

May 21, 2013

Wetland Delineation Report

Interstate 70 Bridge Over Havana Street
Denver, Colorado

Prepared For:

Parsons Transportation Group, Inc.
1700 Broadway Street, Suite 900
Denver, Colorado 80290

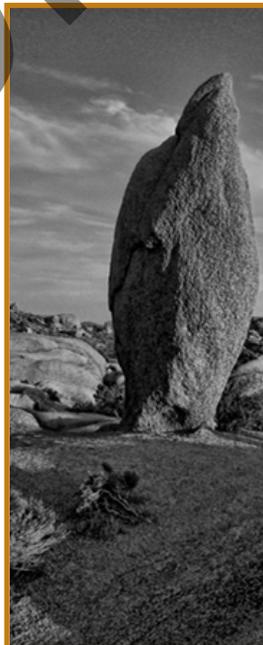
Pinyon Project No.:

I/13-671-01.8003

CDOT Project No.:

FBR 0704-230 (19339)

DRAFT





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I. Introduction

The Colorado Department of Transportation (CDOT) has retained Parsons Transportation Group, Inc. (Parsons) to assist CDOT in procuring a design-build contract for a project to replace the Interstate 70 (I-70) Bridge over Havana Street, located in Denver, Colorado (Figure 1). This project was originally part of the I-70 East project, and a Draft Environmental Impact Statement (DEIS), the *I-70 East Draft Environmental Impact Statement* has been completed (CDOT, 2008). The replacement of the I-70 Bridge over Havana Street is being fast-tracked as a design-build project. This project is in part being funded using federal monies through the Funding Advancements for Surface Transportation and Economic Recovery (FASTER) program which are being administered by the Colorado Department of Transportation (CDOT). Because federal money is being used, the project will follow the guidelines outlined by the National Environmental Policy Act (NEPA). For this project, a Categorical Exclusion (Cat Ex) will be completed to document environmental conditions, specifically through completion of CDOT Form #128. This project will also follow standards or requirements outlined in the DEIS. Pinyon Environmental, Inc. (Pinyon) has been contracted by Parsons to complete environmental evaluations to support the Cat Ex, including completion of this Wetland Delineation Report (report). This report has been prepared to identify existing wetland conditions, and to address potential project impacts to wetlands or stream resources in accordance with the following federal and state regulations or policies:

- **Section 404 of the Clean Water Act (CWA)** – Regulates waters of the US and related wetlands, and impacts to these features and associated wetlands would require permitting through the U.S. Army Corps of Engineers (USACE). Waters of the United States (WUS) include navigable waters and their tributaries. Both open waters and areas with an ordinary high water mark may be defined as WUS. Wetlands that are abutting, or adjacent to, these areas are also under the jurisdiction of the USACE. Wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (USACE, 1987). Following recent Supreme Court rulings, the USACE typically does not take jurisdiction over wetlands or open waters that do not flow to navigable waters unless these areas are considered to have a "significant nexus" to navigable waters. Only the USACE has the authority to make jurisdictional determinations.

If wetlands do occur, and impacts to WUS and/or wetlands between 0.10 and 0.50 acre, most projects are expected to be permitted under a USACE Nationwide Permit, and mitigation would be required. If impacts are below 0.10 acre, then only a Pre-Construction Notification (PCN) to the USACE is required. An Individual Permit generally is required where impacts exceed 0.5 acre; however, other specific components of a project could trigger an Individual Permit (e.g., river channel realignment, construction of a drop structure). An Individual Permit is typically a more difficult permit to obtain, as it requires Public Notice, an evaluation of alternatives, and more comprehensive mitigation planning. Only the USACE has the authority to make final determinations regarding jurisdiction, permitting, and mitigation.

CDOT also has wetland-specific requirements beyond what is required by the USACE. For instance, a CDOT Wetland Finding report would also be required if permanent wetland impacts exceed 500 square feet, or if temporary impacts exceed 1,000 square feet, regardless of whether the USACE has jurisdiction. This does not include impacts to open water areas. CDOT requires mitigation for all wetland impacts at a 1 to 1 ratio.

I.1 Project Location

The proposed project is located at the Interstate 70 (I-70) Bridge over Havana Street in Denver, Colorado. The approximate geographical location of the project is centered at decimal degree coordinates (North American Datum [NAD] 83) latitude 39.775731°, longitude -104.865912°. The project is located in Sections 22 and 23, Township 3 South, Range 67 West, of the 6th Principal Meridian on the United States Geological Survey (USGS) Montbello, Colorado 7.5-Minute Quadrangle. The elevation of the Site is approximately 5,290 feet above mean sea level (msl). The study area gently slopes to the west (USGS, 1994). The nearest water body is Sand Creek, which is located 0.5 miles to the southwest of the study area.

I.2 Project Description

The project consists of replacing Structure E-17-JP, which is the I-70 bridge over Havana Street. The bridge replacement will improve safety and level of service, and it will be widened to accommodate the new configuration for the I-70 East project. Specifically, the shoulders will be widened, two toll lanes will be added in both the eastbound and westbound directions, and an enhanced concrete barrier will be emplaced.

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2. Methods

Pinyon scientists Elly Weber and Scott Fanello visited the site on April 12, 2013 to delineate wetlands within the study area. While in the field, wetland boundaries were recorded with a Trimble Geo XH-6000 global positioning system (GPS) unit. The GPS data were downloaded and mapped in ArcGIS 10.1 mapping software. The delineated wetlands were also flagged during the field visit. Photos of wetland areas were taken while in the field (Appendix A).

The wetland delineation was completed in accordance with the 1987 USACE Wetland Delineation Manual (USACE, 1987), and the 2010 Great Plains Regional Supplement (USACE, 2010). Wetlands were defined by vegetative, hydrologic, and soil features, and the data were recorded onto field data forms (Appendix B). Sampling points were completed in representative locations. Vegetation was identified and documented within the strata-specific sampling radii recommended by the USACE (30 feet for trees, 15 feet for shrubs, five feet for herbs, and 15 feet for woody vines) (USACE, 2010). Additional plant species located outside of the sampling point, but within the sampled plant community, are noted on the data forms as needed to better describe the nearby vegetation. Wetland indicator status for plant species was referenced in the "National Wetland Plant List Final Draft Ratings" (USACE, 2012; USDA, 2012a). Species were classified as OBL (obligate wetland species), FACW (facultative wetland species), FAC (facultative species), FACU (facultative upland), or UPL (upland species). Plant species classified as FAC, FACW, or OBL, are considered hydrophytic plants, and are wetland indicators. Wetlands were also classified using the Cowardin classification system (Cowardin, et al., 1979). Classifications are further described in the results section.

Hydrology and soil data were also collected at the sampling points. Hydrology indicators may include topographic positions, presence of standing water and/or saturated soil, profile conditions, drainage patterns, water marks, sediment deposits, or oxidized root channels in the upper 18 inches of the soil profile.

Wetland soil indicators may include presence of color streaking (mottling), gleying (greyish coloration), reducing conditions, hydrogen sulfide odor, high organic content, and organic matter streaking in the surface layer of sandy soils. Soil pits were hand-excavated near the edge of potential wetlands to verify indicators of vegetation, wetland hydrology and hydric soils.

Wetland areas identified in the *I-70 East Supplemental Draft Environmental Impact Statement Section 4(F) Evaluation: Wetlands and Waters of the U.S. Technical Report* (DEIS) are also included in this report (CDOT, 2013).

3. Results

3.1 General Site Conditions

3.1.1 Upland Vegetation

The proposed project will be located at the I-70 Bridge over Havana Street and the surrounding interchange. The bridge, I-70 east and west of the bridge, the on- and off-ramps, and Havana Street will be affected. A UPRR Railway spur within the study area will not be affected. Given the presence of the roadway, the bridge, the railroad spur, and surrounding development, it is likely that the natural vegetation, soils, and hydrology have been altered by filling, grading, and improvement activities.

The upland vegetation in the study area included upland grassy and weedy roadside habitat, and areas of ornamental landscaped vegetation. Vegetative cover in the upland portions of the study area ranged from zero to 100 percent. Vegetation quality in the grassy and weedy upland portions of the study area was fair to poor, with a mix of native, non-native, and weedy species. Vegetative cover present in black-tailed prairie dog (*Cynomys ludovicianus*) (prairie dog) colonies present in several portions of the study area, was much more sparse than in areas located outside prairie dog colonies. The vegetation quality in the wetland was fair to good with native herbaceous and shrub species.

3.1.2 Waters of the United States

The only hydrologic feature within the study area is a concrete-lined canal located in the north part of the study area (Figure 2). This canal is a blue-line feature on the USGS 7.5 minute quadrangle, and is unnamed (USGS, 1994). It flows on the west side of Havana Street and takes a 90-degree turn under the road towards the east. This feature is not likely a WUS because it flows north into Havana Ponds, which do not appear to have an outlet to a recognized WUS.

3.1.3 General Soils

The soils observed during the extension of sampling points in both the wetland and upland areas were clayey loams and sands (Appendix B). The soil types within Denver County are unmapped; therefore soil classification data is unavailable.

3.2 Wetland

Six wetland areas were identified within the study area. Two wetlands were identified as part of the DEIS (CDOT, 2013). They were Wet280-04 and Wet280-05, and are discussed along with the wetlands delineated by Pinyon in the sections below.

3.2.1 Wetland I

Wetland I (WL-1) was located in a low area adjacent to the eastbound I-70 on-ramp from northbound Havana Street (Photographic log) (Figure 2). This wetland was a palustrine emergent (PEM) wetland dominated by narrowleaf cattail (*Typha angustifolia*), which is an obligate wetland herbaceous plant. A PEM wetland is a type of wetland dominated by rooted erect herbaceous wetland plants. Some woody vegetation (such as shrubs) may be present, but the percent coverage must be less than 30%. The primary wetland hydrology indicators included oxidized rhizospheres on living roots. Secondary indicators included geomorphic position and the FAC-Neutral Test, which only evaluates obligate and

facultative wetland plants against upland and facultative upland plants for the purposes of determining wetland hydrology. The hydric soil indicator was a depleted matrix. Sampling Point 1 (SP-1) was completed in WL-1. This wetland appears to be isolated, and is not likely to be deemed jurisdictional; however, only the USACE has the authority to make a jurisdictional determination.

3.2.2 Wetland 2

Wetland 2 (WL-2) was also a PEM wetland, dominated by reed canarygrass (*Phalaris arundinacea*) (Photographic Log) (Figure 2). Sandbar willow (*Salix exigua*) was also present, but at only 20% coverage, which does not meet the criteria for a Palustrine Scrub-Shrub (PSS) wetland. The wetland hydrology indicator was saturation, which was present at a depth of two inches below the ground surface (bgs). The hydric soil indicator was a depleted matrix. Sampling Point 3 (SP-3) was completed in this wetland. WL-2 was located in a ditch on the south side of the eastbound I-70 on ramp from northbound Havana Street (Figure 2). This wetland appears to be isolated, and is not likely to be deemed jurisdictional; however, only the USACE has the authority to make a jurisdictional determination.

3.2.3 Wetland 3

Wetland 3 (WL-3) was located in the far northwest portion of the study area, in a stormwater basin with riprap-lined trickle channels (Photographic Log) (Figure 2). WL-3 was a PEM wetland, dominated by narrowleaf cattail. The wetland hydrology indicators included surface water at a depth of one inch, high water table, and saturation at the surface. A soil pit could not be dug due to the presence of riprap; hydric soil was assumed based on the presence of standing water and 100% coverage of obligate wetland plants. This wetland appears to be isolated, and is not likely to be deemed jurisdictional; however, only the USACE has the authority to make a jurisdictional determination.

3.2.4 Wetland 4

Wetland 4 (WL-4) was located in a low area along the west side of Havana Street, just to the south of the end of the concrete-lined canal, north of I-70 (Figure 2). WL-4 was a PEM wetland, dominated by narrowleaf cattail (Photographic Log). Sandbar willow (*Salix exigua*) was also present, but at only 10% coverage, which does not meet the criteria for a Palustrine Scrub-Shrub (PSS) wetland. Wetland hydrology indicators included saturation at the surface and the presence of a thin layer of muck at the surface. The hydric soil indicator was one centimeter of muck present on the surface. This wetland appears to be isolated, and is not likely to be deemed jurisdictional; however, only the USACE has the authority to make a jurisdictional determination.

3.2.5 Wetland Wet280-04

According to the DEIS, Wetland Wet280-04 was a depressional PEM wetland dominated by curly dock (*Rumex crispus*) (CDOT, 2013). According to the report, the wetland was in an area that collects stormwater runoff in the northeast quadrant of the I-70 and Havana Street interchange (CDOT, 2013) (Figure 2). The hydric soil indicators presented in the Wetland Determination Data Form were Sandy Redox. It was noted that, "Sand particles are coated with iron redox" (CDOT, 2013). Organic streaking was also noted in the layer between 5-12 inches bgs (CDOT, 2013). The wetland hydrology indicators noted in the Wetland Determination Data Form included in the DEIS were the two secondary indicators of surface soil cracks and geomorphic position (CDOT, 2013). This wetland appears to be isolated, and is not likely to be deemed jurisdictional; however, only the USACE has the authority to make a jurisdictional determination.

3.2.6 Wetland Wet280-05

According to the DEIS, Wetland Wet280-05 was a PEM wetland located in a roadside ditch in the northeast quadrant of the I-70 and Havana Street interchange (CDOT, 2013) (Figure 2). The wetland was dominated by the obligate wetland plant narrowleaf cattail (CDOT, 2013). According to the Wetland Determination Data Form included in the DEIS, the hydric soil indicator was loamy gleyed matrix, and the wetland hydrology indicator included the presence of surface water (CDOT, 2013). This wetland appears to be isolated, and is not likely to be deemed jurisdictional; however, only the USACE has the authority to make a jurisdictional determination.

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4. Impacts and Conclusions

The design is in the conceptual phase of the design-build process, and it appears that no wetlands will be impacted. It is not likely that a Finding would be required by CDOT.

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5. References

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- USACE, 1987. "U.S. Army Corps of Engineers Wetland Delineation Manual," United States Army Corps of Engineers Wetland Training Institute, January 1987.
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- Federal Register, 1977. The Provisions of Executive Order 11990 (Protection of Wetlands), 42 FR 26961, 3 CFR, 1977, page 121. The Federal Register, May 24, 1977.
- USDA, 2012a. "Plant Database," plants.usda.gov, United States Department of Agriculture, Natural Resources Conservation Service, Website accessed May 2013.
- USDA, 2012. "Web Soil Survey," websoilsurvey.nrcs.usda.gov, United States Department of Agriculture, Natural Resource Conservation Service, Website accessed May 2013.
- USGS, 1994. "7.5-Minute Topographic Map, Fitzsimons Quadrangle," United States Geological Survey, 1994.

Figures

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Legend

USGS 7.5' Topographic Map
Montbello, CO 1965 (Revised 1994)

 Study Area Boundary



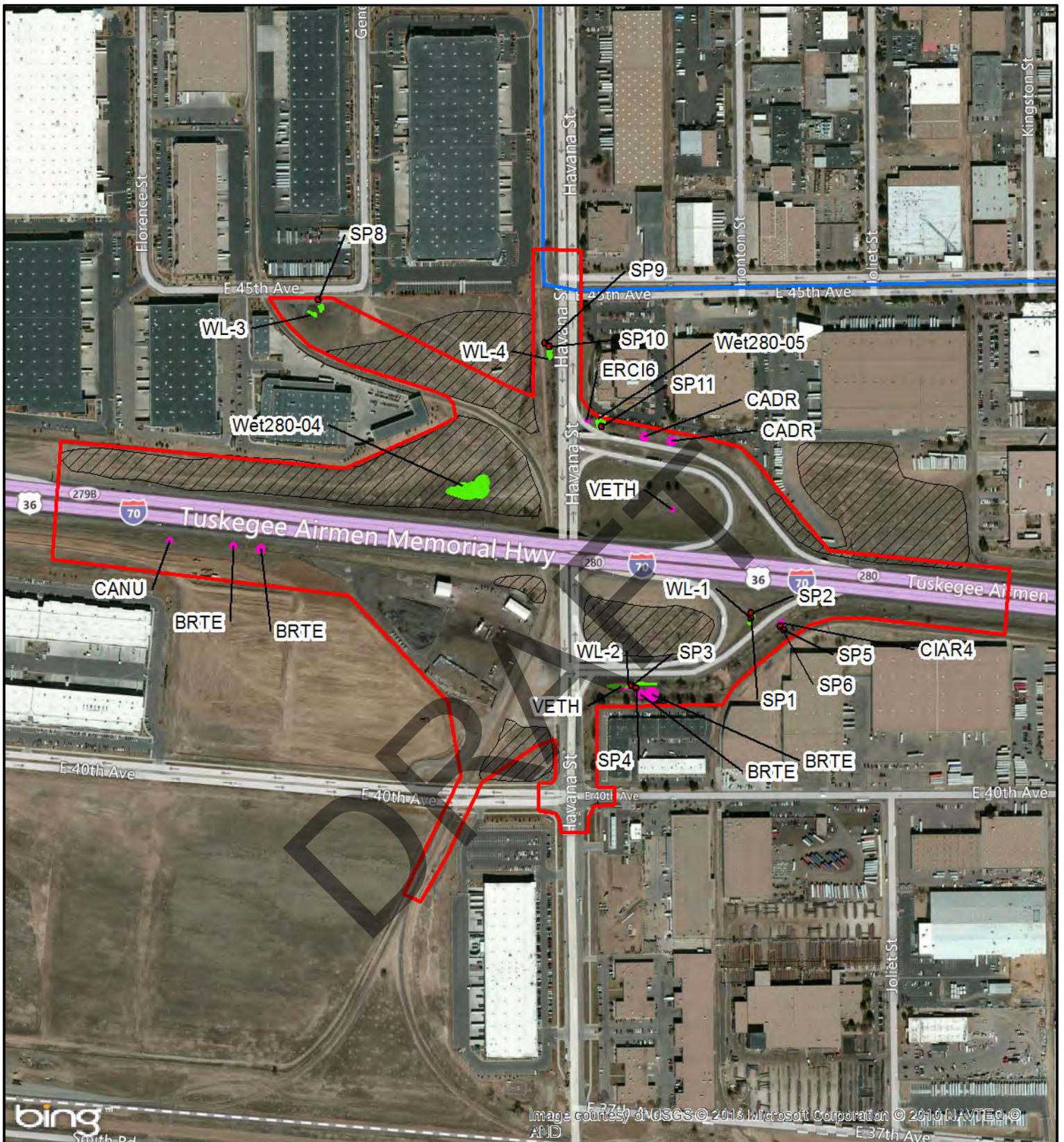
PROJECT LOCATION

*I-70 Bridge Over Havana Street
Denver, Colorado*

Site Location: Sections 22 and 23, Township 3S, Range 67W, 6th Principal Meridian

Drawn By: TJD

Figure 1



Legend

- Sampling Point
- Unnamed Canal
- Noxious Weeds
- Wetland
- Prairie Dogs
- Study Limits

Notes:
See Table 3-3 (EOM) for Noxious Weed definitions.



STUDY AREA

*I-70 Bridge Over Havana Street
Denver, Colorado*

Site Location: Sections 22 and 23, Township 3S, Range 67W, 6th Principal Meridian		Drawn By: TJD	Figure 2
...2013\11367101 I-70 Bridge Over Havana\Figures\ArcMap\MXD\Figure 2 - Study Area.mxd		Reviewed By: EMW	Revision: 5/21/2013
Job No: 1/13-671-01			

Appendix A Photographic Log

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1. Facing West,
View of
Eastbound I-70
On-Ramp Right-
Of-Way (ROW)
from Havana
Street.



2. Facing East,
View of ROW of
Eastbound
I-70 with Small
Ditch.



3. Facing Southwest, View of Sampling Point-1 (SP-1) in Wetland 1 (WL-1).



4. Facing Southwest, Overall View of WL-1. Note Mowed Wetland Vegetation.



5. Facing West,
View of SP-2,
Upland
Sampling Point
Adjacent to
SP-1.



lower case "l" here

6. Facing West,
View of Black-
Tailed Prairie
Dog (*Cynomys*
ludovicianus)
(Prairie Dog)
Colony in
Southeast
Quadrant of
Study Area.



7. Facing West,
View of
Railroad Tracks
and Small
Prairie Dog
Colony in
Southwest
Quadrant of
Study Area.



8. Facing North,
View of
Interstate 70
(I-70) Bridge
Over Havana
Street.



9. Facing West,
View of ROW
Along
Eastbound I-70.



10. Facing
Southwest, View
of Railroad
Tracks in
Southwest Arm
of Study Area.



11. Facing
West, View of
SP-3 in WL-2.



12. Facing
West, View of
SP-4, Upland Pit
Adjacent to
SP-3.



13. Facing West, View of WL-2 with Wetland Flagging.



14. Facing South, View of SP-5 in Roadside Ditch. Wetland Vegetation Present, But Lacked Hydric Soils.



15. Facing West, View of WL-3 in Stormwater Basin.



16. Facing Southeast, View of Partially-Vegetated Northwest Quadrant of Study Area.



17. Facing East,
View of
Railroad Spur in
Mid-Ground and
I-70 Bridge Over
Havana Street in
Background.



18. Facing East,
View of Prairie
Dog Colony in
ROW of
Westbound I-70
West of Havana
Street.



19. Facing East,
View of Area
Within
Cloverleaf
Interchange in
Northeast
Quadrant of
Study Area.



20. Facing
Southeast, View
of WL-4 in
Ditch West of
Havana Street,
North of I-70.



21. Facing East,
View of SP-9 in
WL-4.



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Appendix B Wetland Determination Data Forms

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WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-70 Bridge Over Havana Street City/County: Denver Sampling Date: 4-12-13
 Applicant/Owner: CDOT State: CO Sampling Point: SP-1
 Investigator(s): E. Weber, S. Fanello Section, Township, Range: Section 23, Township 3 South, Range 67 West
 Landform (hillslope, terrace, etc.): N/A Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR): G- Western Great Plains Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Unmapped NWI classification: N/A

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 <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: *Severe drought (http://droughtmonitor.unl.edu) Pit completed in low area in grassy area adjacent to eastbound on-ramp to I-70 from Havana.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
0 = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				
2. _____				
3. _____				
4. _____				
5. _____				
0 = Total Cover				
Herb Stratum (Plot size: <u>5 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Typha angustifolia</u>	100	Y	OBL	
2. _____				
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
100 = Total Cover				
Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____				
2. _____				
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A)
 Total Number of Dominant Species Across All Strata: _____ (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: 0 (A) 0 (B)
 Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
All dominants are FACW and/or OBL.
 ___ 2 - Dominance Test is >50%
 ___ 3 - Prevalence Index is ≤3.0¹
 ___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes No _____

Remarks: Wetland vegetation has been mowed. D5 - FAC Neutral Test for hydrology. Drop all FAC, cross examine all other dominants. If > 50% remaining are FACW to OBL, then YES to D5.

SOIL

Sampling Point: SP-1

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/2	100					sandy clay loam	No redox
4-10	10YR 3/2	97	7.5YR 4/6	3	C	PL/M	sandy loam	Redox features observed
10-18	10YR 3/4	100					loamy sand	No redox

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 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 Soils³:

- 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)

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Profile moist near surface due to recent snowmelt. Layer 4 inches below ground surface, 6 inches in depth, redox observed 3% in pore linings/root channels, redox concentrations prominent.

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 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 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:

Surface soil is moist due to recent snowmelt.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-70 Bridge Over Havana Street City/County: Denver Sampling Date: 4-12-13
 Applicant/Owner: CDOT State: CO Sampling Point: SP-2
 Investigator(s): E. Weber, S. Fanello Section, Township, Range: Section 23, Township 3 South, Range 67 West
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): none Slope (%): 1
 Subregion (LRR): G- Western Great Plains Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Unmapped NWI classification: N/A

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: *Severe drought (http://droughtmonitor.unl.edu) Upland pit adjacent to SP-1. Completed on hillslope above SP-1 in grassy area between I-70 and eastbound on-ramp from Havana Street.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)														
2. _____																		
3. _____																		
4. _____																		
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>0</u> (A)</td> <td><u>0</u> (B)</td> </tr> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: <u>0</u> (A)	<u>0</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = _____																	
FAC species _____	x 3 = _____																	
FACU species _____	x 4 = _____																	
UPL species _____	x 5 = _____																	
Column Totals: <u>0</u> (A)	<u>0</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 Ft radius</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____																		
<u>0</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 Ft radius</u>) 1. <u>Festuca idahoensis</u> 93 Y UPL 2. <u>Panicum virgatum</u> 5 N FAC 3. <u>Artemisia tridentata</u> 2 N UPL 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____																		
<u>100</u> = Total Cover																		
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____																		
_____ = Total Cover																		
% Bare Ground in Herb Stratum <u>0</u>																		

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
All dominants are FACW and/or OBL.
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks: _____
D5 - FAC Neutral Test for hydrology. Drop all FAC, cross examine all other dominants. If > 50% remaining are FACW to OBL, then YES to D5.

SOIL

Sampling Point: SP-2

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10 YR 3/2	100					sandy loam	
4-10	10 YR 4/4	100					sandy loam	
10-18	10 YR 4/3	100					sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 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 Soils³:

- 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)

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ^x _____

Remarks:

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 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 _____ Depth (inches): _____
Water Table Present? Yes _____ No _____ Depth (inches): _____
Saturation Present? Yes _____ No _____ Depth (inches): _____
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ^x _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-70 Bridge Over Havana Street City/County: Denver Sampling Date: 4-12-13
 Applicant/Owner: CDOT State: CO Sampling Point: SP-3
 Investigator(s): E. Weber, S. Fanello Section, Township, Range: Section 23, Township 3 South, Range 67 West
 Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR): G- Western Great Plains Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Unmapped NWI classification: N/A

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 <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: *Severe drought (http://droughtmonitor.unl.edu) Sampling point completed in ditch/swale along Interstate 70 on-ramp, in the southeast quadrant of the interchange.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0 = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: 0 (A) 0 (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>15 Ft radius</u>)				
1. <u>Salix exigua</u>	20	Y	FACW	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
20 = Total Cover				
Herb Stratum (Plot size: <u>5 Ft radius</u>)				
1. <u>Phalaris arundinacea</u>	100	Y	FACW	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
100 = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>0</u>				

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
All dominants are FACW and/or OBL.
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes No _____

Remarks: Scrub/shrub wetland D5 - FAC Neutral Test for hydrology. Drop all FAC, cross examine all other dominants. If > 50% remaining are FACW to OBL, then YES to D5.

SOIL

Sampling Point: SP-3

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10 YR 2/1	100					sandy clay loam	mucky at surface, no redox
6-10	10 YR 3/2	100					sand	no redox
10-18	10 YR 3/2	98	7.5 YR 4/6	2	C	PL	sandy loam	redox features present

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 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 Soils³:

- 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)

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Same hydric indicators as SP-1

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 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 Depth (inches): _____
 Water Table Present? Yes _____ No Depth (inches): _____
 Saturation Present? (includes capillary fringe) Yes No _____ Depth (inches): 2

Wetland Hydrology Present? Yes No

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

Remarks:

Top of profile wet due to recent snowmelt.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-70 Bridge Over Havana Street City/County: Denver Sampling Date: 4-12-13
 Applicant/Owner: CDOT State: CO Sampling Point: SP-4
 Investigator(s): E. Weber, S. Fanello Section, Township, Range: Section 23, Township 3 South, Range 67 West
 Landform (hillslope, terrace, etc.): N/A Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): G- Western Great Plains Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Unmapped NWI classification: N/A

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: *Severe drought (http://droughtmonitor.unl.edu) Upland pit for SP-3, eastbound I-70 on ramp from Havana Street.	

VEGETATION – Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
<u>Tree Stratum</u> (Plot size: <u>30 Ft radius</u>)				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)	
1. _____				Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
2. _____					
3. _____					
4. _____					
	<u>0</u>	= Total Cover			Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15 Ft radius</u>)				Prevalence Index worksheet:	
1. _____					Total % Cover of: _____ Multiply by: _____
2. _____					OBL species _____ x 1 = _____
3. _____					FACW species _____ x 2 = _____
4. _____					FAC species _____ x 3 = _____
5. _____				FACU species <u>50</u> x 4 = <u>200</u>	
	<u>0</u>	= Total Cover			UPL species <u>50</u> x 5 = <u>250</u>
<u>Herb Stratum</u> (Plot size: <u>5 Ft radius</u>)				Column Totals: <u>100</u> (A) <u>450</u> (B)	
1. <u>Bassia scoparia</u>	<u>50</u>	<u>Y</u>	<u>FACU</u>	Prevalence Index = B/A = <u>4.5</u>	
2. <u>Festuca idahoensis</u>	<u>48</u>	<u>Y</u>	<u>UPL</u>		
3. <u>Artemisia tridentata</u>	<u>2</u>	<u>N</u>	<u>UPL</u>		
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
	<u>100</u>	= Total Cover			
<u>Woody Vine Stratum</u> (Plot size: _____)				Hydrophytic Vegetation Indicators:	
1. _____					<input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation
2. _____				<input type="checkbox"/> 2 - Dominance Test is >50% <small>All dominants are FACW and/or OBL.</small>	
				<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
				<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
% Bare Ground in Herb Stratum <u>0</u>				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Remarks: Upland vegetation present.				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>	

SOIL

Sampling Point: SP-4

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10 YR 4/3	100					sandy loam	No redox
6-10	10 YR 4/4	100					sandy loam	No redox
10-14	10 YR 3/2	100					sandy clay loam	No redox
14-18	10 YR 3/3	100					sandy loam	No redox

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 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 Soils³:

- 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)

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ^x _____

Remarks:
No evidence of 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 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? Yes _____ No ^x _____ Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ^x _____

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

Remarks:
No wetland hydrology indicators present.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-70 Bridge Over Havana Street City/County: Denver Sampling Date: 4-12-13
 Applicant/Owner: CDOT State: CO Sampling Point: SP-5
 Investigator(s): E. Weber, S. Fanello Section, Township, Range: Section 23, Township 3 South, Range 67 West
 Landform (hillslope, terrace, etc.): canal/ditch Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): G- Western Great Plains Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Unmapped NWI classification: N/A

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: *Severe drought (http://droughtmonitor.unl.edu) Willows growing in ditch along I-70 on-ramp. Very sandy soil.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.50</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
0 = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>60</u> x 2 = <u>120</u> FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species <u>50</u> x 5 = <u>250</u> Column Totals: <u>110</u> (A) <u>370</u> (B) Prevalence Index = B/A = <u>3.36</u>
Sapling/Shrub Stratum (Plot size: <u>15 Ft radius</u>)				
1. <u>Salix exigua</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
60 = Total Cover				
Herb Stratum (Plot size: <u>5 Ft radius</u>)				
1. <u>Festuca Idahoensis</u>	<u>50</u>	<u>Y</u>	<u>UPL</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
50 = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				
% Bare Ground in Herb Stratum <u>50</u>				

Hydrophytic Vegetation Indicators:
 ___ 1 - Rapid Test for Hydrophytic Vegetation
All dominants are FACW and/or OBL.
 ___ 2 - Dominance Test is >50%
 ___ 3 - Prevalence Index is ≤3.0¹
 ___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks: D5 - FAC Neutral Test for hydrology. Drop all FAC, cross examine all other dominants. If > 50% remaining are FACW to OBL, then YES to D5.
 Hydrophytic vegetation not predominant, despite willows.

SOIL

Sampling Point: SP-5

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10 YR 3/2						loamy sand	no redox
6-10	10 YR 3/3	70	7.5 YR 4/6	30	C	M	loamy sand	soft masses redox
10-18	10 YR 4/4						loamy sand	no redox

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 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 Soils³:

- 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)

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ^x _____

Remarks:
Redox below top 6 inches.

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 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 _____ No _____ Depth (inches): _____
Water Table Present? Yes _____ No _____ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ^x _____

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

Remarks:
Not particularly moist.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-70 Bridge Over Havana Street City/County: Denver Sampling Date: 4-12-13
 Applicant/Owner: CDOT State: CO Sampling Point: SP- 6
 Investigator(s): E. Weber, S. Fanello Section, Township, Range: Section 23, Township 3 South, Range 67 West
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0
 Subregion (LRR): G- Western Great Plains Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Unmapped NWI classification: N/A

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: *Severe drought (http://droughtmonitor.unl.edu) Upland pit uphill from ditch.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
0 = Total Cover				Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: 0 (A)</td> <td>0 (B)</td> </tr> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: 0 (A)	0 (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = _____																	
FAC species _____	x 3 = _____																	
FACU species _____	x 4 = _____																	
UPL species _____	x 5 = _____																	
Column Totals: 0 (A)	0 (B)																	
0 = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 Ft radius</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
0 = Total Cover																		
Herb Stratum (Plot size: <u>5 Ft radius</u>)																		
1. <u>unknown grass (mowed)</u>	5	Y	UPL															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
5 = Total Cover																		
Woody Vine Stratum (Plot size: _____)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
_____ = Total Cover																		
% Bare Ground in Herb Stratum <u>95</u>																		

Hydrophytic Vegetation Indicators:
 ___ 1 - Rapid Test for Hydrophytic Vegetation
All dominants are FACW and/or OBL.
 ___ 2 - Dominance Test is >50%
 ___ 3 - Prevalence Index is ≤3.0¹
 ___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks: vegetation mowed. D5 - FAC Neutral Test for hydrology. Drop all FAC, cross examine all other dominants. If > 50% remaining are FACW to OBL, then YES to D5.

SOIL

Sampling Point: SP-6

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10 YR 3/2	100					loamy sand	
4-10	10 YR 4/3	100					loamy sand	
10-18	10 YR 5/3	100					sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 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 Soils³:

- 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)

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ^x _____

Remarks:

No evidence of 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 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): _____

Wetland Hydrology Present? Yes _____ No ^x _____

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

Remarks:

No evidence of wetland hydrology.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-70 Bridge Over Havana Street City/County: Denver Sampling Date: 4-12-13
 Applicant/Owner: CDOT State: CO Sampling Point: SP-7
 Investigator(s): E. Weber, S. Fanello Section, Township, Range: Section 22, Township 3 South, Range 67 West
 Landform (hillslope, terrace, etc.): stormwater detention pond Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): G- Western Great Plains Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Unmapped NWI classification: N/A

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 <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: *Severe drought (http://droughtmonitor.unl.edu) Stormwater pond with rock-lined trickle channels. Cattails in channel WL-3 - circumstances not normal due to riprap /no soil at surface	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
0 = Total Cover				Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: 0 (A)</td> <td>0 (B)</td> </tr> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: 0 (A)	0 (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = _____																	
FAC species _____	x 3 = _____																	
FACU species _____	x 4 = _____																	
UPL species _____	x 5 = _____																	
Column Totals: 0 (A)	0 (B)																	
0 = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 Ft radius</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
0 = Total Cover																		
Herb Stratum (Plot size: <u>5 Ft radius</u>)																		
1. <u>Typha Angustifolia</u>	100	Y	OBL															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
100 = Total Cover																		
Woody Vine Stratum (Plot size: _____)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
_____ = Total Cover																		
% Bare Ground in Herb Stratum 0																		

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
All dominants are FACW and/or OBL.
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes No _____

Remarks: All obligate vegetation. D5 - FAC Neutral Test for hydrology. Drop all FAC, cross examine all other dominants. If > 50% remaining are FACW to OBL, then YES to D5.

SOIL

Sampling Point: SP-7

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 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 Soils³:

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No

Remarks:

Could not dig due to riprap. *Hydric soil assumed due to presence of 100 percent coverage of obligate wetland vegetation.

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 tilled)
- (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 Depth (inches): 1
 Water Table Present? Yes No Depth (inches): _____
 Saturation Present? Yes No Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes No

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

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-70 Bridge Over Havana Street City/County: Denver Sampling Date: 4-12-13
 Applicant/Owner: CDOT State: CO Sampling Point: SP-8
 Investigator(s): E. Weber, S. Fanello Section, Township, Range: Section 22, Township 3 South, Range 67 West
 Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): convex Slope (%): 0
 Subregion (LRR): G- Western Great Plains Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Unmapped NWI classification: N/A

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: *Severe drought (http://droughtmonitor.unl.edu) Upland pit.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Total % Cover of:</td> <td style="width:50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species <u>50</u></td> <td>x 5 = <u>250</u></td> </tr> <tr> <td>Column Totals: <u>50</u> (A)</td> <td><u>250</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>5</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species <u>50</u>	x 5 = <u>250</u>	Column Totals: <u>50</u> (A)	<u>250</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = _____																	
FAC species _____	x 3 = _____																	
FACU species _____	x 4 = _____																	
UPL species <u>50</u>	x 5 = <u>250</u>																	
Column Totals: <u>50</u> (A)	<u>250</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 Ft radius</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
<u>0</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 Ft radius</u>)																		
1. <u>Festuca idahoensis</u>	<u>50</u>	<u>Y</u>	<u>UPL</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
<u>50</u> = Total Cover																		
Woody Vine Stratum (Plot size: _____)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
_____ = Total Cover																		
% Bare Ground in Herb Stratum <u>50</u>																		

Hydrophytic Vegetation Indicators:
 ___ 1 - Rapid Test for Hydrophytic Vegetation
All dominants are FACW and/or OBL.
 ___ 2 - Dominance Test is >50%
 ___ 3 - Prevalence Index is ≤3.0¹
 ___ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 ___ Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes _____ No

Remarks: D5 - FAC Neutral Test for hydrology. Drop all FAC, cross examine all other dominants. If > 50% remaining are FACW to OBL, then YES to D5.
 No hydrophytic vegetation present.

SOIL

Sampling Point: SP-8

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-18	7.5 YR 5/6	100					Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 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 Soils³:

- 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)

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ^x _____

Remarks:
No evidence of hydric soil.

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 tilled)
- (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 _____ Depth (inches): _____
 Water Table Present? Yes _____ No _____ Depth (inches): _____
 Saturation Present? Yes _____ No _____ Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ^x _____

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

Remarks:
No evidence of wetland hydrology.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-70 Bridge Over Havana Street City/County: Denver Sampling Date: 4-12-13
 Applicant/Owner: CDOT State: CO Sampling Point: SP-9
 Investigator(s): E. Weber, S. Fanello Section, Township, Range: Section 23, Township 3 South, Range 67 West
 Landform (hillslope, terrace, etc.): N/A Local relief (concave, convex, none): convex Slope (%): 1
 Subregion (LRR): G- Western Great Plains Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Unmapped NWI classification: N/A

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 <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: *Severe drought (http://droughtmonitor.unl.edu) Upland pit on slope above ditch.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. _____				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)														
2. _____																		
3. _____																		
4. _____																		
<u>0</u> = Total Cover				Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species <u>3</u></td> <td>x 3 = <u>9</u></td> </tr> <tr> <td>FACU species <u>67</u></td> <td>x 4 = <u>268</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>80</u> (A)</td> <td><u>327</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.08</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species <u>3</u>	x 3 = <u>9</u>	FACU species <u>67</u>	x 4 = <u>268</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>80</u> (A)	<u>327</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = _____																	
FAC species <u>3</u>	x 3 = <u>9</u>																	
FACU species <u>67</u>	x 4 = <u>268</u>																	
UPL species <u>10</u>	x 5 = <u>50</u>																	
Column Totals: <u>80</u> (A)	<u>327</u> (B)																	
<u>0</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 Ft radius</u>)																		
1. _____																		
2. _____																		
3. _____																		
4. _____																		
5. _____																		
<u>0</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 Ft radius</u>)																		
1. <u>Elymus trachycaulus</u>	<u>67</u>	<u>Y</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: ___ 1 - Rapid Test for Hydrophytic Vegetation <small>All dominants are FACW and/or OBL.</small> ___ 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.														
2. <u>Bassia scoparia</u>	<u>10</u>	<u>N</u>	<u>UPL</u>															
3. <u>Rumex crispus</u>	<u>3</u>	<u>N</u>	<u>FAC</u>															
4. _____																		
5. _____																		
6. _____																		
7. _____																		
8. _____																		
9. _____																		
10. _____																		
<u>80</u> = Total Cover																		
Woody Vine Stratum (Plot size: _____)																		
1. _____																		
2. _____																		
_____ = Total Cover																		
% Bare Ground in Herb Stratum <u>20</u>																		
Remarks: Upland vegetation present.																		

SOIL

Sampling Point: SP-9

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
10-18	10 YR 4/3	100					Sandy Loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 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 Soils³:

- 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)

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No ^x _____

Remarks:
No evidence of hydric soil.

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 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 _____ Depth (inches): _____
 Water Table Present? Yes _____ No _____ Depth (inches): _____
 Saturation Present? Yes _____ No _____ Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ^x _____

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

Remarks:
No evidence of wetland hydrology.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: I-70 Bridge Over Havana Street City/County: Denver Sampling Date: 4-12-13
 Applicant/Owner: CDOT State: CO Sampling Point: SP-10
 Investigator(s): E. Weber, S. Fanello Section, Township, Range: Section 22, Township 3 South, Range 67 West
 Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): G- Western Great Plains Lat: _____ Long: _____ Datum: NAD83
 Soil Map Unit Name: Unmapped NWI classification: N/A

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 <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: *Severe drought (http://droughtmonitor.unl.edu) Ditch along Havana, south of concrete-lined ditch.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 Ft radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:														
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
0 = Total Cover				Prevalence Index worksheet: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: 0 (A)</td> <td>0 (B)</td> </tr> </table> Prevalence Index = B/A = _____	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: 0 (A)	0 (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = _____																	
FAC species _____	x 3 = _____																	
FACU species _____	x 4 = _____																	
UPL species _____	x 5 = _____																	
Column Totals: 0 (A)	0 (B)																	
10 = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 Ft radius</u>)																		
1. <u>Salix exigua</u>	10	Y	FACW															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
10 = Total Cover																		
Herb Stratum (Plot size: <u>5 Ft radius</u>)																		
1. <u>Typha angustifolia</u>	100	Y	OBL															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
100 = Total Cover																		
Woody Vine Stratum (Plot size: _____)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
_____ = Total Cover																		
% Bare Ground in Herb Stratum <u>0</u>																		

Hydrophytic Vegetation Indicators:
 1 - Rapid Test for Hydrophytic Vegetation
All dominants are FACW and/or OBL.
 2 - Dominance Test is >50%
 3 - Prevalence Index is ≤3.0¹
 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

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

Hydrophytic Vegetation Present? Yes No _____

Remarks: _____

D5 - FAC Neutral Test for hydrology. Drop all FAC, cross examine all other dominants. If > 50% remaining are FACW to OBL, then YES to D5.

SOIL

Sampling Point: SP-10

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	10 YR 2/1	100					loam	organic matter muck (lots)
10-18	10 YR 3/3	95	10 YR 4/6	5	C	M	sandy clay loam	redox

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: 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 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 Soils³:

- 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)

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

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes No _____

Remarks:

Surface slippery/oily between fingers = muck
One centimeter of muck is the evidence of hydric soil present.

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 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 Depth (inches): _____
Water Table Present? Yes _____ No Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes No _____ Depth (inches): at surface

Wetland Hydrology Present? Yes No _____

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

Remarks:

Evidence of wetland hydrology is saturation at the surface.