springs undertook this project to expand the conveyance of flood discharges, improve safety and protect property. One outcome of the project was to return the stream to a more natural appearance and function.

Soils test pits and a close review of onsite conditions were conducted and then cross referenced with standards established in the 1987 USACE Delineation Manual manual and the *Draft Interim Great Plains Supplement* (USACE, 2008) prior to making the decision that the area does not meet all three wetland criteria. Data collected at this location is located in Datasheet UPL 2 in **Appendix C.** Despite being disqualified as a wetland, this area appears to be in a state of transition towards a more established hydric ecosystem, and could potentially meet all three criteria within the next few years. Because this area was not delineated, it does not appear in the Wetland Atlas in **Appendix A**.

In addition, stream restoration work was performed near the Gold Hill Mesa area in 2010. Impacts to this area were permitted separately. Onsite mitigation measures, including the incorporation of fish habitat features within Fountain Creek, were completed.

All wetland locations identified during surveys are assumed to be jurisdictional under the USACE standards due to a potential nexus with Fountain Creek, which is a relatively permanent waterway and tributary to Monument Creek. Identified wetland locations are described in further detail below and **Table 1** provides a summary of wetlands present within the study area. The locations of wetlands and Waters of the United States can be seen in the Wetlands Atlas in **Appendix A**. Site photographs can be seen in **Appendix B**. Wetland data forms are included in **Appendix C**.

TABLE 1
Wetlands and Other Waters of the United States within the Study Area

Site ID	Acres within Study Area	USACE Jurisdictional?*	Wetland Type**	Comment
Wetland 1	0.02-	Yes	Emergent	Wetland located on a terrace within the Fountain Creek floodplain
Wetland 2	0.04	Yes	Emergent/ Scrub Shrub	Wetland located on a terrace under a pedestrian bridge adjacent to Monument Creek (along I-25)
Wetland 3	0.13	Yes	Emergent/ Scrub Shrub	Wetland located on a terrace under a pedestrian bridge adjacent to Fountain Creek (along I-25)
Fountain Creek	Over 10	Yes	N/A	Fountain Creek includes both the stretch along US 24 as well as the stretch below the confluence with Monument Creek
Monument Creek	Over 10	Yes	N/A	Monument Creek changes to Fountain Creek below the confluence with Fountain Creek.
Bear Creek	Less than 0.5	Yes	N/A	Bear Creek flows under I-25 to its confluence with Fountain Creek

*All wetlands assumed as jurisdictional under USACE standards. An official on-site jurisdictional determination would be needed from a USACE representative to confirm final jurisdictional status.

** Cowardin, L.M. et al., 1979. *Classification of Wetland and Deepwater Habitats of the United States.* USFWS, Biological Services Program; FWS/OBS-79/31.

Plant communities represented in the wetlands consist of vegetation typical of palustrine systems according to the Cowardin classification system. Wetlands of the emergent class are typically associated with grasses, sedges, rushes, and forbs. **Table 2** displays vegetation identified in the wetlands in the study area.

TABLE 2
Vegetation Summary Table for Wetlands

Common Name	Scientific Name*	Wetland Indicator Status**
Bluejoint reedgrass	*Calamagrostis canadensis*	OBL
Cattail	*Typha latifolia*	OBL
Curly Dock	*Rumex crispus*	FACW
Emory's sedge	*Carex emoryii*	OBL
Poison Hemlock	*Conium maculatum*	FACW
Narrowleaf Cattail	*Typha angustifolia*	OBL
Red top	*Agrostis gigantea*	NI
Reed Canary Grass	*Phalaris arundinacea*	FACW+
Soft stem bulrush	*Schoenoplectus tabernaemontani*	OBL
Sandbar willow	*Salix exigua*	OBL

*Scientific Names based on nomenclature provided by Weber and Whittman, 1996.

**Wetland indicators based on Reed, 1998 (Region 5) Central Plains Species.

Wetland 1

Wetland 1 is a 0.02 acre palustrine emergent wetland located within the banks and floodplain of Fountain Creek near 13th Street. This wetland location occurs near a confluence between Fountain Creek and an unnamed drainage near the southern border of US 24 in the SCIP Flood Management Area constructed in 2000. The unnamed drainage is piped under US 24 from an unknown location to the north, and likely is primarily a stormwater drainage feature. Wetland 1 is within the proposed ROW of the new alignment of US-24 and would likely be an impacted feature.

Dominant wetland vegetation includes sandbar willow (*Salix exigua*), reed canary grass, and narrowleaf cattail. Other plants in the wetland area include curly dock (*Rumex crispus*), and poison hemlock (*Conium maculatum*).

Wetland hydrology indicators observed at time of survey included water-stained leaves, drainage patterns typical in wetlands, oxidized rhizospheres along root channels, and a positive FAC-neutral test. This location appears to be seasonally flooded.

The ground at this sample location was disturbed in 2000 during construction activities for the SCIP Flood Management Project resulting in areas of disturbed and atypical soil conditions. Soils from 0 to 6 inches were a dark reddish brown (5YR 3/3) silty clay loam; soils from 6 to 12+ inches were a dark brown (7.5YR 3/3) silty clay loam with few, distinct strong brown (7.5YR 4/6) redoximorphic features. The soils within this sample plot were considered as problematic due to ground disturbance activities from construction in 2000, and were assumed, under natural conditions; to be hydric based on strength of wetland vegetation and hydrology indicators.

Wetland 2

Wetland 2 is a 0.04 acre palustrine emergent/ scrub-shrub wetland complex located on a terrace under a pedestrian bridge along the banks and floodplain of Monument Creek. This wetland is perched above the channel of Monument Creek by about 5 feet, but is located just downstream of a rip-rap drop structure that contains a secondary channel that appears to overtop into the wetland area during high flow events. Wetland 2 is within the proposed ROW of the new alignment of I-25 but is not expected to be impacted.

Dominant wetland vegetation includes sandbar willow, reed canary grass, and cattail (*Typha latifolia*). Other plants in the wetland area include curly dock, softstem bulrush (*Schoenoplectus tabernaemontani*), bluejoint reedgrass (*Calamagrostis canadensis*), and red top (*Agrostis gigantea*).

Wetland hydrology indicators observed at time of survey included water-stained leaves, drainage patterns typical in wetlands, rafted debris, oxidized rhizospheres along root channels, standing water within part of the wetland, and a soil profile saturated to the surface. This location appears to be seasonally flooded, receiving overflow water associated with a secondary channel next to a rip-rap drop structure located just upstream.

Soils from 0 to 7 inches were a typical 10YR3/2 sandy loam with two percent 7.5YR4/6 redoximorphic features; soils from 7 to 12+ inches were a 10YR3/3 coarse sand a gravel layer no redoximorphic features. Due to the the redoximorphic features located in the upper 7 inches of the soil profile, soils within Wetland 2 are considered hydric.

Wetland 3

Wetland 3 is a 0.13 acre palustrine emergent/ scrub-shrub wetland area located on a terrace along the banks and floodplain of Fountain Creek. Like wetland 2, this wetland is perched above the channel of Fountain Creek by about 5 feet, but is located just downstream of a rip-rap drop structure that contains a secondary channel that appears to overtop into the wetland area during high flow events. Wetland 3 is within the proposed ROW of the new alignment of I-25 but is not expected to be impacted.

Dominant wetland vegetation was sandbar willow. Other plants in the wetland area include curly dock, Emory's sedge (*Carex emoryii*), reed canary grass, and cattail.

Wetland hydrology indicators observed at time of survey were similar to those found in wetland 2. These included water-stained leaves, drainage patterns typical in wetlands, rafted debris, oxidized rhizospheres along root channels, standing water within part of the wetland, and a soil profile saturated to the surface. This location appears to be seasonally flooded, receiving overflow water associated with a secondary channel next to a rip-rap drop structure located just upstream. Several overland flow paths can be seen leading out of the wetland and back into Fountain Creek at various points along the creek edge.

Soils from 0 to 4 inches were a 10YR3/3 loamy sand, soils from 4 to 6 inches were a 10YR3/3 loamy sand, and soils from 6 to 12 inches were 10YR3/3 loamy sand. No redoximorphic features were found within the soil profile, however, due to the high sand content, this area may be considered a naturally problematic soil type. Due to the strong presence of wetland vegetation and hydrologic indicators, this area may be considered a naturally problematic wetland.

Fountain Creek

As described above, Fountain Creek is a jurisdictional water of the United States that runs through a developed area of Manitou Springs before reaching its confluence with Monument Creek. Downcutting is evident along the creek channel. The fringe along Fountain Creek provides a variety of habitat types. Habitat types mapped by USGS include Montane Shrubland, Pinon-Juniper Woodlands, Riparian Woodlands, Grassland, and Rock (USGS, 2010). Much of the creek is lined with a riparian fringe of hardwood trees such as cottonwoods and Russian olives. Small pockets of wetland vegetation are present along the edges of the channel. A brief description of the local habitats available at each impacted segment of Fountain Creek is presented in **Table 4** below.

Impacts to the creek will occur as a result of cut and fill activities within the channel from bridge upgrade and replacement work and realignment of US 24. These areas are shown in the Wetland Atlas in **Appendix A**.

Monument Creek

Monument Creek is a perennial tributary of Fountain Creek. Monument Creek has a confluence with Fountain Creek just north of the Cimmaron St. bridge. Impacts to the creek may occur as a result of cut and fill activities within the channel from bridge/culvert upgrade and replacement work and realignment of the Cimmaron St. bridge. These areas are shown in the Wetland Atlas in **Appendix A**.

Bear Creek

Bear Creek is a perennial tributary of Fountain Creek. The creek flows under I-25 via a box culvert. Impacts to the creek will occur as a result of cut and fill activities within the channel from bridge/culvert upgrade and replacement work and realignment of I-25. These areas are shown in the Wetland Atlas in **Appendix A**.

Functions and Values

Wetland functions and values for Wetland 1were determined based on the Functional Assessment of Colorado Wetlands (FACWet) Method (Johnson et al., 2010). A FACWet analysis was not performed for Wetland 2 or Wetland 3 because they are would not be impacted by the project and thus any functional values placed on them would have no bearing on project plans. Data sheets for wetland functions and values for Wetland 1 are located in **Appendix B.**

The functions and values of wetland 1 are limited due to its size and location within the landscape. The composite FCI Score from the FACWet analysis is 0.77, which is considered to be functioning.

6.0 Impacts

Impacts discussed in this section are based on 15 percent design build. The Proposed Action would result in 0.02 acre of permanent wetland impacts.

Impacts to Fountain Creek, Monument Creek, and Bear Creek are anticipated in proposed bridge replacement locations, totaling 5.17 acres and 8,220 linear feet. The waters of the US would be temporarily impacted during construction. While these areas would be disturbed

during construction, the acreage of waters of the US would be permanently enlarged as a result of widening the channel for the Proposed Action. The adverse impact, therefore, is temporary during construction, while the permanent, long-term impact would be beneficial as the waters of the US would be substantially increased in size and improved in quality.

Channel improvements included in the Proposed Action would widen drainage areas, stabilize embankments, and add drop structures. The wider channel would provide a greater opportunity for wetlands and riparian vegetation to re-establish. The wider drainage channels and drop structures also would distribute and dissipate flows to reduce scour and erosion in the channels, which would reduce sedimentation and improve the quality of waters of the US.

In addition to stream widening, rip-rap improvements would be added to the base of the creek and the elevation of the creek profile would be changed to accommodate adequate flood volumes under each bridge to be improved.

Realignment of Fountain Creek represents a minor impact to waters of the US, especially when weighed against the benefits associated with improved stream function, flood conveyance, bank stability, and riparian habitat potential.

All of these improvements are represented by the impact area numbers that appear in **Table 3**. Impacted areas are shown in the Wetland Atlas in **Appendix A**.

TABLE 3
Wetlands and Other Waters of the United States Impacts

Site ID	Acres Impacted	Length (ft) Impacted	Wetland Type**	Comment
Wetland 1	0.02	-	Emergent	Wetland terrace within Fountain Creek floodplain. Impacts associated with US 24 realignment work
A	0.54	895	N/A	Fountain Creek impacts associated with Ridge Road bridge work. A Riparian Woodland fringe along the edges of the channel would also be impacted.
B	0.35	555	N/A	Fountain Creek impacts associated with 31st Street bridge work. A Riparian Woodland fringe along the edges of the channel would also be impacted.
C	0.27	585	N/A	Fountain Creek impacts associated with US 24 realignment work. A Riparian Woodland fringe along the edges of the channel would also be impacted.
D	0.67	1350	N/A	Fountain Creek impacts associated with US 24 realignment work and S 26th Street bridge work. A Riparian Woodland fringe along the edges of the channel would also be impacted.
E	0.83	1255	N/A	Fountain Creek impacts associated with S 21st Street and US 24 bridge work. A Riparian Woodland fringe and a small portion of grassland along the edges of the channel would also be impacted.
F	0.22	650	N/A	Fountain Creek impacts associated with US 24 realignment work. A grassland fringe with rip-rap drop structures along the edges of the channel would also be impacted.

TABLE 3
Wetlands and Other Waters of the United States Impacts

Site ID	Acres Impacted	Length (ft) Impacted	Wetland Type**	Comment
G	1.60	2480	N/A	Fountain Creek impacts associated with S 8th Street and US 24 bridge work. A Riparian Woodland fringe and a small portion of grassland along the edges of the channel would also be impacted.
H	0.52	180	N/A	Fountain Creek/Monument Creek impacts associated with the Cimmaron St. Bridge replacement. A riparian woodland fringe along the edges of the channel would also be impacted.
I	0.06	40	N/A	Fountain Creek impacts associated with the construction of a loop offramp structure from I-25 to US 24.. A riparian woodland fringe along the edges of the channel would also be impacted.
J	0.07	40	N/A	Fountain Creek impacts associated with the construction of a loop offramp structure from I-25 to US 24.. A riparian woodland fringe along the edges of the channel would also be impacted.
K	0.02	190	N/A	Bear Creek Impacts associated with a shift in the alignment of I-25 at the location of the current creek crossing. A box culvert currently conveys the creek under I-25
Totals	**5.17**	**8,220**		

*All wetlands assumed as jurisdictional under USACE standards. An official on-site jurisdictional determination to confirm final jurisdictional status was not requested.

** Cowardin, L.M. et al., 1979. *Classification of Wetland and Deepwater Habitats of the United States.* USFWS, Biological Services Program; FWS/OBS-79/31.

7.0 Avoidance and Minimization Measures

The following efforts have been made to avoid and minimize impacts to wetlands and other Waters of the United States:

- The project team considered a variety of design options at 21st Street and ultimately shifted the alignment to the north to avoid impacts to historic properties and Fountain Creek.
- During final design, retaining walls will be placed to minimize impacts to Fountain Creek.
- CDOT will consider appropriate locations for upland buffers in the northwest quadrant of the project area where right-of-way will be purchased for the Proposed Action.

8.0 Conclusion

Three wetlands were delineated within project boundaries during the survey. Wetland 1 is approximately 0.02 acre and is expected to be impacted. Wetlands 2 and 3, 0.04 acre and 0.13 acre, respectively, are not expected to be impacted. The wetlands are all considered to be jurisdictional under USACE standards based on their proximity and potential significant nexus to Fountain Creek. Impacts of 5.17 acres and 8,220 linear feet are anticipated to the Fountain Creek, Monument Creek, and Bear Creek channels as a result of proposed bridge replacements.

Based on the above considerations, it is determined that there is no practicable alternative to the proposed new construction. The Proposed Action includes all practicable measures to minimize harm to Fountain Creek (and associated wetlands) which may result from such use.

A Wetland Finding will be completed during final design and will include a final assessment of impacts and a detailed plan for mitigation. CDOT will obtain a Section 404 permit from the USACE for impacts to wetlands and waters of the US during final design. The USACE has confirmed informally that the Proposed Action could be permitted under a combination of Section 404 General Nationwide Permits and Individual Permits.

Nationwide Permits are often issued by USACE for categories of activities that are similar in nature and have only minimal adverse environmental effects. Final permit applications will be filed during final design.

Under Section 404 permit programs in place today, some segments of the project would qualify for streamlined permitting under the Nationwide Permit #14 for Linear Transportation Projects and Nationwide Permits #27 for Aquatic Habitat Restoration, Establishment, and Enhancement Activities.

9.0 References

Cowardin, L.M. et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. United States Fish and Wildlife Service. Biological Services Program; FWS/OBS-79/31.

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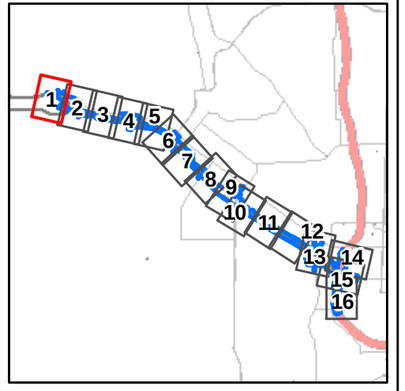
APPENDIX A

Wetland Atlas

1

Legend

- Soil Pits
- Impacted OHWM Areas
- Limits of Disturbance
- Fountain Creek OHWM
- Surveyed Wetlands
- Proposed Right of Way
- Parcels
- Proposed Action
- Improvements to be Constructed by Others



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Scale in Feet

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Envision 24 West
The Entryway

2

Legend

- Soil Pits
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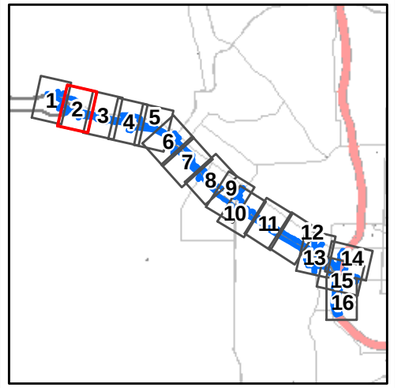

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The Entryway

3

Legend

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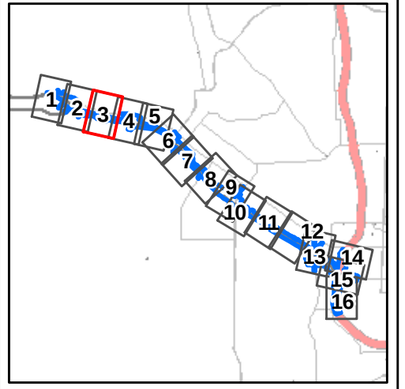

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The Entryway

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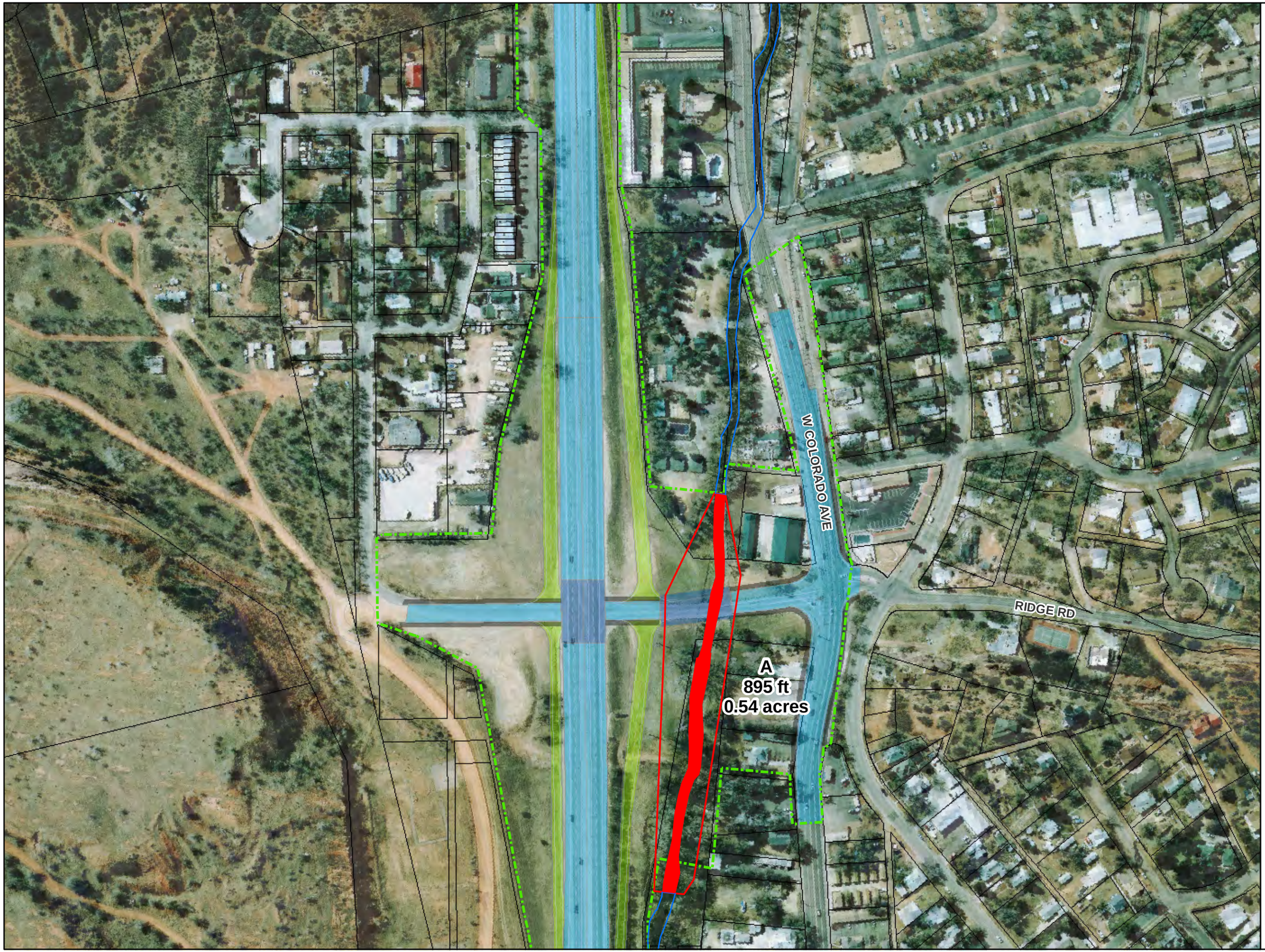

Legend

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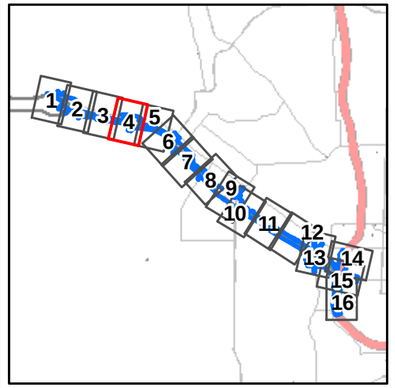

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The Entryway

5

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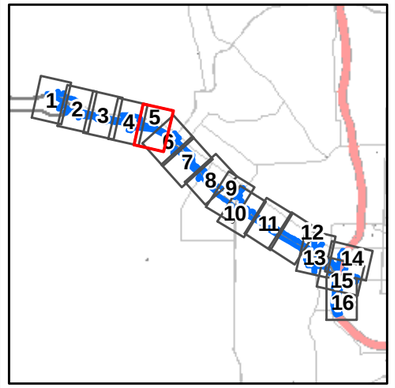

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Last Revised January 2011
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The Entryway

6

Legend

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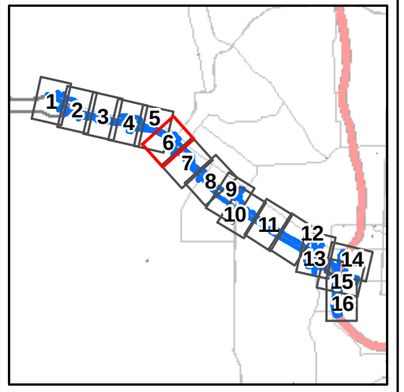

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Scale in Feet

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Envision 24 West
The Entryway

C
585 ft
0.27 acres

D
1350 ft
0.67 acres

W COLORADO AVE

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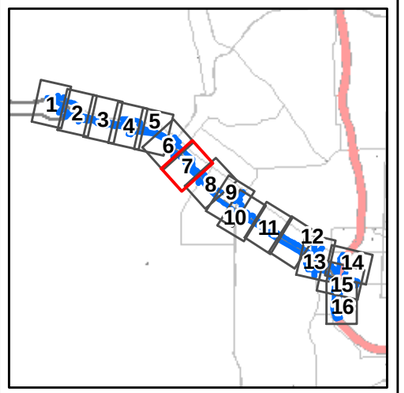

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Envision 24 West
The Entryway

8

Legend

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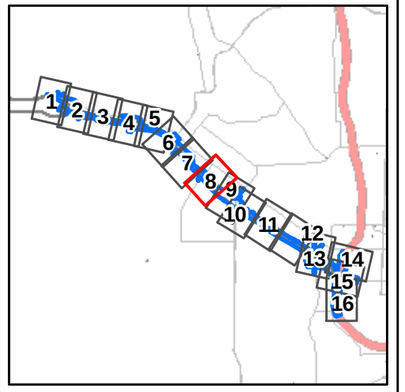

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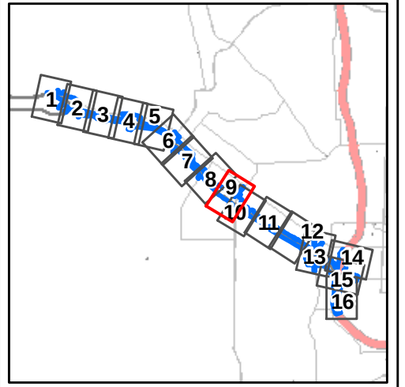

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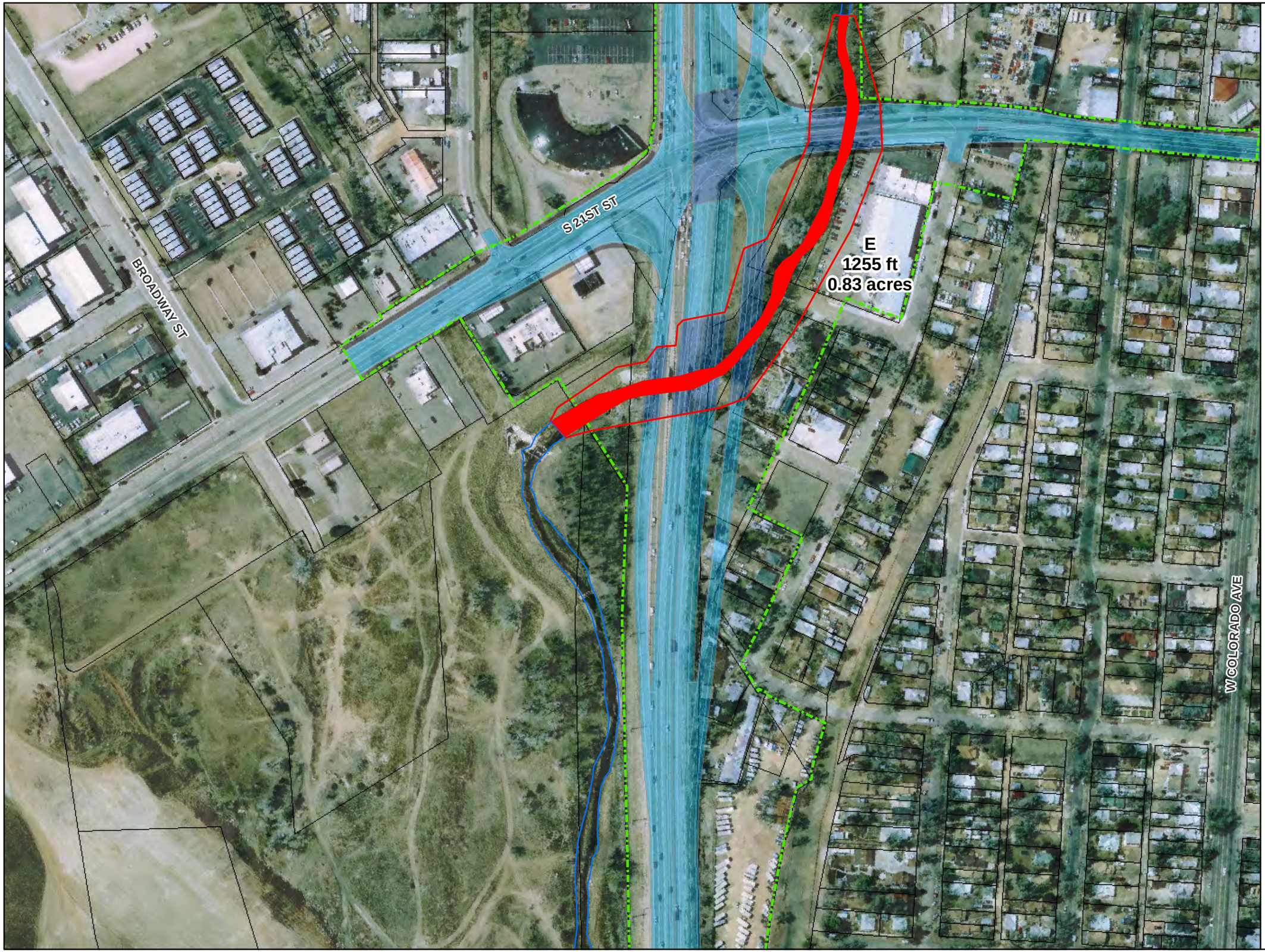

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Legend

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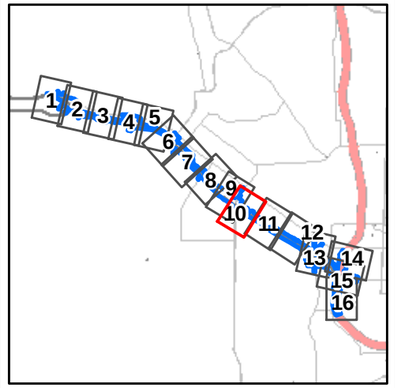

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Envision 24 West
The Entryway

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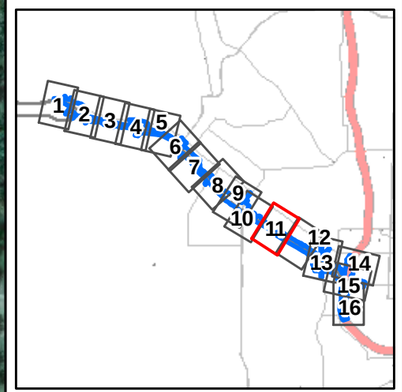

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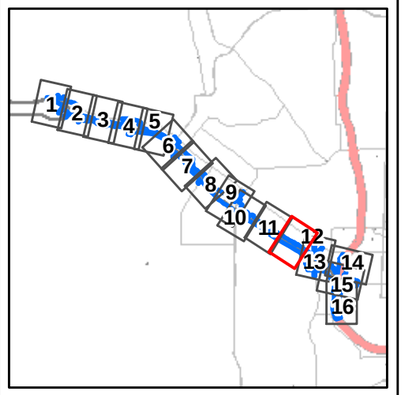

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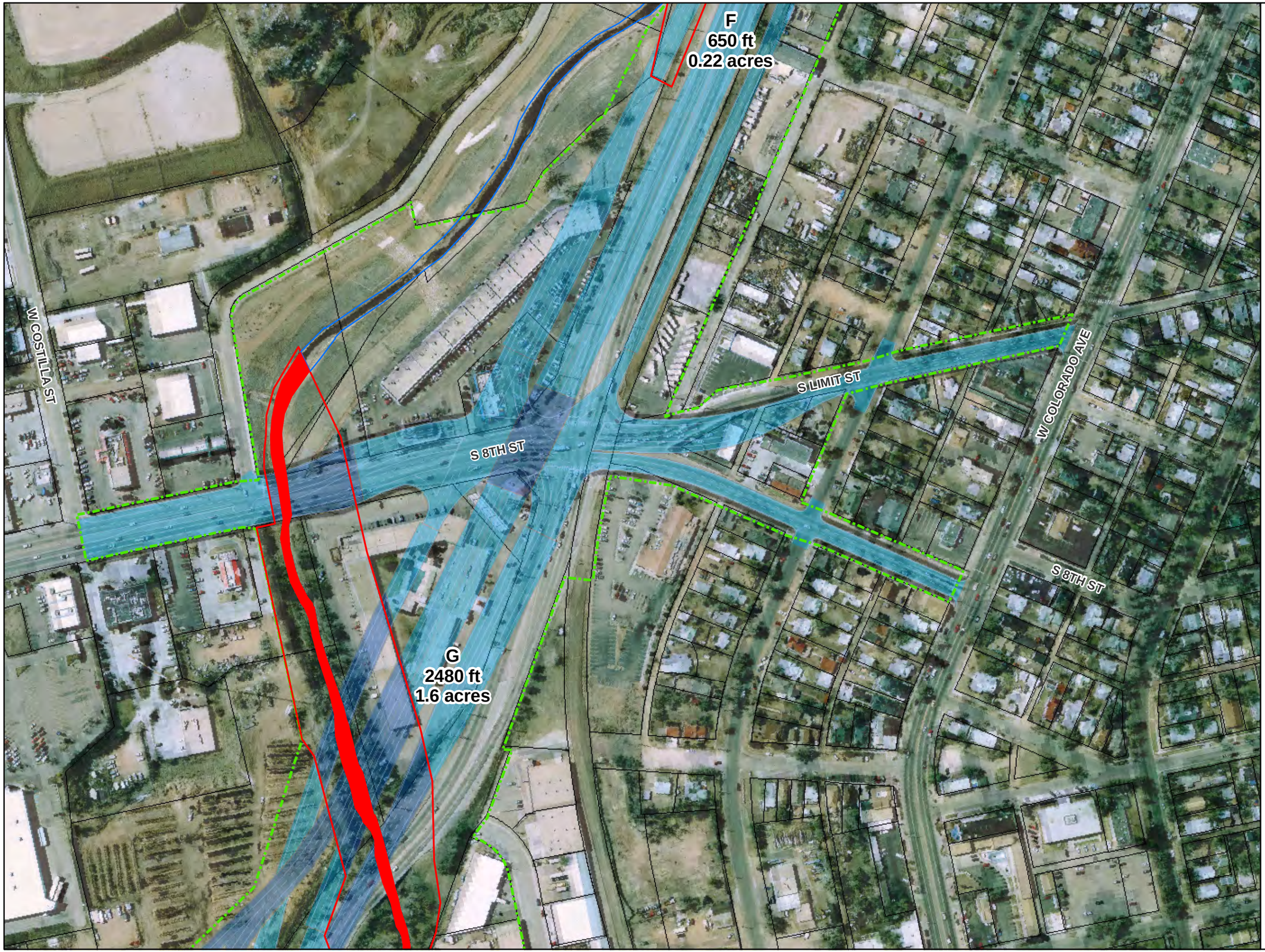

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Legend

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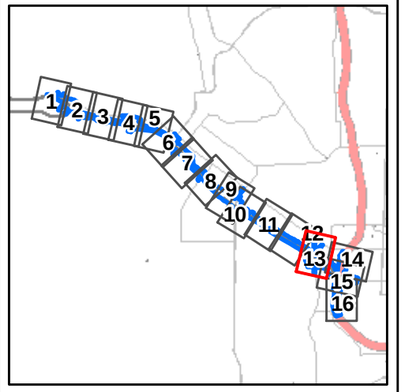

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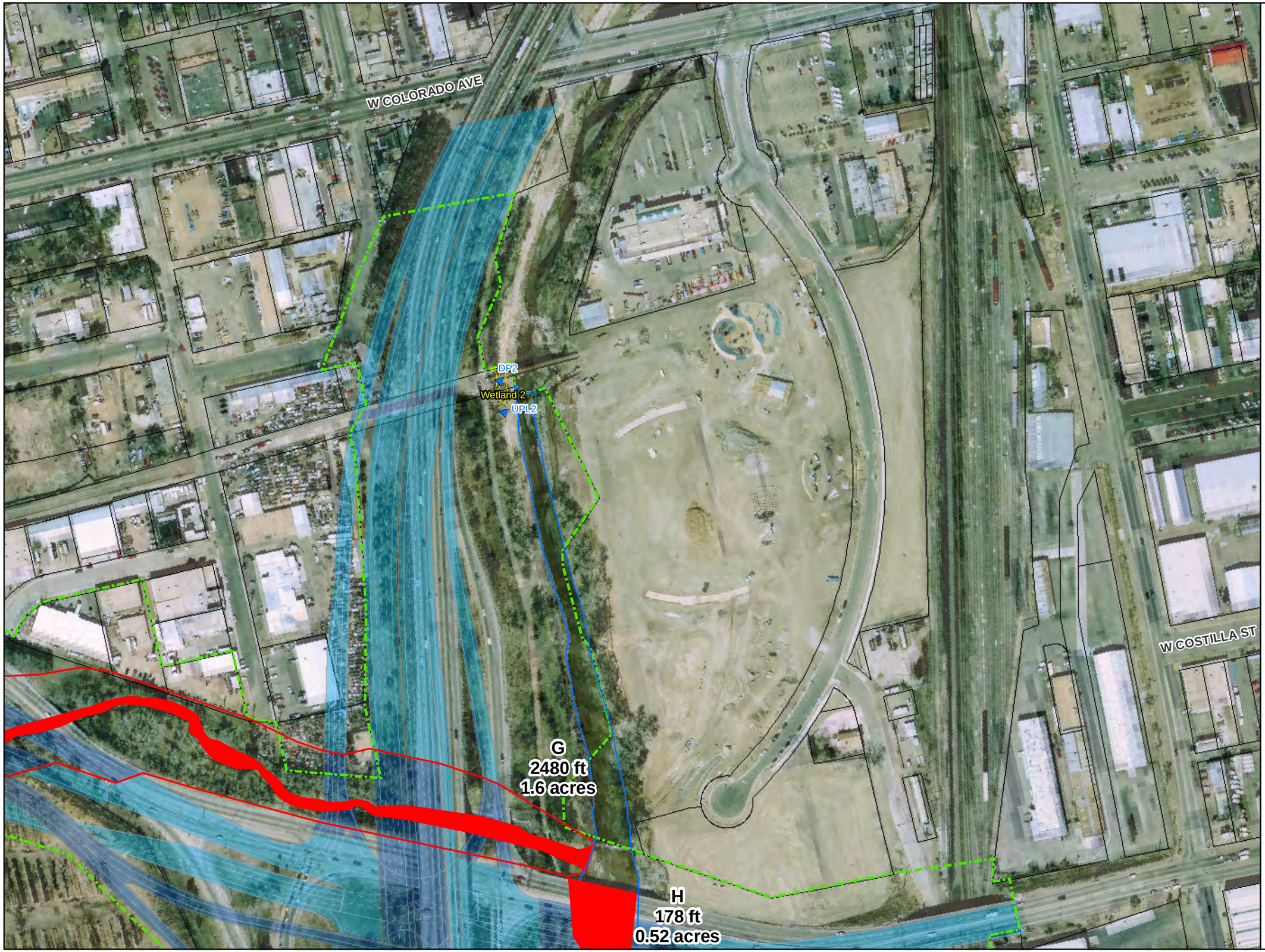

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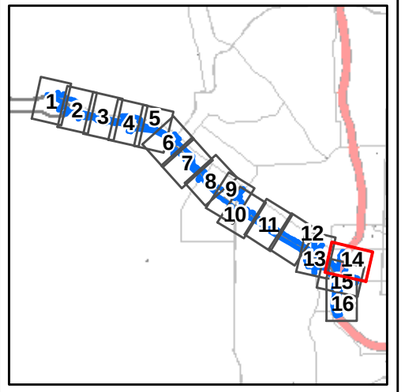

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Scale in Feet

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Envision 24 West
The Entryway

G
2480 ft
1.6 acres

H
178 ft
0.52 acres

I
40 ft
0.06 acres

J
40 ft
0.07 acres

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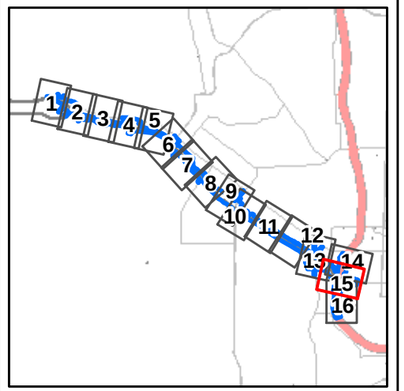

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The Entryway

16

Legend

- Soil Pits
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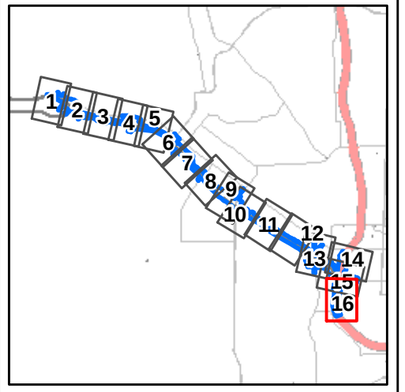

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Scale in Feet

Last Revised January 2011
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January 2002 (Page 16 Only)

Envision 24 West

The Entryway

APPENDIX B

Site Photographs

Photo 1: View to the west of Wetland 1 location within the Fountain Creek floodplain.

Photo 2: View to the east of Wetland 1 looking down the center of Fountain Creek showing adjacent riparian (non-wetland) fringe of sandbar willow.

Photo 3: View of erosion along the banks of Fountain Creek near S. 25th St.

Photo 4: View to the east of Fountain Creek and typical existing conditions within the floodplain.

Photo 5: View of the confluence between Fountain Creek and Monument Creek, east of I-25.

Photo 6: View of Wetland 2 on terrace adjacent to Monument Creek and under a pedestrian bridge. Wetland is dominated by cattails.

Photo 7: View of Monument Creek and riparian areas looking south towards Cimmaron St. bridge.

Photo 8: View of Fountain Creek at Cimmaron St. bridge.

Photo 9: View of Wetland 3 looking south at standing water within sandbar willow terrace. Pedestrian bridge in the distance.

Photo 10: Looking east at Bear Creek from pedestrian underpass under I-25. Confluence with Fountain Creek is in the background.

APPENDIX C

Wetland Dataforms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: US 24 West City/County: COS – El Paso Sampling Date: 1/15/09
Applicant/Owner: Colorado Department of Transportation State CO Sampling Point DP1
Investigator(s): B. Knapp ; B. Lee Section, Township, Range: 13, 14S, 67W
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-2
Subregion (LRR): LRR G Lat: 38.50.3 Long: -104.50.49 Datum: NAD 83
Soil Map Unit Name: Ustic Torrifluvents, loamy NWI classification N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation, ____ Soil, X or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation, ____ Soil, ____ or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? **Yes X No**

Remarks:
Sample area is on a small terrace located adjacent to the confluence of Fountain Creek and an outfall from under US 24.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Salix exigua	10	Y	OBL
2.			
3.			
4.			
5.			
Total Cover:	10		
Herb Stratum			
1. Phalaris arundinacea	35	Y	FACW+
2. Typha angustifolia	25	Y	OBL
3. Conium maculatum	15	N	FACW
4. Rumex crispus	15	N	FACW
5.			
6.			
7.			
8.			
Total Cover:	90		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % cover of:		Multiply by:	
OBL species		X1 =	
FACW species		X2 =	
FAC species		X3 =	
FACU species		X4 =	
UPL species		X5 =	
Column Totals:	(A)		(B)

Prevelance Index = B/A = (A) (B)

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No**

Remarks:
Salix (Willow) species within sample point were all saplings.

SOIL

Sampling Point: DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6	5YR 3/3						SiClLm	Silty Clay Loam
6 – 12+	7.5 YR 3/3		7.5 YR 4/6			RC,M	SiClLm	Silty Clay Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Histosol (A1)	Sandy Redox (S5)	2.5 cm Mucky Peat or Peat (**LRR G, H)**
Histic Epipedon (A2)	Stripped Matrix (S6)	5 cm Mucky Peat or Peat (**LRR F)**
Black Histic (A3)	Loamy Mucky Mineral (F1)	**Indicators for Problematic Hydric Soils[3]:**
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	1 cm Muck (A9) (**LRR I, J**)
Stratified Layers (A5) (**LRR F**)	Depleted Matrix (F3)	Coast Prairie Redox (A16) (**LRR F, G, H)**
1 cm Muck (A9) (**LRR F, G, H**)	Redox Dark Surface (F6)	Dark Surface (S7) (**LRR G**)
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	Reduced Vertic (F18)
Thick Dark Surface (A12)	Redox Depressions (F8)	Red Parent Material (TF2)
Sandy Mucky Mineral (S1)	High Plains Depression (F16)	High Plains Depression (F16) (**LRR H outside MLRA 72 & 73**)
Sandy Gleyed Matrix (S4)	(**MLRA 72 & 73 of LRR H)**	**X** Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

Soils in this area were recently disturbed within last few years during flood control management construction. Common hydric soil indicators not present; Soils considered hydric based on diversity of hydric vegetation population and presence of wetland hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)			Secondary Indicators (2 or more required)	
Surface Water (A1)	**X**	Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
High Water Table (A2)		Salt Crust (B11)		Sparsely Vegetated Concave Surface (B8)
Saturation (A3)		Aquatic Invertebrates (B13)	**X**	Drainage Patterns (B10)
Water Marks (B1)		Hydrogen Sulfide Odor (C1)	**X**	Oxidized Rhizospheres along Roots (C3)
Sediment Deposits (B2)		Dry-Season Water Table (C2)		Crayfish Burrows (C8)
Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)		Thin Muck Surface (C7)		Frost-Heaved Hummocks (C11) (**LRR F**)
Iron Deposits (B5)		Other (Explain in Remarks)		Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)			**X**	FAC-Neutral Test (D5)
				Local Survey Data (D8)

Field Observations:

Surface Water Present?	Yes		No	**X**	Depth (inches):
Water Table Present?	Yes		No	**X**	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes		No	**X**	Depth (inches):

Wetland Hydrology Present? Yes X No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: US 24 West City/County: COS – El Paso Sampling Date: 1/15/09
Applicant/Owner: Colorado Department of Transportation State CO Sampling Point UPL 1
Investigator(s): B. Knapp ; B. Lee Section, Township, Range: 13, 14S, 67W
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-2
Subregion (LRR): LRR G Lat: 38.50.3 Long: -104.50.49 Datum: NAD 83
Soil Map Unit Name: Ustic Torrifluvents, loamy NWI classification N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation, ____ Soil, X or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation, ____ Soil, ____ or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes		No	X
Hydric Soil Present?	Yes		No	X
Wetland Hydrology Present?	Yes		No	X

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:
Sample area is on a small terrace located adjacent to Fountain Creek floodplain.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Salix exigua	40	Y	OBL
2.			
3.			
4.			
5.			
Total Cover:	40		
Herb Stratum			
1. Bromus inermis	30	Y	NI
2. Pascopyrum smithii	15	Y	FACU
3. Helianthus annuus	15	Y	FACU
4.			
5.			
6.			
7.			
8.			
Total Cover:	60		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 25 (A/B)

Prevalence Index worksheet:

Total % cover of:		Multiply by:	
OBL species		X1 =	
FACW species		X2 =	
FAC species		X3 =	
FACU species		X4 =	
UPL species		X5 =	
Column Totals:	(A)		(B)

Prevelance Index = B/A = (A) ____ (B)

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
___ [1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:

SOIL

Sampling Point: UPL 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	5 YR 4/4						Sand	
2 – 3	10 YR 4/6						SiSa	Silty Sand
3 – 12+	7.5 YR 3/4						Silt	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depression (F16) (**MLRA 72 & 73 of LRR H)**
- ___ 2.5 cm Mucky Peat or Peat (**LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (**LRR F)**
- ___ **Indicators for Problematic Hydric Soils[3]:**
- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H)**
- ___ Dark Surface (S7) (**LRR G**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ High Plains Depression (F16) (**LRR H outside MLRA 72 & 73**)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizosphers along Roots (C3)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Frost-Heaved Hummocks (C11) (**LRR F**)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Local Survey Data (D8)

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): ___

Water Table Present? Yes ___ No **X** Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: US 24 West City/County: COS – El Paso Sampling Date: 1/4/2011
Applicant/Owner: Colorado Department of Transportation State CO Sampling Point DP2
Investigator(s): B. Lee Section, Township, Range: 13, 14S, 67W
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-2
Subregion (LRR): LRR G Lat: 38 ° 49' 51" Long: -104°50'01" Datum: NAD 83
Soil Map Unit Name: Ustic torrifluvents, loamy NWI classification N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation, ____ Soil, ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation, ____ Soil, ____ or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes	X	No	
Wetland Hydrology Present?	Yes	X	No	

Is the Sampled Area within a Wetland? **Yes X No**

Remarks:

Sample area is located on a terrace along Monument Creek, north of the Monument Creek and Fountain Creek confluence. It is located underneath a pedestrian bridge.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Salix exigua	40	Y	OBL
2.			
3.			
4.			
5.			
Total Cover:	40		
Herb Stratum			
1. Phalaris arundinacea	10	N	FACW+
2. Typha latifolia	60	Y	OBL
3. Schoenoplectus tabernaemontani	5	N	FACW
4. Rumex crispus	10	N	FACW
5. Calamagrostis canadensis	10	N	OBL
6. Agrostis gigantea	5	N	NI
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % cover of:		Multiply by:	
OBL species		X1 =	
FACW species		X2 =	
FAC species		X3 =	
FACU species		X4 =	
UPL species		X5 =	
Column Totals:	(A)		(B)

Prevelance Index = B/A = (A) ____ (B)

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
___ [1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks:

Thick stand of cattails surrounded by some other species.

SOIL

Sampling Point: DP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 7	10YR3/2	98	7.5YR4/6	2		RC,M	SaLm	Sandy Loam with some
7 – 12+	10YR3/3	100					Sand & Gravel	Mottles and oxidized root channels

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Histosol (A1)	Sandy Redox (S5)	2.5 cm Mucky Peat or Peat (**LRR G, H)**
Histic Epipedon (A2)	Stripped Matrix (S6)	5 cm Mucky Peat or Peat (**LRR F)**
Black Histic (A3)	Loamy Mucky Mineral (F1)	**Indicators for Problematic Hydric Soils[3]:**
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	1 cm Muck (A9) (**LRR I, J**)
Stratified Layers (A5) (**LRR F**)	Depleted Matrix (F3)	Coast Prairie Redox (A16) (**LRR F, G, H)**
1 cm Muck (A9) (**LRR F, G, H**)	Redox Dark Surface (F6)	Dark Surface (S7) (**LRR G**)
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	Reduced Vertic (F18)
Thick Dark Surface (A12)	**X** Redox Depressions (F8)	Red Parent Material (TF2)
Sandy Mucky Mineral (S1)	High Plains Depression (F16)	High Plains Depression (F16) (LRR H outside MLRA 72 & 73)
Sandy Gleyed Matrix (S4)	**(MLRA 72 & 73 of LRR H)**	**X** Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes X No

Remarks:

Redox depressions in upper soil profile

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

X Surface Water (A1)	**X** Water-Stained Leaves (B9)
High Water Table (A2)	Salt Crust (B11)
X Saturation (A3)	Aquatic Invertebrates (B13)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)
Sediment Deposits (B2)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Presence of Reduced Iron (C4)
Algal Mat or Crust (B4)	Thin Muck Surface (C7)
Iron Deposits (B5)	Other (Explain in Remarks)
Inundation Visible on Aerial Imagery (B7)	

Secondary Indicators (2 or more required)

Surface Soil Cracks (B6)
Sparsely Vegetated Concave Surface (B8)
X Drainage Patterns (B10)
X Oxidized Rhizospheres along Roots (C3)
Crayfish Burrows (C8)
Saturation Visible on Aerial Imagery (C9)
Frost-Heaved Hummocks (C11) (**LRR F**)
Geomorphic Position (D2)
FAC-Neutral Test (D5)
Local Survey Data (D8)

Field Observations:

Surface Water Present?	Yes	**X**	No		Depth (inches): **12**
Water Table Present?	Yes	**X**	No		Depth (inches): **12**
Saturation Present? (includes capillary fringe)	Yes	**X**	No		Depth (inches): **surface**

Wetland Hydrology Present? Yes X No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing surface water just to north of test point. Soils are saturated to the surface. Hydrology appears to originate from overflow from a rip-rap drop structure to the north of the wetland area. Seasonally high flows may enter the wetland area.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: US 24 West City/County: COS – El Paso Sampling Date: 1/4/2011
Applicant/Owner: Colorado Department of Transportation State CO Sampling Point UPL 2
Investigator(s): B. Lee Section, Township, Range: 13, 14S, 67W
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-2
Subregion (LRR): LRR G Lat: 38 ° 49' 51" Long: -104°50'01" Datum: NAD 83
Soil Map Unit Name: Ustic Torrifluvents, loamy NWI classification N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation, ____ Soil, ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation, ____ Soil, ____ or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes		No	X
Hydric Soil Present?	Yes		No	X
Wetland Hydrology Present?	Yes		No	X

Is the Sampled Area within a Wetland? **Yes** ____ **No** **X**

Remarks:
Sample area is on a terrace adjacent to Monument Creek.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1.			
2. Melilotus alba	100	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % cover of:		Multiply by:	
OBL species		X1 =	
FACW species		X2 =	
FAC species		X3 =	
FACU species		X4 =	
UPL species		X5 =	
Column Totals:	(A)		(B)

Prevelance Index = B/A = (A) ____ (B)

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%
____ Prevalence Index is ≤3.0[1]
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)
____ [1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** **X**

Remarks:
Upland pit location dominated by sweet clover

SOIL

Sampling Point: UPL 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 5	10YR3/3	100						Sandy loam
5 - 10	5YR5/6	100						Gravelly loam
10-12	10YR4/6	100						Gravelly loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depression (F16) (**MLRA 72 & 73 of LRR H)**
- ___ 2.5 cm Mucky Peat or Peat (**LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (**LRR F)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H)**
- ___ Dark Surface (S7) (**LRR G**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ High Plains Depression (F16) (**LRR H outside MLRA 72 & 73**)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:

Upland soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizosphers along Roots (C3)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Frost-Heaved Hummocks (C11) (**LRR F**)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Local Survey Data (D8)

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): ___

Water Table Present? Yes ___ No **X** Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Upland hydrology within floodplain of creek

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: US 24 West City/County: COS – El Paso Sampling Date: 1/4/2011
Applicant/Owner: Colorado Department of Transportation State CO Sampling Point DP3
Investigator(s): B. Lee Section, Township, Range: 13, 14S, 67W
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-2
Subregion (LRR): LRR G Lat: 38 ° 49' 24" Long: -104°50'08" Datum: NAD 83
Soil Map Unit Name: Ustic torrifluvents, loamy NWI classification N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation, ____ Soil, ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation, ____ Soil, X or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes X No ____**

Remarks:

Sample area is located on a large sandbar willow wetland terrace along the banks of Fountain Creek (along the I-25 corridor). Hydric soils do not appear to have developed possibly due to high sand content, but the area is considered a naturally problematic wetland due to the presence of strong hydrology and vegetation indicators.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Salix exigua	70	Y	OBL
2.			
3.			
4.			
5.			
Total Cover:	70		
Herb Stratum			
1. Phalaris arundinacea	5	N	FACW+
2. Typha latifolia	15	N	OBL
3. Carex emoryii	30	Y	OBL
4. Rumex crispus	10	N	FACW
5.			
6.			
7.			
8.			
Total Cover:	60		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % cover of:		Multiply by:	
OBL species		X1 =	
FACW species		X2 =	
FAC species		X3 =	
FACU species		X4 =	
UPL species		X5 =	
Column Totals:	(A)		(B)

Prevelance Index = B/A = (A) ____ (B)

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
____ Prevalence Index is ≤3.0[1]
____ Morphological Adaptations[1] (Provide supporting data in Remarks o□ on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X No ____**

Remarks:

Area is dominated by sandbar willow.

SOIL

Sampling Point: DP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR3/3	100						Loamy sand
4 – 6	7.5YR4/4	100						Loamy sand
6 - 12	10YR3/3	100						Loamy sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Histosol (A1)	Sandy Redox (S5)	2.5 cm Mucky Peat or Peat (**LRR G, H)**
Histic Epipedon (A2)	Stripped Matrix (S6)	5 cm Mucky Peat or Peat (**LRR F)**
Black Histic (A3)	Loamy Mucky Mineral (F1)	**Indicators for Problematic Hydric Soils[3]:**
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	1 cm Muck (A9) (**LRR I, J**)
Stratified Layers (A5) (**LRR F**)	Depleted Matrix (F3)	Coast Prairie Redox (A16) (**LRR F, G, H)**
1 cm Muck (A9) (**LRR F, G, H**)	Redox Dark Surface (F6)	Dark Surface (S7) (**LRR G**)
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	Reduced Vertic (F18)
Thick Dark Surface (A12)	Redox Depressions (F8)	Red Parent Material (TF2)
Sandy Mucky Mineral (S1)	High Plains Depression (F16)	High Plains Depression (F16) (**LRR H outside MLRA 72 & 73**)
Sandy Gleyed Matrix (S4)	**(MLRA 72 & 73 of LRR H)**	**X** Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ____ **No X**

Remarks:

Hydric soils have not developed in this area… may be due to high sand content in soil profile. Area treated as a wetland with naturally problematic soils due to the strong hydrology and vegetation indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)		Secondary Indicators (2 or more required)
		Surface Soil Cracks (B6)
X Surface Water (A1)	**X** Water-Stained Leaves (B9)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	Salt Crust (B11)	**X** Drainage Patterns (B10)
X Saturation (A3)	Aquatic Invertebrates (B13)	**X** Oxidized Rhizospheres along Roots (C3)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
Sediment Deposits (B2)	Dry-Season Water Table (C2)	Saturation Visible on Aerial Imagery (C9)
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Frost-Heaved Hummocks (C11) (**LRR F**)
Algal Mat or Crust (B4)	Thin Muck Surface (C7)	Geomorphic Position (D2)
Iron Deposits (B5)	Other (Explain in Remarks)	FAC-Neutral Test (D5)
Inundation Visible on Aerial Imagery (B7)		Local Survey Data (D8)

Field Observations:

Surface Water Present?	Yes	**X**	No		Depth (inches):	**12**
Water Table Present?	Yes	**X**	No		Depth (inches):	**12**
Saturation Present? (includes capillary fringe)	Yes	**X**	No		Depth (inches):	**surface**

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Similar to wetland 2. Standing surface water just to north of test point. Soils are saturated to the surface. Hydrology appears to originate from overflow from a rip-rap drop structure to the north of the wetland area. Seasonally high flows may enter the wetland area.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: US 24 West City/County: COS – El Paso Sampling Date: 1/4/2011
Applicant/Owner: Colorado Department of Transportation State CO Sampling Point UPL 3
Investigator(s): B. Lee Section, Township, Range: 13, 14S, 67W
Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-2
Subregion (LRR): LRR G Lat: 38 ° 49' 51" Long: -104°50'01" Datum: NAD 83
Soil Map Unit Name: Ustic Torrifluvents, loamy NWI classification N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation, ____ Soil, ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation, X Soil, ____ or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No	
Hydric Soil Present?	Yes		No	X
Wetland Hydrology Present?	Yes		No	X

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:

Sample area is on a large bench covered with sandbar willow. This part of the bench is does not have hydric soil indicators or wetland hydrology. The willows are somewhat discounted because they are able to root very deeply. Upland species present in the understory.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Salix exigua	90	Y	OBL
2.			
3.			
4.			
5.			
Total Cover:	90		
Herb Stratum			
1. Bromus inermis	50	Y	NL
2. Melilotus alba	20	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	70		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 30 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % cover of:		Multiply by:	
OBL species		X1 =	
FACW species		X2 =	
FAC species		X3 =	
FACU species		X4 =	
UPL species		X5 =	
Column Totals:	(A)		(B)

Prevelance Index = B/A = (A) ____ (B)

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
____ Prevalence Index is ≤3.0[1]
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)
____ [1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

Upland pit location dominated by sandbar willow

SOIL

Sampling Point: UPL 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 5	10YR3/3	100						Sandy loam
5 - 12	10YR3/4	100						Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depression (F16) (**MLRA 72 & 73 of LRR H)**
- ___ 2.5 cm Mucky Peat or Peat (**LRR G, H)**
- ___ 5 cm Mucky Peat or Peat (**LRR F)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H)**
- ___ Dark Surface (S7) (**LRR G**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ High Plains Depression (F16) (**LRR H outside MLRA 72 & 73**)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ___ No X

Remarks:

Upland soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres along Roots (C3)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Frost-Heaved Hummocks (C11) (**LRR F**)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Local Survey Data (D8)

Field Observations:

Surface Water Present? Yes ___ No **X** Depth (inches): ___

Water Table Present? Yes ___ No **X** Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No **X** Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Upland hydrology within floodplain of creek

ADMINISTRATIVE CHARACTERIZATION

General Information		Date of Evaluation:	1/4/2011
Site Name or ID:	Wetland 1	Project Name:	US 24 West
404 or Other Permit Application #:	CDOT Project No. NH 0242-040	Applicant Name:	CDOT
Evaluator Name(s):	Becky Pierce, Brian Lee	Evaluator's professional position and organization:	Pierce: Wetland Program Manager, CDOT; Lee: Staff Scientist, CH2M Hill

Location Information:			
Site Location (Lat./Long. or UTM):	38 deg, 50' 02", 104 deg, 50' 49"	Geographic Datum Used (NAD 83	NAD 83
USGS Quadrangle Map:	Colorado Springs	Map Scale: (Circle one)	**1:24,000** 1:100,000 Other 1:
Sub basin Name (8 digit HUC):	11020003: Fountain Creek	Wetland Ownership:	City of Colorado Springs

Project Information:

This evaluation is being performed at: *(Check applicable box)*
- [X] *Project Wetland*
- [ ] *Mitigation Site*

Purpose of Evaluation (check all applicable):
- [X] *Potentially Impacted Wetlands*
- [ ] *Mitigation; Pre-construction*
- [ ] *Mitigation; Post-construction*
- [ ] *Monitoring*
- [ ] *Other (Describe)*

Intent of Project: *(Check all applicable)* ☐ Restortation ☐ Enhancement ☐ Creation

Total Size of Wetland Involved: (Record Area, Check and Describe Measurement Method Used)	ac.	[X]	Measured: 0.02				
		[ ]	Estimated				
Assessment Area (AA) Size (Record Area, check appropriate box. Additional spaces are used to record acreage when more than one AA is included in a single assessment)	ac.	[X]	Measured	ac. 0.02	ac.	ac.	ac.
		[ ]	Estimated	ac.	ac.	ac.	ac.
Characteristics or Method used for AA boundary determination:	Delineated with GPS unit						

Notes:	Wetland lies at edge of Fountain Creek just below a rip-rap flow attenuation structure. An outfall exists just upstream of the structure, which likely contributes additional flows to the wetland during high flow storm events.

ECOLOGICAL DESCRIPTION 1

Special Concerns

Check all that apply

- ☐ Organic soils including Histosols or Histic Epipedons are present in the AA (i.e., AA includes core fen habitat).
- ☐ Project will directly impact organic soil portions of the AA including areas possessing either Histosol soils or histic epipedons.
- ☐ Organic soils are known to occur anywhere within the contiguous wetland of which the AA is part.
- ☐ The wetland is a habitat oasis in an otherwise dry or urbanized landscape?
- ☐ Federally threatened or endangered species are **KNOWN** to occur in the AA? List Below.

_____

_____

- ☐ Federally threatened or endangered species are **SUSPECTED** to occur in the AA?

_____

_____

_____

_____

- ☐ Species of concern according to the Colorado Natural Heritage (CNHP) are known to occur in the AA?
- ☐ The site is located within a potential conservation area or element occurrence buffer area as determined by CNHP?
- ☐ Other special concerns (please describe)

_____

HYDROGEOMORPHIC SETTING

- ☒ AA wetland maintains its fundamental natural hydrogeomorphic characteristics
- ☐ AA wetland has been subject to change in HGM classes as a result of anthropogenic modification
  If the above is checked, please describe the original wetland type if discernable using the table below.
- ☐ AA wetland was created from an upland setting.

Current Conditions

Describe the hydrogeomorphic setting of the wetland by circling all conditions that apply.

HGM Setting

Water source	**Surface flow**		**Groundwater**	Precipitation		Unknown
Hydrodynamics	Unidirectional		Vertical	**Bi-directional**		
Wetland Gradient	**0 - 2%**		2-4%	4-10%	>10%	
# Surface Inlets	**Over-bank**	0	1	2	3	>3
# Surface Outlets		**0**	1	2	3	>3
Geomorphic Setting (Narrative Description. Include approx. stream order for riverine)	**Riverine wetland adjacent to Fountain Creek. Flanked by Rip-rap on West er**					
HGM class	**Riverine**		Slope	Depressional		Lacustrine

Historical Conditions

Previous wetland typology

Water source	Surface flow	Groundwater	Precipitation	Unknown
Hydrodynamics	Unidirectional	Vertical		
Geomorphic Setting (Narrative Description)				
Previous HGM Class	Riverine	Slope	Depressional	Lacustrine

Notes (include information on the AA's HGM subclass and regional subclass):

ECOLOGICAL DESCRIPTION 2

Vegetation Habitat Description

US FWS habitat classification according as reported in Cowardin et al. (1979).

System	Subsystem	Class	Subclass	Water Regime	Other Modifiers	% AA
Palustrine	Palustrine	SS	Broad-leaved deciduous	-	-	30
Riverine	Palustrine	EM	Persistent	-	-	70

Lacustrine	Littoral; Limnoral	Rock Bot. (RB) Uncon Bottom(UB) Aquatic Bed(AB) Rocky Shore(RS) Uncon Shore(US) Emergent(EM) Shrub-scrub(SS) Forested (FO)	Floating vascular; Rooted vascular; Algal; Persistent; Non-Persistent; Broad-leaved deciduous; Needle-leaved evergreen; Cobble - gravel; Sand; Mud; Organic	**Examples** Temporarily flooded(A); Saturated(B); Seasonally flooded(C); Seas.-flood./sat.(E); Semi-Perm. flooded(F); Intermittently exposed(G); Artificially flooded(K); Sat./semiperm./Seas. (Y); Int. exposed/permenant(Z)	Hypersaline(7) ; Eusaline(8); Mixosaline(9); Fresh(0); Acid(a); Circumneutral(c); Alkaline/calcareous(i); Organic(g); Mineral(n); Beaver(b); Partially Drained/ditched(d); Farmed(f); Diked/impounded(h); Artificial Substrate(r); Spoil(s); Excavated(x)	
Palustrine	Palustrine					
Riverine	Lower perennial; Upper perennial; Intermittent					

Site Map

Scale: 1 inch = 200 feet

Draw a sketch map of the site including relevant portions of the wetland, AA boundary, structures, habitat classes, and other significant features.

Variable 1: Habitat Connectivity - Neighboring Wetland Habitat Loss

This variable is a measure of how isolated from other naturally-occurring wetland or riparian habitat the AA has become as a result of the loss of that habitat. To score this variable, estimate the percent of naturally- occurring wetland/riparian habitat that has been lost (by filling, draining, development, or whatever means) within a 500-meter-wide belt surrounding the AA. This surrounding area is called the Habitat Connectivity Envelope (HCE). Historical photographs and NWI and hydric soils maps can be helpful in scoring this variable. In most cases the evaluator must use best professional judgment in estimating the amount of natural wetland loss. Evaluation of landforms and habitat patterns in the context of perceivable land use change should be used to steer estimates of the amount of wetland loss within the HCE. This variable is not meant to penalize AAs that are naturally isolated, or unique to the landscape. Rather, it should measure the degree to which natural habitat connectivity has been lost.

Rules for Scoring:

1. On the aerial photo, create a 500 meter perimeter around the AA.

2. The area within this perimeter is the **Habitat Connectivity Envelope (HCE)**.

3. Within the HCE, outline the current extent of naturally occurring wetland and riparian habitat. Do not include habitats such as excavated ponds or reservoir induced fringe wetlands.

4. Outline the historical extent of wetland and riparian habitats (i.e., existing natural wetlands plus those that have been destroyed).

- Use your knowledge of the history of the area and evident land use change to identify where habitat losses have occurred. Additional research could be utilized to increase the accuracy of this estimate including consideration of floodplain maps, historical aerial photographs, etc.

5. Calculate the area of existing and historical wetlands. Divide the area values to determine the percentage of naturally occurring wetland habitat that remains in the HCE, and determine the variable score using the guidelines below.

Variable Score	Condition Category	Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Wetland losses are absent or negligible or there is no evidence to suggest the native landscape within the HCE historically contained other wetland habitats
<0.9 - 0.8	*Highly Functioning*	More than 80% of historical wetland habitat area within the HCE is still present (less than 20% of habitat area lost).
<0.8 - 0.7	*Functioning*	80 to 60% of historical wetland habitat area within the HCE is still present (20% to 40% of habitat area lost).
<0.7 - 0.6	*Functioning Impaired*	Less than 60 to 25% of historical wetland habitat area within the HCE is still present (more than 40 to 75% of habitat area lost).
<0.6	*Non-functioning*	Less than 25% of the historical wetland habitat area within the HCE still in existence (more than 70% of habitat lost).

Variable 1 Score 0.75

Notes: Approximately 30% of Riparian canopy cover was lost when regrading work was done for the Springs Community Improvement Program (SCIP) Flood Control Project in 2003.

Variable 2: Habitat Connectivity - Migration/Dispersal Barriers

This variable is intended to rate the degree to which the AA has become isolated from existing neighboring wetland and riparian habitat by artificial barriers that inhibit migration or dispersal of organisms. On the aerial photograph, identify the man-made barriers within the HCE that intercede between the AA and surrounding wetlands and riparian areas, and identify them by type on the stressor list. Score this variable based on the barriers' impermeability to migration and dispersal and the amount of surrounding wetland/riparian habitat they affect.

Rules for Scoring:

1. On the aerial photo, outline **all** existing wetland and riparian habitat areas within the HCE. This includes naturally occurring habitats as well as those purposefully created or induced by land use change.

2. Identify artificial barriers to dispersal and migration of organisms within the HCE that intercede between the AA and surrounding habitats. Mark the stressors present with a check in the first column and describe the general nature, severity and extent of each. List additional stressors in empty rows at the bottom of the table and explain.

3. Considering the composite effect of all of identified barriers to migration and dispersal (i.e., stressors), assign an overall variable score using the scoring guidelines.

Stressors = artificial barriers

✔	Stressors	Comments/description
X	Major Highway	US 24 is a busy four lane highway
	Secondary Highway	
	Tertiary Roadway	
	Railroad	
	Bike Path	
X	Urban Development	Residential and Commercial properties surround the area
	Agricultural Development	
	Artificial Water Body	
X	Fence	Chain link fence along highway ROW restricts wildlife movement
	Ditch or Aqueduct	
	Aquatic Organism Barriers	

Variable Score	Condition Class	Scoring Guidelines
1.0 - 0.9	*Reference Standard*	No appreciable barriers exist between the AA and other wetland and riparian habitats in the HCE; or there are no other wetland and riparian areas in the HCE.
<0.9 - 0.8	*Highly Functioning*	Barriers impeding migration/dispersal between the AA and up to 33% of surrounding wetland/riparian habitat highly permeable and easily passed by most organisms. Examples could include gravel roads, minor levees, ditches or barbed-wire fences. More significant barriers (see "functioning category below) could affect migration to up to 10% of surrounding wetland/riparian habitat.
<0.8 - 0.7	*Functioning*	Barriers to migration and dispersal retard the ability of many organisms/propagules to pass between the AA and up to 66% of wetland/riparian habitat. Passage of organisms and propagules through such barriers is still possible, but it may be constrained to certain times of day, be slow, dangerous or require additional travel. Busy two-lane roads, culverted areas, small to medium artificial water bodies or small earthen dams would commonly rate a score in this range. More significant barriers (see "functioning impaired" category below) could affect migration to up to 10% of surrounding wetland/riparian habitat.
<0.7 - 0.6	*Functioning Impaired*	Barriers to migration and dispersal preclude the passage of some types of organisms/propagules between the AA and up to 66% of surrounding wetland/riparian habitat. Travel of those animals which can potential negotiate the barrier are strongly restricted and may include a high chance of mortality. Up to 33% of surrounding wetland/riparian habitat could be functionally isolated from the AA.
<0.6	*Non-functioning*	AA is essentially isolated from surrounding wetland/riparian habitat by impermeable migration and dispersal barriers. An interstate highway or concrete-lined water conveyance canal are examples of barriers which would generally create functional isolation between the AA and wetland/riparian habitat in the HCE.

Variable 2 Score 0.7

Variable 3: Buffer Capacity

The buffer area is defined as a 250-meter-wide belt surrounding the perimeter of the AA. This variable is a measure of the capacity of that area to function as an effective buffer for the wetland against the deleterious effects of surrounding land use change. To score the variable, assume that the AA is 100% buffered except where land use changes inside the buffer area have diminished this quality. Identify these land use types as specific stressors in the list. For each stressor, rate severity and extent within the buffer area; then use this list to make an overall rating for the buffer's departure from reference conditions. When rating buffer capacity, consider both the intensity of the impact and the proximity of the stressor to the AA.

Rules for Scoring:

1. On the aerial photograph, delimit the buffer area (BA) as the zone within 250 meters of the outer boundary of the AA.

2. Use the stressor list to record land use changes that affect buffering capacity within the buffer area. Mark the stressors present with a check in the first column and describe the general nature, severity and extent of each. List additional stressors in empty rows at the bottom of the table and explain.

3. Considering all of the identified stressors, their composite severity, extent and proximity to the AA assign an overall variable score using the scoring guidelines.

Stressors = Land Use Changes	✔	Stressors	Comments/description
	X	Industrial/commercial	Auto parts facilties and repair shops across US 24
	X	Urban	Moderate amount of impervious surface. Urban corridor
	X	Residential	Residential development on both sides of US 24
		Rural	
		Dryland Farming	
		Intensive Agriculture	
		Orchards or Nurseries	
		Livestock Grazing	
	X	Transportation Corridor	US 24
		Urban Parklands	
		Dams/impoundments	
		Artificial Water body	
		Physical Resource Extraction	
		Biological Resource Extraction	

Variable Score	Condition Class	Scoring Guidelines
1.0 - 0.9	*Reference Standard*	No appreciable land use change has been imposed within the TBA and it provides the full buffering capacity.
<0.9 - 0.8	*Highly Functioning*	Some land use change has occurred in the BA, but such changes little impair the area's ability to provide a buffering function, either because land use is not intensive, for example haying, light grazing, or low intensity silviculture, or more substantial changes occur in approximately less than 10% of the BA.
<0.8 - 0.7	*Functioning*	BA has been subjected to a marked shift in land use, however, the land retains much of its original buffering capacity. Moderate-intensity land uses such as dry-land farming, urban "green" corridors, or moderate cattle grazing would commonly be placed within this scoring range.
<0.7 - 0.6	*Functioning Impaired*	Land use changes within the BA has been substantial including the a moderate to high coverage (up to 50%) of impermeable surfaces, bare soil, or other artificial surface; considerable in-flow urban runoff or fertilizer-rich waters common. While, the buffering capacity of the land has been greatly diminished it is not extinguished. Intensively logged areas, low-density urban developments, some urban parklands and some cropping situations would commonly rate a score within this range.
<0.6	*Non-functioning*	The area within the BA provides essentially no buffering capacity. Many Commercial developments or highly urban landscapes would rate a score of less than 0.6.

Variable 3 score 0.66

Variable 4: Water Source

This variable is concerned with up-gradient hydrologic connectivity. It is a measure of the impacts to the AA's water source, including the ability of source water to perform work such as sediment transport, erosion, soil pore flushing, etc. To score this variable, identify stressors that alter the source of water to the AA, and record their presence on the stressor list. Stressors can impact water source by depletion, augmentation, or alteration of inflow timing or hydrodynamics. For riverine systems, this variable is primarily concerned with the connection of the channel to the floodplain. This variable is designed to assess water quantity, power and timing, not water quality. Water quality will be evaluated in Variable 8.

Scoring rules:

1. Use the stressor list and knowledge of the watershed to catalog type-specific impairments of the AA's water source. Mark the stressors present with a check in the first column and describe the general nature, severity and extent of each. List additional stressors in empty rows at the bottom of the table and explain.

2. Considering the composite effect of stressors on the water source, rate the condition of this variable with the aid of the scoring guidelines.

✔	Stressors	Comments/description
	Ditches or Drains (tile, etc.)	
	Dams	
	Diversions	
	Groundwater pumping	
	Draw-downs	
X	Culverts or Constrictions	Residential runoff/ channelization upstream
	Point Source (urban, ind., ag.)	
	Non-point Source	
	Increased Drainage Area	
X	Storm Drain/Urban Runoff	
	Impermeable Surface Runoff	
	Irrigation Return Flows	
	Mining/Natural Gas Extraction	
	Transbasin Diversion	
	Actively Managed Hydrology	

Variable Score	Condition Class	Depletion	Augmentation
1.0 - 0.9	*Reference Standard*	Unnatural drawdown events minor, rare or non-existent, very slight uniform depletion, or trivial alteration of hydrodynamics.	Unnatural high-water events minor, rare or non-existent, slight uniform increase in amount of inflow, or trivial alteration of hydrodynamics.
<0.9 - 0.8	*Highly Functioning*	Unnatural drawdown events occasional, short duration and/or mild; or uniform depletion up to 20%; or mild to moderate reduction of peak flows or capacity of water to perform work.	Occasional unnatural high-water events, short in duration and/or mild in intensity; or uniform augmentation up to 20%; or mild to moderate increase of peak flows or capacity of water to perform work.
<0.8 - 0.7	*Functioning*	Unnatural drawdown events common and of mild to moderate intensity and/or duration; or uniform depletion up to 50%; or moderate to substantial reduction of peak flows or capacity of water to perform work.	Common occurrence of unnatural high-water events, of a mild to moderate intensity and/or duration; or uniform augmentation up to 50%; or moderate to substantial increase of peak flows or capacity of water to perform work.
<0.7 - 0.6	*Functioning Impaired*	Unnatural drawdown events occur frequently with a moderate to high intensity and/or duration; or uniform depletion up to 75%; or substantial reduction of peak flows or capacity of water to perform work. **Wetlands with actively managed or wholly artificial hydrology will usually score in this range or lower.**	Common occurrence of unnatural high-water events, some of which may be severe in nature or exist for a substantial portion of the growing season; or uniform augmentation more than 50% or capacity of water to perform work. **Wetlands with actively managed or wholly artificial hydrology will usually score in this range or lower.**
<0.6	*Non-functioning*	Water source diminished enough to threaten or extinguish wetland hydrology in the AA.	Frequency, duration or magnitude of unnaturally high-water great enough to change the fundamental characteristics of the wetland.

Variable 4 Score 0.8

Variable 5: Water Distribution

*This variable is concerned with hydrologic connectivity **within** the AA. It is a measure of alteration to the spatial distribution of surface and groundwater within the AA. These alterations are manifested as local changes to the hydrograph and generally **result** from geomorphic modifications. To score this variable, identify stressors that alter flow patterns and impact the hydrograph within the AA, including localized increases or decreases to the depth or duration of the water table or surface water. In most cases, the Water Source variable score will determine the maximum achievable score for Water Distribution, since the condition of the water source exerts a primary control on the wetland's capacity to distribute water in a characteristic fashion and exhibit a natural hydrograph.*

Scoring rules:

1. Identify impacts to the natural distribution of water throughout the AA and catalog them in the stressor table.
2. Considering all of the stressors identified, assign an overall variable score using the scoring guidelines. In most cases, the Water Source variable score will set the upper limit for the Water Distribution score.

✔	Stressors	Comments/description
	Alteration of Water Source	No major stressors
	Ditches	
	Ponding/Impoundment	
	Culverts	
	Road Grades	
	Channel Incision/Entrenchment	
	Hardened/Engineered Channel	
	Enlarged Channel	
	Artificial Banks/Shoreline	
	Weirs	
X	Dikes/Levees/Berms	Rip rap on upstream end
	Diversions	
X	Sediment/Fill Accumulation	Regraded area. Minor fill.

Variable Score	Condition Class	Non-riverine	Riverine
1.0 - 0.9	*Reference Standard*	Little or no alteration has been made to the way in which water is distributed throughout the wetland. AA maintains a natural hydrologic regime.	Natural active floodplain areas flood on a normal recurrence interval. No evidence of alteration of flooding and subirrigation duration and intensity.
<0.9 - 0.8	*Highly Functioning*	Less than 10% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in less than a 2 in. (5 cm) change in mean growing season water table elevation.	Channel-adjacent areas have occasional unnatural periods of drying or flooding; or uniform shift in the hydrograph less than typical root depth.
<0.8 - 0.7	*Functioning*	Between 10 and 33% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in a 4 in. (5 cm) or less change in mean growing season water table elevation.	In channel-adjacent area, periods of drying or flooding are common; or uniform shift in the hydrograph near root depth.
<0.7 - 0.6	*Functioning Impaired*	33 to 66% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in a 6 in. (15 cm) or less change in mean growing season water table elevation. Water table behavior must still meet jurisdictional criteria to merit this rating.	Adjacent to the channel, unnatural periods of drying or flooding are the norm; or uniform shift in the hydrograph greater than root depth.
<0.6	*Non-functioning*	More than 66% of the AA is affected by hydrologic alteration which changes the fundamental functioning of the wetland system, generally exhibited as a conversion to upland or deep water habitat.	Historical active floodplain areas are almost never wetted from overbank flooding, and/or groundwater infiltration is effectively cut off.

Variable 5 Score 0.7

Variable 6: Water Outflow

This variable is concerned with down-gradient hydrologic connectivity and the flow of water (transporting materials and energy) out of the AA. It is a measure of impacts that affect the hydrologic outflow of water including the passage of water through its normal low- and high-flow surface outlets, and infiltration/groundwater recharge. In some cases, alteration of evapotranspiration rates may be significant enough of a factor to consider in scoring. Score this variable by identifying stressors that impact the means by which water is exported from the AA. In Variable 5, the stressors were evaluated in light of their impact on water distribution within the AA. To evaluate this variable focus on the AA's ability to export water, energy and associated materials to habitats down-gradient of the AA. In most cases, the Water Source variable score will determine the maximum achievable score for Water Outflow, since the condition of the water source exerts a primary control over the wetland's capacity to export water and associated materials.

Scoring rules:

1. Identify impacts to the natural outflow of water from the AA and catalog them in the stressor table.

2.Considering all of the stressors identified, assign an overall variable score using the scoring guidelines. Take in to account the cumulative effect of stressors on the wetland's ability to export water and water-borne materials. In most cases the Water Source variable will set the upper limit for the Water Outflow score.

✔	Stressors	Comments/description
	Alteration of Water Source	No major stressors
	Ditches	
	Dikes/Levees	
	Road Grades	
	Culverts	
	Diversions	
	Constrictions	
	Channel Incision/Entrenchment	
	Hardened/Engineered Channel	
	Artificial Stream Banks	
	Weirs	
	Confined Bridge Openings	

Variable Score	Condition Class	Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Stressors have little to no effect on the magnitude, timing or hydrodynamics of the AA water outflow regime.
<0.9 - 0.8	*Highly Functioning*	High- or low-water outflows are mildly to moderately affected, but at intermediate ("normal") levels flow continues essentially unaltered in quantity or character.
<0.8 - 0.7	*Functioning*	High- or low-water outflows are moderately affected, mild alteration of intermediate level outflow occurs; or hydrodynamics moderately affected.
<0.7 - 0.6	*Functioning Impaired*	Outflow at all stages is moderately to highly impaired resulting in persistent flooding of portions of the AA or unnatural drainage; or outflow hydrodynamics severely disrupted.
<0.6	*Non-functioning*	The natural outflow regime is profoundly impaired. Down-gradient hydrologic connection severed or nearly so. Alterations may cause widespread unnatural persistent flooding or dewatering of the wetland system.

Variable 6 Score 0.85

Variable 7: Geomorphology

This variable is a measure of the degree to which the geomorphic setting has been altered within the AA. Changes to the surface configuration and natural topography constitute stressors. Such stressors may be observed in the form of fill, excavation, diking, sedimentation due to absence of flushing floods, etc. In riverine systems geomorphic changes to stream channel should be considered if the channel is within the AA. Alterations may include bed surface changes (embeddedness or morphology changes), stream bank instability, and stream channel reconfiguration. Geomorphic changes are usually ultimately manifested as changes to wetland hydrology and water relations with vegetation. Geomorphic alteration can also directly affect soil properties, such as near-surface texture, and the wetland chemical environment, such as the redox state or nutrient composition in the rooting zone. In rating this variable, do not include the resultant effects of geomorphic change; rather focus on the physical impacts ***within the footprint*** *of the alteration. The effects of geomorphic change are addressed by other variables. All alterations to geomorphology should be evaluated including small-scale impacts such as pugging, hoof sheer, and sedimentation which constitute important, but not immediately apparent, impacts.*

Scoring Rules:

1. Identify impacts to geomorphological setting and topography within the AA and record them on the stressor checklist.
2. Considering all of the stressors identified, assign an overall variable score using the scoring guidelines.

✔		Stressors	Comments
	General	Dredging/Excavation/Mining	
		Fill, including dikes, road grades, etc	
		Grading	
		Compaction	
		Plowing/Disking	
		Excessive Sedimentation	
		Dumping	
		Hoof Shear/Pugging	
		Aggregate or Mineral Mining	
		Sand Accumulation	
	Channels Only	Channel Instability/Over Widening	
		Excessive Bank Erosion	
		Channelization	
		Reconfigured Stream Channels	
		Artificial Banks/Shoreline	
		Beaver Dam Removal	
		Substrate Embeddedness	
		Lack or Excess of Woody Debris	

Variable Score	Condition Class	Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Topography essentially unaltered from the natural state, or alterations appear to have a minimal effect on wetland functioning and condition. Patch or microtopographic complexity may be slightly altered, but native plant communities are still supported.
<0.9 - 0.8	*Highly Functioning*	Alterations to topography result in small but detectable changes to habitat conditions in some or all of the AA; or more severe impacts exist but affect less than 10% of the AA.
<0.8 - 0.7	*Functioning*	Changes to AA topography may be pervasive but generally mild to moderate in severity. May include patches of more significant habitat alteration; or more severe alterations affect up to 20 % of the AA.
<0.7 - 0.6	*Functioning Impaired*	At least one important surface type or landform has been eliminated or created; microtopography has been strongly impacted throughout most or all of the AA; or more severe alterations affect up to 50% of the AA. Evidence that widespread diminishment or alteration of native plant community exist due to physical habitat alterations. Most incidentally created wetland habitat such as that created by roadside ditches and the like would score in this range or lower.
<0.6	*Non-functioning*	Pervasive geomorphic alterations have caused a fundamental change in site character and functioning, commonly resulting in a conversion to upland or deepwater habitat.

Variable 7 Score 0.88

Variable 8: Water and Soil Chemical Environment

This variable concerns the chemical environment of the soil and water media within the AA, including pollutants and water quality. The origin of pollutants may be in the AA or delivered from up-gradient or surrounding areas. Score this variable by listing indicators of chemical stress in the AA. Consider point source and non-point sources of pollution, as well as mechanical or hydrologic changes that alter the chemical environment. Because water quality frequently cannot be inferred directly, the presence of many stressors is identified via indirect indicators.

Scoring rules:

1. Stressors are grouped into categories which have a similar signature or set of causes.
2. Use the indicator list to identify each stressor impacting the chemical environment of the AA.
3. For each stressor category, determine the sub-variable score using the scoring guideline table provided on the second page of the scoring sheet.
   -If the AA is part of a water body that is recognized as impaired or recommended for TMDL development for one of the factors, then score that sub-variable 0.65 or lower.
4. Transcribe sub-variable scores to the following variable scoring page and compute the sum.
5. Determine the variable score by following the scoring guidelines.

Stressor Category	Stressor Indicator	✔	Comments	Sub-variable Score
Nutrient Enrichment/ Eutrophication/ Oxygen (D.O.)	Livestock			0.76
	Agricultural Runoff			
	Septic/Sewage			
	Excessive Algae or Aquatic Veg.			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List	X	Fountain Creek is Impaired:	
			E. Coli (high), Selenium (low)	
Sedimentation/ Turbidity	Excessive Erosion			0.98
	Excessive Deposition			
	Fine Sediment Plumes			
	Agricultural Runoff			
	Excessive Turbidity			
	Nearby Construction Site			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List		turbidity not a concern	
Toxic contamination/ pH	Recent Chemical Spills			0.82
	Nearby Industrial Sites			
	Road Drainage/Runoff			
	Livestock			
	Agricultural Runoff			
	Storm Water Runoff	X	Roads (minor)	
	Fish/Wildlife Impacts			
	Vegetation Impacts			
	Cumulative Watershed NPS			
	Acid Mine Drainage			
	Point Source Discharge			
	CDPHE Impairment/TMDL List	X	Selenium (low)	
	Metal staining on rocks and veg.			
Temperature	Excessive Temperature Regime			0.92
	Lack of Shading	X	Minor upstream	
	Reservoir/Power Plant Discharge			
	Industrial Discharge			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List			
Soil chemistry/ Redox potential	Unnatural Saturation/Desaturation			0.98
	Mechanical Soil Disturbance			
	Dumping/introduced Soil			
	CDPHE Impairment/TMDL List			

Variable 8: Water and Soil Chemical Environment

Sub-variable Scoring Guidelines

Variable Score	Condition Class	Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Stress indicators not present or trivial.
<0.9 - 0.8	*Highly Functioning*	Stress indicators scarcely present and mild, or otherwise not occurring in more than 10% of the AA.
<0.8 - 0.7	*Functioning*	Stress indicators present at mild to moderate levels, or otherwise not occurring in more than 33% of the AA.
<0.7 - 0.6	*Functioning Impaired*	Stress indicators present at moderate to high levels, or otherwise not occurring in more than 66% of the AA
<0.6	*Non-functioning*	Stress indicators strongly evident throughout the AA at levels which apparently alter the fundamental chemical environment of the wetland system

Input each factor score from the stressor list and calculate the sum.

Nutrient enrichment/ Eutrophication/ Oxygen (D.O.)		Sedimentation/ Turbidity		Toxic contamination/ pH		Temperature		Soil chemistry/ Redox potential		Sum of Sub-variable Scores
0.76	+	0.98	+	0.82	+	0.92	+	0.98	=	4.46

Use the table to score the Chemical Environment Variable circling the applicable scoring rules.

Variable Score	Condition Class	Scoring Rules		
		Single Factor		**Composite Score**
1.0 - 0.9	*Reference Standard*	No single factor scores < 0.9	or	The factor scores sum > 4.5
<0.9 - 0.8	*Highly Functioning*	Any single factor scores ≥ 0.8 but < 0.9	or	The factor scores sum >4.0 but ≤4.5
<0.8 - 0.7	*Functioning*	Any single factor scores ≥ 7.0 but < 0.8	or	The factor scores sum >3.5 but ≤ 4.0
<0.7 - 0.6	*Functioning Impaired*	Any single factor scores ≥ 0.6 but <0.7	or	The factor scores sum >3.0 but ≤3.5
< 0.6	*Non-functioning*	Any single factor scores < 0.6	or	The factor scores sum < 3.0

Variable 8 Score 0.85

Variable 9: Vegetation Structure and Complexity

This variable is a measure of the condition of the wetland's vegetation relative to its native state. It is particularly relevant to the wetland's ability to perform higher-order functions such as support of wildlife populations, although it also affects primary functions such as flood-flow attenuation. Score this variable by listing stressors that have affected the diversity, composition and cover of each vegetation cover class that would normally be present for the wetland type being assessed. For this variable, stressor severity is a measure of how much each vegetation stratum differs functionally from its natural condition.

Rules for Scoring:

1. Determine the number and types of vegetation layers present within the AA. Make a judgment as to whether additional layers were historically present using direct evidence such as stumps, root wads or historical photographs. Indirect evidence such as local knowledge and expert opinion can also be used in this determination. Check each present or suspected vegetation layer in the third row of the table.

2. Do not score vegetation layers that would not normally be present in the wetland type being assessed.

3. Estimate the percent coverage of each vegetation layer. Aerial photographs can be helpful for this but are not required. In cases where a stratum has been thinned or removed, enter the expected coverage of that layer **not** the current percent coverage.

4. Enter the percent cover values as decimals in the row of the stressor table labeled "Percent Cover of Layer". Note, percentages will often sum to more than 100% (1.0).

5. Determine the severity of stressors acting on each individual canopy layers, indicating their presence with checks in the appropriate boxes of the stressor table.

6. Determine the sub-variable score for each valid vegetation layer using the scoring guidelines on the second page of the scoring sheet. Enter each sub-variable score in the appropriate cell of the row labeled "Veg. Layer Sub-variable Score".

7. Add the "Veg. Layer Sub-variable Scores" and enter the sum in the labeled cell to the right of the individual scores. Follow this same process for the "Percent Cover of Layer".

8. Divide the sum of "Veg. Layer Sub-variable Scores" by the total coverage of all layers scored. This product is the Variable 9 score. Enter this number in the labeled box at the bottom of this page.

	Vegetation Layers				
Layers Scored *(check boxes to right to indicate scored layers)*	X	X	X		
Stressor	**Tree**	**Shrub**	**Herb**	**Aquatic**	**Comments**
Noxious Weeds		X	X		Teasel, thistle, other weeds present
Exotic/Invasive spp.					
Tree Harvest					
Brush Cutting/Shrub Removal					
Livestock Grazing					
Excessive Herbivory					
Mowing/Haying					
Herbicide					
Loss of Zonation/Homogenization	X	X			
Dewatering					
Over Saturation			X		Historical composition has changed. Trees
					and shrubs have been reduced

Percent Cover of Layer	40.00	+ 80.00	+ 90.00	+	=	210	
	x	x	x	x			
Veg. Layer Sub-variable Score	0.6	0.68	0.72		÷		**See sub-variable scoring guidelines on following page**
	=	=	=	=			
Weighted Sub-variable Score	24.00	+ 54.40	+ 64.80	+	=	143.2	

Variable 9 Score 0.68

Sub-variable 9 Scoring Guidelines:

Based on the list of stressors identified above, rate the severity of their cumulative effect on vegetation structure and complexity for each vegetation layer.

Variable Score	Condition Class	Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Stressors not present or with an intensity low enough as to not detectably affect the structure, diversity or composition of the vegetation layer.
<0.9 - 0.8	*Highly Functioning*	Stressors present at intensity levels sufficient to cause detectable, but minor, changes in layer composition. Stress related change should generally be less than 10% for any given attribute (e.g., 10% cover of invasive, 10% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as high as 33% for a given attribute if stressors are confined to patches comprising less than 10% of the wetland.
<0.8 - 0.7	*Functioning*	Stressors present with enough intensity to cause significant changes in the character of vegetation, including alteration of layer coverage, structural complexity and species composition. The vegetation layer retains its essential character though. AA's with a high proportion of non-native grasses will commonly fall in this class. Stress related change should generally be less than 33% for any given attribute (e.g., 33% cover of invasive, 33% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as much as 66% for a given attribute if stressors are confined to patches comprising less than 25% of the wetland.
<0.7 - 0.6	*Functioning Impaired*	Stressor intensity severe enough to cause profound changes to the fundamental character of the vegetation layer. Stress-related change should generally be less than 66% for any given attribute (e.g., 66% cover of invasive, 66% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as much as 80% of a given attribute if stressors are confined to patches comprising less than 50% of the wetland.
<0.6	*Non-functioning*	Vegetation layer has been completely removed or altered to the extent that is no longer comparable to the natural structure, diversity and composition.

FACWet Score Card

Scoring Procedure:

1. Transcribe variable scores from each variable data sheet to the corresponding cell in the variable score table.
2. In each Functional Capacity Index (FCI) equation, enter the corresponding variable scores in the equation cells. Do not enter values in the crossed cells lacking labels.
3. Add the variable scores to calculate the total functional points achieved for each function.
4. Divide the total functional points achieved by the functional points possible. The typical number of total points possible is provided, however, if a variable is added or subtracted to FCI equation the total possible points must be adjusted
5. Calculate the Composite FCI, by adding the FCI scores and dividing by the total number of functions scored (usually 7).
6. If scoring is done directly in the Excel spreadsheet, all values will be transferred and calculated automatically.

VARIABLE SCORE TABLE

Buffer & Landscape Context	**Variable 1:**	**Habitat Connectivity - Neighboring Wetland Habitat Loss**	0.75
	Variable 2:	**Habitat Connectivity - Migration/Dispersal Barriers**	0.70
	Variable 3:	**Buffer Capacity**	0.66
Hydrology	**Variable 4:**	**Water Source**	0.80
	Variable 5:	**Water Distribution**	0.70
	Variable 6:	**Water Outflow**	0.85
Abiotic and Biotic Habitat	**Variable 7:**	**Geomorphology**	0.88
	Variable 8:	**Chemical Environment**	0.85
	Variable 9:	**Vegetation Structure and Complexity**	0.68

Functional Capacity Indices

Function 1 -- Support of Characteristic Wildlife Habitat

$V1_{wetloss}$	+	$V2_{barriers}$	+	$V3_{buffer}$	+	$(2 \times V9_{veg})$				Total Functional Points		Functional Capacity Index
0.75	+	0.70	+	0.66	+	1.36	+		=	3.47	÷ 5	= 0.69

Function 2 -- Support of Characteristic Fish/aquatic Habitat

$(3 \times V4_{source})$	+	$(2 \times V5_{dist})$	+	$2 \times V6_{outflow}$	+	$V8_{chem}$	+	$V7_{geom}$					
2.40	+	1.40	+	1.70	+	0.85	+	0.88	+		=	7.23	÷ 9	= 0.80

Function 3 -- Flood Attenuation

$V3_{buffer}$	+	$(2 \times V4_{source})$	+	$(2 \times V5_{dist})$	+	$2 \times V6_{outflow}$	+	$V7_{geom}$	+	$V9_{veg}$			
0.66	+	1.60	+	1.40	+	1.70	+	0.88	+	0.68	=	6.92	÷ 9	= 0.77

Function 4 -- Short- and Long-term Water Storage

$V4_{source}$	+	$(2 \times V5_{dist})$	+	$2 \times V6_{outflow})$		$V7_{geom}$							
0.80	+	1.40	+	1.70	+	0.88	+		+		=	4.78	÷ 6	= 0.80

Function 5 -- Nutrient/Toxicant Removal

$(2 \times V5_{dist})$	+	$V8_{chem}$	+	$V7_{geom}$									
1.40	+	0.85	+	0.88	+		+		+		=	3.13	÷ 4	= 0.78

Function 6 -- Sediment Retention/Shoreline Stabilization

$V3_{buffer}$	+	$(2 \times V7_{geo})$	+	$(2 \times V9_{veg})$									
0.66	+	1.76	+	1.36	+		+		+		=	3.78	÷ 5	= 0.76

Function 7 -- Production Export/Food Chain Support

$V1_{wetloss}$	+	$2 \times V6_{outflow}$	+	$V8_{chem}$	+	$V7_{geo}$	+	$(2 \times V9_{veg})$					
0.75	+	1.70	+	0.85	+	0.88	+	1.36	+		=	5.54	÷ 7	= 0.79

Sum of Individual FCI Scores 5.40

Divide by the Number of Functions Scored ÷ 7

Composite FCI Score 0.77