AECOM Environment

Widefield PFC/PFAS Drinking Water Mitigation System Raw Water Pipeline, El Paso County, Colorado

Wetland Delineation and Biological Survey Report

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1.0 Introduction

The U.S. Army Corps of Engineers (USACE) and Widefield Water and Sanitation District (WWSD) are proposing to design and construct a Perfluorinated Compound and Per- and Polyfluoroalkyl Substances (PFC/PFAS) groundwater drinking water mitigation facility (DWMF). As part of this project, the discharge from existing permitted and operational groundwater wells will be piped to a raw water collection pipeline. The raw water pipeline will convey well water to the DWMF where it will pass through processes including pre-filtration, ion exchange, and a disinfection process in a dedicated pipeline and then will ultimately tie-in to the existing distribution system.

URS Group, Inc. (URS), an AECOM Company, is working with the USACE and SWSD to design and construct the project. The following report provides an evaluation of biological resources and wetlands and other waters potentially subject to permitting under Section 404 of the Clean Water Act. The study area included only those portions of the proposed raw water pipeline that would be placed in unpaved and relatively undisturbed areas.

The study area (Figure 1) is located in the southwestern part of Security-Widefield, Colorado. It is in Section 24 of Township 15 South, Range 66 West, 6th Principal Meridian (P.M.) and is depicted on the Fountain, Colorado, 7.5-minute U.S. Geological Survey topographic quadrangle map (USGS 1969). The study area includes approximately 1,600 feet of proposed pipeline corridor between Southmoor Drive and Highway 85, and an additional 1,000 feet of proposed pipeline corridor east of U.S. Highway 85. The study area includes three proposed crossings of Crews Gulch, two west of U.S. Highway 85 and one east of the highway. The width of the study area varies from 75 to 100 feet.

2.0 Methods

2.1 General Biological Surveys

General biological field surveys were conducted on November 29, 2018, by AECOM biologist Jeff Dawson. Prior to the field survey, maps were obtained showing the proposed pipeline route and study area (Figure 1). Detailed aerial imagery was obtained to use during the field work. Pedestrian surveys of the entire study area were conducted by using meandering transects to record notes on vegetation community structure and composition and wildlife and birds observed. The primary focus was on sensitive biological resources, such as raptor nests or prairie dog colonies, potential habitat for threatened or endangered species, and wetlands.

A desktop assessment was conducted prior to the initial field survey to identify potential wetlands and surface waters in the study area and other site information. Information collected and reviewed included current and historic aerial photographs (GoogleEarth 2017), web soil survey (NRCS 2018), topographic maps (USGS 1969, 2016), and National Wetland Inventory (U.S. Fish and Wildlife Service [USFWS] 2018a).

2.2 Wetland Delineation

AECOM biologist Jeff Dawson completed wetland delineations concurrent with the biological field surveys on November 29, 2018, to identify and evaluate surface waters and wetlands. Wetland delineations were conducted using the protocol outlined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and U.S. Army Corps of Engineers Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region Version 2.0 (Supplement) (Environmental Laboratory 2010). Wetlands were identified in the field as areas having positive evidence of three environmental parameters: hydrophytic vegetation, hydric soils, and wetland hydrology.

During field surveys, wetlands were classified using the Cowardin classification system (Cowardin et al. 1979). Plant species were identified using Weber and Wittmann (2012), Ackerfield (2015) and other references relevant to the region. Wetland plant species names and indicator status were obtained from the National Wetland Plants List (Lichvar et al. 2016). Synonyms and other standardized common names were taken from Ackerfield (2015).

Surface water features (e.g., streams and ponds) were identified by the presence of a defined bed and bank, evidence of an Ordinary High Water Mark (OHWM), and less than 5 percent vegetative cover within the bed. Information recorded for each surface water feature included the average OHWM, average bankfull depth, bank slope, substrate composition, source of hydrology, dominant vegetation, percent overstory, and wildlife observed.

The boundaries of aquatic features were recorded by field mapping on detailed aerial imagery. All aquatic features were photographed. All vegetative habitats were characterized and dominant species recorded. After completing the field survey, data was overlaid on aerial photographs, and acreages of surface water features and wetlands were calculated.

2.3 Threatened and Endangered Species Assessment

An analysis of potential impacts to federally listed endangered and threatened species was made by evaluating habitat suitability for species potentially present in the study area. The list of species considered was obtained from the USFWS Information, Planning, and Conservation System (IPaC) website (USFWS 2018b).

3.0 Results

3.1 Project Area Overview and Habitats

The study area is located mostly southwest of Crews Gulch and includes three crossings of Crews Gulch. The study area includes undeveloped lands, but the surrounding area has residential, industrial and transportation land uses. A recreational trail is located along Crews Gulch and is the main access to the study area. The study area is at an elevation of approximately 5,640 feet. The study area is in the Fountain Creek 8-digit hydrographic unit (11020003) (USGS 2018). Crews Gulch is shown on the USGS topographic map as intermittent and on the National Wetlands Inventory on-line viewer as a freshwater emergent wetland (PEM1Cx). Crews Gulch originates below Big Johnson Reservoir, flows approximately 2 miles to the study area, and discharges to Fountain Creek about 0.25 mile south of the study area. Soils in the study area are mapped as Ellicott loamy coarse sand, 0 to 5 percent slopes (NRCS 2018). Photographs of the study area are provided in Attachment A.

The study area includes the following habitats:

- Siberian elm riparian woodland. This habitat type occurs along Crew Gulch in a strip approximately 60 to 100 feet wide west of the highway. The primary species are Siberian elm (*Ulmus pumila*) and reed canarygrass (*Phalaris arundinacea*). The woodland occurs on terraces adjacent to Crew Gulch.
- Wetlands. Emergent wetlands occur along a portion of the concrete-lined Crews Gulch channel east of US Highway 85, and are dominated by reed canarygrass.
- Mid-grass prairie. This cover type occurs in the uplands south of Crews Gulch and west of the highway. The primary species is sand dropseed (*Sporobolus cryptandrus*), with smaller amounts of little bluestem (*Schizachyrium scoparium*), blue grama (*Bouteloua gracilis*), plains yucca (*Yucca glauca*), western pricklypear (*Opuntia macrorhiza*), and scattered Siberian elm. Soils in this area are sandy, and it is likely that this area has never been plowed.
- Mowed grasslands. These areas occur in uplands on both sides of Crews Gulch east of the highway. They have a mix of agricultural species, native grasses and annual weeds, and may be used as hay fields now or in the past. Plant species present include alfalfa (*Medicago sativa*), western wheatgrass (*Pascopryrum smithii*), blue grama, meadow fescue (*Schedonorus pratensis*), smooth brome (*Bromus inermis*), red-stem filaree (*Erodium cicutarium*), pineapple weed (*Matricaria discoidea*), and matted grama (*Bouteloua simplex*, an annual grass).

3.2 Wetlands and Surface Waters

Two aquatic resources were delineated in the study area (Figure 2, Table 1), including one wetland and Crews Gulch. Three crossings of Crews Gulch were delineated. Photographs are included in Attachment A, and wetland data forms are included in Attachment B.

Table 1. Wetlands and Surface Water Features in the Study Area

Aquatic Resource Name	Cowardin Classification[1]	Location	Area (Acres) Within Study Area[2]		Connectivity	Photo Numbers
			Wetlands	Surface Water		
WL-1	PEME	Within concrete-lined channel of Crews Gulch, located at upper crossing of Crews Gulch	0.048		Connected to Crews Gulch, which flows to Fountain Creek	4
Crews Gulch	R4SB	Channel of Crews Gulch at three crossings		0.083	Discharges to Fountain Creek	4, 7. 8
Total Aquatic Resources			0.048	0.083		

Notes:
[1]Classification based on Cowardin et al. 1979
PEME = Palustrine Emergent, seasonally flooded/saturated
R4SB = Intermittent streambed
[2]All measurements are approximate

Wetland 1 (WL-1) is located within a concrete-lined channel of Crews Gulch at the upper crossing. WL-1 is dominated by emergent vegetation, primarily reed canarygrass . Other species present include broadleaf cattail (*Typha latifolia*) and Siberian elm. The creek was flowing at the time of the survey, and soils were saturated. The wetland has formed on soils deposited on top of the concrete bottom of the channel, and the only soils indicator present is hydrogen sulfide. The depth of the soil pit was 13 inches, limited by the depth of the concrete.

Crews Gulch was evaluated at the three crossings.

- At the upper (upstream) crossing, the creek was about 4 feet wide with a bankfull depth of about 8 inches. Water was about 2 inches deep at the time of survey and was flowing rapidly. The channel was bounded on both sides by emergent wetlands that filled the bottom of the trapezoidal channel and overhung the channel. The bottom of the stream channel was concrete, and the banks were clay loam in the wetland. Algae covered about 90 percent of the concrete in the stream channel.
- At the middle crossing, the stream channel was 4 to 8 feet wide with a bankfull depth of about 10 inches. Water was about 4 inches deep at the time of survey. The bottom of the channel was mostly gravel with some chunks of concrete. The banks of the creek were sand and elevated 3 to 4 feet above the OHWM. The primary vegetation on the banks was Siberian elm and reed canarygrass.
- At the lower crossing, the creek had an OWHM about 20 feet wide and at least 10 inches or more deep. The water was barely flowing and was backed up behind a dam just upstream of Southmoor Drive. The channel bed was gravel, and the banks were sandy and 2 to 3 feet above the river, with a vegetation cover of Siberian elm and reed canarygrass.

Wetlands were only observed at the upper crossing, growing on sediment deposited in a concrete-lined channel. At the other two crossings, the dominant species on the banks was reed canarygrass, a wetland indicator species and the same species than is dominant in the wetland in the upper crossing. The reed canarygrass at the middle and lower crossings were growing on elevated sandy banks and within the floodplain, areas that did not have wetland hydrology. Siberian elm is an upland species and was typically present at the base of the slope on each side of the floodplain.

According to a representative from WWSD, the source of water at the time of survey was augmentation water discharged by the wastewater treatment plant.

Because Crews Gulch discharges to Fountain Creek, a perennial water, Crews Gulch and its associated wetland are expected to be considered waters of the U.S. and under USACE jurisdiction for Section 404

Clean Water Act permitting. The three proposed open-cut crossings of Crews Gulch are anticipated to be authorized under nationwide permit 12 Utility Line Discharges (Corps of Engineers 2017). This nationwide permit authorizes the construction, maintenance, repair and removal of utility lines and associated facilities in waters of the U.S., provided that losses of waters of the U.S. are less than 0.5 acre and that there is no change in pre-construction contours. There are several project criteria that require a pre-construction notification, including mechanized clearing in a forested wetland, a Section 10 permit for impacts to navigable waterways, impacts to waters of the U.S. of more than 500 feet or 0.1 acre, and permanent access roads constructed above grade or with impervious materials. None of these criteria appear to apply to this project. The proposed Crews Gulch crossings would be authorized under nationwide permit 12 without requiring notification to the USACE regulatory office, as long as the pre-construction notification conditions are not applicable to the project and the nationwide permit general conditions are followed.

3.3 Threatened or Endangered Species

The USFWS Mountain-Prairie Region (Region 6) lists nine federally proposed, candidate, threatened, or endangered species or subspecies with the potential to occur within the study area or be affected by the project (USFWS 2018). Table 2 describes these species and their potential for occurrence within the study area. Four of the species have the potential to occur in the study area and the other five are only relevant for projects involving water-related activities in the North Platte, South Platte, and Laramie River Basins that may affect listed species associated with the Platte River in Nebraska. The study area does not have suitable habitat for any of these species, and is not located in the Platte River watershed. The project will have no effect to federally listed endangered or threatened species.

The USFWS list of potential species does not include Preble's meadow jumping mouse (*Zapus hudsonius preblei*), which is a federally listed threatened species occurring in other portions of El Paso County. Preble's meadow jumping mouse is not known to occur south of Colorado Springs.

Table 2 – Federally Listed Species With the Potential to Occur or be Affected by Project Activity Within the Study Area

Common Name	Scientific Name	Status[1]	Habitat Description[2]	Potential For Occurrence in Study Area[3]	Conclusion
Birds					
Piping plover	*Charadrius melodus*	FT	Open, sparsely vegetated sand or gravel benches adjacent to alkali wetlands; on beaches, sandbars, and dredged material islands of major river systems and reservoirs. Relevant to projects in Colorado that involve water depletions to the Platte River System.	No suitable habitat in study area. The project would not result in depletions that could impact the species lower in the watershed.	*No effect.*
Whooping crane	*Grus americana*	FE	Migrates through central Nebraska. Relevant to projects in Colorado that involve water depletions to the Platte River System.	No suitable habitat in study area. The project would not result in depletions that could impact the species lower in the watershed.	*No effect.*
Least tern	*Sterna antillarum*	FE	Barren areas near water, such as saline salt marshes, sandbars in river beds, and shores of large impoundments. Relevant to projects in Colorado that involve water depletions to the Platte River System.	No suitable habitat in study area. The project would not result in depletions that could impact the species lower in the watershed.	*No effect.*

Table 2 – Federally Listed Species With the Potential to Occur or be Affected by Project Activity Within the Study Area

Common Name	Scientific Name	Status[1]	Habitat Description[2]	Potential For Occurrence in Study Area[3]	Conclusion
Mexican spotted owl	*Strix occidentalis lucida*	FT	Forested mountains and canyons with mature trees that create high closed canopies.	No suitable habitat in study area.	*No effect.*
Mammals					
North American wolverine	*Zapus hudsonius preblei*	PT	Occurs in a wide variety of alpine, arctic, and boreal habitats, including high elevation portions of Colorado.	No suitable habitat is present.	*No effect.*
Fishes					
Pallid sturgeon	*Scaphirhynchus albus*	FE	Floodplains, backwaters, chutes, sloughs, islands, sandbars, and main channel waters. Relevant to projects in Colorado that involve water depletions to the Platte River System.	No suitable habitat in study area. The project would not result in depletions or affect water quality that could impact the species lower in the watershed.	*No effect.*
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	FT	Clear, swift-flowing mountain streams with cover such as overhanging banks and vegetation.	No suitable habitat in study area.	*No effect.*
Plants					
Western prairie fringed orchid	*Platanthera praeclara*	FT	Unplowed, calcareous tall grass prairies and sedge meadows. Relevant to projects in Colorado that involve water depletions to the Platte River System.	No suitable habitat in study area. The project would not result in depletions that could impact the species lower in the watershed.	*No effect.*
Ute ladies'-tresses orchid	*Spiranthes diluvialis*	FT	Moist meadows associated with perennial stream terraces, floodplains, and oxbows at elevations between 4,300 and 6,850 feet.	No suitable habitat in study area.	*No effect.*

[1]FE = federally endangered, FT = federally threatened, PT = federally proposed threatened (USFWS 2018b).
[2]Habitat information source: USFWS 2018c
[3]Potential for occurrence is based on field surveys and desktop analysis.

3.4 Other Biological Resources

No raptor nests were observed within or near the study area. No unusual or potentially sensitive habitats were observed.

The woodlands and grasslands in the study area provide potential nesting habitat for various species of migratory birds. Migratory birds, active nests, eggs, and young are protected under the Migratory Bird Treaty Act, which prohibits unpermitted take or interference with nesting. Removal of vegetation should be scheduled to avoid the nesting season, which for most species is mid-April to August 15. Some raptor and owl species begin nesting as early as February. If clearing of land will occur during the nesting

season, a survey must be completed to identify whether any active nests are present. If active nests are in the proposed construction area, construction needs to be delayed near the nests until the young birds have fledged and the nests have been abandoned.

4.0 Conclusions

The USACE and WWSD are proposing construction of a DWMF including a raw water pipeline. A biological survey and wetland delineation of about 2,600 feet of proposed pipeline route was conducted on November 29, 2018.

The study area is mostly undeveloped land with Siberian elm woodland along Crews Gulch and mid-grass prairie in the upland. The proposed pipeline route includes three crossings of Crews Gulch, an intermittent tributary of Fountain Creek. One small wetland was found at the upper crossing of Crews Gulch, within a concrete-lined channel. No raptor nests or other sensitive biological resources were observed. Construction of the pipeline would involve one open-cut crossing of Crews Gulch where wetlands are present and two crossings of the waterway without adjacent wetlands. Crews Gulch and its adjacent wetlands are expected to be considered waters of the U.S. under the jurisdiction of Section 404 of the Clean Water Act. The open-cut crossings could be constructed under authorization of nationwide permit 12 without notification to the USACE regulatory office, as long as regional and nationwide permit conditions are followed.

5.0 References

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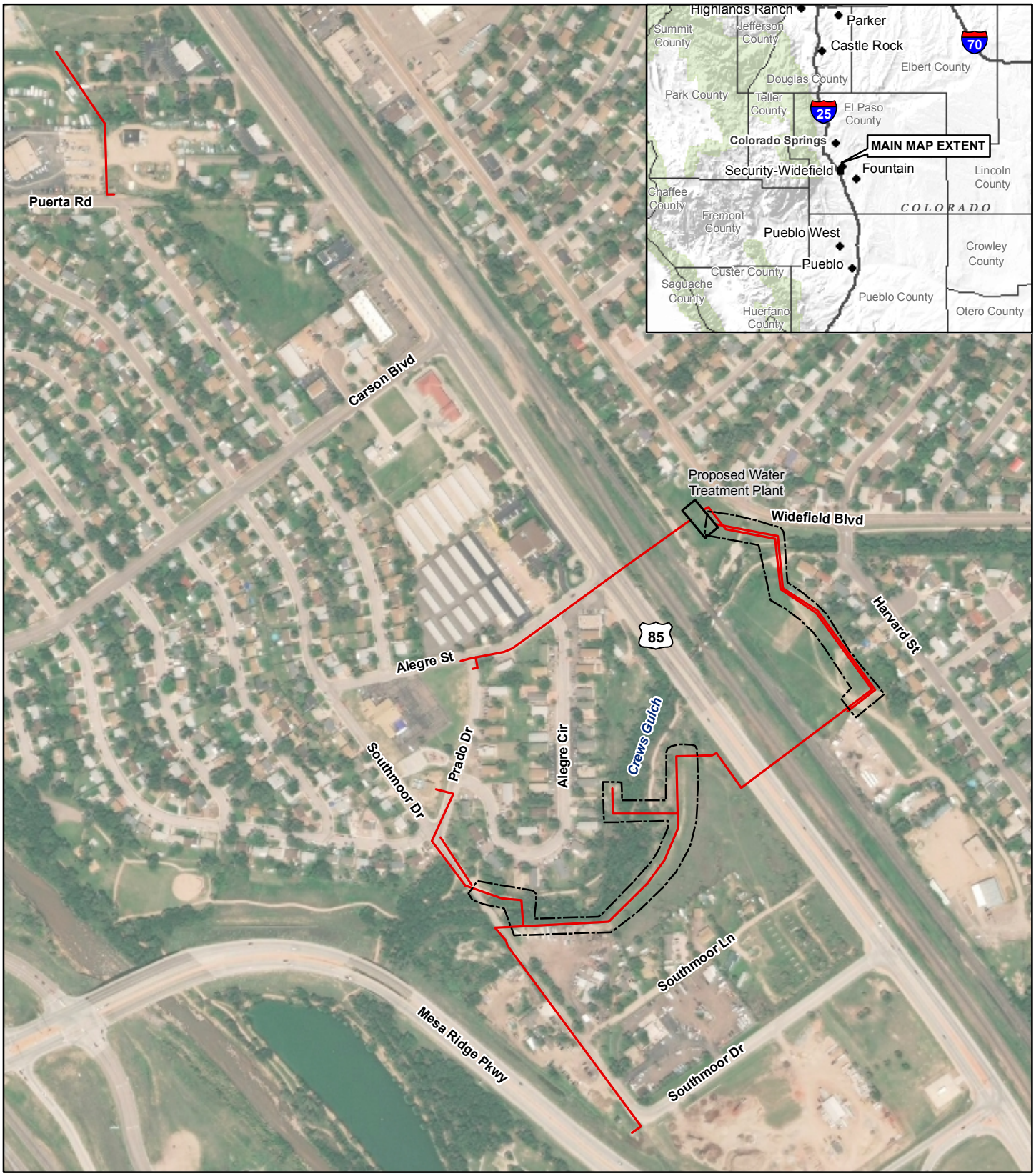
Figures



Legend

- Proposed Pipeline Alignment
- Water Treatment Plant
- Study Area

0 125 250 500 Feet

1 inch = 500 feet

Widefield Drinking Water Mitigation System

Figure 1
Study Area

AECOM 6200 South Quebec Street
Greenwood Village, Colorado 80111

1/21/2019

\\Denver\Denver\DCS\Projects\WTR\60589841_PAFB_PFAS\900_CAD_GIS\920_929_GIS_Graphics\WetlandsCultural\Widefield_Wet_Fig1_StudyArea.mxd

Legend

- Proposed Pipeline Alignment
- Water Treatment Plant
- Study Area
- Wetland
- Water

0 62.5 125 250 Feet

1 inch = 250 feet

Widefield Drinking Water Mitigation System

Figure 2
Wetlands and Other Waters

AECOM 6200 South Quebec Street
Greenwood Village, Colorado 80111

1/21/2019

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Attachment A
Photographic Log

1. Siberian elm woodland. Looking west from near middle pipeline crossing of Crews Gulch.

2. Mid-grass prairie dominated by sand dropseed. Looking south, west side of Crews Gulch.

3. Mowed grassland. Looking southwest from upper pipeline crossing.

4. Wetland 1 at upper pipeline crossing of Crews Gulch, looking south.

5. Soil pit in Wetland 1.

6. Upland soil pit for Wetland 1.

7. Middle pipeline crossing of Crews Gulch. Looking north from pedestrian bridge.

8. Lower pipeline crossing of Crews Gulch, looking east from Southmoor Drive bridge.

Attachment B
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Widefield Water Pipeline City/County: Security-Widefield/ El Paso Sampling Date: 11/29/18

Applicant/Owner: Corps of Engineers and Widefield Water and Sanitation State: CO Sampling Point: UP-1

Investigator(s): Jeff Dawson Section, Township, Range: S24, T15S, R66W

Landform (hillslope, terrace, etc.): plain Local relief (concave, convex, none): flat Slope (%): <1

Subregion (LRR): Western Great Plains (LRR G) Lat: 38.730269 Long: -104.722560 Datum:

Soil Map Unit Name: Ellicott coarse sandy loam, 0-5% slopes NWI classification: Upland

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes ( ) No (•)
Hydric Soil Present?	Yes ( )	No (•)	
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 20 x 20 ft	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum Plot size: 20 x 20 ft			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum Plot size 20 x 20 ft			
1 *Bouteloua simplex*	40	Yes	UPL
2 *Sporobolus cryptandrus*	30	Yes	FACU
3 *Medicago sativa*	8	No	UPL
4 *Matricaria discoidea*	5	No	FACU
5 *Bouteloua gracilis*	15	No	UPL
6 *Erodium cicutarium*	1	No	UPL
7 *Symphyotrichum sp.*	2	No	FACU
8.			
9.			
10.			
	101	= Total Cover	
Woody Vine Stratum Plot size: 20 x 20 ft			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 5 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	37	x 4 =	148
UPL species	64	x 5 =	320
Column Totals:	101 (A)		468 (B)

Prevalence Index = B/A = 4.63

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)
- [ ] 5 - Wetland Non-Vascular Plants [1]
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ( ) No (•)

Remarks: A few Siberian elm in field. Area has been mowed, perhaps for hay production. Goose droppings.

SOIL

Sampling Point: UP-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR4/4	100					Loam	Some asphalt chunks.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 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 present):

Type:

Depth (inches): 13 inches

Hydric Soil Present? Yes ○ No ◉

Remarks: Concrete at 13 inches, asphalt inclusions. Soil probably disturbed during construction of adjacent concrete-line channel. No hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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 Iton (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 ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

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

Remarks: No indicators

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: Widefield Water Pipeline City/County: Security-Widefield/ El Paso Sampling Date: 11/29/18

Applicant/Owner: Corps of Engineers and Widefield Water and Sanitation State: CO Sampling Point: WL-1

Investigator(s): Jeff Dawson Section, Township, Range: S24, T15S, R66W

Landform (hillslope, terrace, etc.): concrete-line channel Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): Western Great Plains (LRR G) Lat: 38.730184 Long: -104.722539 Datum:

Soil Map Unit Name: Ellicott coarse sandy loam, 0-5% slopes NWI classification: PEM

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

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ] Soil [ ] or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes (•)	No ( )	**Is the Sampled Area within a Wetland?** Yes (•) No ( )
Hydric Soil Present?	Yes (•)	No ( )	
Wetland Hydrology Present?	Yes (•)	No ( )	

Remarks: Wetland along both sides of 4-foot creek, filling bottom of concrete-lined channel. Wetland has developed on sediment deposited in channel.

VEGETATION - Use scientific names of plants.

Tree Stratum Plot size: 15-20 ft	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum Plot size: 15 x 20 ft			
1 *Ulmus pumila*	5	Yes	UPL
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum Plot size 15 x 20 ft			
1 *Phalaris arundinacea*	100	Yes	FACW
2 *Typha latifolia*	5	No	OBL
3 *Bromus inermis*	2	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	107 = Total Cover		
Woody Vine Stratum Plot size:			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	100	x 2 =	200
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	2	x 5 =	10
Column Totals:	107 (A)		215 (B)

Prevalence Index = B/A = 2.01

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)
- [ ] 5 - Wetland Non-Vascular Plants [1]
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks: Ulmus pumila and Bromus inermis at edge of channel.

SOIL

Sampling Point: WL-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR3/2	100					clay loam	moist to saturated

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

[2]Location: PL=Pore Lining, M=Matrix

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

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 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 present):

Type:

Depth (inches): 13 inches

Hydric Soil Present? Yes ◉ No ○

Remarks: concrete bottom of lined channel at 13 inches. Trapezoidal channel. Only indicator is hydrogen sulfide. Other indicators may not be evident because soils may be relatively recently deposited.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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 Iton (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 ◉	Depth (inches):
Water Table Present?	Yes ◉	No ○	Depth (inches): 9 inches
Saturation Present? (includes capillary fringe)	Yes ○	No ○	Depth (inches): 9 inches

Wetland Hydrology Present? Yes ◉ No ○

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

Remarks: Soil pit about 5 feet from creek. Current flow is augmentation water from wastewater treatment plant. Other source of hydrology include stormwater and possibly groundwater discharge.