US 50 West: Wills Boulevard to Purcell Boulevard (Milepost 313 to Milepost 307)

Project Number: STA 0503-088
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Wetland Delineation Technical Report

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List of Acronyms and Abbreviations

Ave.	Avenue
Blvd	Boulevard
CBC	concrete box culvert
CDOT	Colorado Department of Transportation
EA	Environmental Assessment
FACU	Facultative Upland
FACW	Facultative Wetland
FHWA	Federal Highway Administration
GIS	geographic information system
NRCS	Natural Resource Conservation Service
OBL	Obligate wetland
PBS-1	Pueblo Boulevard South-1
PEL	Planning and Environmental Linkages
PWMD	Pueblo West Metropolitan District
Rd	Road
RPW	relatively permanent waters
TNW	Traditional Navigable Water
UPL	Upland
USACE	United States Army Corps of Engineers
US 50	United States Highway 50
USFWS	United States Fish and Wildlife Service
WCN-1	Williams Creek North-1
WCS-1	Williams Creek South-1
WHDC	Wild Horse Dry Creek-1
WUS	waters of the US

1. Introduction

This environmental assessment (EA) is for safety and capacity improvements to US Highway 50 (US 50) between Wills Boulevard (Blvd) and McCulloch Blvd that the Colorado Department of Transportation (CDOT), is proposing, in consultation with Federal Highway Administration (FHWA), within the City of Pueblo, Pueblo County, and Pueblo West Metropolitan District (PWMD). This project is the third in a sequence of improvements that CDOT is making to US 50, all under the framework of the *US 50 West Planning and Environmental Linkages (PEL) Study* (CDOT, 2012a). The US 50 West PEL established the purpose and need, evaluated a full range of alternatives, and developed the *US 50 West PEL Implementation Plan* (CDOT, 2012b) for the PEL recommended Preferred Alternative within a 12-mile corridor from Swallows Road to Baltimore Avenue. Safety and capacity improvements included in the PEL recommended Preferred Alternative generally consist of widening US 50 from four lanes to six lanes from McCulloch Blvd to Wills Blvd and establishing grade-separated interchanges at McCulloch Blvd, Purcell Blvd, and Pueblo Blvd. US 50 would remain a four-lane highway west of McCulloch Blvd.

At the completion of the PEL Study, funds were not available to construct the recommended improvements for the entire PEL Corridor, leading CDOT to implement a sequence of improvement projects in coordination with FHWA. The following summarizes the sequence of completed National Environmental Policy Act (NEPA) studies and recent improvements for US 50 that have led to this *US 50 West Wills Blvd to McCulloch Blvd EA,* as shown in **Figure 1**:

- The *US 50 West Purcell Blvd to Wills Blvd EA* (CDOT, 2014) provides widening 3.4 miles of eastbound US 50 from two lanes to three lanes from Purcell Blvd to Wills Blvd to establish five lanes (three eastbound and two westbound). Safety improvements include adding northbound right turns onto US 50 at McCulloch Blvd and Purcell Blvd and establishing two water quality ponds on the east and west sides of Wild Horse Dry Creek. In addition, widening the eastbound bridge at Wild Horse Dry Creek accommodates a future pedestrian/bicycle path. Construction of these improvements is scheduled for completion in 2016.
- The *US 50 West Wills Blvd to BNSF Acceleration Lane Categorical Exclusion* (CDOT, 2015), recently approved by CDOT, establishes a westbound acceleration lane on US 50 from Wills Blvd to the BNSF right-of-way (ROW), east of the BNSF bridge, shown on **Figure 1**. Construction of the acceleration lane is scheduled for 2016.
- CDOT and FHWA are currently undertaking the *US 50 West Wills Blvd to McCulloch Blvd EA* to provide additional safety and capacity improvements to US 50. Improvements include widening 3.4 miles of westbound US 50 between Wills Blvd and Purcell Blvd, from two lanes to three lanes; and widening 2.4 miles of westbound and eastbound US 50 between Purcell Blvd and McCulloch Blvd, from two lanes to three lanes in each direction. Grade-separated interchanges would be established within the US 50 ROW at Purcell Blvd and Pueblo Blvd. A future pedestrian/bicycle path would also be accommodated between Wills Blvd and Pueblo Blvd. A regional water quality pond is proposed to treat US 50 runoff and PWMD municipal runoff.

The Proposed Action, in combination with the improvements under construction from Purcell Blvd to Wills Blvd, would establish six-lane capacity (three lanes in each direction) in the most congested portion of the PEL Corridor, between Wills Blvd and McCulloch Blvd.

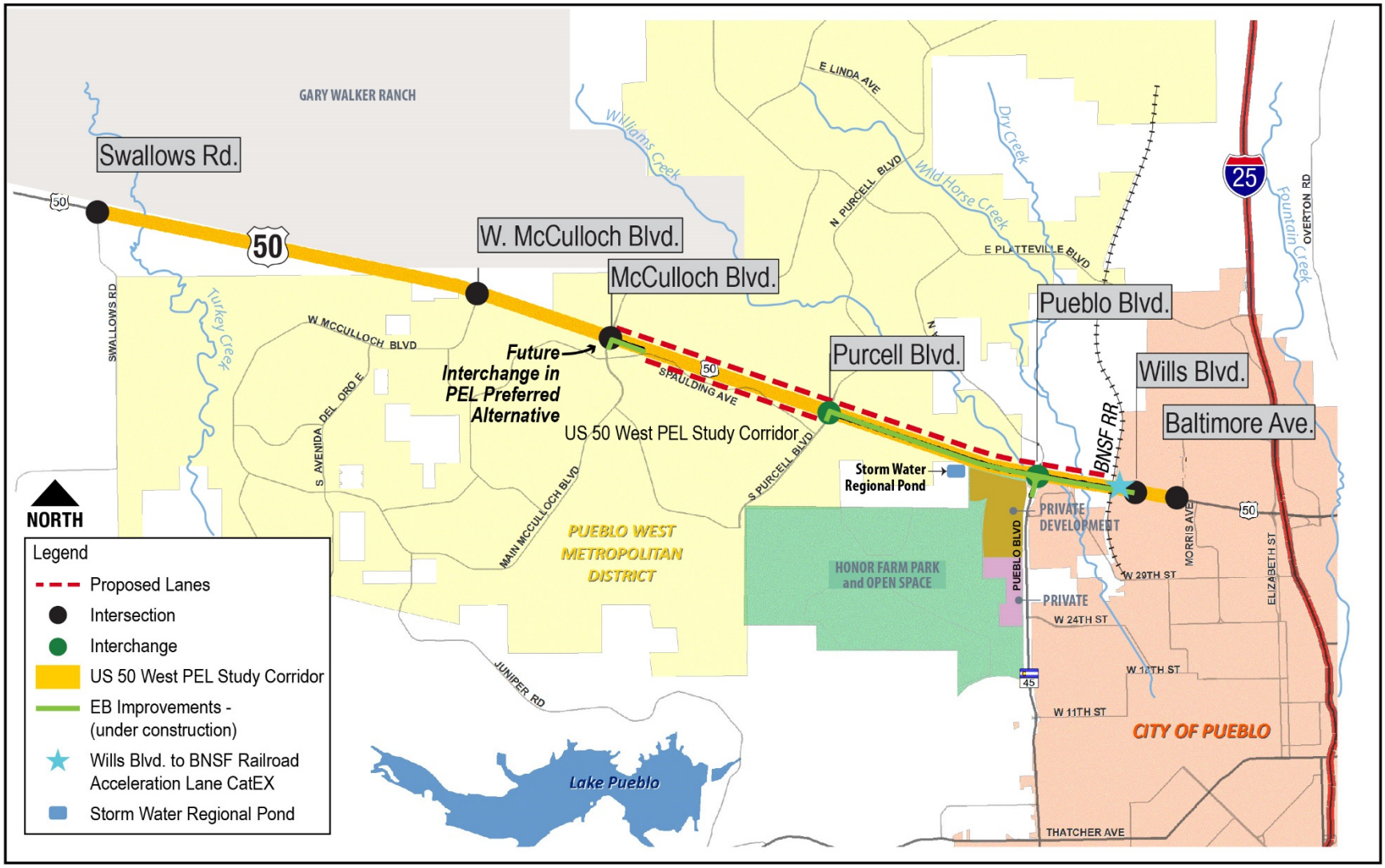
For this EA, the existing features of US 50, including the improvements approved through the *US 50 West Purcell Blvd to Wills Blvd EA* (CDOT, 2014) and the *US 50 West Wills Blvd to BNSF Acceleration Lane Categorical Exclusion,* represent the No Action Alternative. The No Action Alternative assumes that no other major capacity improvements would be made to US 50. The No Action Alternative also includes routine maintenance to keep the existing transportation network in good operating condition.

CDOT and FHWA prepared this EA to evaluate the Proposed Action benefits and environmental impacts, relevant to the No Action Alternative. This EA will also ensure that the Proposed Action would have logical termini and independent utility and would not restrict other reasonably foreseeable transportation improvements identified in the PEL recommended Preferred Alternative.

Future elements of the PEL recommended Preferred Alternative will undergo NEPA analysis as funding for design, ROW, and construction becomes available.

This wetland delineation has been prepared in support of the *US 50 West Wills Blvd to McCulloch Blvd EA*. This wetland delineation technical report describes the waters of the US (WUS), including wetlands and open water, within and adjacent to the project, and evaluates the potential for impacts as a result of the Proposed Action and No Action Alternative.

Figure 1. Proposed Action and PEL Study Corridor



2. Project Description

2.1 Proposed Action

The Proposed Action for this *US 50 West Wills Blvd to McCulloch Blvd* EA involves widening 3.4 miles of westbound US 50 from two lanes to three lanes, to include a third westbound lane from Wills Blvd (Milepost 313.15) to Purcell Blvd (Milepost 309.78), and widening 2.4 miles of both westbound and eastbound US 50 from Purcell Blvd (Milepost 309.78) to McCulloch Blvd (Milepost 307.34). Grade-separated interchanges would be established at Pueblo Blvd and at Purcell Blvd. The Proposed Action from Wills Blvd to McCulloch Blvd, in combination with the eastbound improvements under construction from Purcell Blvd to Wills Blvd, would establish six-lane capacity (three lanes in each direction), for 5.8 miles of US 50, consistent with the *US 50 West PEL Implementation Plan* (CDOT, 2012b).

CDOT is proposing the following transportation improvements between Wills Blvd and McCulloch Blvd:

- **Wills Blvd Intersection to BNSF Railroad Bridge (Milepost 313.15 to Milepost 312.87) –** A third westbound lane would be established by restriping the Wills Blvd to BNSF acceleration lane (*US 50 West Wills Blvd to BNSF Acceleration Lane Categorical Exclusion*; CDOT, 2015) and by extending the westbound lane through the BNSF railroad bridge underpass to Pueblo Blvd.
- **BNSF Railroad Bridge through Pueblo Blvd Intersection (Milepost 312.87 to Milepost 312.65) –** The westbound lanes of US 50 in the vicinity of Pueblo Blvd would be realigned to be parallel to the eastbound lanes from Milepost 311.45 to Milepost 312.65, and the existing westbound bridge over Wild Horse Dry Creek would be replaced. A grade-separated interchange would be established, with Pueblo Blvd crossing over US 50. The Williams Creek concrete box culvert (CBC) under the eastbound US 50 lanes would be extended 160 ft. to accommodate the realigned westbound lanes, including the westbound third-lane widening. Pueblo Blvd would be widened to accommodate two additional left turn lanes onto westbound US 50 via a right-side exit ramp. The existing westbound US 50 lanes would be retained and modified to provide access from US 50 onto southbound Pueblo Blvd. The *US 50 West PEL Implementation Plan* (CDOT, 2012b) identifies the Proposed Action at US 50 at Pueblo Blvd to be implemented as phased improvements over time. The Proposed Action would implement a diamond-type interchange at Pueblo Blvd. The PEL recommends a Diverging Diamond Interchange configuration, which would be implemented at some time in the future when the Pueblo Blvd Extension is developed as an expressway between US 50 and I-25 (CDOT, 2012a).
- **Pueblo Blvd to Purcell Blvd Intersection (Milepost 312.65 to 309.78) –** The westbound third lane would extend from Pueblo Blvd to Purcell Blvd, and a full six-lane grade-separated interchange would be developed, with US 50 crossing over Purcell Blvd. A CBC under Purcell Blvd would be extended to accommodate a future pedestrian/bicycle trail and future widening of Purcell Blvd.

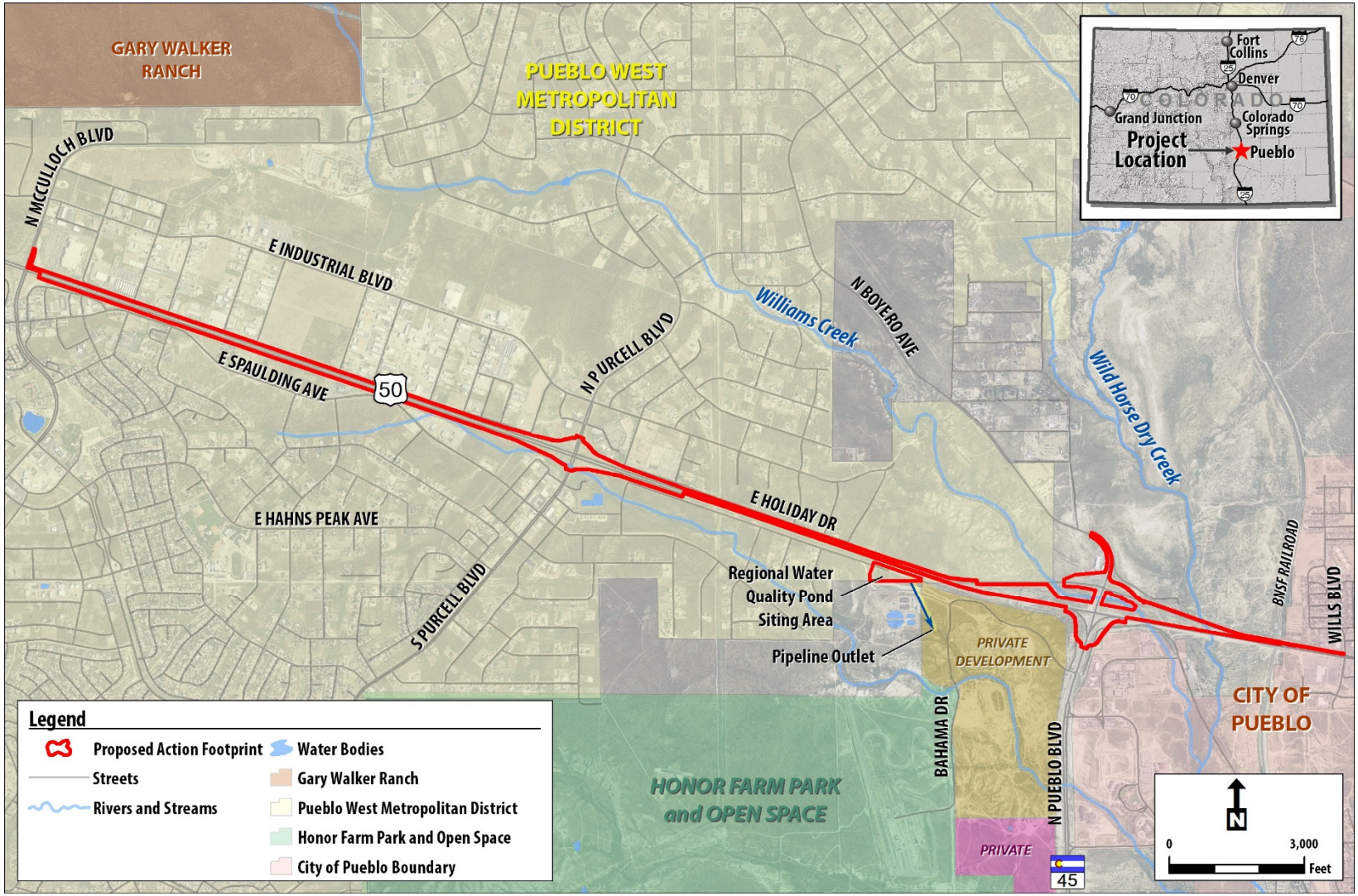
- **Purcell Blvd to McCulloch Blvd (Milepost 309.78 to Milepost 307.34) –** The Proposed Action would include a third westbound lane extending from Purcell Blvd and terminating at a right turn onto northbound McCulloch Blvd; and a third eastbound lane extending from the newly established northbound right turn from McCulloch Blvd and terminating at Purcell Blvd. The ultimate configuration for US 50 and McCulloch Blvd, although not part of this EA, is a grade-separated interchange as identified in the *US 50 West PEL Implementation Plan* (CDOT, 2012b).
- **Pedestrian/Bicycle Path –** The Proposed Action would accommodate a future pedestrian/bicycle path within CDOT ROW along the south side of US 50 from Wills Blvd to Pueblo Blvd, which is an element of the PEL recommended Preferred Alternative (CDOT, 2012a). The slope paving adjacent to the eastbound lanes at the BNSF railroad underpass would be modified to accommodate the pedestrian/bicycle path.
- **Municipal Separate Storm Sewer System (MS4) Improvements/Regional Pond –** The Proposed Action would include water quality improvements and a regional pond. Stormwater runoff for the westbound lane widening and interchange improvements between Wills Blvd and Pueblo Blvd (Milepost 313.5 to Milepost 311.15) would be directed to the two extended detention basins under construction on the east and west sides of Wild Horse Dry Creek. Stormwater runoff for the westbound and eastbound lanes between Pueblo Blvd and McCulloch Blvd (Milepost 311.5 to Milepost 397.34) would be directed to a proposed regional pond site within a private parcel west of Pueblo Blvd and south of US 50.

Figure 2 provides a general map of the Proposed Action

2.2 No Action Alternative

The existing features of US 50, including the improvements approved through the *US 50 West Purcell Blvd to Wills Blvd EA* (CDOT, 2014) and the *US 50 West Wills Blvd to BNSF Acceleration Lane Categorical Exclusion*, represent the No Action Alternative. The No Action Alternative assumes that no other major capacity improvements would be made to US 50. The No Action Alternative also includes routine maintenance to keep the existing transportation network in good operating condition.

Figure 2. Proposed Action



3. Methods

Felsburg Holt & Ullevig (FHU) staff reviewed previous environmental studies conducted in the project vicinity, reviewed existing environmental data, and conducted a wetland delineation to gather information about wetlands within and adjacent to the project footprint (wetland resources study area). FHU staff also completed an impact assessment for the Proposed Action and No Action Alternative, as discussed in **Section 4**.

FHU staff used wetland delineations from the *US 50 West PEL Study* (2012a) and the eastbound *US 50 West Purcell Blvd to Wills Blvd Environmental Assessment* (CDOT, 2014) to identify baseline wetland information. FHU staff conducted wetland delineations on June 3, 2013, and April 1, 2015, and a site reconnaissance on December 3, 2015. The wetland delineations and site reconnaissance were based on the latest *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (Version 2.0) (USACE, 2010). During the field surveys on April 1, 2015, FHU staff reviewed the previous delineation and corrected the previous wetland boundaries based on current field conditions. As identified in the field in April 2015, there were no significant changes to the previously delineated wetlands. One additional wetland was captured as part of the expanded project area west of Purcell Blvd along the unnamed tributary to Williams Creek. FHU staff also reviewed field conditions in the vicinity of a potential location for a regional water quality pond during the site reconnaissance on December 3, 2015. No wetlands were identified in the location of the proposed water quality pond; however, depending on where the pond outlets, a future delineation may be required.

During the field surveys on June 3, 2013, April 1, 2015, and December 3, 2015, FHU staff collected the wetland boundaries using a Trimble® GeoXH™ global positioning system with ESRI® ArcPad™ version 10.0 mobile geographic information system (GIS). FHU staff then analyzed the data in the office using ESRI® ArcMap™ GIS v.10. **Appendix A** includes photographs of the study area and illustrates the conditions of wetland and open water areas in June/July 2013, April 2015, and December 2015. FHU staff used the latest wetland determination forms to document wetlands identified during the June 2013 and April 2015 field surveys for the *US 50 West Wills Blvd to McCulloch Blvd EA* (**Appendix B**).

3.1 Environmental Setting

The approximate center of the project is located in Pueblo County in the SW ¼ of the SW ¼ of Section 9, Township 2 South, Range 65 West (Lat 38.318 and Long -104.678). Land use surrounding US 50 in the study area is predominantly rangeland with scattered residential and commercial development. Commercial development focuses on the four major arterial roads: McCulloch Blvd, Purcell Blvd, Pueblo Blvd, and Wills Blvd, and in the southwest corner of the McCulloch Blvd/Purcell Blvd intersection. The BNSF railroad also crosses US 50 within the study area.

The study area lies within both the Dry Creek watershed and the Wild Horse Creek watershed, which are both within the Upper Arkansas River Basin. Williams Creek and Wild Horse Dry Creek cross US 50 at the Pueblo Blvd intersection. Williams Creek flows from northwest to southeast and passes under the highway and under Pueblo Blvd. Wild Horse Dry Creek also flows from northwest to southeast and passes under the highway to the east of Pueblo Blvd. An unnamed tributary to

Williams Creek also exists south of US 50 and crosses under Purcell Blvd in a narrow channelized ditch.

The natural setting within the study area is disturbed by surrounding commercial development, residential development, recreational off-road vehicle use, utility corridors, noxious weeds, and a highly traveled highway. Most of the project corridor has limited habitat to support wildlife species; however, the Williams Creek and Wild Horse Dry Creek drainages provide habitat for various species. Also, prairie dog colonies are present throughout the study area.

Common vegetation present in the study area includes grasses, forbs, shrubs, and trees. Vegetation includes buffalograss (*Bouteloua dactyloides*), purple milkvetch (*Astragalus agrestis*), common threesquare (*Schoenoplectus pungens*), common spikerush (*Eleocharis palustris*), creeping bentgrass (*Agrostis stolonifera*), narrowleaf cattail (*Typha angustifolia*), tamarisk (*Tamarix chinensis*), golden currant (*Ribes aureum*), sandbar willow (*Salix interior*), plains cottonwood (*Populus deltoides*), and Siberian elm (*Ulmus pumila*).

Williams Creek and Wild Horse Dry Creek pass under US 50 from northwest to southeast in the study area. These two creeks are lined with tamarisk, Canada thistle (*Cirsium arvense*), and other vegetation similar to the vegetation identified throughout the study area. Common spikerush was also found within the ordinary high water mark channel in both creeks. The wetlands identified at Wild Horse Dry Creek, other than the vegetation in the channel, are fringe wetlands (between 1- and 2-feet wide) on a shelf above the channel. The wetlands identified at Williams Creek are found in a depressional area. The wetlands found at the Williams Creek tributary, east and west of Purcell Blvd, are within the channel/depressional area. This tributary channel is also dry in other areas between McCulloch Blvd and Purcell Blvd, where the water is present for a short time and where wetland vegetation does not grow.

No wetlands were found at the intersection of McCulloch Blvd and US 50. Formal landscaping was added to the two south quadrants of the intersection, which mark the gateway to Pueblo West. The landscaping consists of large beds of crushed red gravel, with clumps of shrubs and evergreen trees. The northern two quadrants of the intersection were not landscaped in the past, have little vegetation, and are dominated by prairie dog colonies.

3.2 Summary of Wetlands

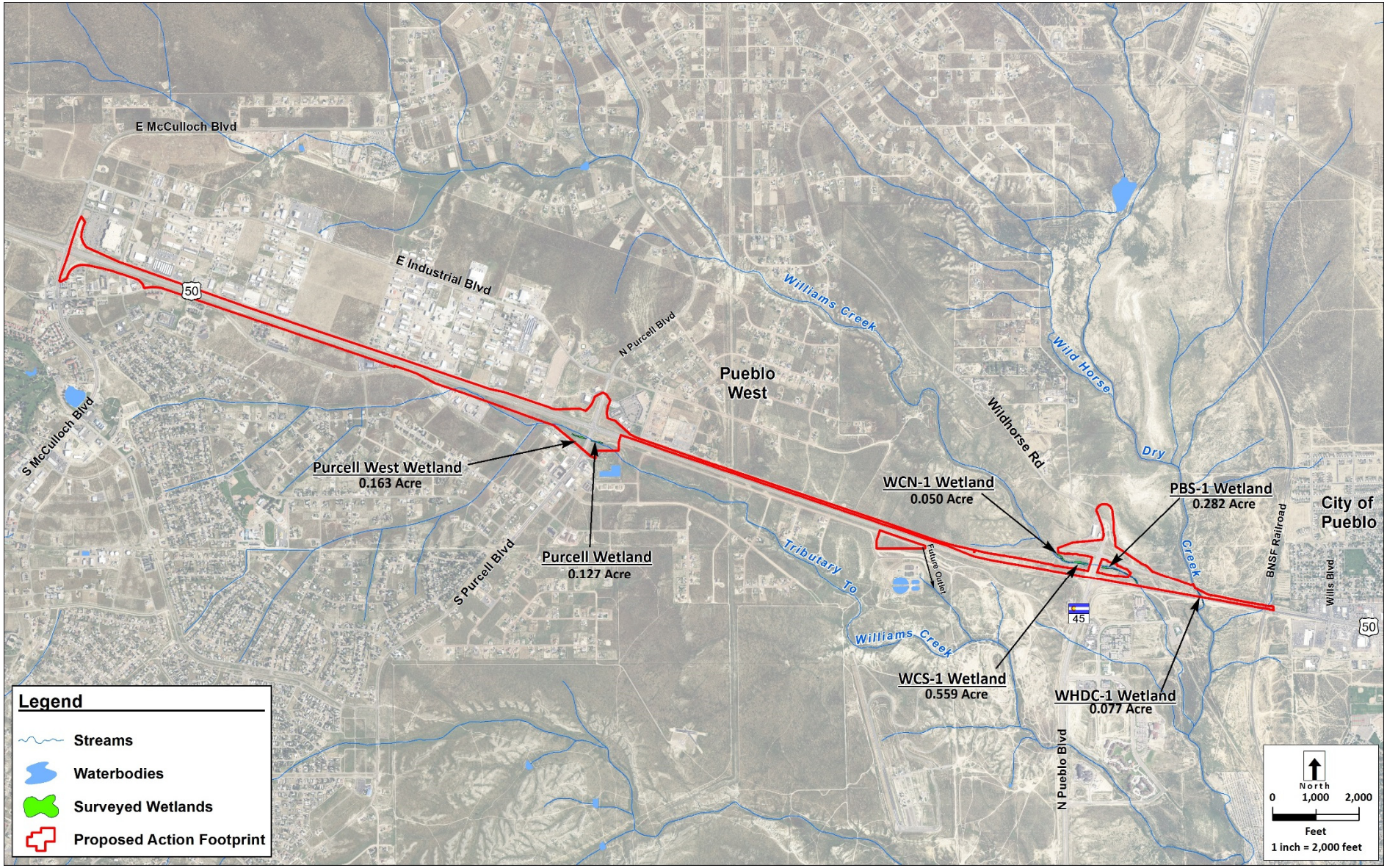
The project team identified six wetland areas (Purcell Wetland, Purcell Wetland West, Williams Creek North-1 [WCN-1], Williams Creek South-1 [WCS-1], Pueblo Boulevard South-1 [PBS-1], and Wild Horse Dry Creek-1 [WHDC-1]) in the study area (**Table 1** and **Figure 3**).

Table 1. Summary of Wetlands in the Study Area

Wetland ID	Existing Area (acres)
Purcell Wetland	0.127
Purcell Wetland West	0.163
Williams Creek North-1 (WCN-1)	0.050
Williams Creek South-1 (WCS-1)	0.559
Pueblo Boulevard South-1 (PBS-1)	0.282
Wild Horse Dry Creek-1 (WHDC-1)	0.077 (4 separate areas)
TOTAL	**1.258**

The Purcell Wetland and Purcell Wetland West are located in the Williams Creek tributary southwest and southeast of the US 50 and Purcell Blvd intersection. Wetlands WCN-1, WCS-1, and PBS-1 are found in or adjacent to Williams Creek near the US 50 and Pueblo Blvd intersection. Wetland WHDC-1 is found underneath US 50 at Wild Horse Dry Creek, east of Pueblo Blvd. All of these wetlands have distinct boundaries within the narrow floodplain/drainage areas. The following sections present more detail on each wetland/wetland group identified in the study area.

Figure 3. Surveyed Wetlands Overview



3.3 Purcell Wetland

FHU staff identified and delineated one wetland area associated with the Williams Creek tributary, which flows in a west-to-east direction and is located south of US 50 and east of Purcell Blvd (**Figure 3** above and in detail on **Figure C-2** in **Appendix C**). The wetland area is completely within a depression (**Photo 12**), in and adjacent to a narrow channel. The vegetation that was present during the June 2013 field survey varies between 5 feet and 10 feet in width and extends upstream and downstream outside the study area. The size of this wetland is 0.127 acre. FHU staff completed one wetland determination form for the wetland described as Purcell Wetland. This form is in **Appendix B**.

The Purcell Wetland is categorized as a palustrine emergent wetland that is seasonally flooded. The soils in this area, which are Niobrara shale, are higher in selenium and exhibit other alkaline properties. Under the Cowardin classification system, the Purcell Wetland is considered to be PEMAi, with the "i" indicating the alkaline content in the water (Cowardin et al., 1979). The characteristics of this wetland are described below and are shown as Purcell Wetland on **Figure 3** above and in detail (1" = 100') on **Figure C-2** in **Appendix C**.

Vegetation

Weeds dominate the vegetation identified in the Purcell Wetland, including common reed (*Phragmites australis*) and tamarisk. FHU staff also identified narrowleaf cattail as another dominant plant located in and adjacent to the Williams Creek tributary channel during the June 2013 field survey. No trees were identified in this area. The common reed and the narrowleaf cattail, which are the dominant species, account for 60 percent of the herb stratum. Canada thistle is also present but to a much lesser extent. Tamarisk accounts for 40 percent in the sapling/shrub stratum. The Dominance Test was passed; therefore, the wetland consists of hydrophytic vegetation. The upland vegetation surrounding the wetland consists of buffalograss, rubber rabbitbrush (*Ericameria nauseosa*), fourwing saltbrush (*Atriplex canescens*), other grasses, and noxious weeds.

Hydrology

Hydrology in the Purcell Wetland consists of intermittent surface flow as a tributary to Williams Creek, which collects stormwater and carries it in a highly channelized narrow channel to Williams Creek downstream. The primary hydrologic indicators include the presence of surface water at the CBC under Purcell Blvd and saturation. The one secondary indicator is the geomorphic position. Therefore, wetland hydrology is present at the Purcell Wetland.

Soils

Before conducting the field survey, FHU staff downloaded a Web Soil Survey that identified the soil types in the area. Soil types include Heldt silty clay loam, Manvel silt loam, Minnequa-Manvel loams, Penrose-Minnequa complex, Penrose-Rock outcrop complex, and Shingle silty clay loams (NRCS, 2013). During the field survey, FHU staff dug a soil pit to investigate the soil profile in the Purcell Wetland. Within the first 4 inches of the surface, the soil color consists of 10 YR 4/3. Below these 5 inches of clay loam, there is another 5 inches of clay loam of 2.5 YR 5/2 as the dominant color with 80 percent in the matrix. The second soil color (20 percent) in this matrix had a color consisting of 2.5 YR 5/1. The soils at the Purcell Wetland were problematic due to a deeply incised channel and young soils. Soils at this location were assumed hydric due to the presence of wetland vegetation and hydrology.

3.4 Purcell Wetland West

FHU staff identified and delineated one wetland area associated with the Williams Creek tributary, located south of US 50 and west of Purcell Blvd (**Figure 3** above and in detail on **Figure C-2** in **Appendix C**). The wetland area is completely within a depression, in and adjacent to a narrow channel (**Photos 13 & 14)**. The vegetation that was present during the April 2015 field survey varies between 5 feet and 10 feet in width and extends upstream and downstream outside the study area. The size of this wetland is 0.163 acre. FHU staff completed two wetland determination forms for the wetland described as Purcell Wetland West. These forms in **Appendix B** are identified as PWW-1 and PWW-2.

The Purcell Wetland West is categorized as a palustrine emergent wetland that is seasonally flooded. The soils in this area, which are Niobrara shale, are higher in selenium and exhibit other alkaline properties. Under the Cowardin classification system, the Purcell Wetland West is considered to be PEMAi, with the "i" indicating the alkaline content in the water (Cowardin et al., 1979). The characteristics of this wetland are described below and are shown as Purcell Wetland West on **Figure 3** above and in detail (1" = 100') on **Figure C-2** in in **Appendix C**.

Vegetation

Weeds dominate the vegetation identified in the Purcell Wetland West, including common reed and tamarisk. FHU staff also identified narrowleaf cattail as another dominant plant located in and adjacent to the Williams Creek tributary channel during the April 2015 field survey. No trees were identified in this area. The common reed and narrowleaf cattail, which are the dominant species, account for 55 percent of the herb stratum. Tamarisk accounts for 30 percent in the sapling/shrub stratum. The Dominance Test was passed; therefore, the wetland consists of hydrophytic vegetation. The upland vegetation surrounding the wetland consists of buffalograss, rubber rabbitbrush, fourwing saltbrush, other grasses, and noxious weeds.

Hydrology

Hydrology in the Purcell Wetland West consists of intermittent surface flow as a tributary to Williams Creek, which collects stormwater and carries it in a highly channelized narrow channel to Williams Creek downstream. The primary hydrologic indicators include the presence of surface water, a high water table, saturation, and the appearance of a salt crust. Secondary indicators include drainage patterns, the geomorphic position, and passing the FAC-Neutral Test. Therefore, wetland hydrology is present at the Purcell Wetland West.

Soils

Before conducting the field survey, FHU staff downloaded a Web Soil Survey that identified the soil types in the area. Soil types include Heldt silty clay loam, Manvel silt loam, Minnequa-Manvel loams, Penrose-Minnequa complex, Penrose-Rock outcrop complex, and Shingle silty clay loams (NRCS, 2013). During the field survey, FHU staff dug a soil pit to investigate the soil profile in the Purcell Wetland West. Within the first 2 inches of the surface, the soil colors observed consists of GLEY 1 2.5/N (60 percent) and 10 YR 4/3 (40 percent). Between these 2 inches of sandy clay and the bottom of the soil sample (20 inches), there is clay loam of 10YR 4/4. This soil profile qualifies as a Sandy Gleyed Matrix and is considered hydric. The soils at the Purcell Wetland West were also somewhat problematic due to a deeply incised channel.

3.5 Wetlands WCN-1, WCS-1, and PBS-1

FHU staff identified and delineated three wetland areas associated with the Williams Creek drainage, which flows in a northwest-to-southeast direction and is located in the area of the US 50/Pueblo Blvd intersection (**Figure 3** above and in detail on **Figures C-3 and C-4** in **Appendix C**). Williams Creek crosses underneath Pueblo Blvd in a CBC in this area. The wetland areas identified during the June 2013 field survey are completely within a depression in and adjacent to a narrow channel. The vegetation that is present varies between 3 feet and 50 feet in width and extends upstream and downstream outside the study area. The size of these wetlands combined is 0.891 acre. FHU staff compiled an "in-point" and an "out-point" wetland determination form for each wetland identified as WCN-1, WCN-2, WCS-1, WCS-2, PBS-1, and PBS-2, which are provided in **Appendix B**.

All wetlands identified in the Williams Creek drainage are categorized as being palustrine emergent wetlands that are seasonally flooded (USFWS, 2013). The soils in this area (Niobrara shale) are higher in selenium and other alkaline properties and exhibited a rotten egg smell the day of the survey. Under the Cowardin classification system, the wetlands here are considered to be PEMAi, with the "i" indicating the alkaline content in the water (Cowardin et al., 1979). Wetland characteristics are described below and are shown as Wetland WCN-1, Wetland WCS-1, and Wetland PBS-1 on **Figure 3** above and in detail (1" = 100') on **Figures C-3 and C-4** in **Appendix C**.

Vegetation

Table 2 identifies the dominant vegetation for Wetland WCN-1, Wetland WCS-1, and Wetland PBS-1 for each wetland "in-point" sampling area, including the dominant vegetation, wetland vegetation indicator status, and the results of the Dominance Test. **Appendix B** includes information on the dominant vegetation in the "out-point" sampling areas.

The Dominance Test was passed for all three wetlands; therefore, these wetlands consist of hydrophytic vegetation. The upland vegetation surrounding the wetlands consists of buffalograss, rubber rabbitbrush, fourwing saltbrush, other grasses, and noxious weeds.

Table 2. Surveyed Vegetation in the Williams Creek Wetlands

Common Name	Species Name	Indicator Status	Wetland WCN-1	Wetland WCS-1	Wetland PBS-1
Herb Stratum					
Kochia	*Bassia scoparia*	FACU			X
Canada thistle	*Cirsium arvense*	FACU			X
Common spikerush	*Eleocharis palustris*	OBL	X	X	
Common threesquare	*Schoenoplectus pungens*	OBL			X
Creeping bentgrass	*Agrostis stolonifera*	FACW	X	X	
Narrowleaf cattail	*Typha angustifolia*	OBL	X	X	X
Purple milkvetch	*Astragalus agrestis*	FACU			X

Common Name	Species Name	Indicator Status	Wetland WCN-1	Wetland WCS-1	Wetland PBS-1
Sapling/Shrub Stratum					
Golden currant	*Ribes aureum*	FACU	X	X	X
Russian olive	*Elaeagnus angustifolia*	FACU		X	
Sandbar willow	*Salix interior*	FACW			X
Tamarisk	*Tamarix chinensis*	FACW	X	X	X
Tree Stratum					
Siberian elm	*Ulmus pumila*	UPL			X
Dominance Test Score			80%	75%	60%

Wetland Vegetation Indicator Key: OBL = Obligate wetland, FACW = Facultative Wetland, FACU = Facultative Upland, UPL = Upland

Hydrology

Hydrology in Wetland WCN-1, Wetland WCS-1, and Wetland PBS-1 consists of perennial surface flow as part of Williams Creek, which carries water from the northwest to the southeast in a depression or an arroyo and which eventually empties into Wild Horse Dry Creek and then into the Arkansas River further downstream. The primary hydrologic indicators include the presence of surface water and saturation in all three wetlands. Another primary indicator and two secondary indicators in Wetlands WCN-1 and WCS-1 include an algal mat or crust, geomorphic position, and drainage patterns. A third primary indicator, drift deposits, was also observed at Wetland PBS-1.

Soils

Before conducting the field survey, FHU staff downloaded a Web Soil Survey that identified the soil types in the area. Soil types include Heldt silty clay loam, Manvel silt loam, Minnequa-Manvel loams, Penrose-Minnequa complex, Penrose-Rock outcrop complex, and Shingle silty clay loams (NRCS, 2013). During the field survey, FHU staff dug a soil pit to investigate the soil profiles in these three wetlands. **Table 3** identifies each hydric soil property in the "in-point" sampling locations at each wetland site. Refer to **Appendix B** for additional information about soils captured on the wetland determination forms and the "out-point" soil properties.

The soil profiles in Wetlands WCN-1 and WCS-1 have a hydric soil indicator of sandy redox. Therefore, these soils are considered hydric soils. The soil profiles in Wetland PBS-1 are problematic due to indications that there were recent fluvial deposits. Due to the soils being recently deposited here, hydric soil characteristics have not had enough time to form. Hydric soils are assumed for Wetland PBS-1 due to the presence of wetland vegetation and wetland hydrology.

Table 3. Wetlands WCN-1, WCS-1, and PBS-1 Soil Profiles

Soil Depth	Soil Color	Percent of Matrix	Soil Texture	Remarks
WCN-1				
0 – 5"	10 YR 5/2	70%	Sandy Loam	
0 – 5"	7.5 YR 5/6	5% Redox	Sandy Loam	
0 –5"	10 YR 3/1	25%	Sandy Loam	Restricted at 5"
WCS-1				
0 – 5"	10 YR 5/2	70%	Sandy Loam	
0 – 5"	7.5 YR 5/6	5% Redox	Sandy Loam	
0 – 5"	10 YR 3/1	25%	Sandy Loam	Restricted at 5"
PBS-1				
0 – 5"	2.5 YR 4/2	100%	Sandy Clay	
5" – 8"	2.5 YR 4/2	100%	Sandy Clay	Saturated

3.6 Wetland WHDC-1

FHU staff identified and delineated one wetland area associated with Wild Horse Dry Creek, which flows in a northwest-to-southeast direction and is located east of Pueblo Blvd and crosses underneath the westbound and eastbound US 50 bridges in this area. The wetland area is completely within a depression in and adjacent to a narrow channel. The vegetation that is present varies between 1 foot and 4 feet in width and extends upstream and downstream outside the study area. The size of four separate wetland features associated with Wetland WHDC-1 combined is 0.077 acre. The project team compiled one "in-point" wetland determination form and one "out-point" wetland determination form for Wetland WHDC-1 (**Appendix B**).

Wetland WHDC-1 is categorized as a palustrine emergent wetland that is intermittently flooded/temporary (USFWS, 2013). The soils in this area (Niobrara shale) are higher in selenium and other alkaline properties. Under the Cowardin classification system, the wetland here is considered to be PEMAi, with the "i" indicating the alkaline content in the water (Cowardin et al., 1979).

The characteristics of this wetland are described below and are shown as Wetland WHDC-1 on **Figure 3** above and in detail (1" = 100') on **Figure C-5** in **Appendix C**.

Vegetation

Creeping bentgrass and tamarisk dominate the vegetation identified in Wetland WHDC-1 and account for 40 percent of the herb stratum and 30 percent of the sapling/shrub stratum, respectively. No trees were identified in this area. The Dominance Test was passed; therefore, the wetland consists of hydrophytic vegetation. The upland vegetation surrounding the wetland consists of buffalograss, rubber rabbitbrush, fourwing saltbrush, and other grasses. Two other noxious weeds, perennial pepperweed (*Lepidium latifolium*) and hoary cress (*Cardaria draba*), are also present in dense populations.

Hydrology

Hydrology in Wetland WHDC-1 consists of perennial surface flow as part of Wild Horse Dry Creek, which is a perennial stream. The primary hydrologic indicators include the presence of surface water, saturation, an algal mat or crust, and a salt crust. Two secondary indicators were observed: the geomorphic position and drainage patterns. Therefore, wetland hydrology is present at Wetland WHDC-1.

Soils

Before conducting the field survey, FHU staff downloaded a Web Soil Survey that identified the soil types in the area. Soil types include Heldt silty clay loam, Manvel silt loam, Minnequa-Manvel loams, Penrose-Minnequa complex, Penrose-Rock outcrop complex, and Shingle silty clay loams (NRCS, 2013). During the field survey, FHU environmental scientists dug a soil pit to investigate the soil profile in Wetland WHDC-1. Within the first 5 inches of the surface, the soil consists of a dominant (70 percent) color of 10 YR 5/2, with 5 percent of the matrix showing that redox features are apparent (7.5 YR 5/6). The other 25 percent of the matrix shows a color of 10 YR 3/1. Because this soil profile has a hydric soil indicator of sandy redox, this soil is considered a hydric soil.

3.7 Waters of the US and Jurisdictional Status

The definition of WUS under United States Army Corps of Engineers (USACE) jurisdiction does not include wetlands that lack a surface connection to and, therefore, are isolated from, regulated waters. However, in projects with federal funding or oversight, such as this Project, a second piece of legislation, Executive Order 11990 Protection of Wetlands, directs the lead federal agencies, in this instance FHWA, to protect isolated wetlands by avoiding direct or indirect support of construction in wetlands when a practicable alternative is available.

The tributary to Williams Creek, Williams Creek, and Wild Horse Dry Creek would potentially be considered WUS within the Clean Water Act jurisdiction (as defined by 33 Code of Federal Regulations Part 328). The specific WUS indicators include relatively permanent waters (RPWs) that flow directly or indirectly into a Traditional Navigable Water (TNW) and wetlands directly abutting RPWs that flow directly or indirectly into TNWs (USACE, 2007). Purcell Wetland, Purcell Wetland West, WCN-1, WCS-1, PBS-1, and WHDC-1 would likely be considered jurisdictional wetlands.

4. Impacts

This section describes the impact assessment of the Proposed Action and the No Action Alternative on the wetland resources identified in the study area. Impacts of highway improvements on wetlands, whether from the Proposed Action or No Action Alternative, can result from:

- Placement of fill within a wetland boundary
- Soil disturbance
- Vegetation removal
- Changing hydrology
- Pollutant discharge
- Changing adjacent land use

Permanent impacts can be defined as changes to vegetation, hydrology, or soils that lead to a change in the presence of wetlands. Permanent impacts from the Proposed Action were evaluated based on the project design footprint and included the areas of ground disturbance from the following project elements:

- Addition of a third eastbound lane and intersection improvements at Purcell Blvd/US 50 and McCulloch Blvd/US 50
- Bridge widening, including pier work, at Wild Horse Dry Creek
- Extending the CBC at Pueblo Blvd
- Extending the CBC at Purcell Blvd
- Placement of riprap for erosion control
- Drainage outfall structures

A temporary impact can be defined as a change to at least one of the wetland characteristics (vegetation, hydrology, or soils) but can later be restored to a pre-construction condition at the same location. Temporary impacts from the Proposed Action were evaluated based on the areas of ground disturbance that will be reseeded and revegetated following construction and included a 10-foot buffer around the construction footprint.

Wetland impacts were summed within the concept-level design footprint. The total potential wetland impact in these three drainages due to construction of the westbound US 50 project is 0.160 acre (0.025 acre of permanent impacts and 0.135 acre of temporary impacts).

There are no permanent or temporary wetland impacts due to the No Action Alternative.

Refer to **Appendix C**, **Figures C-1** to **C-5** for a detailed view of the Proposed Action in the area of the Wild Horse Dry Creek, Williams Creek, and unnamed tributary to Williams Creek drainages.

5. Mitigation

CDOT mitigates impacts to wetlands that have been determined to be jurisdictional and non-jurisdictional by the USACE. CDOT also mitigates impacts to non-jurisdictional wetlands on projects per Executive Order 11990, as identified in an Memorandum of Agreement with FHWA. Due to not having formal design at this time (December 2015), wetland impacts were estimated within the concept-level design footprint. The estimated amount of permanent wetland impacts is 0.025 acre at the three drainage locations. CDOT would either mitigate on site or purchase wetland mitigation bank credits from the Limon Wetland Bank as mitigation to offset permanent impacts to wetlands. CDOT will also implement best management practices to avoid any erosion or other indirect impacts to wetlands identified in the study area. Also, due to the presence of thick stands of tamarisk along these three drainages, CDOT determined that the project would benefit from vegetation enhancement/restoration in these three drainages as part of the US 50 West Project. The vegetation enhancement/restoration strategy involves removing tamarisk and common reed and replanting with a combination of sandbar willow, other shrubs, and a grass seed-mix. CDOT will address the vegetation enhancement/restoration strategy in accordance with specification 214 (Planting) of the CDOT Standard Specifications for Road and Bridge Construction (CDOT, 2011). This vegetation restoration/enhancement strategy is being implemented in an effort to improve the overall quality of vegetation in this drainage. Refer to *Appendix A08, Biological Resources Report,* of this EA for additional information on the noxious weed management plan in these three drainages.

6. Conclusions

This technical report summarizes the delineation of wetlands in support of the *US 50 West Wills Blvd to McCulloch Blvd EA*. Six wetland areas were identified, three of which are associated with Williams Creek, two of which are associated with a tributary to Williams Creek near Purcell Blvd, and one of which is associated with Wild Horse Dry Creek. **Table 1 a**nd **Figure 3** include an overview of the wetlands identified in the study area. The Proposed Action would affect some or all of the identified wetlands. If wetland impacts are identified as the project design is completed, the project team will complete any additional reporting and CDOT will prepare a notification to the USACE.

7. References

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Appendix A
Site Photographs

Photo 1 — Wetland WCN-1 in the background and Wetland WCS-1 in the foreground.

View looking north from in the bottom of the drainage/arroyo.

Photo 2 — Looking northwest out over Wetland WCN-1 showing the vegetation present in the channel.

Photo 3 — Wetland WCS-1, looking northwest toward the westbound bridge.

Photo 4 — Wetland WCS-1, looking southeast toward the Pueblo Blvd intersection in the background.

Photo 5 — Looking southeast from the box culvert on Williams Creek under Pueblo Blvd toward Wild Horse Dry Creek, Wetland PBS-1.

Photo 6 — Looking east along Wetland PBS-1, showing the vegetation narrow channel.

Photo 7 — Looking southeast from the median at Pueblo Blvd, showing the typical upland and depressional (arroyo) geomorphology of the area.

Photo 8 — USGS gauging station between Wetlands WCN-1 and WCS-1 on Williams Creek.

Photo 9 — USGS gauging station at Wetland WHDC-1 on Wild Horse Dry Creek.

Photo 10 — Looking south from under the eastbound bridge.
This channel is very narrow and filled with noxious weeds.

Photo 11 — Looking north from under the eastbound bridge.
Pedestrian/off-road vehicle use in the area has eroded and damaged wetlands.

Photo 12 — Looking north next to the concrete box culvert under Purcell Blvd for the tributary to Williams Creek.
This drainage is highly channelized and filled with noxious weeds.

Photo 13 — The Purcell Wetland had vegetation growing within the channel.

**Photo 14 — Looking east over the Purcell Wetland.
Filled with common reed and tamarisk.**

Appendix B
Great Plains
Wetland Delineation Forms

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US-50 PEL | City/County: Pueblo | Sampling Date: 6/3/13

Applicant/Owner: CDOT | State: COLORADO | Sampling Point: Purcell Wetland

Investigator(s): KH & JL | Section, Township, Range: SECT 7, T2S, R65W

Landform (hillslope, terrace, etc.): Depression | Local relief (concave, convex, none): Concave | Slope (%): 1 to 3

Subregion (LRR): LRR G | Lat: 38.323 | Long: -104.701 | Datum: NAD 83

Soil Map Unit Name: Manvel silt loam 1 to 5 percent slopes | NWI classification: PEMWi

Are climatic/hydrologic conditions on the site typical for this time of the year? N (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

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?	Y		
Hydric Soil Present?	Y	**Is the Sampled Area Within a Wetland?**	Y
Indicators of Wetland Hydrology Present?	Y	If yes, optional wetland site ID:	Purcell Wetland

Remarks: (Explain alternative procedures here or in a separate report.)

In an extreme drought for 2 years now, very stressed vegetation. This drainage has been highly channelized and is filled with noxious weeds

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1 *Tamarix chinensis*	40	Y	FACW
2			
3			
4			
5			
	40	= Total Cover	

Herb Stratum (Plot size:)			
1 *Typha angustifolia*	35	Y	OBL
2 *Phragmites australis*	25	Y	FACW
3 *Cirsium arvense*	15	N	FACU
4			
5			
6			
7			
8			
9			
10			
	75	= Total Cover	

Woody Vine Stratum (Plot size:)			
1			
2			
	0	= Total Cover	

% /Bare Ground in Herb Stratum ____

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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	65	x 2 =	130
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column totals	115 (A)		225 (B)

Prevalence Index = B/A = 1.96

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - 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, unless disturbed or problematic

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

This channel is filled with noxious weeds, some water is present.

SOIL

Sampling Point: Purcell Wetland

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 - 5"	10 YR 4/3	100					Clay Loam	
5 - 10"	2.5 YR 5/2	80					Clay Loam	
5 - 10"	2.5 YR 5/1	20					Clay Loam	

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. [2]Location: PL = Pore Lining, M = M

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)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

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**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Y

Remarks:

Channelized tributary of Williams Creek. 5/1 value at depths of 5" - 10" indicated that this soil is a depleted matrix. No redox features present. Water present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X 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)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes	X	No		Depth (inches):	1
Water Table Present?	Yes		No	X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	1

Indicators of Wetland Hydrology Present? Y

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

Remarks:

<1" of water in the concrete box culvert upstream of the wetland

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US-50 PEL | City/County: Pueblo | Sampling Date: 4/1/2015

Applicant/Owner: CDOT | State: COLORADO | Sampling Point: Purcell Wetland West

Investigator(s): KH & TT | Section, Township, Range: SECT 7, T2S, R65W

Landform (hillslope, terrace, etc.): Stream bank | Local relief (concave, convex, none): Concave | Slope (%): 3 to 5

Subregion (LRR): LRR G | Lat: 38.323 | Long: -104.701 | Datum: NAD 83

Soil Map Unit Name: Manvel silt loam 1 to 5 percent slopes | NWI classification: PEMWi

Are climatic/hydrologic conditions on the site typical for this time of the year? Y (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

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?	Y		
Hydric Soil Present?	Y	**Is the Sampled Area Within a Wetland?**	Y
Indicators of Wetland Hydrology Present?	Y	If yes, optional wetland site ID:	Purcell Wetland West

Remarks: (Explain alternative procedures here or in a separate report.)

Area is coming out of a drought, vegetation and precipitation has increased from last survey. Vegetation dominated by Common Reed, Tamarisk, and Cattails.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1 *Tamarix chinensis*	30	Y	FACW
2			
3			
4			
5			
	30	= Total Cover	

Herb Stratum (Plot size:)			
1 *Typha angustifolia*	30	Y	OBL
2 *Phragmites australis*	25	Y	FACW
3			
4			
5			
6			
7			
8			
9			
10			
	55	= Total Cover	

Woody Vine Stratum (Plot size:)			
1			
2			
	0	= Total Cover	

% /Bare Ground in Herb Stratum ____

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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	55	x 2 =	110
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	85 (A)		140 (B)

Prevalence Index = B/A = 1.65

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - 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, unless disturbed or problematic

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

This channel is filled with noxious weeds, some water is present.

SOIL

Sampling Point: ırcell Wetland We

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 - 2"	GLEY 1 2.5/N	60					Sandy Clay	Saturated
0 - 2"	10YR 4/3	40					Sandy Clay	Saturated
2 - 20"	10YR 4/4	100					Clay Loam	Saturated

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. [2]Location: PL = Pore Lining, M = M

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)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- X 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 Depressions (F16) (**MLRA 72 & 73 of LRR H**)

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**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Y

Remarks:

Channelized tributary of Williams Creek. Gleyed soils present in the top layer. Deeply incised channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth (inches):	1
Water Table Present?	Yes	X	No	___	Depth (inches):	3
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	1

Indicators of Wetland Hydrology Present? Y

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

Remarks:

Very shallow channel with surface water present in the low-flow channel. Hidden by vegetation in other areas.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US-50 PEL | City/County: Pueblo | Sampling Date: 6/3/13

Applicant/Owner: CDOT | State: COLORADO | Sampling Point: WCN-1

Investigator(s): KH & JL | Section, Township, Range: SECT 16, T2S, R65W

Landform (hillslope, terrace, etc.): Depression (arroyo) | Local relief (concave, convex, none): Concave | Slope (%): 0 - 3

Subregion (LRR): LRR G | Lat: 38.316 | Long: -104.665 | Datum: NAD 83

Soil Map Unit Name: Penrose-Minnequa complex | NWI classification: PEMWi

Are climatic/hydrologic conditions on the site typical for this time of the year? N (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

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?	Y		
Hydric Soil Present?	Y	**Is the Sampled Area Within a Wetland?**	Y
Indicators of Wetland Hydrology Present?	Y	If yes, optional wetland site ID:	Wetland WCN-1

Remarks: (Explain alternative procedures here or in a separate report.)

In an extreme drought for about 2 years now, vegetation is stressed

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1 *Tamarix chinensis*	20	Y	FACW
2 *Ribes aureum*	15	Y	FACU
3			
4			
5			
	35	= Total Cover	

Herb Stratum (Plot size:)			
1 *Typha angustifolia*	30	Y	OBL
2 *Agrostis stolonifera*	30	Y	FACW
3 *Eleocharis palustris*	25	Y	OBL
4			
5			
6			
7			
8			
9			
10			
	85	= Total Cover	

Woody Vine Stratum (Plot size:)			
1			
2			
	0	= Total Cover	

% /Bare Ground in Herb Stratum ____

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 80.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	55	x 1 =	55
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column totals	120 (A)		215 (B)

Prevalence Index = B/A = 1.79

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - 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, unless disturbed or problematic

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Salt Cedar and Golden Currant along wetland fringe.

SOIL

Sampling Point: WCN-1

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 - 5"	10 YR 5/2	70	7.5 YR 5/6	5	CS	M	Sandy Loam	Restricted at 5"
0 - 5"	10 YR 3/1	25						

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. [2]Location: PL = Pore Lining, M = M

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)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- X 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 Depressions (F16) (**MLRA 72 & 73 of LRR H**)

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**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock/Shale

Depth (inches): 5"

Hydric Soil Present? Y

Remarks:

Restricted at 5" due to shale/bedrock layer, Saturation at 3"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X 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)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes	X	No		Depth (inches):	3"
Water Table Present?	Yes		No	X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	5"

Indicators of Wetland Hydrology Present? Y

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

Remarks:

Flowing water, very yellow/gold color

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US-50 PEL | City/County: Pueblo | Sampling Date: 6/3/13

Applicant/Owner: CDOT | State: COLORADO | Sampling Point: WCN-2

Investigator(s): KH and JL | Section, Township, Range: SECT 16, T2S, R65W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 5 to 15

Subregion (LRR): LRR G | Lat: 38.316 | Long: -104.665 | Datum: NAD 83

Soil Map Unit Name: Penrose-Minnequa complex | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of the year? N (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

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?	N		
Hydric Soil Present?	N	**Is the Sampled Area Within a Wetland?**	N
Indicators of Wetland Hydrology Present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Outpoint for WCN-1, extreme drought for 2 years.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1 *Ericamerica nauseosa*	30	Y	UPL
2 *Tamarix chinensis*	20	Y	FACW
3 *Ribes aureum*	10	N	FACU
4			
5			
	60	= Total Cover	

Herb Stratum (Plot size:)			
1 *Helianthus annuus*	10	Y	FACU
2 *Bassia scoparia*	10	Y	FACU
3 *Astragalus agrestis*	5	N	FACU
4 *Agrostis stolonifera*	5	N	FACW
5 *Grindelia hirsutula*	5	N	FACU
6 *Cucurbita foetidissima*	1	N	UPL
7 *Eragrostis spectabilis*	1	N	UPL
8			
9			
10			
	37	= Total Cover	

Woody Vine Stratum (Plot size:)			
1			
2			
	0	= Total Cover	

% /Bare Ground in Herb Stratum 15

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: 25.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	32	x 5 =	160
Column totals	97 (A)		370 (B)

Prevalence Index = B/A = 3.81

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - 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, unless disturbed or problematic

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

Drier upland area surrounding Williams Creek. Vegetation is stressed due to extreme drought

SOIL

Sampling Point: WCN-2

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 - 8"	2.5 YR 6/2	100					Sand	Restricted at 8"

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. [2]Location: PL = Pore Lining, M = M

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)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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 Depressions (F16) (**MLRA 72 & 73 of LRR H**)

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**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock/shale

Depth (inches): 8"

Hydric Soil Present? N

Remarks:

Very dry sand, restricted at 8" due to dryness and/or bedrock/shale

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ 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)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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): ___		

Indicators of Wetland Hydrology Present? N

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

Remarks:

Very dry, sloped banks of channel

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US-50 PEL | City/County: Pueblo | Sampling Date: 6/3/13

Applicant/Owner: CDOT | State: COLORADO | Sampling Point: WCS-1

Investigator(s): KH and JL | Section, Township, Range: SECT 16, T2S, R65W

Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): | Slope (%):

Subregion (LRR): LRR G | Lat: 38.315 | Long: -104.664 | Datum: NAD 83

Soil Map Unit Name: Penrose-Minnequa complex | NWI classification: PEMWi

Are climatic/hydrologic conditions on the site typical for this time of the year? N (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "normal circumstances" present? Yes

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?	Y		
Hydric Soil Present?	Y	**Is the Sampled Area Within a Wetland?**	Y
Indicators of Wetland Hydrology Present?	Y	If yes, optional wetland site ID:	Wetland WCS-1

Remarks: (Explain alternative procedures here or in a separate report.)

Very similar to WCN-1, extreme drought for 2 years. Bedrock/shale present at shallow depth. Selenium present visibly and based on scent.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1 *Tamarix chinensis*	30	Y	FACW
2 *Ribes aureum*	10	Y	FACU
3 *Elaeagnus angustifolia*	1	N	FACU
4			
5			
	41	= Total Cover	
Herb Stratum (Plot size:)			
1 *Typha angustifolia*	70	Y	OBL
2 *Eleocharis palustris*	20	Y	OBL
3 *Agrostis stolonifera*	10	N	FACW
4			
5			
6			
7			
8			
9			
10			
	100	= Total Cover	
Woody Vine Stratum (Plot size:)			
1			
2			
	0	= Total Cover	

% /Bare Ground in Herb Stratum

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 75.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	40	x 2 =	80
FAC species	0	x 3 =	0
FACU species	11	x 4 =	44
UPL species	0	x 5 =	0
Column totals	141 (A)		214 (B)

Prevalence Index = B/A = 1.52

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- 4 - 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, unless disturbed or problematic

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Vegetation stressed due to extreme drought, southwestern arroyo topography/vegetation with distinct boundary.

SOIL

Sampling Point: WCS-1

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 - 5"	10 YR 5/2	70	7.5 YR 5/6	5	CS	M	Sandy Loam	Restricted at 5"
0 - 5"	10 YR 3/1	25						

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. [2]Location: PL = Pore Lining, M = M

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)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- X 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 Depressions (F16) (**MLRA 72 & 73 of LRR H**)

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**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock/shale

Depth (inches): 5"

Hydric Soil Present? Y

Remarks:

Restricted at 5" from bedrock or shale, saturation at 3"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X 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)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes	X	No	___	Depth (inches):	4"
Water Table Present?	Yes	X	No	___	Depth (inches):	~ 5"
Saturation Present? (includes capillary fringe)	Yes	X	No	___	Depth (inches):	3"

Indicators of Wetland Hydrology Present? Y

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

Remarks:

Water flowing through wetland in a channel. Water table present and assumed below soil pit depth due to presence of stream.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US-50 PEL | City/County: Pueblo | Sampling Date: 6/3/13

Applicant/Owner: CDOT | State: COLORADO | Sampling Point: WCS-2

Investigator(s): KH & JL | Section, Township, Range: SECT 16, T2S, R65W

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): 5 to 15

Subregion (LRR): LRR G | Lat: 38.315 | Long: -104.664 | Datum: NAD 83

Soil Map Unit Name: Penrose-Minnequa complex | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of the year? N (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

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?	N		
Hydric Soil Present?	N	**Is the Sampled Area Within a Wetland?**	N
Indicators of Wetland Hydrology Present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Outpoint for WCS-1, extreme drought for 2 years, uplands stressed and sparse vegetation.

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: ____)			
1 *Populus deltoides*	5	Y	FAC
2			
3			
4			
5			
	5	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1 *Tamarix chinensis*	40	Y	FACW
2 *Ribes aureum*	20	Y	FACU
3 *Ericamerica nauseosa*	10	N	UPL
4			
5			
	70	= Total Cover	
Herb Stratum (Plot size: ____)			
1 *Helianthus annuus*	10	Y	FACU
2 *Bassia scoparia*	10	Y	FACU
3 *Cirsium arvense*	10	Y	FACU
4 *Convolvulus arvensis*	10	Y	UPL
5 *Astragalus agrestis*	5	N	FACU
6 *Lathyrus latifolius*	1	N	UPL
7			
8			
9			
10			
	46	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1			
2			
	0	= Total Cover	

% /Bare Ground in Herb Stratum 10

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 28.57% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	40	x 2 =	80
FAC species	5	x 3 =	15
FACU species	55	x 4 =	220
UPL species	21	x 5 =	105
Column totals	121 (A)		420 (B)

Prevalence Index = B/A = 3.47

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - 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, unless disturbed or problematic

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

Vegetation stressed especially in the uplands due to an extreme drought.

SOIL

Sampling Point: WCS-2

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 - 8"	2.5 YR 6/2	100					Sand	Restricted at 8"

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. [2]Location: PL = Pore Lining, M = M

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)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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 Depressions (F16) (**MLRA 72 & 73 of LRR H**)

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**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? N

Remarks:

Same as WCN-2

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ 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)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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):	___

Indicators of Wetland Hydrology Present? N

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

Remarks:

Very dry, sloped banks of channel

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US-50 PEL | City/County: Pueblo | Sampling Date: 6/3/13

Applicant/Owner: CDOT | State: COLORADO | Sampling Point: PBS-1

Investigator(s): KH & JL | Section, Township, Range: SECT 15, T2S, R65W

Landform (hillslope, terrace, etc.): Arroyo | Local relief (concave, convex, none): Concave | Slope (%): 0-2

Subregion (LRR): LLR G | Lat: 38.315 | Long: -104.66 | Datum: NAD 83

Soil Map Unit Name: Penrose-Minnequa complex | NWI classification: PEMWi

Are climatic/hydrologic conditions on the site typical for this time of the year? N (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

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?	Y		
Hydric Soil Present?	Y	**Is the Sampled Area Within a Wetland?**	Y
Indicators of Wetland Hydrology Present?	Y	If yes, optional wetland site ID:	Wetland PBS-1

Remarks: (Explain alternative procedures here or in a separate report.)

In-point for PBS-1, extreme drought for 2 years now causing stressed and sparse vegetation. Wetland boundaries very distinct.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1 *Ulmus pumila*	5	Y	UPL
2			
3			
4			
5			
	5	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1 *Tamarix chinensis*	50	Y	FACW
2 *Ribes aureum*	15	Y	FACU
3 *Salix interior*	5	N	FACW
4			
5			
	70	= Total Cover	

Herb Stratum (Plot size:)			
1 *Schoenoplectus pungens*	40	Y	OBL
2 *Typha angustifolia*	20	Y	OBL
3 *Cirsium arvense*	1	N	FACU
4 *Bassia scoparia*	1	N	FACU
5 *Astragalus agrestis*	1	N	FACU
6			
7			
8			
9			
10			
	63	= Total Cover	

Woody Vine Stratum (Plot size:)			
1			
2			
	0	= Total Cover	

% /Bare Ground in Herb Stratum ____

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 60.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	55	x 2 =	110
FAC species	0	x 3 =	0
FACU species	18	x 4 =	72
UPL species	5	x 5 =	25
Column totals	138 (A)		267 (B)

Prevalence Index = B/A = 1.93

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - 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, unless disturbed or problematic

Hydrophytic Vegetation Present? Y

Remarks: (Include photo numbers here or on a separate sheet)

Abundant dead kochia and saltcedar along banks of channel

SOIL

Sampling Point: PBS-1

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 - 5"	2.5 YR 4/2	100					Sandy Clay	
5 - 8"	2.5 YR 4/2						Sandy Clay	Saturated

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. [2]Location: PL = Pore Lining, M = M

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)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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 Depressions (F16) (**MLRA 72 & 73 of LRR H**)

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**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock/Shale

Depth (inches): 8"

Hydric Soil Present? Y

Remarks:

Possible problematic soils from new fluvial deposits. Restricted due to shale/bedrock.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X 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)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes	X	No		Depth (inches):	3"
Water Table Present?	Yes	X	No		Depth (inches):	8"+
Saturation Present? (includes capillary fringe)	Yes	X	No		Depth (inches):	8"

Indicators of Wetland Hydrology Present? Y

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

Remarks:

Water flowing through wetlands, water table at 8" due to nearby stream channel.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US-50 PEL | City/County: Pueblo | Sampling Date: 6/3/13

Applicant/Owner: CDOT | State: COLORADO | Sampling Point: PBS-2

Investigator(s): KH & JL | Section, Township, Range: SECT 15, T2S, R65W

Landform (hillslope, terrace, etc.): Hillslope above arroyo | Local relief (concave, convex, none): Concave | Slope (%): 5 to 15

Subregion (LRR): LLR G | Lat: 38.315 | Long: -104.66 | Datum:

Soil Map Unit Name: Penrose-Minnequa complex | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of the year? N (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

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?	N		
Hydric Soil Present?	N	**Is the Sampled Area Within a Wetland?**	N
Indicators of Wetland Hydrology Present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Very dry; abundance of bare ground and dead plant material. Extreme drought for 2 years now.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1 *Ericameria nauseosa*	20	Y	UPL
2 *Ribes aureum*	10	Y	FACU
3 *Tamarix chinensis*	10	Y	FACW
4			
5			
	40	= Total Cover	

Herb Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1 *Grindelia hirsutula*	15	Y	FACU
2 *Stanleya pinnata*	5	N	UPL
3 *Cirsium arvense*	5	N	FACU
4 *Astragalus agrestis*	1	N	FACU
5			
6			
7			
8			
9			
10			
	26	= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
	0	= Total Cover	

% /Bare Ground in Herb Stratum 35

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: 25.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	31	x 4 =	124
UPL species	25	x 5 =	125
Column totals	66 (A)		269 (B)

Prevalence Index = B/A = 4.08

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - 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, unless disturbed or problematic

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

Abundant dead kochia and saltcedar along banks of channel

SOIL

Sampling Point: PBS-2

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 - 8"	2.5 YR 6/2	100					Sand	Dry

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. [2]Location: PL = Pore Lining, M = M

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)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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 Depressions (F16) (**MLRA 72 & 73 of LRR H**)

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**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock/Shale

Depth (inches): 8"

Hydric Soil Present? N

Remarks:

Same as others, pure sand. Restricted at 8" due to dryness, bedrock/shale.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ 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)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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): ___		

Indicators of Wetland Hydrology Present? N

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

Remarks:

Dry uplands near Wetland PBS-1, sand.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US-50 PEL | City/County: Pueblo | Sampling Date: 6/3/13

Applicant/Owner: CDOT | State: COLORADO | Sampling Point: WHDC-1

Investigator(s): KH and JL | Section, Township, Range: SECT 15, T2S, R65W

Landform (hillslope, terrace, etc.): Depression, arroyo | Local relief (concave, convex, none): Concave | Slope (%): 0 to 3

Subregion (LRR): LRR G | Lat: 38.313 | Long: -104.652 | Datum: NAD 83

Soil Map Unit Name: Manvel silt loam, 1 to 5 percent slopes | NWI classification: PEMWi

Are climatic/hydrologic conditions on the site typical for this time of the year? N (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

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?	Y		
Hydric Soil Present?	Y	**Is the Sampled Area Within a Wetland?**	Y
Indicators of Wetland Hydrology Present?	Y	If yes, optional wetland site ID:	WETLAND WHDC-1

Remarks: (Explain alternative procedures here or in a separate report.)

Marginal wetland along flowing creek, extreme drought for 2 years causing vegetation to be very stressed.

VEGETATION -- Use scientific names of plants.

	Absolute % Cover	Dominant Species	Indicator Status
Tree Stratum (Plot size: ____)			
1			
2			
3			
4			
5			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1 *Tamarix chinensis*	30	Y	FACW
2			
3			
4			
5			
	30 = Total Cover		
Herb Stratum (Plot size: ____)			
1 *Agrostis stolonifera*	40	Y	FACW
2 *Eleocharis palustris*	5	N	OBL
3 *Helianthus annuus*	5	N	FACU
4 *Carex nebrascensis*	1	N	OBL
5			
6			
7			
8			
9			
10			
	51 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1			
2			
	0 = Total Cover		

% /Bare Ground in Herb Stratum 50

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: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	6	x 1 =	6
FACW species	70	x 2 =	140
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column totals	81 (A)		166 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - 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, unless disturbed or problematic

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

Abundant dead saltcedar along channel

SOIL

Sampling Point: WHDC-1

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 - 5"	10 YR 5/2	70	7.5 YR 5/6	5	CS	M	Sandy Loam	Restricted at 5"
0 - 5"	10 YR 3/1	25						

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. [2]Location: PL = Pore Lining, M = M

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)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- X 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 Depressions (F16) (**MLRA 72 & 73 of LRR H**)

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**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock/shale

Depth (inches): 5"

Hydric Soil Present? Y

Remarks:

Same as Williams Creek, restricted due to bedrock/shale

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present?	Yes	X	No		Depth (inches):	2"
Water Table Present?	Yes	X	No		Depth (inches):	5"+
Saturation Present? (includes capillary fringe)	Yes		No	X	Depth (inches):	

Indicators of Wetland Hydrology Present? Y

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

Remarks:

Flowing water in an incised channel. Much drier benches on either side of the channel.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US-50 PEL | City/County: Pueblo | Sampling Date: 6/3/13

Applicant/Owner: CDOT | State: COLORADO | Sampling Point: WHDC-2

Investigator(s): KH and JL | Section, Township, Range: Sect 15, T2S, R65W

Landform (hillslope, terrace, etc.): hillslope | Local relief (concave, convex, none): Concave | Slope (%): 3 to 10

Subregion (LRR): LRR G | Lat: 38.313 | Long: -104.652 | Datum: NAD 83

Soil Map Unit Name: Manvel silt loam, 1 to 5 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of the year? N (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "normal circumstances" present? Yes

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?	N		
Hydric Soil Present?	N	**Is the Sampled Area Within a Wetland?**	N
Indicators of Wetland Hydrology Present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

Outpoint for WHDC-1, extreme drought for 2 years stressing vegetation along streams and especially in uplands.

VEGETATION -- Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status
1			
2			
3			
4			
5			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1 *Ericameria nauseosa*	10	Y	
2 *Ribes aureum*	5	Y	FACU
3			
4			
5			
	15	= Total Cover	
Herb Stratum (Plot size:)			
1 *Lepidium latifolium*	20	Y	FACW
2 *Cardaria draba*	20	Y	UPL
3 *Astragalus agrestis*	1	N	FACU
4 *Stanleya pinnata*	1	N	UPL
5			
6			
7			
8			
9			
10			
	42	= Total Cover	
Woody Vine Stratum (Plot size:)			
1			
2			
	0	= Total Cover	

% /Bare Ground in Herb Stratum 40

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: 25.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	6	x 4 =	24
UPL species	21	x 5 =	105
Column totals	47 (A)		169 (B)

Prevalence Index = B/A = 3.60

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - 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, unless disturbed or problematic

Hydrophytic Vegetation Present? N

Remarks: (Include photo numbers here or on a separate sheet)

Abundant dead kochia and saltcedar along banks of channel

SOIL

Sampling Point: WHDC-2

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 - 8"	2.5 YR 6/2	100					Sand	Restricted at 8"

[1]Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. [2]Location: PL = Pore Lining, M = M

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)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ 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 Depressions (F16) (**MLRA 72 & 73 of LRR H**)

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**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock/shale

Depth (inches): 8"

Hydric Soil Present? N

Remarks:

Same as WCN-2, very dry sand - restricted at 8" due to dryness and/or bedrock/shale.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ 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)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

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): ___

Indicators of Wetland Hydrology Present? N

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

Remarks:

Very dry, sloped banks of channel.

Appendix C
Surveyed Wetlands
Detailed Maps (1” = 100’)

Figure C-1. Surveyed Wetlands Detail Index Map

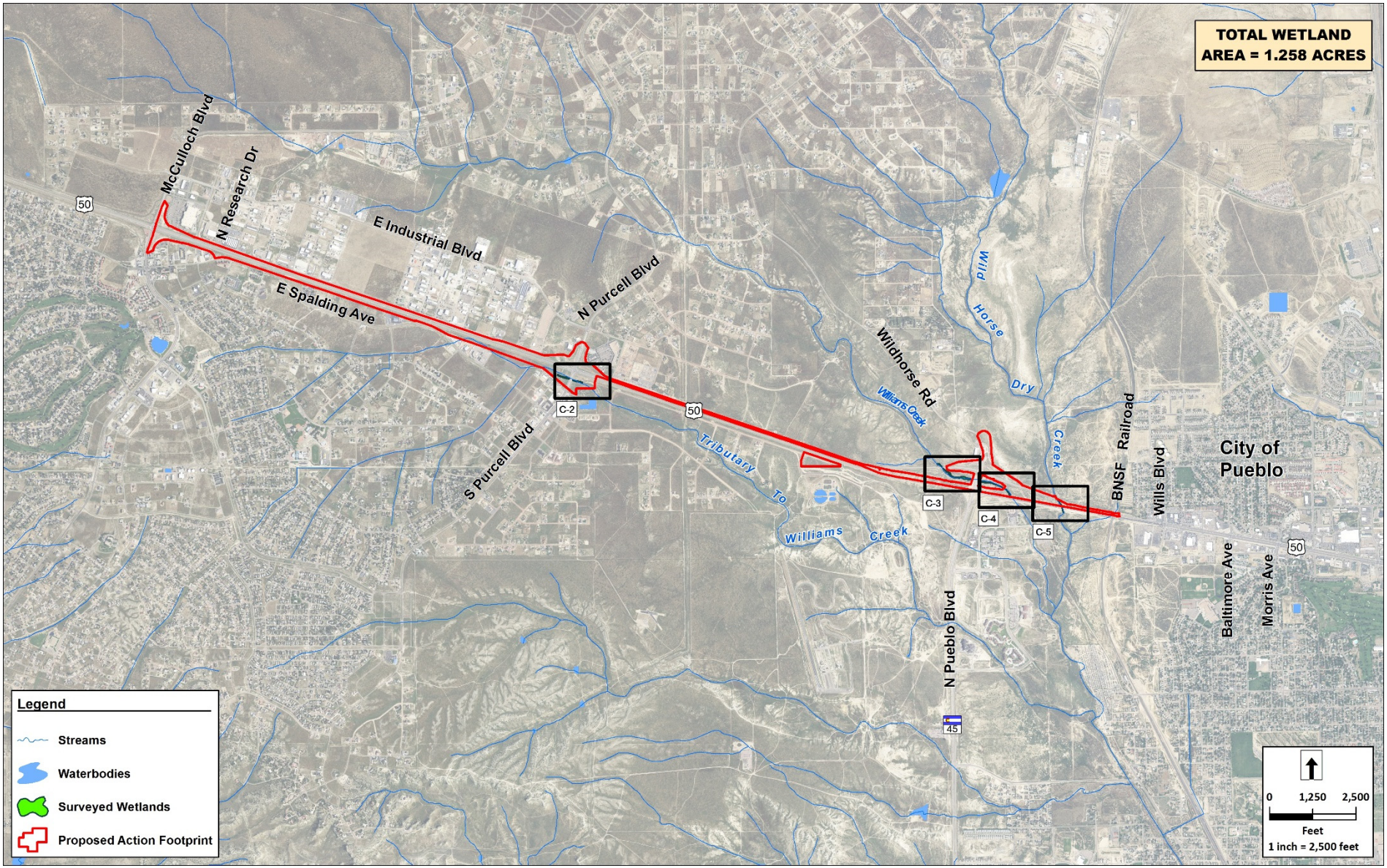

Figure C-2. Surveyed Wetlands Detail Map

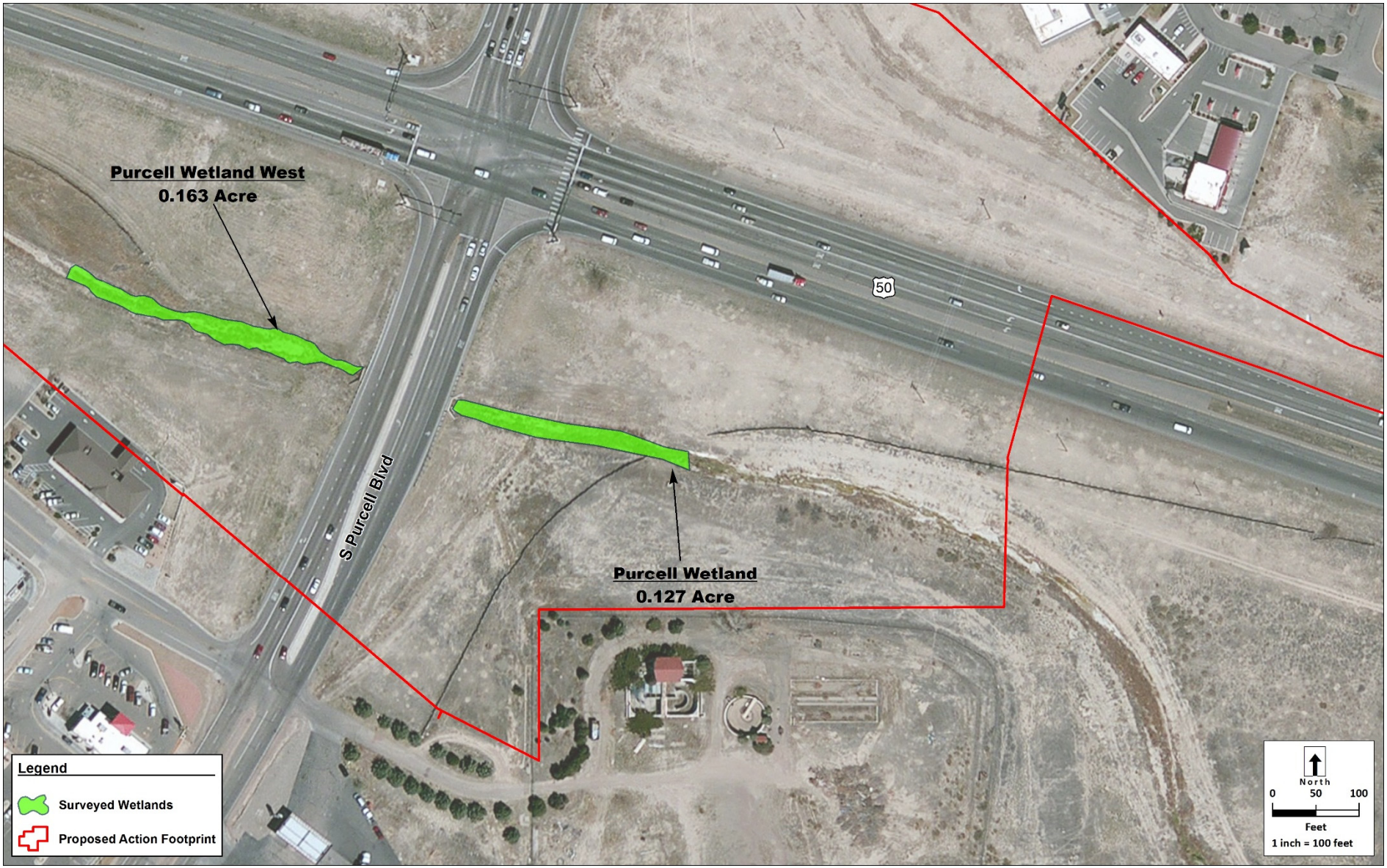

Figure C-3. Surveyed Wetlands Detail Map

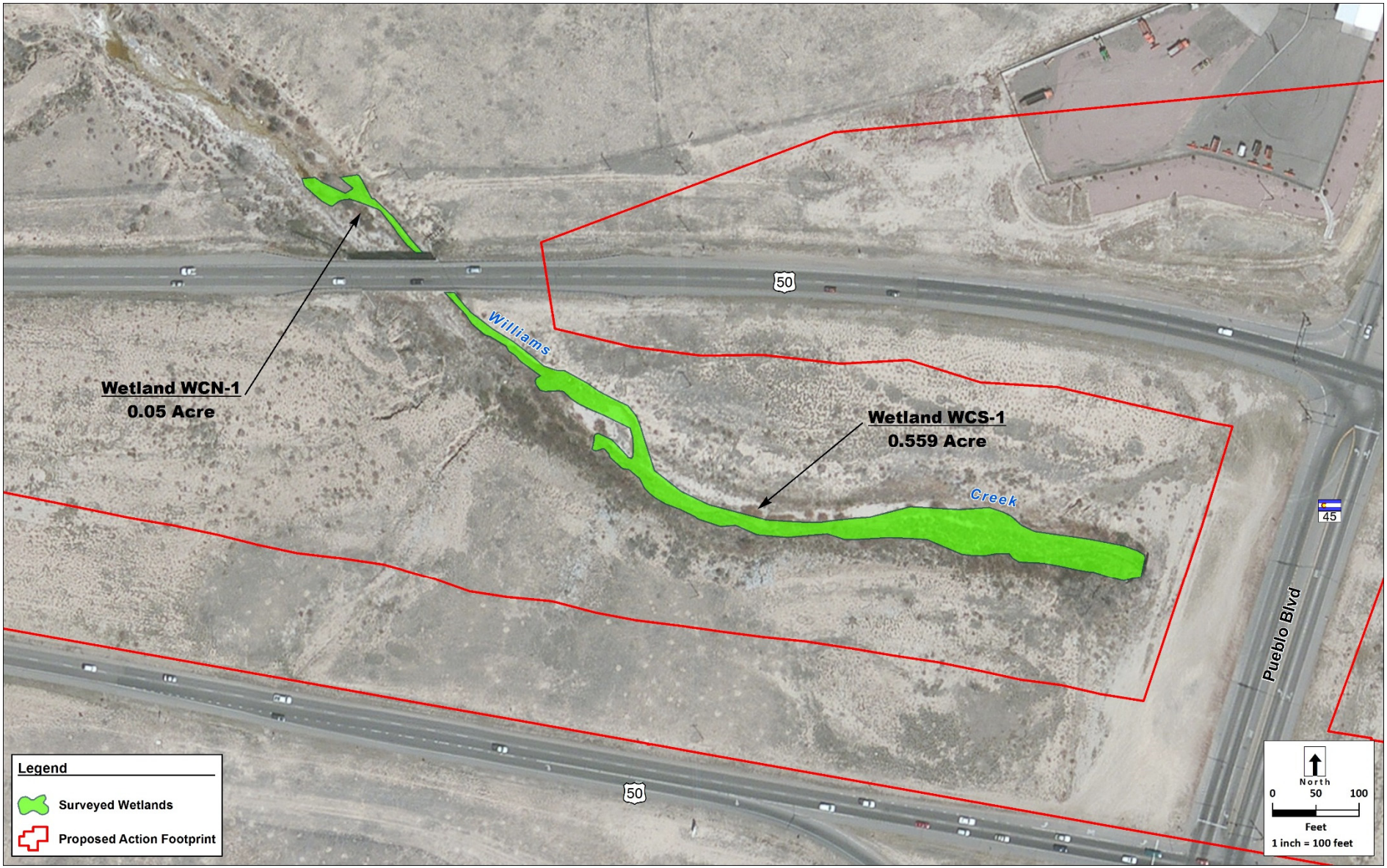

Figure C-4. Surveyed Wetlands Detail Map

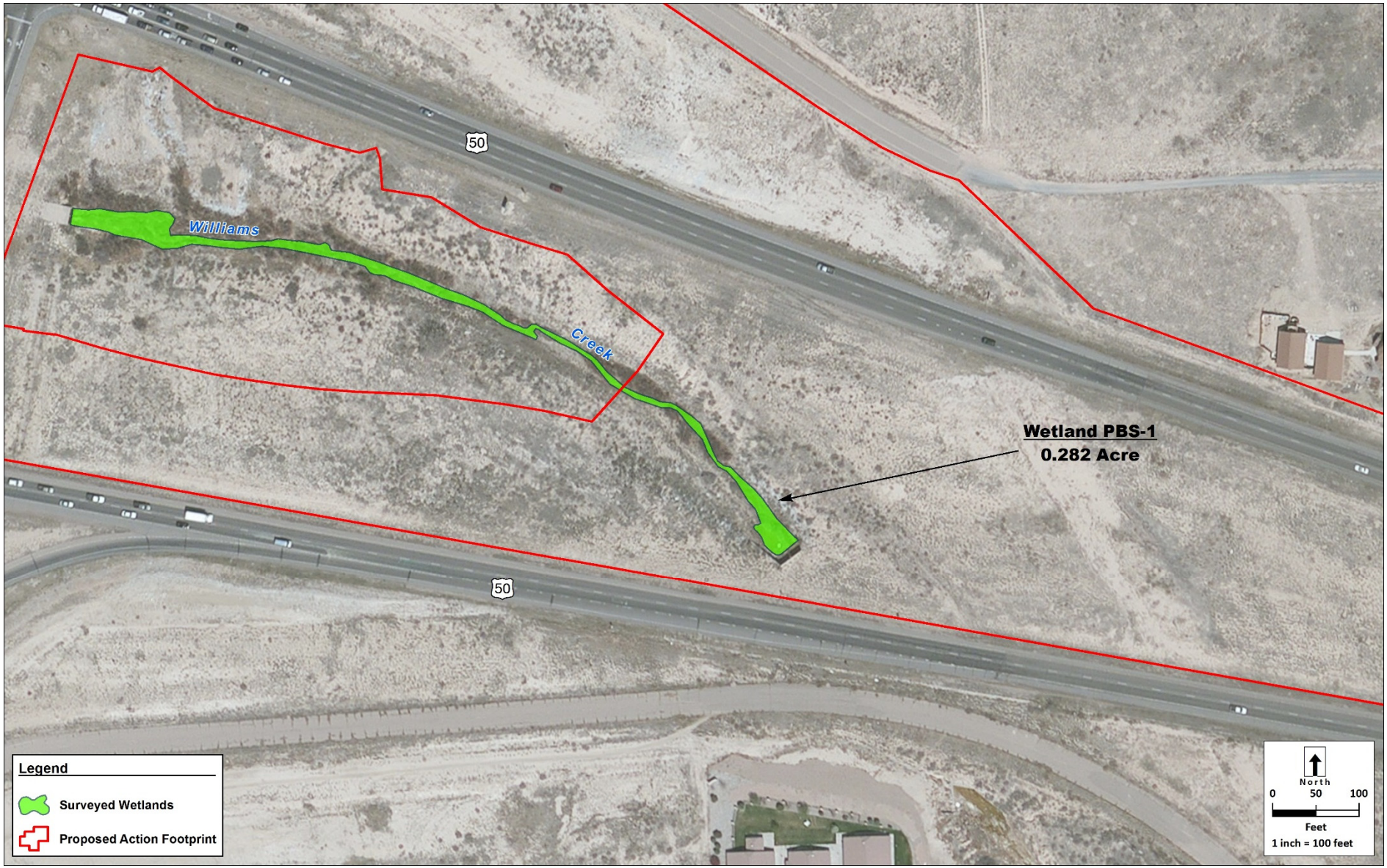

Figure C-5. Surveyed Wetlands Detail Map