WETLANDS DELINEATION TECHNICAL REPORT FOR THE 6TH AVENUE PARKWAY EXTENSION ENVIRONMENTAL ASSESSMENT

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LIST OF ACRONYMS

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AFB	Air Force Base
CWA	Clean Water Act
E-470	E-470 Tollway
EA	Environmental Assessment
FHU	Felsburg Holt & Ullevig
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
Lidar	Light Detecting and Ranging Technology
NRCS	Natural Resource Conservation Service
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
RPW	Relatively Permanent Water
SH 30	State Highway 30
TCGC	Triple Creek Greenway Corridor
TNW	Traditional Navigable Water
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WUS	Waters of the U.S.

1. INTRODUCTION

This technical report has been prepared in support of the 6th Avenue Parkway Extension Environmental Assessment (EA) extending 6th Avenue from State Highway 30 (SH 30) to the E-470 Tollway (E-470). This technical report evaluates the effects of the Proposed Action and the No Action Alternative with respect to wetlands.

1.1 Proposed Action

The Proposed Action would extend the 6th Avenue Parkway for approximately 2 miles along a new alignment, connecting existing 6th Avenue/SH 30 to the west with the existing 6th Avenue Parkway at E-470 to the east. This would close a gap in the existing major arterial street system, reducing out of direction travel and improving the efficiency and reliability of the transportation system. The Proposed Action would be a six-lane arterial roadway with a raised median and sidewalks.

Six initial alternatives were developed and screened through three screening levels to identify the Proposed Action. The alternatives screening is summarized in **Appendix A1** Alternatives *Technical Report* of the EA. Details of the Proposed Action are presented in **Appendix A2** *Conceptual Design Plans* of the EA.

The Proposed Action is shown on **Figure 1**. Major elements of the Proposed Action are identified by number from west to east on **Figure 1**, and include the following:

Element 1. Tie into existing 6th Avenue/SH 30: 6th Avenue/SH 30 is an existing two-lane arterial. At the western end of the Proposed Action, a signalized "thru-tee" type intersection would be constructed connecting the Proposed Action roadway to existing 6th Avenue/SH 30. This new signalized intersection would include bypass lanes for the eastbound SH 30 through movement or a thru-tee signalized intersection with bypass lanes for both the eastbound SH 30 through movement. The tie-in would be an urban curb and gutter section with three 12-foot travel lanes in each direction to connect to future 6-lane section to the west. A 10-foot sidewalk would be located on both the north and south sides of the roadway.

Element 2. Triple Creek Trail realignment and connections: A portion of the existing Triple Creek Trail would be realigned and would pass beneath the Proposed Action roadway which would be on a bridge at this location (see Element 3 in **Figure 1**). The Triple Creek Trail would be connected to 6th Avenue via a spur trail to the sidewalk constructed along the south side of the new roadway. The Triple Creek Trail is a 10–foot wide soft surface trail that serves equestrians, bicyclists and pedestrians. The realigned portion would match the existing width and surface. A 10-foot sidewalk on both sides of the bridge (Element 3) would provide connections to the trail. The southern terminus of the trail is currently at the Coal Creek Arena, and further extension to the south is planned by the City of Aurora.

Element 3. Roadway bridge over Sand Creek: Immediately east of the new intersection with existing 6th Avenue/SH 30 (Element 1 in **Figure 1**), the roadway would be elevated onto a six-lane bridge crossing over Sand Creek and its associated floodplain/floodway, and over the Triple Creek Trail. The bridge length and profile would be set to minimize impacts to Sand Creek, while still providing a minimum 10-foot vertical clearance over the Triple Creek Trail. The bridge a median and sidewalks. The bridge would be approximately 680 feet in length with 5 variable length spans supported on four piers. The bridge would be

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designed to be compatible with the surrounding environment and to allow wildlife connectivity along Sand Creek and the Triple Creek Trail.

Element 4. 6th Avenue Parkway arterial roadway: The 6th Avenue Parkway extension would consist of a 144-foot wide, six-lane arterial roadway (three lanes in each direction) with a raised vegetated median. There would be curb and gutter and 10-foot wide sidewalks on the north and south sides of the roadway. The Proposed Action would provide two new access connections from the Proposed Action to two existing portions of 6th Avenue. One of these connections would provide access to the existing residences along unpaved 6th Avenue, west of Picadilly Road. The second connection would extend northeast from the Proposed Action to unpaved 6th Avenue to areas planned for development east of Picadilly Road.

Element 5. Intersection with Picadilly Road: The Proposed Action roadway would cross Picadilly Road, which is an existing north-south road. A signalized intersection would be constructed at this location. Picadilly Road is currently two lanes, but the City of Aurora anticipates that expansion to six lanes would occur in the future as a different project. Therefore, the intersection would be configured such that future expansion of Picadilly Road to six lanes can be accommodated and is not precluded.

Element 6. Tie into existing 6th Avenue Parkway at E-470: On its eastern end, the Proposed Action roadway would tie into the existing E-470 interchange, which currently truncates at this location, forming a connection with the existing 6th Parkway to the east of the interchange. The intersection tie-in at Valdai Street and 6th Avenue Parkway would be signalized. This connection would allow access from the west via the Proposed Action to the E-470 interchange and to the existing 6th Avenue Parkway extending to the east of E-470.

In addition to these transportation elements, the Proposed Action would include permanent roadway stormwater drainage with water quality features for roadway runoff and accommodate offsite stormwater flows. Details of drainage and water quality features are presented in **Appendix A6** *Floodplains and Drainage Assessment Technical Report* of the EA.

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Note: Numbers in graphic correspond with text above.

1.2 No Action Alternative

If the Proposed Action is not selected for implementation, there would be no improvements made to 6th Avenue beyond the existing and committed transportation system. The No Action Alternative was carried forward as a baseline comparison for environmental analysis purposes.

2. DELINEATION APPROACH

2.1 Preliminary Desktop Review

Prior to engaging in on-site field surveying activities, a desktop review was conducted to determine potential presence of wetlands and other waters of the US (WUS) in the study area. Utilizing National Wetlands Inventory (NWI) data from the U.S. Fish and Wildlife Service (USFWS), several hydrologic features were depicted throughout the project site. These features include freshwater emergent wetlands, freshwater ponds and riverine areas (**Figure 2**).

The majority of these features appear aggregated near the center of the study area, where the convergence of Murphy Creek and Coal Creek occur. This convergence zone is also the site of previous disturbance from surface mining activities, giving rise to bodies of surface water from exposed groundwater. At this location, Murphy Creek and Coal Creek join to become Sand Creek, which meanders northwest out of the study area. According to current data, pockets of potential wetlands appear to exist along this stretch of Sand Creek, most notably just north of the Coal Creek Arena.

In addition to NWI data, a topographical inspection was performed through use of Light Detecting and Ranging technology (LiDAR) (**Figure 3**). Given that multiple drainage ways occur in the study area, this analysis provides a better understanding of site drainage patterns by displaying the possible stream channel Ordinary High Water Mark (OHWM) associated with changes in slope. Those drainage areas that express a clear "bed and bank" and have an observable drainage condition can, and typically are, noted as WUS and fall under regulatory protection. However, while a review of the LiDAR data can help in locating these areas, it is not always accurate and field surveys are required to identify accurate locations of wetlands and the OHWM.

These preliminary reviews identified areas for Felsburg Holt & Ullevig (FHU) staff to focus wetland delineation efforts in the field.

Figure 2 USFWS National Wetland Inventory Map



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Figure 3 LiDAR Wetland Inventory Map



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2.2 On-Site Wetland Delineation

In support of this EA, Keith Hidalgo, Certified Ecologist, and Jake Lloyd, both Environmental Scientists with FHU, performed wetland delineations on March 16 - 17, 2015 and July 17, 2015. Wetlands identified in the field during these three days were documented using the latest Wetland Determination Forms from the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (Version 2) (USACE, 2010). A Trimble® GeoXH[™] GNSS with ESRI's® ArcPad[™] version 10.x mobile Geographic Information System (GIS) was used to delineate wetland boundaries. The boundaries that have been delineated are shown on **Figure 4, Figure 5,** and **Figure 6**. Site photographs included in **Appendix A** illustrate field conditions at the time of the surveys.

2.3 Cowardin Classifications for the Site

The site wetlands provide a range of classifications under the Cowardin classification system (Cowardin et al., 1979), as identified in the NWI Mapper tool (USFWS, 2014). FHU's staff reviewed the NWI classifications during the field surveys of the study area and identified each wetland's Cowardin classification in **Section 4**.

3. SITE SETTING AND CONDITIONS

The study area is located within the City of Aurora and unincorporated Arapahoe County, Colorado, at approximately 5,600 feet above sea level. The study area is in the western-most edge of the Flat to Rolling Plains of the High Plains level 4 ecoregion (USEPA, 2003). This ecoregion is described as:

"More level and less dissected than the adjacent Moderate Relief Plains. Soils are generally silty with a veneer of loess. Dryland farming is extensive, with areas of irrigated cropland scattered throughout the ecoregion. Winter wheat is the main cash crop, with a smaller acreage in forage crops." (USEPA, 2003).

Generally, the study area is located to the northeast of the Buckley Air Force Base (AFB), west of high- and low-density single-family residences and commercial businesses, west of E-470 and surrounding agricultural lands, north of agricultural lands, and southeast of recreational ball fields, agricultural lands and single-family residences. The natural characteristics of this ecoregion have been replaced by development; however, the blue grama-buffalo grass (*Bouteloua gracilis – Bouteloua dactyloides*) association was observed in many upland areas around the study area. The natural vegetation in the study area consists primarily of native and non-native grasses, weedy forbs, shrubs and trees throughout the Triple Creek Greenway Corridor (TCGC) and in the open areas in and adjacent to the study area.

Vegetation in the study area includes native trees, shrubs, and grasses, along with non-native weeds. Wetland plant species exist along the TCGC, and upland plant species exist in the surrounding open lands. Generally, cover types primarily consist of various native and non-native woody and herbaceous species including: plains cottonwood (*Populus deltoides*), black locust (*Robinia pseudoacacia*), sandbar willow (*Salix interior*), rubber rabbitbrush (*Ericameria nauseosa*), chokecherry (*Prunus virginiana*), American plum (*Prunus americana*), common snowberry (*Symphoricarpos albus*), smooth brome (*Bromus inermis*), and Scotch thistle (*Onopordum acanthium*). Upland tree species included non-native ornamental and noxious trees. The non-native and noxious trees observed in the field include Russian olive (*Elaeagnus angustifolia*) and Siberian elm (*Ulmus pumila*). This vegetation is un-impaired and has relatively high quality because of the presence of Sand Creek, Coal Creek, Murphy Creek, un-named tributaries and the lack of overall development surrounding the perennial streams and riparian corridors in the study area.

Coal Creek, two un-named tributaries to Coal Creek, Murphy Creek, and an un-named tributary to Murphy Creek (as identified by Colorado Department of Public Health and Environment stream segmentation source information) are all found in the study area and occur in the study area flowing from southeast to northwest into Sand Creek within the study area. Sand Creek subsequently flows northwest toward a confluence with the South Platte River approximately 12.3 miles to the northwest.

The study area lies within an un-named sub-watershed of the Sand Creek watershed, part of the South Platte River Basin. This watershed is the 6th level Hydrologic Unit Code 101900030402 of the U.S. Geological Survey National Hydrology Dataset. Aurora Reservoir is found to the southeast of the study area by approximately 8 miles.

4. WETLAND DELINEATION SUMMARY

Wetlands and other WUS delineated in March 2015 and July 2015 were surveyed within the Proposed Action footprint and in areas adjacent to the Proposed Action footprint in an effort to cover additional areas if roadway drainage design modifications are required (**Figure 4**). Wetlands consisted of different species of vegetation, including plains cottonwood, sandbar willow, narrowleaf cattail (*Typha angustifolia*), rushes and sedges. Vegetation was dense due to the amount of precipitation in the region during the 2015 season and snowmelt from the previous winter. Fifteen (15) Wetland Determination Forms were completed for the project and all wetlands are labeled on **Figure 4**. The total wetland area delineated as part of the field survey in March 2015 and July 2015 is 3.73 acres (**Table 1**).

Wetland ID	Existing Area (acres)	Remarks
Wetland SCA	1.381	Large wetland associated with the Sand Creek floodplain/riparian corridor. Dominated by sandbar willow, common threesquare (<i>Schoenoplectus pungens</i>), scouring rush (<i>Equisetum laevigatum</i>) and jointleaf rush (<i>Juncus articulatus</i>).
Wetland SCB	0.065	Narrow wetland corridor associated with the Sand Creek floodplain/riparian corridor. Dominated by Russian olive, common threesquare, sandbar willow, and plains cottonwood.
Wetland CCA	0.689	Large wetland associated with the Coal Creek floodplain/riparian corridor (west side of Picadilly Road). Dominated by sandbar willow.
Wetland CCB	0.105	Moderate wetland associated with the Coal Creek floodplain/riparian corridor (east side of Picadilly Road). Dominated by sandbar willow and common threesquare.
Wetland CCC	0.172	Fringe wetland approximately 3 to 4 feet wide associated with the Coal Creek floodplain/riparian corridor (east side of Picadilly Road). Dominated by narrowleaf cattail and annual rabbitsfoot grass (<i>Polypogon monspeliensis (L.) Desf.</i>).
Wetland CCD	1.298	Moderate wetland associated with the Coal Creek floodplain/riparian corridor (east side of Picadilly Road). Dominated by sandbar willow and plains cottonwood.
Wetland CCE	0.018	Abundant, rich wetland associated with the Coal Creek floodplain/riparian corridor (east side of Picadilly Road). Dominated by narrowleaf cattail, sandbar willow, and plains cottonwood.
TOTAL	3.73 acres	

Table 1Wetlands Summary

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Figure 4 Surveyed Wetlands Master Index Map



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4.1 Wetland SCA

FHU staff identified and delineated Wetland SCA (Sand Creek A) in March 2015 where the Proposed Action crosses through a portion of the Sand Creek riparian zone (Figure 5). An additional survey was conducted based on new design elements, specifically regarding drainage. This new survey extended wetland SCA further north. Wetland conditions included flowing water, oxbows and ponded open water bordered by sand bars and vegetation of varying size. FHU staff analyzed four (4) sample points and compiled wetland determination forms for Wetland SCB. These wetland determination forms describe sample points SP-1 through SP-4 (Appendix B). SP-1 and SP-3 showed distinct wetland characteristics (see discussion below); SP-2 and SP-4 contained upland conditions, including non-hydric soils and a lack of hydrologic features. The strong contrast in sampling points helped define boundaries between wetland and upland areas.

Wetland SCA: Vegetation

The shrub and herb stratums dominate the vegetation in Wetland SCA. The sapling and shrub stratum of SP-1 consists of sandbar willows (50 percent); common threesquare (80 percent), narrowleaf cattail (15 percent) and smooth brome (5 percent) make up the herb aerial coverage. The upland vegetation, SP-2, surrounding the wetlands consists of smooth brome, plains cottonwood, yellow sweetclover (*Melilotus officinalis*), American licorice (*Glycyrrhiza lepidota*), Canadian horseweed (*Conyza canadensis*), and other grasses. The sapling and shrub stratum in SP-3 is made up of sandbar willows (20 percent). The herb stratum contains mostly jointleaf rush (55 percent), with scouringrush horsetail (*Equisetum hyemale*) (20 percent), switch grass (*Panicum virgatum*) (10 percent), smooth brome (5 percent), squirreltail (*Elymus elymoides*) (5 percent), and reed canarygrass (*Phalaris arundinacea*) (5 percent). The upland vegetation, SP-4, surrounding the wetlands had similar plants species to SP-2. SP-1 and SP-3 passed the Dominance Test and Prevalence Index; therefore, the area contains a predominance of hydrophytic vegetation.

Wetland SCA: Soils

FHU staff downloaded a Web Soil Survey which shows these areas having a "Sandy alluvial land" soil type (NRCS, accessed 2015). During the field survey, FHU staff dug soil pits to investigate the soil profile. In SP-1, the first 10 inches of the soil profile consisted of saturated sand with a soil color of 10YR 4/3 (100 percent). From 10 to 20 inches, the profile was made up of saturated loamy sand, with a soil color of Gley 1 3/10Y (100 percent). This soil condition qualifies as a *Loamy Gleyed Matrix*.

In SP-3, the first 6 inches of the soil surface consisted of saturated loamy sand with two prominent colors in the matrix: 7.5YR 3/1 (55 percent) and 7.5YR 3/3 (25 percent). Redox features of 7.5YR 5/6 made up the remaining 20 percent. From 6 to 10 inches, the soil profile had a sand texture (saturated), with 100 percent of the soil color consisting of 10YR 3/2. From 10 to 20 inches, the soil profile was loamy sand (saturated) and contained a soil color of 10YR 2/2 (100 percent). This soil contained redox concentrations which qualifies the soil as hydric.

According to US Army Corps of Engineers (USACE) guidelines, both sample point soil conditions qualify as hydric (refer to data forms in **Appendix B**).

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Figure 5 Surveyed Wetlands Map – Sand Creek A & B



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Wetland SCA: Hydrology

Primary hydrologic indicators for SP-1 and SP-3 include saturation (beginning within the first inch). SP-1 secondary indicators include drainage patterns and the FAC-Neutral Test. SP-3 was similar with the secondary indicators of the drainage patterns, geomorphic position, and the FAC-Neutral Test. Therefore, wetland hydrology is present at Wetland SCA.

Wetland SCA is classified as a *palustrine emergent, temporarily flooded* wetland (PEMA) under the Cowardin classification system (Cowardin et al., 1979). The total size of Wetland SCA is **1.381 acre**.

4.2 Wetland SCB

FHU staff identified and delineated Wetland SCB (Sand Creek B) where the Proposed Action Alternative touches the north portion of the Sand Creek riparian zone (**Figure 5**). Wetland conditions included flowing water bordered by sand bars in the southwest area and vegetation of varying size to the north, south, and southeast. FHU staff analyzed two (2) sample points and compiled wetland determination forms for Wetland SCC. These wetland determination forms describe sample points SP-5 and SP-6 (**Appendix B**). SP-5 showed distinct wetland characteristics (see discussion below); SP-6 contained upland conditions, including non-hydric soils. The strong contrast in sampling points helped define boundaries between wetland and upland areas.

Wetland SCC: Vegetation

Groups of trees and herbs dominate the vegetation in Wetland SCB. The tree stratum in SP-5 is made up of Russian olive (40 percent) and plains cottonwood (20 percent). The sapling and shrub stratum contains sandbar willows (15 percent) and Russian olive (5 percent). The herb stratum contains mostly common threesquare (55 percent), smooth brome (10 percent), leafy spurge (*Euphorbia esula*) (10 percent), common spikerush (*Eleocharis palustris*) (5 percent) and woolly sedge (*Carex pellita*) (5 percent) accounting for the rest of the herb aerial coverage. SP-5 passed the Dominance Test and Prevalence Index; therefore, the area contains a predominance of hydrophytic vegetation. The upland vegetation, SP-6, surrounding the wetlands consists of smooth brome, common saltgrass (*Distichlis spicata*), alfalfa (*Medicago sativa*), leafy spurge, and other grasses.

Wetland SCC: Soils

FHU staff downloaded a Web Soil Survey which shows this area having a "Sandy alluvial land" soil type (NRCS, accessed 2015). During the field survey, FHU staff dug soil pits to investigate the soil profile. In SP-5, the first 4 inches of the soil surface consisted of saturated sand with a prominent color in the matrix of 10YR 4/3 (100 percent). From 4 to 12 inches, the soil profile had a sand texture (saturated), with 85 percent of the soil color consisting of 10YR 4/3 and 15 percent of the soil color consisting of Gley 13/N. From 12 to 20 inches, the soil profile was sand (saturated) and contained a soil color of 10YR 4/3 (100 percent). This soil qualified as *Sandy Gley Matrix* dominated by sand.

According to USACE guidelines, SP-5 soil conditions qualify as hydric (refer to data forms in **Appendix B**).

Wetland SCC: Hydrology

Primary hydrologic indicators for SP-5 include surface water (7 inches deep), high water table (at 12 inches), saturation (at least 18 inches deep), sediment deposits, drift deposits, and aquatic invertebrates; secondary indicators include drainage patterns, geomorphic position and passing the FAC-Neutral Test.

Wetland SCC is classified as a *palustrine emergent, temporarily flooded* wetland (PEMA) under the Cowardin classification system (Cowardin et al., 1979). The total size of Wetland SCC is **0.065 acre**.

4.3 Wetland CCA

FHU staff identified and delineated Wetland CCA (Coal Creek A), found along the west edge of Picadilly Road where Coal Creek crosses the roadway perpendicularly via culverts (**Figure 6**). Wetland conditions included flowing water with several sand bars and locations of sparse vegetation of varying sizes. Coal Creek west of Picadilly Road consisted of a wide, shallow, braided floodplain with sandbars scattered throughout and where the OHWM extends to the edges of the channel braids. However, the low-flow channel itself changes from year to year within the overall OHWM.

FHU staff analyzed two sample points and compiled wetland determination forms for Wetland CCA. These wetland determination forms describe sample points SP-7 and SP-8 (**Appendix B**). SP-7 showed distinct wetland characteristics (see discussion below); SP-8 contained upland conditions, including upland plant species, non-hydric soils and a lack of hydrologic features.

Wetland CCA: Vegetation

Groups of shrubs dominate the vegetation in Wetland CCA. The sapling and shrub stratum in SP-7 is made up mostly of sandbar willows (75 percent). The herb stratum contains squirreltail (5 percent) and jointleaf rush (5 percent). SP-7 passed the Dominance Test and Prevalence Index; therefore, the area contains a predominance of hydrophytic vegetation. The upland vegetation surrounding the wetlands consists of sand dropseed (*Sporobolus cryptandrus*), kochia (*Bassia scoparia*), annual ragweed (*Ambrosia artemisiifolia*), common sunflower (*Helianthus annuus*), common mullein (*Verbascum thapsus*), and other grasses.

Wetland CCA: Soils

FHU staff downloaded a Web Soil Survey which shows this area having a "Sandy alluvial land" soil type (NRCS, accessed 2015). During the field survey, FHU staff dug soil pits to investigate the soil profile. In SP-7, the first 10 inches of the soil surface consisted of saturated sandy loam with two prominent colors in the matrix: 10YR 4/3 (50 percent) and 10YR 5/3 (45 percent). Redox features of 7.5YR 5/6 made up the remaining 5 percent. From 10 to 16 inches, the soil profile remained as saturated sandy loam. Three soil colors were present: 10YR 4/3 (45 percent), 10YR 5/3 (45 percent) and Gley 1 3/10B (10 percent). From 16 to 20 inches, the soil profile contained a soil color of 10YR 4/3 (100 percent). This portion of the profile was also a sandy loam. This soil qualified as *Redox Depressions*.

According to USACE guidelines, SP-7 soil conditions qualify as hydric (refer to data forms in **Appendix B**).

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Figure 6 Surveyed Wetlands Map – Coal Creek A, B, C, D, E



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Wetland CCA: Hydrology

Primary hydrologic indicators for SP-7 include surface water (4 inches deep), high water table (at 4 inches), saturation (20+ inches), water marks, sediment deposits, drift deposits and inundation visible on aerial imagery. Secondary indicators include sparsely vegetated concave surface, drainage patterns, geomorphic position and passing the FAC-Neutral Test.

Wetland CCA is classified as palustrine scrub-shrub wetland which is temporarily flooded (PSSA) under the Cowardin classification system (Cowardin et al., 1979). The total size of Wetland CCA is **0.689 acre**.

4.4 Wetland CCB

FHU staff identified and delineated Wetland CCB (Coal Creek B), found along the east edge of Picadilly Road where Coal Creek crosses the roadway perpendicularly via culverts (**Figure 6**). Wetland conditions included flowing water with several sand bars and sparse vegetation of varying size. Coal Creek east of Picadilly Road consisted of a wide, shallow, floodplain with sandbars scattered throughout and where the OHWM extends to the edges of the channel and the sandbars. Outside of the OHWM, a steep rise in topography constrains the channel. The south bank of Coal Creek has been eroded to a 3-to 4-foot incised bank, while the north bank of Coal Creek is eroded in areas to heights of 6-to-10 feet in height. Within the overall OHWM the low-flow channel has the opportunity to change its alignment.

FHU staff analyzed two sample points and compiled two (2) wetland determination forms for Wetland CCB. These wetland determination forms describe sample points SP-9 and SP-11 (**Appendix B**). SP-9 showed distinct wetland characteristics (see discussion below). SP-11 contained upland conditions, including upland plant species, non-hydric soils and a lack of hydrologic features. SP-11 was also used as an upland outpoint for Wetlands CCC, CCD, and CCE.

Wetland CCB: Vegetation

The shrub stratum dominates vegetation in Wetland CCB. The sapling/shrub stratum present at the wetland is exclusively the sandbar willow (45 percent). The herb stratum in this wetland is comprised of common threesquare (15 percent) and jointleaf rush (5 percent). A great deal of sand/bare soil (35 percent) was exposed in the wetland area. SP-9 vegetation passed the Dominance Test and the Prevalence Index, confirming hydrophytic vegetation is located in the wetland area. The upland vegetation, described in SP-11, was dominated by smooth brome with a small amount of sandbar willow.

Wetland CCB: Soils

FHU staff downloaded a Web Soil Survey which shows this area having a "Sandy alluvial land" soil type (NRCS, accessed 2015). During the field survey, FHU staff dug soil pits to investigate the soil profile. In SP-9, the first 12 inches of the soil surface consisted of two prominent colors in the matrix: 10YR 4/3 (40 percent) with a sandy loam and 10YR 5/3 (55 percent) with a loamy sand texture. The first 12 inches also had a presence of redox concentrations in the matrix with a color of 7.5YR 5/6 (5 percent). Depths 12 to 16 inches were observed with a similar soil mix containing the same two prominent colors: 10YR 4/3 (45 percent) and 10YR 5/3 (45 percent); depths 12 to 16 inches also contained small concentrations observed with a color of Gley 1 3/10B (10 percent). Depths 16 to 20 inches were composed of a single color: 10YR 4/3 (100 percent). Depths 12 to 20 were noted as a sandy loam texture and saturated.

According to USACE guidelines, SP-9 soil conditions qualify as hydric (refer to data forms in **Appendix B**).

Wetland CCB: Hydrology

Primary hydrologic indicators of surface water, high water table, saturation, water marks, sediment deposits, drift deposits, and inundation visible on aerial imagery were identified at Wetland CCB. Secondary indicators of sparsely vegetated concave surface, drainage patterns, and geomorphic position were also observed.

Wetland CCB is classified as a PSSA wetland under the Cowardin classification system (Cowardin et al., 1979). The total size of Wetland CCB is **0.105 acre**.

4.5 Wetland CCC

FHU staff identified and delineated Wetland CCC (Coal Creek C), found east of Picadilly Road where Coal Creek begins to curve southeast (**Figure 6**). Wetland conditions included flowing water with several sand bars and locations of sparse vegetation of varying sizes. Coal Creek east of Picadilly Road consisted of a wide, shallow, floodplain with sandbars scattered throughout and where the OHWM extends to the edges of the channel and the sandbars. Outside of the OHWM, a steep rise in topography constrains the channel. The south bank of Coal Creek has been eroded to a 3-to 4-foot incised bank, while the north bank of Coal Creek is eroded in areas to heights of 6-to-10 feet in height. Within the overall OHWM the low-flow channel has the opportunity to change its alignment.

FHU staff analyzed two sample points and compiled wetland determination forms for Wetland CCC. This wetland determination form describes sample point SP-10 (**Appendix B**). SP-10 showed distinct wetland characteristics (see discussion below); SP-11 contained upland conditions, including upland plant species, non-hydric soils and a lack of hydrologic features.

Wetland CCC: Vegetation

Herbaceous species dominate the vegetation in Wetland CCC. The herb stratum contains narrowleaf cattail (40 percent), rabbitsfoot grass (30 percent), woolly sedge (5 percent), smartweed (*Polygonum spp.*) (2 percent), and softstem bulrush (2 percent). SP-10 passed the Dominance Test and Prevalence Index; therefore, the area contains a predominance of hydrophytic vegetation. The upland vegetation, SP-11, surrounding the wetlands consists of plains cottonwood, smooth brome, leafy spurge, yellow salsify (*Tragopogon dubius*), and other grasses.

Wetland CCC: Soils

FHU staff downloaded a Web Soil Survey which shows this area having a "Sandy alluvial land" soil type (NRCS, accessed 2015). During the field survey, FHU staff dug soil pits to investigate the soil profile. In SP-10, the first 4 inches of the soil surface consisted of saturated sand with a prominent color in the matrix of 10YR 3/2 (100 percent). From 4 to 8 inches, the soil profile remained as saturated sandy loam with two prominent colors in the matrix: Gley 1 3/N (20 percent) and 10YR 3/2 (80 percent). This soil qualified as a *Sandy Gleyed Matrix*, which contains young sandy soil and sandy gleyed soils.

According to USACE guidelines, SP-10 soil conditions qualify as hydric (refer to data forms in **Appendix B**).

Wetland CCC: Hydrology

Primary hydrologic indicators for SP-10 include saturation (at least 20 inches deep), sediment deposits, and drift deposits. Secondary indicators include drainage patterns, geomorphic position, and passing the FAC-Neutral Test.

Wetland CCC is classified as a PEMA wetland under the Cowardin classification system (Cowardin et al., 1979). The total size of Wetland CCC is **0.172 acre**.

4.6 Wetland CCD

FHU staff identified and delineated Wetland CCD (Coal Creek D), found east of Picadilly Road where Coal Creek begins to curve southeast (**Figure 6**). Wetland conditions included flowing water with abundant vegetation of varying sizes at the east end blending into less abundant vegetation to the west end of Coal Creek. Coal Creek at Wetland CCD consisted of a narrower channel cross-section than wetlands further to the west. The channel at this location contained a narrower OHWM with sandbars and a narrower and deeper low-flow channel. The topography was more gradual outside of the OHWM.

FHU staff analyzed three sample points and compiled wetland determination forms for Wetland CCD. These wetland determination forms describe sample points SP-12 and SP-15 (**Appendix B**). SP-12 and 15 showed distinct wetland characteristics (see discussion below); SP-11 was used as the outpoint for wetlands CCC, CCD, and CCE.

Wetland CCD: Vegetation

Shrubs and trees dominate the vegetation in Wetland CCD. The sapling and shrub stratum of SP-12 also consists of sandbar willows (75 percent); woolly sedge (15 percent), yellow sweetclover (10 percent) and common sunflower (2 percent) make up the remaining herb aerial coverage.

The tree stratum in SP-15 is made up of plains cottonwoods (50 percent) and peachleaf willows (*Salix amygdaloides*) (15 percent). The sapling and shrub stratum consists of sandbar willows (50 percent); narrowleaf cattails (20 percent) make up the remaining herb aerial coverage. SP-12 and SP-15 passed the Dominance Test and Prevalence Index; therefore, the area contains a predominance of hydrophytic vegetation.

Wetland CCD: Soils

FHU staff downloaded a Web Soil Survey which shows these areas having a "Sandy alluvial land" soil type (NRCS, accessed 2015). During the field survey, FHU staff dug soil pits to investigate the soil profile. In SP-12, the first 20 inches of the soil surface consisted of saturated sand with a prominent color in the matrix of 10YR 3/2 (100 percent). This soil is considered a saturated sandy soil and assumed hydric for the soils are too young to show hydric indicators.

In SP-15, the first 3 inches of the soil surface consisted of dry sandy silt loam with a prominent color in the matrix of 10YR 3/2 (100 percent). From 3 to 14 inches, the soil profile became a saturated sand with a matrix color of 10YR 3/2 at 100 percent. From 14 to 18 inches, the soil profile contained two soil colors: 10YR 3/2 (85 percent) and Gley 1 3/N (15 percent). This portion of the profile was also saturated sand. This soil qualified as *Sandy Gleyed Matrix*.

According to USACE guidelines, both sample points soil conditions qualify as hydric (refer to data forms in **Appendix B**).

Wetland CCD: Hydrology

Primary hydrologic indicators for SP-12 include surface water (Coal Creek), high water table (at 10 inches), saturation (20 inches or greater), water marks, sediment deposits, and drift deposits. Secondary indicators include drainage patterns, geomorphic position and passing the FAC-Neutral Test.

Primary hydrologic indicators for SP-15 include surface water (3 inches deep), high water table (at 3 inches), saturation (3 inches or greater), water marks, sediment deposits, drift deposits and water-stained leaves. Secondary indicators include drainage patterns, geomorphic position and passing the FAC-Neutral Test.

Wetland CCD is classified as a PSSA wetland under the Cowardin classification system (Cowardin et al., 1979). The total size of Wetland CCD is **1.298 acre**.

4.7 Wetland CCE

FHU staff identified and delineated Wetland CCE (Coal Creek E), found along the east side of Picadilly Road where Coal Creek curves towards the southeast (**Figure 6**). Wetland conditions included flowing water with dense vegetation. Coal Creek at Wetland CCE consisted of a narrower channel cross-section than wetlands further to the west and contained more dense vegetation and vegetation growing in the channel itself (cattails and bulrush). The channel at this location contained a few braids, but otherwise contained one main low-flow channel where it appeared little movement due to lack of distinct and bare sandbars. The topography was more gradual outside of the OHWM.

FHU staff analyzed two sample points and compiled wetland determination forms for Wetland CCE. These wetland determination forms describe sample points SP-13 and SP-14 (**Appendix B**). SP-13 showed distinct wetland characteristics (see discussion below). SP-14 consisted of upland vegetation and lacked hydric soils and wetland hydrology.

Wetland CCE: Vegetation

The herb stratum dominates the vegetation in Wetland CCE. The tree stratum in SP-13 is made up of plains cottonwoods (20 percent) and the sapling/shrub stratum contains sandbar willows (20 percent). The herb stratum is comprised of narrowleaf cattails (60 percent) and duckweed (*Lemna spp.*) (5 percent). SP-13 passed the Dominance Test and Prevalence Index; therefore, the area contains a predominance of hydrophytic vegetation. The upland vegetation surrounding the wetlands consists of smooth brome, leafy spurge, and yellow salsify.

Wetland CCE: Soils

FHU staff downloaded a Web Soil Survey which shows this area having a "Sandy alluvial land" soil type (NRCS, accessed 2015). During the field survey, FHU staff dug soil pits to investigate the soil profile. In SP-13, a soil survey was not conducted due to the lack of access caused by standing water in the area. The soils at SP-13 are assumed to be hydric based on the prevalence of hydrophytic plant species and the presence of hydrologic wetland indicators.

According to USACE guidelines, SP-13 soil conditions qualify as hydric (refer to data forms in **Appendix B**).

Wetland CCE: Hydrology

The primary hydrologic indicator for SP-13 is surface water (12 inches deep); a secondary indicator is geomorphic position.

Wetland CCE is classified as a PEMA wetland under the Cowardin classification system (Cowardin et al., 1979). The total size of Wetland CCE is **0.018 acre**.

4.8 Waters of the US and Jurisdictional Status

Murphy Creek, Coal Creek, and Sand Creek would be considered WUS within the Clean Water Act (CWA) jurisdiction (as defined by 33 Code of Federal Regulations Part 328). The specific WUS indicators include relatively permanent waters (RPWs) that flow directly or indirectly into a Traditional Navigable Water (TNW) and wetlands directly abutting RPWs that flow directly or indirectly into TNW (USACE, 2007); Sand Creek and Coal Creek were both identified as RPWs and the South Platte River was identified as a known TNW. Wetlands identified during the March 2015 and July 2015 delineation were found directly abutting these RPWs and are therefore likely jurisdictional as well.

4.9 Impacts and Mitigation to Jurisdictional Wetlands

Once the preliminary design of the Proposed Action has been prepared, FHU staff will analyze total quantities of wetland temporary and permanent impacts. Depending on the extent of wetland impacts, this project will likely require several Section 404 Nationwide Permit for construction at Sand Creek and Coal Creek. The project team will coordinate with the USACE to identify mitigation strategies related to wetland impacts. These strategies may include on-site mitigation, off-site mitigation, purchase of wetland bank credits, or use of a separate strategy approved by the USACE.

Construction of impervious surfaces would increase runoff exposing the surrounding vegetation to higher levels of pollutants. Increased runoff may lead to increased soil erosion.

5. CONCLUSIONS

This technical report summarizes FHU's delineation of wetlands in support of the City of Aurora's 6th Avenue Parkway Extension Environmental Assessment. 3.73 acres of wetlands were delineated within the study area that either intersect or are adjacent to the Proposed Action. Should the proposed project be subject to design alteration, additional wetland delineation efforts may be required. The construction of the Proposed Action will require permitting under Section 404 of the CWA. Any Section 404 permit(s) will be acquired from the USACE prior to construction activities occurring.

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Photo 1: Looking north along Sand Creek at northern portion of Wetland SCA



Photo 2: Outpoint for northern portion of Wetland SCA. Looking east directly adjacent to Sand Creek



Photo 3: Looking west along Sand Creek at southern portion of Wetland SCA



Photo 4: Outpoint for southern portion of Wetland SCA. Looking east directly adjacent to Sand Creek



Photo 5: Looking southeast along Sand Creek at stream bank wetlands associated with the creek. Wetland SCB is located in the background.



Photo 6: Looking west along Coal Creek adjacent to the Picadilly Road culvert (Wetland CCA)



Photo 7: Outpoint for Wetland CCA. Looking north directly adjacent to Coal Creek



Photo 8: Looking east along Coal Creek adjacent to the Picadilly Road culvert (Wetland CCB)



Photo 9: Looking east along Coal Creek at the fringe wetland abutting the creek on the north side and vertical eroded banks of Coal Creek (Wetland CCC).



Photo 10: Looking west along Coal Creek at the fringe wetland on the south bank of the Ordinary High Water Mark (Wetland CCC).



Photo 11: Looking southeast along Coal Creek at a sandbar dominated by Sandbar Willow (Wetland CCD).



Photo 12: Another view of the sandbar dominated areas of Wetland CCD, looking north along Coal Creek.



Photo 13: View looking south into Wetland CCD, where the PSSA wetland changes to a PFOA wetland type.



Photo 14: View looking southeast into Wetland CCE, where cattails and willows dominate a small pothole with standing water.

*Note: Additional photographs can be provided on request.



Appendix B Wetland Determination Forms

WETLAND DETERM	INATION	N DATA FO	RM - Gre	at Plains	Region	
Project/Site: 6th Avenue Parkway Extension	City/	County:	Aurora/Arap	bahoe	Sampling Date:	3/16/2015
Applicant/Owner: City of Aurora		State:	CC)	Sampling Point:	SP-1
Investigator(s): Keith Hidalgo, Jake Lloyd, Anthony Ma	rshall	Sect	ion, Townsh	nip, Range:	SEC 011 -	- T4S - 66W
Landform (hillslope, terrace, etc.): side slope of ch	nannel	Local relief	(concave, c	convex, non	e): none	Slope (%): 0-2
Subregion (LRR): LRR G La	at: 39	9.72532716	Long:	-104.7	526266 Datum	: NAD 83
Soil Map Unit Name: Sandy alluvial land			NWI	classificat	ion: P	EMA/C
Are climatic/hydrologic conditions on the site typical for this	s time of th	ne year?	Y (If no, explai	in in Remarks.)	
Are Vegetation , Soil , or Hydrolo	gy	significantly	disturbed?	Are "norr	nal circumstances" pr	esent? Yes
Are Vegetation , Soil , or Hydrolo	gy	naturally pro	blematic?	(If neede	ed, explain any answ	ers in Remarks.)
SUMMARY OF FINDINGS - Attach site map show	ving samp	ling point loo	cations, trai	nsects, imp	oortant features, etc	
Hydrophytic Vegetation Present? Y						
Hydric Soil Present? Y		Is the S	ampled Are	ea Within a	a Wetland?	Y
Indicators of Wetland Hydrology Present? Y		lf yes, o	ptional wetla	and site ID:	SCA (Sand Creek	(A)
Remarks: (Explain alternative procedures here or in a s	eparate re	eport.)		-		
······································		·F - · · ·)				
Wetland area located along south side of potentia	al impact a	area for bridg	e location.	Old oxbow	within greater cotto	nwood gallery.
VEGETATION Use scientific names of plants	`					
	Abaaluta	Dominant	Indiantar	Domina	nce Test Workshee	t
Tree Stratum (Plot size:)	% Cover	Species	Status	Number of	f Dominant Species	-
1 '		·		that are O	BL, FACW, or FAC:	2 (A)
2				Total Num	ber of Dominant	
3				Species A	cross all Strata:	<u> </u>
4				Percent of	f Dominant Species	
5				that are O	BL, FACW, or FAC:	<u>100.00%</u> (A/B)
Contine/Chryth Ctrature (Plat size)	0	= I otal Cover		Drevela	nee Index Merkeh	
<u>Sapling/Sritub Stratum</u> (Piol Size)	50	Y	FACW	Total %	Cover of Mi	itinly by:
2	00	<u> </u>	17.011	OBL spe	ecies 95 x 1	= 95
3				FACW	species 50 x 2	2 = 100
4				FAC spe	ecies 0 x 3	3 = 0
5				FACU s	pecies 0 x 4	= 0
	50	= Total Cover		UPL spe	ecies <u>5</u> x 5	5 = 25
Herb Stratum (Plot size:)				Column	totals 150 (A)) <u>220</u> (B)
1 Schoenoplectus pungens	80	<u>Y</u>	OBL	Prevale	nce Index = B/A =	1.47
2 Typha angustifolia	15	<u> </u>		Ludron	hutia Vagatatian Ir	diastara
	5	N	UPL		Panid Test for Hydro	nucators:
5				X 2 - [Dominance Test is >	50%
6				X 3 - F	Prevalence Index is ≤	\$3.0 ¹
7				4 - 1	Morphological Adap	tations ¹ (provide
8				sup	porting data in Rem	arks or on a
9				sepa	arate sheet)	
10	100	TitilO		Prol	blematic Hydrophyti	ic Vegetation ¹
Woody Vine Stratum (Plot size:	100	= I otal Cover		(Exp	plain)	
				¹ Indicato	ors of hydric soil and we	tland hydrology must be
				Hyd	Irophytic	
	0	= Total Cover	•	Veg	etation	
% /Bare Ground in Herb Stratum	-			Pre	sent? Y	_
Remarks: (Include photo numbers here or on a separat	e sheet)					
Area along Sand Creek dominated by common thr	ee-square	bulrush. Pat	ches of san	dbar willow	v throughout Sand C	Creek floodplain

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)									
Depth	Matrix		Red	dox Featu	ures				
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-10	10YR 4/3	100					Sand	Saturated	
10-20	Glev 1 3/10Y	100					Loamy sand	Saturated	
10 20		100							
1-									
Type: C = C	oncentration, D =	Depletion	h, RM = Reduced M	Viatrix, CS	s = Cover	ed or Co	ated Sand Grains. Locat	ion: PL = Pore Lining, M = Matrix	
Hydric Soil	Indicators: (App	licable	o all LRRs, unle	ss other	wise no	ted.)	Indicators for Prob	lematic Hydric Solls":	
Hist	tosol (A1)		San	dy Gleye	d Matrix (S4)	1 cm Muck (A9) (
Hist	tic Epipedon (A2)		San	dy Redo	(S5)			lox (A16) (LRR F, G, H)	
Blac	ck Histic (A3)		Strip	oped Mat	rix (S6)		Dark Surface (S7) (LRR G)	
Hyd	arogen Sulfide (A4)		Loa	my Muck	y Mineral	(F1)	High Plains Depr		
Stra	attried Layers (A5)		X Loa	my Gleye	a Matrix	(F2)		OT WILKA /2 & /3)	
	TI IVIUCK (A9) (LRR	г, G, H) Сылбала (leted Ma	trix (F3) Suurfacca (Reduced Vertic (
	pieted Below Dark	Surrace (ATT) Red	IOX Dark	Surrace (F0)	Ked Parent Mate	rial (TFZ)	
	CK Dark Surface (A	(24)	Dep	leted Dai	K Surfac	e(F7)	Very Shallow Dar	K Sufface (TF12)	
San	ndy Mucky Mineral	(51)		IOX Depre	ssions (F	·8)	Other (Explain in	Remarks)	
2.5	CM MUCKY Peat or	Peat (S2	2)Higr	1 Plains L		ns (F16)	Indicators of hydro	phytic vegetation and wetland	
(L	кк G, п) m Muslay Dest sr [Deet (CO)			x / 3 01 L	кк п)	nydrology must be	present, unless disturbed or	
^{5 C}	m Mucky Peat of F	Peat (53)	(LRR F)				р	ionematic.	
Restrictive	Layer (if observe	ed):							
Туре:							Hydric Soil Prese	nt? <u>Y</u>	
Depth (inche	es):								
Remarks:									
			Dark Gley	/ color in	matrix; s	saturated	l near surface.		
			-						
HYDROLO	OGY								
Wetland Hy	drology Indicato	ors:							
Primary Indi	cators (minimum	of one is	required; check	all that a	(ylqa		Secondary Inc	dicators (minimum of two required)	
Surface	Water (A1)			Salt Cru	st (B11)		Surface	Soil Cracks (B6)	
High Wa	ater Table (A2)			Aquatic	Invertebra	ates (B13	s) Sparsely	/ Vegetated Concave Surface (B8)	
X Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C1	í) X Drainag	e Patterns (B10)	
Water N	larks (B1)			Dry-Sea	son Wate	er Table (C2) Oxidized	Rhizospheres on Living	
Sedimer	nt Deposits (B2)			Oxidized	l Rhizosp	heres on	Living Roots	(C3) (where tilled)	
Drift Dep	posits (B3)			Roots (C3) (whe	ere not ti	lled) Crayfish	Burrows (C8)	
Algal Ma	at or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Saturation	on Visible on Aerial Imagery (C9)	
Iron Dep	oosits (B5)			Thin Mu	ck Surfac	e (C7)	Geomor	phic Position (D2)	
Inundati	on Visible on Aeria	I Imager	y (B7)	Other (E	xplain in	Remarks) X FAC-Ne	utral Test (D5)	
Water-S	tained Leaves (B9)					Frost-He	eave Hummocks (D7) (LRR F)	
Field Obser	rvations:								
Surface Wa	ter Present?	Yes	No	<u>X</u>	Depth (i	nches):	I .	Readown of Minilary 1	
vvater Table	e Present?	Yes	NO NI	X	Depth (i	ncnes):		alcators of Wetland	
Saturation P	nesent?	res	<u> </u>		Depth (I	ncnes):	<u> </u>	yurology Fresent? Y	
Uncludes ca					.1	•	·····		
Describe Re	ecorded Data (stre	eam gau	ge, monitoring we	ell, aerial	photos,	orevious	inspections), if available:		
Remarks:									
		abt rice :	n alouation alors	Sand C.		and Cat	uration propert pear ast	surface.	
	51	yni nse i	n elevation along	Sanu Ur	eek chal	mei. Sat	uration present near soll s		
L									

WETLAND DETERMI	NATION	DATA FO	RM - Grea	at Plains	Regior	า		
Project/Site: 6th Avenue Parkway Extension	City/C	City/County: Aurora/Ar		pahoe Sampling Date		g Date:	3/16/201	5
Applicant/Owner: City of Aurora		State: CC			C Sampling Point:			
Investigator(s): Keith Hidalgo, Jake Lloyd, Anthony Mars	shall	Secti	on, Townsh	ip, Range:		SEC 011 -	T4S - 66W	
Landform (hillslope, terrace, etc.): side slope		Local relief	(concave, c	onvex, none	e):	none	Slope (%):	0-5
Subregion (LRR): LRR G Lat	t: 39.	72537709	Long:	-104.75	25811	Datum:	NAD	33
Soil Map Unit Name: Sandy alluvial land			NWI	classificatio	on:			
Are climatic/hydrologic conditions on the site typical for this	time of the	year?	Y (I	lf no, explair	n in Rema	arks.)		
Are Vegetation , Soil , or Hydrolog	ЗУ	significantly of	listurbed?	Are "norm	al circum	stances" pre	sent? Y	es
Are Vegetation , Soil , or Hydrolog	ay	naturally prob	plematic?	(If needed	d, explain	any answe	rs in Remark	(S.)
SUMMARY OF FINDINGS - Attach site map show	ing sampli	ng point loc	ations, tran	sects, impo	ortant fea	atures, etc.		
Hydrophytic Vegetation Present? Y								
Hydric Soil Present? N		Is the Sa	mpled Are	a Within a	Wetland	d?	Ν	
Indicators of Wetland Hydrology Present? N		lf yes, op	tional wetla	nd site ID: \	Wetland	SCA Outpo	pint	
Remarks: (Explain alternative procedures here or in a se	parate rer	vort)						
	eparate rep	JOIT.)						
Sample point located adjacent to	o channel	bank on sligł	nt upslope.	Upland out	point for	SP-1.		
VECETATION Line acientific names of plants								
VEGETATION Use scientific flames of plants.	Abaaluta	Dominant	Indiantar	Dominan	nce Test	Worksheet		
Tree Stratum (Plot size:)	% Cover	Species	Status	Number of	Dominar	t Species		
1 Populus deltoides	40	Y	FAC	that are OE	BL, FACV	V, or FAC:	2	(A)
2				Total Numb	ber of Do	minant		
3				Species Ac	cross all S	Strata:	3	(B)
4				Percent of	Dominan	t Species		
5				that are OE	BL, FACV	V, or FAC:	66.67%	(A/B)
Carling (Chrish Strature (Diet eizer	40 =	I otal Cover		Drevelor		v Morkoha		
Sapling/Shrub Stratum (Plot size:)	5	V	FACW	Total % (Cover of:		et tiply by:	
2	<u> </u>	<u> </u>	17.077	OBL spe	cies	0 x 1	= 0	
3				FACW s	pecies	5 x 2	= 10	-
4				FAC spe	cies	40 x 3	= 120	-
5				FACU sp	pecies	25 x 4	= 100	
_	5 =	Total Cover		UPL spee	cies	75 x 5	= 375	
Herb Stratum (Plot size:)				Column t	totals	145 (A)	605	(B)
1 Bromus inermis	75	Y	UPL	Prevalen	ice Index	a = B/A =	4.17	-
2 Melilotus officinalis	15	<u> </u>	FACU	Lbudeenb				
3 Giycyrmiza iepidota	5	<u>N</u>	FACU	Hyaroph 1 D	apid Tool		dicators:	tion
5	5	IN	TACO	X 2 - D		- Test is 56	nylic vegela n%	
6				3 - Pi	revalence	e Index is ≤3	3.0 ¹	
7				4 - M	lorpholo	nical Adapta	ations ¹ (prov	/ide
8				supp	orting da	ata in Rema	arks or on a	
9				sepa	arate she	et)		
10	<u> </u>			Prob	lematic I	Hydrophytic	· Vegetation	1
	100 =	Total Cover		Expl	lain)			
				¹ Indicator	rs of hydric	soil and wetle	and hydrology	must be
2				Pi Hvdr	rophytic			,
	0 =	Total Cover		Vege	etation			
% /Bare Ground in Herb Stratum	Ū			Pres	ent?	Y		
Remarks: (Include photo numbers here or on a separate	sheet)			• · · · · · · · · · · · · · · · · · · ·				
Disturbed areas within vicinity of	f sample p	oint appear to	o be filled i	n with yellow	w sweet	clover.		

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)												
Depth Matrix Redox Feature					ures							
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks				
0-2	10YR 3/3	80					Sand	Dry				
	10VR 3/1	20					Sand	Dry				
0.00	10110 1/2	20					Cand					
2-20	10YR 4/3	100					Sand	Dry				
¹ Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains 2 location: PL = Pore Lining, M = Matrix												
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ³ .												
Hydric Soil indicators: (Applicable to all LKKs, unless otherwise noted.) Indicators for Problematic Hydric Soils":												
Hist	iosol (A1)		San	dy Gleye	d Matrix (54)		LRR I, J)				
Hist	ic Epipedon (A2)		San	ay Read	x (55)			$(\mathbf{A} \mathbf{B} \mathbf{B}, \mathbf{C})$				
Blac	CK HISTIC (A3) Irogon Sulfido (A4)			oped iviat	rix (56) v Minoral	(E1)		(LRR G)				
	nogen Sunde (A4)				y wineral	(F1) (F2)		of MI DA 72 & 73				
	m Muck (A0) (I PP)			Intod Mar	triv (E2)	(⊢∠)		UI WILINA 12 & 13)				
	Noted Below Dark	т, с, п) Surfoco (ox Dark	uix (F3) Surfaca /I	E6)		io)				
	k Dark Surface (A	(12)			rk Surface	- (F7)		k Surface (TE12)				
	ndy Mucky Mineral	(S1)	Dep		assione /E	- (i /) - (i /)	Other (Evolution in	Remarks)				
	cm Mucky Peat or	(OT) Post (S2		Depie Depie	Jonrossia	0) ns (E16)	³ Indiactors of hydror	bytic vogetation and wetland				
	RRGH)	1 eat (02	.) (M		8 73 of I	BB H)	hydrology must bo	prosent unless disturbed or				
5.0	m Mucky Peat or F	Peat (S3)	(I RR F)					oblematic				
							P1	obiomatio.				
Restrictive	Layer (if observe	ed):										
Type:					-		Hydric Soll Preser	it? <u>N</u>				
Depth (Inche	es):				-							
Remarks:												
			_									
			Dry, sand	y area; n	no hydric	soil indic	cators present.					
HIDROLO	JG f											
wetland Hy	drology indicato	ors:										
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Secondary Inc	licators (minimum of two required)				
Surface	Water (A1)			Salt Cru	st (B11)		Surface	Soil Cracks (B6)				
High Wa	ater Table (A2)			Aquatic	Invertebra	ates (B13	5) Sparsely	Provide Concave Surface (B8)				
Saturation Water M	JN (AS) Jorke (B1)				en Suillae	Table (Phizosphoros on Living				
Sedimer	nt Denosits (B2)			Oxidized	l Rhizosn	heres on	Living Roots (C3) (where tilled)				
Drift Der	(B3)			Roots ((C3) (wh	ere not til	lled) Cravfish	Burrows (C8)				
Algal Ma	at or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Saturatio	on Visible on Aerial Imagery (C9)				
Iron Dep	osits (B5)			Thin Mu	ck Surfac	e (C7)	Geomor	phic Position (D2)				
Inundatio	on Visible on Aeria	al Imager	/ (B7)	Other (E	xplain in	Remarks) FAC-Ne	utral Test (D5)				
Water-S	tained Leaves (B9)	· · ·				Frost-He	ave Hummocks (D7) (LRR F)				
Field Obser	vations:											
Surface Wat	ter Present?	Yes	No	Х	Depth (i	nches):						
Water Table	Present?	Yes	No	Х	Depth (i	nches):	Inc	licators of Wetland				
Saturation P	Present?	Yes	No	Х	Depth (i	nches):	H	ydrology Present? N				
(includes ca	pillary fringe)		-									
Describe Re	corded Data (stre	eam gau	ge, monitoring we	ll, aerial	photos, p	orevious	inspections), if available:					
Remarks:												
			.				.					
			Slight rise	in elevat	tion abov	e Sand (creek channel.					
1												

WETLAND DETERM		I DATA FO	RM - Gre	at Plains	Region	
Project/Site: 6th Avenue Parkway Extension	City/	County:	Aurora/Arap	bahoe	Sampling Date:	3/16/2015
Applicant/Owner: City of Aurora		State: CO			Sampling Point:	SP-3
Investigator(s): Keith Hidalgo, Jake Lloyd, Anthony Ma	rshall	Sect	ion, Townsh	ip, Range:	SEC 002 -	T4S - 66W
Landform (hillslope, terrace, etc.): depression	n	Local relief	(concave, c	onvex, none): concave	Slope (%): 0-1
Subregion (LRR): LRR G L	at: 3	9.7258375	Long:	-104.75	24632 Datum:	NAD 83
Soil Map Unit Name: Sandy alluvial land			NWI	classificatio	on: F	PEMA
Are climatic/hydrologic conditions on the site typical for thi	s time of th	e year?	Y (lf no, explain	n in Remarks.)	
Are Vegetation , Soil , or Hydrold	ogy	significantly	disturbed?	Are "norm	al circumstances" pre	esent? Yes
Are Vegetation , Soil , or Hydrold	ogy	naturally pro	blematic?	(If needeo	d, explain any answe	ers in Remarks.)
SUMMARY OF FINDINGS - Attach site map show	wing samp	ling point loc	ations, trar	nsects, impo	ortant features, etc.	
Hydrophytic Vegetation Present? Y						
Hydric Soil Present? Y		Is the S	ampled Are	ea Within a	Wetland?	Y
Indicators of Wetland Hydrology Present? Y		lf yes, o	ptional wetla	and site ID:	SCA (Sand Creek	A)
Remarks: (Explain alternative procedures here or in a s	separate re	enort)				
		,p o)				
Wetland area located along north side of potentia	al impact a	rea for bridge	e location. C	Old oxbow w	vithin greater cotton	wood gallery.
VECETATION Liss scientific names of plant	<u></u>					
	S.	Dominant	Indiaator	Dominan	ce Test Worksheet	
Tree Stratum (Plot size:)	% Cover	Species	Status	Number of	Dominant Species	
1 , , , , , , , , , , , , , , , , , , ,		·		that are OB	BL, FACW, or FAC:	3 (A)
2				Total Numb	per of Dominant	
3				Species Ac	cross all Strata:	<u>3</u> (B)
4				Percent of	Dominant Species	
5		<u></u>		that are OE	BL, FACW, or FAC:	<u>100.00%</u> (A/B)
	0	= I otal Cover		Drevelor	an Index Merkoh	
<u>Saping/Siliub Silatum</u> (Piol Size)	20	Y	FACW	Total % (Cover of Mul	tiply by:
2	20	· ·	17.017	OBL spe	cies 55 x 1	= 55
3				FACW sp	pecies 25 x 2	= 50
4				FAC spe	cies 30 x 3	= 90
5				FACU sp	ecies 0 x 4	= 0
	20	= Total Cover		UPL spec	cies <u>10</u> x 5	= 50
Herb Stratum (Plot size:)				Column t	otals <u>120</u> (A)	<u>245</u> (B)
1 Juncus articulatus	55	<u> </u>	OBL	Prevalen	ce Index = B/A =	2.04
2 Equisetum laevigatum	20	Y	FAC	Hydroph	via Vagatation In	diastora
A Bromus inermis	5			пушторн 1 - Re	anid Test for Hydron	olicators:
5 Elymus elymoides	5	·	UPL	X 2 - De	ominance Test is >5	0%
6 Phalaris arundinacea	5	N	FACW	X 3 - Pr	revalence Index is ≤	3.0 ¹
7				4 - M	lorphological Adapt	ations ¹ (provide
8				supp	orting data in Rema	arks or on a
9				sepa	rate sheet)	
10				Prob	lematic Hydrophytic	c Vegetation ¹
	100	= Total Cover		(Expl	lain)	
				¹ Indicator	s of hydric soil and wet	and hydrology must be
		·		Hvdr	ophytic	
	0	= Total Cover	<u> </u>	Vege	etation	
% /Bare Ground in Herb Stratum	Ū			Pres	ent? Y	
Remarks: (Include photo numbers here or on a separat	te sheet)					
Low sa	andbar are	a along aban	doned oxbo	ox.		

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)												
Depth <u>Matrix</u> <u>Redox F</u>			dox Feat	ures_								
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks				
0-6	7.5YR 3/1	55	7.5YR 5/6	20	С	М	Loamy Sand	Saturated				
	7.5YR 3/3	25					Loamy Sand	Saturated				
6-10	10YR 3/2	100					Sand	Saturated				
10-20	10YR 2/2	100					Loamy Sand	Saturated				
							,					
¹ Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains ² Location: PL = Pore Lining, M = Matrix												
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ³ :												
Hiet	indicators: (App		o all LKKS, unle San	dy Gleve	d Matrix	(S4)	1 cm Muck (A9) (
Hist	ic Eninedon (A2)		San	dy Redo	x (S5)	(04)	Coast Prairie Rec	lox (A16) (I BB F, G, H)				
Blac	vk Histic (A3)		Striv	ned Mat	rix (S6)		Dark Surface (S7) (I RR G)				
	rogen Sulfide (A4)		loa	mv Muck	v Mineral	(F1)	High Plains Depre	essions (F16)				
Stra	tified Lavers (A5)	(LRR F)	Loa	mv Gleve	ed Matrix	(F2)	(LRR H outside	of MLRA 72 & 73)				
1 cr	n Muck (A9) (LRR	F, G, H)	Dep	leted Ma	trix (F3)	. /	Reduced Vertic (I	-18)				
Dep	leted Below Dark	, Surface (A11) Red	lox Dark	Surface (F6)	Red Parent Mater	ial (TF2)				
Thic	k Dark Surface (A	.12)	Dep	leted Da	rk Surfac	e (F7)	Very Shallow Dar	k Surface (TF12)				
San	dy Mucky Mineral	(S1)	X Red	lox Depre	essions (F	-8)	Other (Explain in	Remarks)				
2.5	cm Mucky Peat or	Peat (S2	2) High	n Plains I	Depressic	ons (F16)	³ Indicators of hydror	phytic vegetation and wetland				
(LI	RR G, H)		(M	LRA 72 a	& 73 of L	RR H)	hydrology must be	present, unless disturbed or				
5 ci	m Mucky Peat or F	Peat (S3)	(LRR F)				рі	oblematic.				
Restrictive	Layer (if observe	ed):										
Туре:							Hydric Soil Preser	nt? Y				
Depth (inche	es):				-							
Remarks:												
			Sand	y alluviu	m within	abandon	ed oxbow.					
HYDROLO	DGY											
Wetland Hy	drology Indicato	ors:										
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Secondary Inc	licators (minimum of two required)				
Surface	Water (A1)			Salt Cru	st (B11)		Surface	Soil Cracks (B6)				
High Wa	ter Table (A2)			Aquatic	Invertebra	ates (B13	s) Sparsely	Vegetated Concave Surface (B8)				
X Saturatio	on (A3) Jorko (B1)			Hydroge	en Suifide	Udor (C		Patterns (B10)				
Sedimer	at Denosits (B2)			Oxidized	d Rhizoso	heres on	Living Roots (C3) (where tilled)				
Drift Der	osits (B3)			Roots	(C3) (wh e	ere not ti	lled) Cravfish	Burrows (C8)				
Algal Ma	it or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Saturatio	on Visible on Aerial Imagery (C9)				
Iron Dep	osits (B5)			Thin Mu	ck Surfac	e (C7)	X Geomor	phic Position (D2)				
Inundatio	on Visible on Aeria	al Imager	y (B7)	Other (E	xplain in	Remarks) X FAC-Ne	utral Test (D5)				
Water-S	tained Leaves (B9)		-			Frost-He	eave Hummocks (D7) (LRR F)				
Field Obser	vations:	Var	N1-	v	Dent- "	nohoc):						
Surface Wat	Present?	res		× 	Depth (I	nches):	In/	licators of Wetland				
Saturation P	resent?	Yee		^	Depth (I	nches).		vdrology Present? V				
(includes ca	pillary fringe)	100				noneo).	<u> </u>					
Describe Re	corded Data (stre	eam gau	ge, monitoring we	ll, aerial	photos, I	previous	inspections), if available:					
	× ×	0.		,			1 //					
Remarks:												
	~ ~						· · · · · · · · · · · · · · · · · · ·					
	Surface	e water p	resent in nearby	apandor		w; satura	nuion begins close to the s	Son Sufface.				

WETLAND DETERMI	NATION	I DATA FO	RM - Grea	at Plains	Region
Project/Site: 6th Avenue Parkway Extension	City/0	County:	Aurora/Arap	ahoe	Sampling Date: 3/16/2015
Applicant/Owner: City of Aurora		State:	CO		Sampling Point: SP-4
Investigator(s): Keith Hidalgo, Jake Lloyd, Anthony Mar	shall	Sect	ion, Townshi	p, Range:	SEC 002 - T4S - 66W
Landform (hillslope, terrace, etc.): side slope		Local relief	(concave, co	onvex, none	e): concave Slope (%): 0-5
Subregion (LRR): LRR G La	t: 3	9.725887	Long:	-104.7	52401 Datum: NAD 83
Soil Map Unit Name: Sandy alluvial land			NWI	classificati	on:
Are climatic/hydrologic conditions on the site typical for this	time of the	e year?	Y (l	f no, explai	n in Remarks.)
Are Vegetation , Soil , or Hydrolog	JY	significantly	disturbed?	Are "norn	nal circumstances" present? Yes
Are Vegetation , Soil , or Hydrolog	ay	naturally pro	blematic?	(If neede	ed, explain any answers in Remarks.)
SUMMARY OF FINDINGS - Attach site map show	ing sampl	ling point loc	ations, tran	sects, imp	oortant features, etc.
Hydrophytic Vegetation Present? Y					
Hydric Soil Present? N		Is the Sa	ampled Are	a Within a	a Wetland? N
Indicators of Wetland Hydrology Present? N		If yes, o	ptional wetla	nd site ID:	
Remarks: (Evolain alternative procedures here or in a se	onarato ro	nort)			
internative procedures here of in a se	eparate re	port.)			
Sample point located a	djacent to	channel bar	nk. Upland o	utpoint for	SP-3.
VEGETATION Use scientific names of plants.	•	<u> </u>	1 12 4	Domina	nco Tost Workshoot
Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species	Indicator Status	Number of	f Dominant Spacios
1 Populus deltoides	40	Y	FAC	that are O	BL. FACW. or FAC: 2 (A)
2				Total Num	ber of Dominant
3				Species A	cross all Strata: 3 (B)
4				Percent of	Dominant Species
5				that are O	BL, FACW, or FAC: <u>66.67%</u> (A/B)
	40 =	Total Cover			<u> </u>
Sapling/Shrub Stratum (Plot size:)	F	V		Total %	nce Index Worksheet
2	5	·	FACIN	OBL SDE	cover or . Multiply by:
		·		FACW s	species $5 \times 2 = 10$
4				FAC spe	$40 \times 3 = 120$
5		·		FACU s	pecies 25 x 4 = 100
	5 =	Total Cover		UPL spe	ecies 75 x 5 = 375
Herb Stratum (Plot size:)				Column	totals <u>145</u> (A) <u>605</u> (B)
1 Bromus inermis	75	Y	UPL	Prevaler	nce Index = $B/A = 4.17$
2 Melilotus officinalis	15	N	FACU		
3 Glycyrrhiza lepidota	5	<u> </u>	FACU	Hydrop	hytic Vegetation Indicators:
4 Conyza canadensis	5	<u> </u>	FACU		capid Test for Hydrophytic Vegetation
6				3-P	Prevalence Index is $\leq 3.0^{\circ}$
7					Morphological Adaptations ¹ (provide
8				supp	porting data in Remarks or on a
9				sepa	arate sheet)
10				Prob	plematic Hydrophytic Vegetation ¹
	100 =	Total Cover		(Exp	olain)
Woody Vine Stratum (Plot size:)				¹ Indicato	ors of hydric soil and wetland hydrology must be
				p Hvd	present, unless disturbed or problematic
	0 -	Total Cover		Veq	etation
% /Bare Ground in Herb Stratum	0 -			Pres	sent? Y
Remarks: (Include photo numbers here or on a separate	e sheet)				
	,				
Area dominated by smooth brome with	in cottonw	vood gallery;	few sandba	r willow sp	rigs found throughout.

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the absen	ce of indicators.)
Depth	Matrix		Red	dox Featu	ures			
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-2	10YR 3/2	100					Sand	Dry
2-20	10YR 3/2	30					Loamy Sand	Dry
	10YR 4/3	70					Loamy Sand	Drv
							Loany Cana	2.9
¹ Type: C = C	concentration, D =	Depletior	, RM = Reduced M	Matrix, CS	S = Cover	ed or Co	ated Sand Grains. ² Locat	ion: PL = Pore Lining, M = Matrix
Hydric Soil	Indicators: (App	licable f	o all LRRs, unle	ss other	wise no	ted.)	Indicators for Probl	ematic Hydric Soils ³ :
Hist	tosol (A1)		San	dy Gleye	d Matrix ((S4)	1 cm Muck (A9) (LRR I, J)
Hist	tic Epipedon (A2)		San	dy Redox	(S5)		Coast Prairie Rec	ox (A16) (LRR F, G, H)
Blac	ck Histic (A3)		Strij	oped Mat	rix (S6)	<i>(</i> - <i>i</i>)	Dark Surface (S7) (LRR G)
Hyd	Irogen Sulfide (A4)		Loa	my Muck	y Mineral	(F1) (F0)	High Plains Depre	essions (F16)
	Muck (A0) (LBD			Iny Gleye	trix (E2)	(⊏∠)		UI WILKA / 2 & / 3)
	hiviuck (A9) (LRR	г, с , п) Surface (lox Dark	uix (F3) Surface /I	E6)	Red Parent Mater	- 10 <i>)</i> ial (TF2)
Thic	ck Dark Surface (A	12)		leted Dark	k Surface	e (F7)	Very Shallow Dar	k Surface (TF12)
San	ndv Mucky Mineral	(S1)	Bec	lox Depre	essions (F	-8)	Other (Explain in	Remarks)
2.5	cm Mucky Peat or	Peat (S2	2) Higl	n Plains E	Depressio	ons (F16)	³ Indicators of hydror	obvtic vegetation and wetland
(LI	RR G, H)		́ (М	LRA 72 8	& 73 of L	RR H)	hydrology must be	present, unless disturbed or
5 ci	m Mucky Peat or F	Peat (S3)	(LRR F)				pi	oblematic.
Restrictive	Laver (if observe	ed):						
Type:		,-					Hydric Soil Preser	nt? N
Depth (inche	es):						,	
Pomorko:	,							
Remarks.								
			Dry s	andy are	a adjace	nt to We	tland SCA	
			,	,	,			
HYDROLO	DGY							
Wetland Hy	drology Indicate	ors:						
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Secondary Inc	licators (minimum of two required)
Surface	Water (A1)			Salt Cru	st (B11)		Surface	Soil Cracks (B6)
High Wa	ater Table (A2)			Aquatic	Invertebra	ates (B13	s) Sparsely	Vegetated Concave Surface (B8)
Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C	1) Drainage	e Patterns (B10)
Water M	larks (B1)			Dry-Sea	son wate Phizosp	er Table (UXIdized	C3) (where tilled)
Drift Der	(B2)			Roots (C3) (wh	ere not ti	lled) Cravfish	Burrows (C8)
Algal Ma	at or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Saturatio	on Visible on Aerial Imagery (C9)
Iron Dep	oosits (B5)			Thin Mu	ck Surfac	e (C7)	Geomor	ohic Position (D2)
Inundatio	on Visible on Aeria	I Imager	/ (B7)	Other (E	xplain in	Remarks) FAC-Ne	utral Test (D5)
Water-S	tained Leaves (B9)		-			Frost-He	ave Hummocks (D7) (LRR F)
Field Obser	vations:				_			
Surface Wat	ter Present?	Yes	No	<u> </u>	Depth (i	nches):	I .	liantana of Matter d
Saturation D	e Present?	Yes		X	Depth (I	nches):	Inc	
(includes ca	pillary fringe)	165		^	Debru (I	10165).	——————————————————————————————————————	
Describo Po	corded Data (ctr	am davi		ll acrial	nhotos	arevious	inspections) if available:	
Describe Recorded Data (stream gauge, monitoring well, aenar priotos, previous inspections), il available:								
Remarks [.]								
			Slightly highe	r area ab	ove Wet	land SC	A; moderate slope	

WETLAND DETERM	/INATION	N DATA FO	RM - Gre	at Plains Region
Project/Site: 6th Avenue Parkway Extension	City/	County:	Aurora	a Sampling Date: 7/16/15
Applicant/Owner: Aurora		State:	CC	Sampling Point: SP-5
Investigator(s): Keith Hidalgo and Marissa Finney		Sect	ion, Townsh	nip, Range: Section 11 - T4S - R66W
Landform (hillslope, terrace, etc.): Stream ba	ank	Local relief	(concave, c	convex, none): <u>concave</u> Slope (%): <u>0 - 3</u>
Subregion (LRR): LRR G I	_at:3	39.724507	Long:	-104.749015 Datum: NAD 83
Soil Map Unit Name: Blakeland Loamy Sand, 1 to 20 p	ercent slop	es	NWI	classification: PEMA/C
Are climatic/hydrologic conditions on the site typical for th	is time of th	e year?	Y (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrol	ogy	significantly	disturbed?	Are "normal circumstances" present?
Are Vegetation , Soil , or Hydrol	ogy	naturally pro	blematic?	(If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS - Attach site map sho	wing samp	ling point loo	cations, trai	nsects, important features, etc.
Hydrophytic Vegetation Present? Y	_			
Hydric Soil Present? Y		Is the S	ampled Ar	ea Within a Wetland? Y
Indicators of Wetland Hydrology Present? Y		lf yes, o	ptional wetla	and site ID: Wetland SCB
Remarks:				
Stream bank abutting Sand C	reek domin	ated by com	mon three s	quare and sandbar willow.
VEGETATION Use scientific names of plant	·c			
	Absoluto	Dominant	Indicator	Dominance Test Worksheet
Tree Stratum (Plot size:)	% Cover	Species	Status	Number of Dominant Species
1 Elaeagnus angustifolia	40	Ý	FACU	that are OBL, FACW, or FAC: 3 (A)
2 Populus deltoides	20	Y	FAC	Total Number of Dominant
3				Species Across all Strata: 5 (B)
4				Percent of Dominant Species
5		<u></u>		that are OBL, FACW, or FAC: <u>60.00%</u> (A/B)
Capling/Chruh Stratum (Diat aiza:	60	= Total Cover	•	Drovalance Index Werkeheet
1 Salix interior	15	v	FACW	Total % Cover of: Multiply by:
2 Elaeaanus anaustifolia	5	Y	FACU	OBL species $10 \times 1 = 10$
3				FACW species $70 \times 2 = 140$
4				FAC species $20 \times 3 = 60$
5				FACU species 45 x 4 = 180
	20	= Total Cover		UPL species $20 \times 5 = 100$
Herb Stratum (Plot size:)				Column totals <u>165</u> (A) <u>490</u> (B)
1 Schoenoplectus pungens	55	Y	FACW	Prevalence Index = B/A =
2 Bromus inermis	10	<u> </u>		Undrankutia Varatatian Indiaatara.
3 Eupriorbia esula	<u> </u>	<u> </u>		1 - Panid Test for Hydrophytic Vegetation
5 Carex pellita	5	N	OBL	$\frac{1}{X}$ 2 - Dominance Test is >50%
6				\overline{X} 3 - Prevalence Index is ≤3.0 ¹
7				4 - Morphological Adaptations ¹ (provide
8				supporting data in Remarks or on a
9				separate sheet)
10				Problematic Hydrophytic Vegetation ¹
Weedy Vine Stratum (Plat size:	85	= Total Cover	•	(Explain)
				¹ Indicators of hydric soil and wetland hydrology must be
2				Hvdrophytic
	0	= Total Cover		Vegetation
% Bare Ground in Herb Stratum	-			Present? Y
Remarks:				<u>.</u>
Wetland veg	etation on le	ow stream ba	ank abutting	, channel.

Profile Desc	cription: (Descr	ibe to th	e depth needeo	l to docu	ment the	e indicat	or or confirm the a	bsence of indicators.)
Depth	Matrix		Re	dox Feat	ures			
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0 - 4	10YR4/3	100					sand	saturated
4 - 12	10YR4/3	85					sand	saturated
4 - 12	Glev13/N	15					sand	saturated
12 20	10/04/2	100					sand	saturated
12 - 20	10114/3	100					Sanu	Saturated
¹ Type: C = C	oncentration, D =	Depletion	n, RM = Reduced	Matrix, C	S = Cover	red or Co	ated Sand Grains. ²	² Location: PL = Pore Lining, M = Matrix
Hydric Soil	Indicators: (App	licable f	to all LRRs, unl	ess othe	rwise no	ted.)	Indicators for	Problematic Hydric Soils ³ :
Hist	osol (A1)		<u>X</u> Sa	ndy Gleye	ed Matrix ((S4)	1 cm Muck	(A9) (LRR I, J)
Hist	ic Epipedon (A2)		Sa	ndy Redo	x (S5)		Coast Prair	ie Redox (A16) (LRR F, G, H)
Blac	k Histic (A3)		Str	ipped Mat	trix (S6)		Dark Surfac	ce (S7) (LRR G)
Hyd	rogen Sulfide (A4))	Loa	amy Muck	xy Mineral	(F1)	High Plains	Depressions (F16)
Stra	tified Layers (A5)	(LRR F)	Loa	amy Gleye	ed Matrix	(F2)	(LRR H o	utside of MLRA 72 & 73)
1 cn	n Muck (A9) (LRR	F, G, H)	De	pleted Ma	ıtrix (F3)		Reduced V	ertic (F18)
Dep	leted Below Dark	Surface (A11)Re	dox Dark	Surface (F6)	Red Parent	: Material (TF2)
Thic	k Dark Surface (A	.12)	De	pleted Da	rk Surface	e (F7)	Very Shallo	w Dark Surface (TF12)
San	dy Mucky Mineral	(S1)		dox Depre	essions (F	-8)	X Other (Expl	ain in Remarks)
2.5 (cm Mucky Peat or	Peat (S2		in Plains I		ns (F16)	Indicators of h	hydrophytic vegetation and wetland
(Lr 5.01	кк G, П) m Mucky Doot or Г	Poot (62)			& / 3 OF L	кк п)	nyarology mu	ist be present, unless disturbed or
5 CI	II MUCKY Feat OF	Peal (33)						problematic.
Restrictive	Layer (if observ	ed):						
Type:					-		Hydric Soil P	Present? Y
Depth (Inche	es):				-			
Remarks:								
		Soil	s are dominated	by sand	and som	e of the s	sand are resist, your	ng soil
HYDROLO)GY							
Wetland Hv	drology Indicate	ors:						
Primary Indi	cators (minimum	of one is	required: check	all that a	nnlv)		Seconda	ary Indicators (minimum of two required
X Surface	Water (A1)			Salt Cru	st (B11)		Si	Inface Soil Cracks (B6)
X High Wa	ter Table (A2)		X	Aquatic	Invertebra	ates (B13) <u> </u>	parsely Vegetated Concave Surface (B8)
X Saturatio	on (A3)			Hydroge	en Sulfide	Odor (C1	1) X Dr	rainage Patterns (B10)
Water M	arks (B1)			Dry-Sea	ison Wate	er Table (C2) O	kidized Rhizospheres on Living
X Sedimer	t Deposits (B2)			Oxidized	d Rhizosp	heres on	Living F	Roots (C3) (where tilled)
X Drift Dep	oosits (B3)			Roots	(C3) (whe	ere not til	lled) Cr	ayfish Burrows (C8)
Algal Ma	t or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Sa	aturation Visible on Aerial Imagery (C9)
Iron Dep	osits (B5)			Thin Mu	ck Surfac	e (C7)	X Ge	eomorphic Position (D2)
Inundatio	on visible on Aeria	ii imagery	y (B7)	_Other (E	xplain in	Remarks) <u>X</u> FA	AC-Neutral Test (D5) ost-Heave Hummocks (D7) (LPP F)
Water-S	laineu Leaves (De)						
Field Obser	vations (of the w	etland a	rea):					
Surface Wat	er Present?	Yes	X No		Depth (i	nches):	7	
Water Table	Present?	Yes	X No		Depth (i	nches):	12	Indicators of Wetland
Saturation P	resent?	Yes	X No	_	Depth (i	nches):	0	Hydrology Present? Y
(includes ca	pillary fringe)				_			
Describe Re	corded Data (stre	eam gau	ge, monitoring w	ell, aerial	photos,	previous	inspections), if avai	lable:
Remarks:								
			Hydrology	esociator	d with the	nreconc	of Sand Crock	
			i iyululuyy a	souraled		present	C OI GAIN CIEEK.	

WETLAND DETERMINATION	ON DATA FORM -	Great Plains Region			
Project/Site: 6th Avenue Parkway Extension Ci	ty/County: Au	urora Sampling Date	Sampling Date: 7/16/15		
Applicant/Owner: Aurora	State:	CO Sampling Poir	nt: SP-6		
Investigator(s): Keith Hidalgo and Marissa Finney	Section, To	wnship, Range: Section	n 11 - T4S - R66W		
Landform (hillslope, terrace, etc.): Terrace above channel	Local relief (conca	ve, convex, none): conve	ex Slope (%): 5 - 10		
Subregion (LRR): LRR G Lat:	39.72449 Lo	ng: -104.749057 D	atum: NAD 83		
Soil Map Unit Name: Sandy Alluvial Land		NWI classification:			
Are climatic/hydrologic conditions on the site typical for this time of	the year? Y	(If no, explain in Remarks.)			
Are Vegetation , Soil , or Hydrology	significantly disturb	ed? Are "normal circumstanc	es" present? Yes		
Are Vegetation , Soil , or Hydrology	naturally problemat	c? (If needed, explain any	answers in Remarks.)		
SUMMARY OF FINDINGS - Attach site map showing san	— mpling point locations	, transects, important feature	s, etc.		
Hydrophytic Vegetation Present? N					
Hydric Soil Present? N	Is the Sample	d Area Within a Wetland?	Ν		
Indicators of Wetland Hydrology Present? N	If yes, optional	wetland site ID:			
Nonano.					
Outpoint above the	wetland, sandy area w	vith Brome.			
VECETATION Lies asigntific names of plants					
VEGETATION Ose scientific names of plants.	- Development Indian	Dominance Test Work	rshoot		
Tree Stratum (Plot size:) % Cove	e Dominant Indica r Species Statu	IS Number of Dominant Spo			
1		that are OBL, FACW, or	FAC: 1 (A)		
2		Total Number of Domina	nt ` ` /		
3		Species Across all Strata	:: <u>2</u> (B)		
4		Percent of Dominant Spe	ecies		
5		that are OBL, FACW, or	FAC: <u>50.00%</u> (A/B)		
	= Total Cover	Durana la la dan M/a	wheels and		
<u>Sapling/Shrub Stratum</u> (Plot size:)		Total % Cover of:	Multiply by:		
2		OBL species 0	x 1 = 0		
3		FACW species 20	$x^{2} = 40$		
4		FAC species 0	x 3 = 0		
5		FACU species 0	x 4 = 0		
0	= Total Cover	UPL species 52	x 5 = 260		
Herb Stratum (Plot size:)		Column totals 72	(A) <u>300</u> (B)		
1 Bromus inermis 40	Y UPL	Prevalence Index = B/	A = <u>4.17</u>		
2 Distichlis spicata 20			on Indiactora		
3 Medicago sativa 10		Hydrophytic Vegetat	Ion Indicators:		
5		2 - Dominance Tes	t is $>50\%$		
6		3 - Prevalence Inde	ex is $\leq 3.0^{1}$		
7		4 - Morphological	Adaptations ¹ (provide		
8		supporting data in	Remarks or on a		
9		separate sheet)			
10		Problematic Hydro	ophytic Vegetation ¹		
Weeds Vine Stratum (Plat size)	= I otal Cover	(Explain)			
		¹ Indicators of hydric soil a	nd wetland hydrology must be		
2		Hvdrophytic	sturbed of problematic		
	= Total Cover	Vegetation			
% Bare Ground in Herb Stratum		Present?	Ν		
Remarks:		•			
Upland o	outpoint above wetland				

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the abser	nce of indicators.)
Depth	Matrix	Matrix Redox Features						
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0 - 4	10YR4/3	100					sandy silt	dry
1							2.	
'Type: C = C	oncentration, D =	Depletion	, RM = Reduced M	Matrix, CS	S = Cover	ed or Co	ated Sand Grains. ² Loca	ition: PL = Pore Lining, M = Matrix
Hydric Soil	Indicators: (App	licable t	o all LRRs, unle	ss other	rwise no	ted.)	Indicators for Prob	olematic Hydric Soils":
Hist	iosol (A1)		San	dy Gleye	d Matrix ((S4)	1 cm Muck (A9)	
Hist	ic Epipedon (A2)		San	dy Redox	x (S5)		Coast Prairie Re	dox (A16) (LRR F, G, H)
Blac	ck Histic (A3)		Strip	oped Mat	rix (S6)		Dark Surface (S	() (LRR G)
Hyd	irogen Sulfide (A4)		Loa	my Muck	y Mineral	(F1)	High Plains Dep	
Stra	auneo Layers (A5)		Loa	my Gleye		(F2)		e of Milka / 2 & / 3)
	TI IVIUCK (A9) (LRR	г, G, H) Силбала (leted Ma	trix (⊢3) Surfess //		Reduced Vertic	$(F1\delta)$
	Neleu Below Dark	Suitace (Sullace (I	「ひ) 。 (デオ)		$\frac{1}{1} = \frac{1}{2}$
	ck Dark Surrace (A	(C1)	Dep	leted Dal	rk Surrace	e (F7)	Very Shallow Da	RK Sufface (TF12)
San	am Musky Mineral	(51) Dect (60			SSIONS (F	-8) ma (F16)	Other (Explain in	Remarks)
		Peat (52		1 Plains L			Indicators of hydro	phytic vegetation and wetland
	кк G, П) m Musky Doot or [Deat (62)				кк п)	nyarology must be	present, unless disturbed of
5 C	III WUCKY Feat OF	-eat (33)				-	4	
Restrictive	Layer (if observe	ed):						
Type: C	ompacted Sand				_		Hydric Soil Prese	nt? <u>N</u>
Depth (inche	es): 4"				-			
Remarks:								
			Soil compact	ed in 4 ir	nches, wł	hich is do	ominated by sand.	
HYDROLO	JGY							
Wetland Hy	drology Indicate	ors:						
Primary Indi	<u>cators (minimum</u>	of one is	required; check	all that a	pply)		Secondary In	dicators (minimum of two required)
Surface	Water (A1)			Salt Cru	st (B11)		Surface	e Soil Cracks (B6)
High Wa	ater Table (A2)			Aquatic	Invertebra	ates (B13	s) Sparse	ly Vegetated Concave Surface (B8)
Saturatio	on (A3)			Hydroge	en Sulfide	Odor (C	1) <u>X</u> Drainag	ge Patterns (B10)
Water M	larks (B1)			Dry-Sea	son Wate	er Table (C2) Oxidize	d Rhizospheres on Living
Sedimer	It Deposits (B2)			Poote	(C_2) (whe	neres on	Living Rools	(C3) (where tilled)
	ot or Crust (B4)			Presence	o of Rodu		(CA) Crayiisi	ion Visible on Aerial Imageny (CQ)
	(B5)			Thin Mu	ck Surfac	e (C7)	Geomo	rohic Position (D2)
Inundatio	on Visible on Aeria	l Imager	/ (B7)	Other (E	xplain in	Remarks) FAC-Ne	eutral Test (D5)
Water-S	tained Leaves (B9)					Frost-H	eave Hummocks (D7) (LRR F)
	, -							
Field Obser	vations (of the w	etland a	rea):				I	
Surface Wat	ter Present?	Yes	, No	Х	Depth (i	nches):		
Water Table	Present?	Yes	No	Х	Depth (i	nches):	In	dicators of Wetland
Saturation P	Present?	Yes	No	X	Depth (i	nches):	ŀ	lydrology Present? N
(includes ca	pillary fringe)				- 			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:								
Remarks:								
			Dry	/ sandy s	side-slop	e above	wetland	
				-				

WETLAND DETERMIN	ATION D	ATA FOF	RM - Grea	at Plains	Region	
Project/Site: 6th Avenue Parkway Extension	City/Cou	inty: A	urora/Arap	ahoe	Sampling Date:	3/16/2015
Applicant/Owner: City of Aurora		State:	CO		Sampling Point:	SP-7
Investigator(s): Keith Hidalgo, Jake Lloyd, Anthony Marsh	nall	Sectio	on, Townshi	p, Range:	SEC 11	- T4S - 66W
Landform (hillslope, terrace, etc.): depression	L	_ .ocal relief (concave, co	onvex, none): concave	Slope (%): 0-1
Subregion (LRR): LRR G Lat:	39.72	119393	Long:	-104.73	52077 Datu	m: NAD 83
Soil Map Unit Name: Sandy alluvial land			NWI	classificatio	n:	PSSA
Are climatic/hydrologic conditions on the site typical for this tir	me of the ye	ear?	Y (I	f no, explain	in Remarks.)	
Are Vegetation , Soil , or Hydrology	się	gnificantly d	isturbed?	Are "norma	al circumstances"	present? Yes
Are Vegetation , Soil , or Hydrology	na	turally prob	lematic?	(If needed	l, explain any ans	wers in Remarks.)
SUMMARY OF FINDINGS - Attach site map showing	g sampling	point loca	ations, tran	sects, impo	ortant features, e	tc.
Hydrophytic Vegetation Present? Y						
Hydric Soil Present? Y		Is the Sa	mpled Are	a Within a	Wetland?	Y
Indicators of Wetland Hydrology Present? Y		lf yes, opt	tional wetla	nd site ID:	CCA (Coal Cree	ek A)
Remarks: (Explain alternative procedures here or in a sen	arate reno	+)			·	
rtemarks. (Explain alternative procedures here of in a sep)				
Wetland area located on west side of Pic	cadilly Roa	d within bra	aided Coal	Creek, adja	acent to flowing v	vater.
VECETATION lies establish names of plants						
VEGETATION Use scientific names of plants.				Dominan	oo Toot Worksh	hot l
Ab Tree Stratum (Plot size:) %	Solute Do	ominant i pecies	Indicator Status	Number of	Dominant Spacio	50L
1		pooloo	010100	that are OB	L, FACW, or FAC	s 2: 2 (A)
2				Total Numb	er of Dominant	()
3				Species Ac	ross all Strata:	3 (B)
4				Percent of I	Dominant Species	3
5				that are OB	L, FACW, or FAC	C: <u>66.67%</u> (A/B)
	0 = To	otal Cover		<u>.</u>		
Sapling/Shrub Stratum (Plot size:)	75	V				sneet Aultiply by:
	75	<u> </u>	FACW	OBL sner	cies 5 x	1 = 5
3				FACW sc	becies $\frac{5}{75}$ x	2 = 150
4				FAC spec	cies 0 x	3 = 0
5				FACU sp	ecies 0 x	4 = 0
	75 = To	otal Cover		UPL spec	cies <u>5</u> x	5 = 25
Herb Stratum (Plot size:)				Column to	otals <u>85</u> (A) <u>180</u> (B)
1 Elymus elymoides	5	Y	UPL	Prevalen	ce Index = B/A =	2.12
2 Juncus articulatus	5	Y	OBL			
3				Hydroph	ytic Vegetation	Indicators:
⁺				X 2-D	apiù Test loi Hyui ominance Test is	>50%
6				X 3 - Pr	evalence Index is	s ≤3.0 ¹
7				4 - M	orphological Ada	antations ¹ (provide
8				supp	orting data in Re	marks or on a
9				sepa	rate sheet)	
10				Probl	ematic Hydrophy	vtic Vegetation ¹
	<u>10</u> = To	otal Cover		(Expl	ain)	
<u>vvoody vine Stratum</u> (Plot size:)				¹ Indicator	s of hydric soil and v	vetland hydrology must be
2				Pr Hvdr	ophytic	bed of problematic
<u> </u>	0 = To	tal Cover		Vege	etation	
% /Bare Ground in Herb Stratum	0 10			Pres	ent? Y	_
Remarks: (Include photo numbers here or on a separate s	sheet)					
Area contains pockets of sand	dbar willow	s with a lar	ge portion	of exposed	sandbars.	

Profile Dese	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the absen	ce of indicators.)	
Depth	Matrix		Re	dox Feat	ures				
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-10	10YR 4/3	50	7.5YR 5/6	5	С	М	Sandy loam	Saturated	
	10YR 5/3	45					Sandy loam	Saturated	
10-16	10YR 4/3	45					Sandy loam	Saturated	
	10YR 5/3	45					Sandy loam	Saturated	
	Gley 1 3/10B	10					Sandy loam	Saturated	
16-20	10YR 4/3	100					Sandy loam	Saturated	
¹ Type: $C = C$	oncentration, D =	Depletior	, RM = Reduced	Matrix, CS	S = Cover	red or Co	ated Sand Grains. ² Loca	tion: PL = Pore Lining, M = Matrix	
Hydric Soil	Indicators: (App	, olicable t	to all LRRs, unle	ess othe	rwise no	ted.)	Indicators for Prob	lematic Hydric Soils ³ :	
Hist	osol (A1)		Sar	ndy Gleye	d Matrix ((S4)	1 cm Muck (A9)	(LRR I, J)	
Hist	ic Epipedon (A2)		Sar	ndy Redo	x (S5)		Coast Prairie Re	dox (A16) (LRR F, G, H)	
Blac	ck Histic (A3)		Stri	pped Mat	rix (S6)		Dark Surface (S7	7) (LRR G)	
Hyd	lrogen Sulfide (A4)		Loa	my Muck	y Mineral	(F1)	High Plains Depr	essions (F16)	
	n Muck (AQ) (I PP		Loa	imy Gleye	trix (E3)	(F2)	(LRR H OUISIGE Reduced Vertic (E18)	
Den	leted Below Dark	Surface ((A11) Rec	lox Dark	Surface (F6)	Red Parent Mate	rial (TF2)	
	ck Dark Surface (A	.12)	Der	pleted Da	rk Surface	e (F7)	Very Shallow Da	rk Surface (TF12)	
San	dy Mucky Mineral	(S1)	X Red	lox Depre	essions (F	8)	Other (Explain in	Remarks)	
2.5	cm Mucky Peat or	Peat (S2	2) Hig	h Plains [Depressio	ns (F16)	³ Indicators of hydro	phytic vegetation and wetland	
(LI	RR G, H)		(N	ILRA 72 8	& 73 of L	RR H)	hydrology must be	present, unless disturbed or	
5 ci	m Mucky Peat or F	Peat (S3)	(LRR F)				p	roblematic.	
Restrictive	Layer (if observe	ed):							
Type:							Hydric Soil Prese	nt? <u>Y</u>	
Depth (inche	es):				-				
Remarks:									
Entire soil	profile consists o	of sandy l	oam texture (sat	urated). F	Redox fea	atures fo	und within top layer; Gley	components found within matrix	
	-	-			starting a	t 10".		-	
HYDROLO	DGY								
Wetland Hy	drology Indicate	ors:							
Primary Indi	cators (minimum	of one is	required; check	all that a	(ylqq		Secondary In	dicators (minimum of two required)	
X Surface	Water (A1)		• · ·	Salt Cru	st (B11)		Surface	Soil Cracks (B6)	
X High Wa	iter Table (A2)			Aquatic	Invertebra	ates (B13) X Sparsel	y Vegetated Concave Surface (B8)	
X Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C1	1) X Drainag	e Patterns (B10)	
X Water M	larks (B1)			Dry-Sea	son Wate	er Table ((U2) Oxidize	d Rhizospheres on Living	
X Drift Der	osits (B3)			Roots (C3) (wh	ere not til	lled) Cravfish	Burrows (C8)	
Algal Ma	at or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Saturati	on Visible on Aerial Imagery (C9)	
Iron Dep	oosits (B5)			Thin Mu	ck Surfac	e (C7)	X Geomo	phic Position (D2)	
X Inundatio	on Visible on Aeria	I Imager	y (B7)	Other (E	xplain in	Remarks) X FAC-Ne	utral Test (D5)	
Water-S	tained Leaves (B9)					Frost-Ho	eave Hummocks (D7) (LRR F)	
Field Obser									
Surface Wat	ter Present?	Yes	X No		Denth (i	nches).	4		
Water Table	Present?	Yes	X No		Depth (i	nches):	4 In	dicators of Wetland	
Saturation P	Present?	Yes	X No		Depth (i	nches):	0 H	ydrology Present? Y	
(includes ca	pillary fringe)				-				
Describe Re	corded Data (stre	eam gau	ge, monitoring w	ell, aerial	photos,	previous	inspections), if available:		
Remarks:	Remarks:								
	Sam	ole noint	adjacent to flowing	na water	of Coal (Creek Se	everal hydrologic indicato	rs present	
				.9					

WETLAND DETERMIN	ATION	DATA FOF	RM - Grea	at Plains	Region			
Project/Site: 6th Avenue Parkway Extension	City/C	County: A	urora/Arap	ahoe	Sampling	Date:	3/16/2018	5
Applicant/Owner: City of Aurora	·	State:	СО		Sampling	Point:	SP-8	
Investigator(s): Keith Hidalgo, Jake Lloyd, Anthony Marsh	nall	Sectio	on, Townsh	ip, Range:		SEC 11 - T	4S - 66W	
Landform (hillslope, terrace, etc.): side slope		Local relief ((concave, c	onvex, none	e): I	none	Slope (%):	0-5
Subregion (LRR): LRR G Lat:	39.	.72145683	Long:	-104.73	351906	Datum:	NAD 8	33
Soil Map Unit Name: Sandy alluvial land			NWI	classificatio	on:			
Are climatic/hydrologic conditions on the site typical for this tir	me of the	year?	Y (lf no, explaii	n in Rema	rks.)		
Are Vegetation, Soil, or Hydrology		significantly d	listurbed?	Are "norm	nal circums	stances" pres	sent? Ye	es_
Are Vegetation, Soil, or Hydrology		naturally prob	plematic?	(If neede	ed, explain	any answei	rs in Remark	s.)
SUMMARY OF FINDINGS - Attach site map showing	g sampli	ing point loca	ations, tran	sects, imp	ortant fea	tures, etc.		
Hydrophytic Vegetation Present? N								
Hydric Soil Present? N		Is the Sa	mpled Are	a Within a	a Wetland	l?	N	
Indicators of Wetland Hydrology Present? N		If yes, op	tional wetla	nd site ID:				
Remarks: (Explain alternative procedures here or in a sepa	arate rer	oort.)						
		,						
Sample point located just upslope	of braid	ed Coal Cree	ek channel.	Upland out	tpoint for	SP-7.		
VEGETATION Use scientific names of plants.								
Ab:	solute	Dominant	Indicator	Dominar	nce Test V	Vorksheet		
Tree Stratum (Plot size:) %	Cover	Species	Status	Number of	f Dominant	t Species		
1		<u> </u>		that are Of	BL, FACW	, or FAC:	0	(A)
2	·			Total Num	ber of Dor	ninant		
3				Species A	cross all S	strata:	2	(B)
4	·			Percent of	Dominant	Species	0 0.00%	(^ /D)
o		Total Cover		that are Or	BL, FAGIV	, UI FAG.	0.00%	(A/D)
Sapling/Shrub Stratum (Plot size:)				Prevaler	nce Index	Workshe	et	
1				Total %	Cover of:	Mult	iply by:	
2	·			OBL spe	ecies	0_x1=	= 0	
3				FACW s	species	0 x 2 =	= 0	
4	,			FAC spe	ecies	0 x 3 =	= 0	
5		Tatal Cause	<u> </u>	FACU sp	pecies	<u>60</u> x 4 =	= 240	
Herb Stratum (Plot size:	=	l otal Cover			totals	$\frac{5}{65}$ (A)	= 25	(B)
1 Sporobolus eruptendrus	25	V	EACU	Brovolon		(A)	4.09	(D)
2 Bassia scoparia	20	<u> </u>	FACU	Flevalei	ice muex	= D/A =	4.00	
3 Ambrosia artemisiifolia	10	<u> </u>	FACU	Hydroph	hytic Veg	etation Inc	licators:	
4 Helianthus annuus	5	N	FACU	1 - R	Rapid Test	for Hydroph	nytic Vegetat	ion
5 Verbascum thapsus	5	N	UPL	2 - D	ominance	Test is >50)%	
6				3 - P	Prevalence	Index is ≤3	.0 ¹	
7	<u> </u>			4 - N	Norpholog	ical Adapta	ations ¹ (prov	ide
8				supp	porting da	ta in Rema	rks or on a	
9	·			Sepa	arate snee	et) Ludrandu <i>t</i> io	V	I
10	65 =	Total Cover		(Exp	olematic n olain)	Ιγαιοριιγιο	vegetation	
Woodv Vine Stratum (Plot size:)	00				and hydric	l and wotle		t bo
1				p	present, unle	son and weak ess disturbed	or problematic	nusi de
2	···········			Hyd	rophytic			
	0 =	Total Cover		Vege	etation	NI		
% /Bare Ground in Herb Stratum	·			Fies	Sentr	N		
Remarks: (Include photo numbers here or on a separate s	heet)							
Vagatation consists mostly	of Sond	Dropcood on	d Movicon	Firowood ((Kochia)			
vegetation consists mostly	UI Saliu	Diopseeu an		Fileweeu ((NUCHIA).			

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the abse	nce of indicators.)
Depth	Matrix		Redox Features					
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	10YR 4/3	100					Sand	Drv
¹ Type: C = C	oncentration, D =	Depletion	, RM = Reduced I	Matrix, CS	S = Cover	ed or Co	ated Sand Grains. ² Loc	ation: PL = Pore Lining, M = Matrix
Hydric Soil	Indicators: (App	licable t	o all LRRs, unle	ss other	rwise no	ted.)	Indicators for Pro	blematic Hydric Soils ³ :
Hist	tosol (A1)		San	dy Gleye	d Matrix ((S4)	1 cm Muck (A9) (LRR I, J)
Hist	tic Epipedon (A2)		San	dy Redox	x (S5)		Coast Prairie R	edox (A16) (LRR F, G, H)
Blac	ck Histic (A3)		Stri	oped Mat	rix (S6)		Dark Surface (S	67) (LRR G)
Hyd	Irogen Sulfide (A4)		Loa	my Muck	y Mineral	(F1)	High Plains De	pressions (F16)
Stra	atified Layers (A5)	(LRR F)	Loa	my Gleye	ed Matrix	(F2)	(LRR H outsi	de of MLRA 72 & 73)
1 cr	m Muck (A9) (LRR	F, G, H)	Dep	leted Ma	trix (F3)		Reduced Vertic	(F18)
Dep	leted Below Dark	Surface (A11) Rec	lox Dark \$	Surface (I	F6)	Red Parent Ma	terial (TF2)
Thio	ck Dark Surface (A	12)	Dep	leted Dai	rk Surface	e (F7)	Very Shallow D	ark Surface (TF12)
San	ndy Mucky Mineral	(S1)	Rec	lox Depre	essions (F	8)	Other (Explain	n Remarks)
2.5	cm Mucky Peat or	Peat (S2	:) Higl	n Plains D	Depressio	ons (F16)	³ Indicators of hydr	ophytic vegetation and wetland
(LI	RR G, H)		(M	LRA 72 8	& 73 of L	RR H)	hydrology must b	e present, unless disturbed or
5 c	m Mucky Peat or F	Peat (S3)	(LRR F)					problematic.
Restrictive	Laver (if observe	ed):						
Type:							Hydric Soil Pres	ent? N
Depth (inche	es):				•			
Demention	,				•			
Remarks:								
			Very dry sandy	soil profi	le expres	ssina no	hydric soil indicators	
			very ary, carray			Joing no		
HYDROLO	DGY							
Wetland Hv	drology Indicato	rs:						
Primary Indi	cators (minimum	of one is	required: check	all that a	nnlv)		Secondary I	ndicators (minimum of two required)
Surface	Water (A1)			Salt Cru	<u>ep:</u> st (B11)		Surfac	e Soil Cracks (B6)
High Wa	ater Table (A2)			Aquatic	Invertehr:	ates (R13	Sparse	ely Vegetated Concave Surface (B8)
Saturatio	on (A3)			Hvdroae	n Sulfide	Odor (C	1) Draina	ige Patterns (B10)
Water M	larks (B1)			Drv-Sea	son Wate	er Table (C2) Oxidiz	ed Rhizospheres on Living
Sedimer	nt Deposits (B2)			Oxidized	Rhizosp	heres on	Living Root	s (C3) (where tilled)
Drift Dep	posits (B3)			Roots ((C3) (wh e	ere not ti	lled) Cravfis	sh Burrows (C8)
Algal Ma	at or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Satura	tion Visible on Aerial Imagery (C9)
Iron Dep	oosits (B5)			Thin Mu	ck Surfac	e (C7)	Geom	orphic Position (D2)
Inundati	on Visible on Aeria	I Imagery	/ (B7)	Other (E	xplain in	Remarks) FAC-N	leutral Test (D5)
Water-S	tained Leaves (B9)		· `	•		Frost-	Heave Hummocks (D7) (LRR F)
Field Obser	vations:							
Surface Wa	ter Present?	Yes	No	Х	Depth (i	nches):		
Water Table	Present?	Yes	No	X	Depth (i	nches):	I	ndicators of Wetland
Saturation P	Present?	Yes	No	X	Depth (i	nches):		Hydrology Present? N
(includes ca	pillary fringe)							
Describe Re	ecorded Data (stre	am gaug	ge, monitoring we	ll, aerial	photos, j	previous	inspections), if available):
Remarks:								
	Outoi	nt taken	slightly upslope of	of Coal C	reek cha	annel and	l expressing no hydrolog	gic features.
1								

WETLAND DETERMINA		DATA FOR	RM - Grea	at Plains	Region		
Project/Site: 6th Avenue Parkway Extension	City/C	ounty: A	urora/Arap	pahoe Sampling Date: 3/16/2015			5
Applicant/Owner: City of Aurora		State:	CO		Sampling Point:	SP-9	
Investigator(s): Keith Hidalgo, Jake Lloyd, Anthony Marshal	ll	Sectio	on, Townshi	ip, Range:	SEC 1	11 - T4S - 66W	
Landform (hillslope, terrace, etc.): depression		Local relief ((concave, c	onvex, none	e): concave	e Slope (%):	0-4
Subregion (LRR): LRR G Lat:	39.	72119393	Long:	-104.73	352077 Dat	tum: NAD 8	33
Soil Map Unit Name: Sandy alluvial land			NWI	classificatio	on:	PSSA	
Are climatic/hydrologic conditions on the site typical for this time	e of the	year?	Y (I	lf no, explair	n in Remarks.)		
Are Vegetation , Soil , or Hydrology		significantly d	listurbed?	Are "norm	al circumstances	s" present? Ye	es
Are Vegetation , Soil , or Hydrology		naturally prob	lematic?	(If neede	d, explain any ar	nswers in Remark	s.)
SUMMARY OF FINDINGS - Attach site map showing	sampli	ng point loca	ations, tran	sects, imp	ortant features,	, etc.	
Hydrophytic Vegetation Present? Y							
Hydric Soil Present? Y		Is the Sa	mpled Are	a Within a	Wetland?	Y	
Indicators of Wetland Hydrology Present? Y		If yes, op	tional wetla	nd site ID:	CCB (Coal Cr	eek B)	
Demarka: (Evaleia alternativo preseduros haro ar in o senar	roto ror	ort)			·		
Remarks. (Explain alternative procedures here of in a separ							
Wetland area located on east side of Picadilly Road with	ווח brai Wot	ded Coal Cre land CCB)	ек, адасе	nt to flowing	g water. (SP-8	used as outpoint	TOP
	wet						
VEGETATION Use scientific names of plants.				Deminer		h a a t	
Abso Tree Stratum (Plot size:) % C	olute	Dominant Species	Indicator Status	Dominar	De l'est works	neet	
1	0001	opecies	Otatus	that are OF	Dominant Spec	AC: 3	(A)
2				Total Num	ber of Dominant		(,,,
3				Species Ad	cross all Strata:	3	(B)
4				Percent of	Dominant Speci	ies	
5				that are OF	BL, FACW, or FA	AC: 100.00%	(A/B)
(= 0	Total Cover					
Sapling/Shrub Stratum (Plot size:)	F	V			nce Index Worl	ksheet	
1 Salix Interior 4	5	Y	FACW	OPL cpc	Cover of:	Multiply by: x = 20	
3				EACW s	$\frac{20}{1000}$	$x^{2} = \frac{20}{90}$	
4				FAC spe	cies 0	$\frac{x^2}{x^3} = \frac{30}{0}$	
5	•			FACU sp	pecies 0	x 4 = 0	
4	5 =	Total Cover		UPL spe	cies 0	x 5 = 0	
Herb Stratum (Plot size:)				Column	totals 65	(A) 110	(B)
1 Schoenoplectus pungens 1	5	Y	OBL	Prevalen	nce Index = B/A	= 1.69	
2 Juncus articulatus 5	5	Y	OBL				
3				Hydroph	nytic Vegetatio	n Indicators:	
4				1-R	apid Test for Hy	drophytic Vegetati	ion
5				X 3-P	revalence Index	15 > 50% (is <3.0 ¹	
7						deptetions ¹ (prov	ida
8				supp	orting data in F	Remarks or on a	lue
9				sepa	arate sheet)		
10				Prob	lematic Hydrop	hytic Vegetation ¹	
2	= 0	Total Cover		(Exp	lain)		
Woody Vine Stratum (Plot size:)				¹ Indicator	rs of hydric soil and	d wetland hydrology n	nust be
1				p Hvdi	resent, unless dist	urbed or problematic	
2	<u> </u>	Total Cover		Vea	etation		
% /Bare Ground in Herb Stratum 35	0 =			Pres	sent?	Y	
Remarks: (Include photo numbers here or on a separate she	eet)			1			
· · · · · · · · · · · · · · · · · · ·	,						
Area contains pockets of sandb	oar willo	ows with a lar	ge portion	of exposed	l sandbars.		

Profile Desc	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the absen	ce of indicators.)
Depth	Matrix		Rec	dox Featu	ures			
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-12	10YR 4/3	40	7.5YR 5/6	5	С	М	Sandy loam	Dry
	10YR 5/3	55					Sandy loam	Dry
12-16	10VR 4/3	45					Sandy loam	Saturated
12-10		45					Candy Ioann	
	10YR 5/3	45					Sandy loam	Saturated
	Gley 1 3/10B	10					Sandy loam	Saturated
16-20	10YR 4/3	100					Sandy loam	Saturated
¹ Type: $C = C$	oncentration, D =	Depletion	, RM = Reduced N	Aatrix, CS	S = Cover	ed or Co	ated Sand Grains. ² Locat	ion: PL = Pore Lining, M = Matrix
Hydric Soil	Indicators: (App	licable t	o all LRRs, unle	ss other	wise no	ted.)	Indicators for Prob	ematic Hydric Soils ³ :
Hist	tosol (A1)		San	dy Gleye	d Matrix ((S4)	1 cm Muck (A9) (LRR I, J)
Hist	tic Epipedon (A2)		San	dy Redox	k (S5)	. ,	Coast Prairie Rec	lox (A16) (LRR F, G, H)
Blac	ck Histic (A3)		Strip	oped Mat	rix (S6)		Dark Surface (S7) (LRR G)
Hyd	Irogen Sulfide (A4)		Loa	my Muck	y Mineral	(F1)	High Plains Depr	essions (F16)
Stra	atified Layers (A5)	(LRR F)	Loa	my Gleye	d Matrix	(F2)	(LRR H outside	of MLRA 72 & 73)
1 cn	n Muck (A9) (LRR	F, G, H)	Dep	leted Ma	trix (F3)		Reduced Vertic (I	=18)
Dep	leted Below Dark	Surface (A11) Red	ox Dark \$	Surface (I	F6)	Red Parent Mate	rial (TF2)
Thic	ck Dark Surface (A	.12)	Dep	leted Dai	rk Surface	e (F7)	Very Shallow Dar	k Surface (TF12)
San	ndy Mucky Mineral	(S1)	X Red	ox Depre	essions (F	8)	Other (Explain in	Remarks)
2.5	cm Mucky Peat or	Peat (S2	:) High	n Plains D	Depressio	ns (F16)	³ Indicators of hydror	phytic vegetation and wetland
(LI	RR G, H)		(M	LRA 72 8	& 73 of L	RR H)	hydrology must be	present, unless disturbed or
5 ci	m Mucky Peat or F	Peat (S3)	(LRR F)				p	roblematic.
Restrictive	Layer (if observe	ed):						
Туре:							Hydric Soil Preser	nt? Y
Depth (inche	es):							
Remarks:								
rtemarke.								
Entire se	oil profile consists	s of sand	y loam texture an	d satura	ted begir	ning at 1	2 inches. Redox features	present within top layer; Gley
			compone	ents tour	nd within	matrix st	arting at 12".	
HYDROLO	DGY							
Wetland Hy	drology Indicato	ors:						
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Secondary Inc	licators (minimum of two required)
X Surface	Water (A1)		• · ·	Salt Cru	st (B11)		Surface	Soil Cracks (B6)
X High Wa	ater Table (A2)			Aquatic	Invertebra	ates (B13) X Sparsely	Vegetated Concave Surface (B8)
X Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C1) X Drainage	e Patterns (B10)
X Water M	larks (B1)			Dry-Sea	son Wate	er Table (C2) Oxidized	Rhizospheres on Living
X Sedimer	nt Deposits (B2)			Oxidized	l Rhizosp	heres on	Living Roots	(C3) (where tilled)
X Drift Dep	oosits (B3)			Roots ((C3) (whe	ere not til	lled) Crayfish	Burrows (C8)
Algal Ma	at or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Saturatio	on Visible on Aerial Imagery (C9)
Iron Dep	oosits (B5)		(DZ)	Thin Mu	ck Surfac	e (C7)	X Geomor	phic Position (D2)
X Inundation	on Visible on Aeria	I Imagery	/ (B7)	Other (E	xplain in	Remarks) FAC-Ne	utral Test (D5)
vvater-S	tained Leaves (B9)						ave Hummocks (D7) (LKK F)
Field Ober	votiona.							
Surface M/of	tor Prosent?	Voc	Y No		Dopth /	nchcc);	2	
Water Table	Present?	Voc			Depth (i	nches):	<u> </u>	licators of Wetland
Saturation P	Present?	Yee			Depth (i	nchee).	12+ H	vdrology Present? V
(includes ca	pillary fringe)	100			-		<u> </u>	
Describe Ro	corded Data (str	am dau	ne monitoring wa	ll aprial	nhotos -	revious	inspections) if available:	
Describe Recorded Data (stream yauge, monitoring well, aenal priotos, previous inspections), il available.								
Romarke:								
	Sample point adjacent to flowing water of Coal Creek. Several hydrologic indicators present.							
1								

WETLAND DETERMINA	TION DATA FO	ORM - Grea	at Plains Region
Project/Site: 6th Avenue Parkway Extension	City/County:	Aurora/Arap	ahoe Sampling Date: 3/17/2015
Applicant/Owner: City of Aurora	State:	CO	Sampling Point: SP-10
Investigator(s): Keith Hidalgo, Jake Lloyd, Anthony Marsha	ll Sec	ction, Townsh	p, Range: SEC 12 - T4S - 66W
Landform (hillslope, terrace, etc.): side slope	Local relie	ef (concave, c	onvex, none): None Slope (%):0-4
Subregion (LRR): LRR G Lat:	39.719326	Long:	-104.730029 Datum: NAD 83
Soil Map Unit Name: Sandy alluvial land		NWI	classification:
Are climatic/hydrologic conditions on the site typical for this time	e of the year?	Y (f no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology	significantly	/ disturbed?	Are "normal circumstances" present? Yes
Are Vegetation , Soil , or Hydrology	naturally pr	oblematic?	(If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS - Attach site map showing	sampling point lo	cations, tran	sects, important features, etc.
Hydrophytic Vegetation Present? N			
Hydric Soil Present? N	Is the S	Sampled Are	a Within a Wetland? N
Indicators of Wetland Hydrology Present? N	If yes, o	optional wetla	nd site ID:
Remarks: (Explain alternative procedures here or in a separ	ate report.)		
· · · · · · · · · · · · · · · · · · ·			
Sample point located adjacent	t to depression on	slight upslop	be. Outpoint to CCB.
VEGETATION Use scientific names of plants			
	olute Dominant	Indicator	Dominance Test Worksheet
Tree Stratum (Plot size:) % C	over Species	Status	Number of Dominant Species
1			that are OBL, FACW, or FAC: 1 (A)
2			Total Number of Dominant
3			Species Across all Strata: 2 (B)
4			Percent of Dominant Species
5			that are OBL, FACW, of FAC. 50.00% (A/B)
Sapling/Shrub Stratum (Plot size:)		1	Prevalence Index Worksheet
1 Salix interior 1	0 Y	FACW	Total % Cover of: Multiply by:
2			OBL species $0 \times 1 = 0$
3			FACW species 10 x 2 = 20
4			FAC species $0 \times 3 = 0$
5	Tatal Cause		FACU species $0 \times 4 = 0$
Horb Stratum (Plot size:		er	UPL species $50 \times 5 = 250$ Column totals $60 \times (A) = 270 \times (B)$
	0 V	וסו	$\frac{1}{210}$
		UFL	Frevalence index = D/A = 4.50
3			Hydrophytic Vegetation Indicators:
4			1 - Rapid Test for Hydrophytic Vegetation
5			2 - Dominance Test is >50%
6			3 - Prevalence Index is ≤3.0 ¹
7			4 - Morphological Adaptations ¹ (provide
8			supporting data in Remarks or on a
9			Separate Sheet)
	0 = Total Cove		(Explain)
Woody Vine Stratum (Plot size:)	<u> </u>	-	¹ Indicators of hydric soil and watland hydrology must be
1			present, unless disturbed or problematic
2			Hydrophytic
	= Total Cove	er	Vegetation Present?
% /Bare Ground in Herb Stratum 40			
Remarks: (Include photo numbers here or on a separate she	eet)		
Sample point dominated by smooth	brome with a fow	sandhar will	ows scattered throughout
Sample point dominated by Shooth	STOTICE WILL A IEW	Janubai Will	งพร รอสแรกรน แก่งชุมเบนเ.

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the absend	ce of indicators.)
Depth <u>Matrix</u> <u>Redox Features</u>							•	
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-8	10YR 4/3	40					Sand	Dry
	10YR 5/3	60					Loamy sand	Dry
8-20	10YR 4/3	100					Loamy sand	Dry
1 								
Type: C = C	oncentration, D =	Depletion	RM = Reduced r	Matrix, CS		red or Co	ated Sand Grains. Locat	ion: PL = Pore Lining, M = Matrix
Hiet	indicators: (App		o all LKKS, unle	dy Glava	d Matrix /	(S4)	1 cm Muck (A9) (
Hist	ic Eninedon (A2)		San	dy Redox	(S5)	(04)	Coast Prairie Rec	lox (A16) (I RR F, G, H)
Blac	rk Histic (A3)		Stri	ned Mat	rix (S6)		Dark Surface (S7	$(\mathbf{I} \mathbf{B} \mathbf{R} \mathbf{G})$
	Irogen Sulfide (A4)			mv Muck	v Mineral	(F1)	High Plains Depre	essions (F16)
Stra	atified Layers (A5)	(LRR F)	Loa	my Gleve	d Matrix	(F2)	(LRR H outside	of MLRA 72 & 73)
1 cr	m Muck (A9) (LRR	F, G, H)	Dep	leted Ma	trix (F3)	. /	Reduced Vertic (F	- -18)
Dep	leted Below Dark	Surface (A11) Rec	lox Dark	Surface (F6)	Red Parent Mater	ial (TF2)
Thic	ck Dark Surface (A	.12)	Dep	leted Da	rk Surfac	e (F7)	Very Shallow Dar	k Surface (TF12)
San	dy Mucky Mineral	(S1)	Rec	lox Depre	essions (F	-8)	Other (Explain in	Remarks)
2.5	cm Mucky Peat or	Peat (S2	2) Higl	n Plains [Depressio	ons (F16)	³ Indicators of hydrop	phytic vegetation and wetland
(LI	RR G, H)		(M	LRA 72 8	& 73 of L	RR H)	hydrology must be	present, unless disturbed or
5 ci	m Mucky Peat or F	Peat (S3)	(LRR F)				рі	oblematic.
Restrictive	Layer (if observe	ed):						
Type:					-		Hydric Soil Preser	nt? <u>N</u>
Depth (inche	es):				-			
Remarks:								
			Dry sandy soil	profile v	with no hy	/dric soil	indicators present.	
	OGY							
Wetland Hy	drology Indicate	ors:						
Primary Indi	cators (minimum	of one is	required: check	all that a	nnlv)		Secondary Inc	licators (minimum of two required)
Surface	Water (A1)		required, criccit	Salt Cru	st (B11)		Surface	Soil Cracks (B6)
High Wa	ater Table (A2)			Aquatic	Invertebra	ates (B13	3) Sparsely	Vegetated Concave Surface (B8)
Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C	1) Drainage	Patterns (B10)
Water M	larks (B1)			Dry-Sea	son Wate	er Table (C2) Oxidized	Rhizospheres on Living
Sedimer	nt Deposits (B2)			Oxidized	l Rhizosp	heres on	Living Roots (C3) (where tilled)
Drift Dep	posits (B3)			Roots ((C3) (whe	ere not ti	lled) Crayfish	Burrows (C8)
Algal Ma	at or Crust (B4)			Presenc	e of Redu	LCED Iron	(C4) Saturatio	on Visible on Aerial Imagery (C9)
	on Visible on Aeria	l Imagen	/ (B7)	Other (E	volain in	e (C7) Remarks		utral Test (D5)
Water-S	tained Leaves (B9)				i temanto	Frost-He	ave Hummocks (D7) (LRR F)
<u> </u>	× ×	,						
Field Obser	vations:							
Surface Wat	ter Present?	Yes	No	Х	Depth (i	nches):		
Water Table	Present?	Yes	No	Х	Depth (i	nches):	Inc	licators of Wetland
Saturation P	Present?	Yes	No	X	Depth (i	nches):	Hy	vdrology Present? N
(includes ca	pillary tringe)				• •			
Describe Re	ecorded Data (stre	eam gau	ge, monitoring we	ell, aerial	photos,	previous	inspections), if available:	
Domester								
Remarks:								
	Sa	mple po	int within greater	lower are	ea, howe	ver, no c	ther hydrologic features p	resent.

WETLAND DETERM	INATIO	N DATA FO	RM - Gre	at Plains Region				
Project/Site: 6th Avenue Extension Coal Creek	City	County: Aurora		a Sampling Date: 7/16/15				
Applicant/Owner: Aurora		State:	CC	Sampling Point: SP-11				
Investigator(s): Keith Hidalgo and Marissa Finney		Sect	ion, Townsł	hip, Range: Section 12 - T4S - R66W				
Landform (hillslope, terrace, etc.): streambar	ık	Local relief	(concave, o	convex, none): concave Slope (%): 0 - 3				
Subregion (LRR): LRR G L	at:	39.72128	Long:	-104.732152 Datum: NAD 83				
Soil Map Unit Name: Sandy Alluvial Land			NWI	classification: PEMA/C				
Are climatic/hydrologic conditions on the site typical for this	s time of th	ne year?	Y	(If no, explain in Remarks.)				
Are Vegetation , Soil , or Hydrold	gy	significantly	disturbed?	Are "normal circumstances" present? Yes				
Are Vegetation , Soil , or Hydrold	gy	naturally pro	blematic?	(If needed, explain any answers in Remarks.)				
SUMMARY OF FINDINGS - Attach site map show	wing samp	oling point loc	ations, tra	nsects, important features, etc.				
Hydrophytic Vegetation Present? Y								
Hydric Soil Present? Y		Is the Sa	ampled Ar	ea Within a Wetland? Y				
Indicators of Wetland Hydrology Present? Y		lf yes, o	otional wetla	and site ID: Wetland CCC				
 Remarke:								
PEMA/C wetland	west part o	of Coal Creek	. Fringe ne	xt to cut bank.				
VEOETATION Lies scientific normal of plant								
VEGETATION Use scientific names of plants	S.			Deminence Test Werkehest				
Tree Stratum (Plot size:	Absolute % Cover	Dominant Species	Indicator Status	Dominance Test worksneet				
1		opeoleo	Oluluo	that are OBL. FACW. or FAC: 2 (A)				
2		· ·		Total Number of Dominant				
3				Species Across all Strata: 2 (B)				
4				Percent of Dominant Species				
5				that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)				
	0	= Total Cover						
Sapling/Shrub Stratum (Plot size:)				Prevalence Index Worksheet				
				OBI species $7 \times 1 = 7$				
3		· ·		FACW species $72 \times 2 = 144$				
4		· ·		FAC species $0 \times 3 = 0$				
5				FACU species 0 x 4 = 0				
	0	= Total Cover		UPL species 0 x 5 = 0				
Herb Stratum (Plot size:)				Column totals 79 (A) 151 (B)				
1 Typha angustifolia	40	Y	FACW	Prevalence Index = B/A = 1.91				
2 Polypogon monspeliensis	30	Y	FACW					
3 Carex pellita	5	<u>N</u>	OBL	Hydrophytic Vegetation Indicators:				
4 Polygonum spp.	2	<u>N</u>	FACW	1 - Rapid Test for Hydrophytic Vegetation				
6	2		OBL	$\overline{\mathbf{x}}$ 3 - Prevalence Index is $\leq 3.0^{1}$				
7				4 - Morphological Adaptations ¹ (provide				
8				supporting data in Remarks or on a				
9				separate sheet)				
10				Problematic Hydrophytic Vegetation ¹				
	79	= Total Cover		(Explain)				
Woody Vine Stratum (Plot size:)				¹ Indicators of hydric soil and wetland hydrology must be				
				present, unless disturbed or problematic				
2	0	- Total Covor		Vegetation				
% Bare Ground in Herb Stratum	0			Present? Y				
Remarks:				<u> </u>				
Sparse fr	inge of we	etland next to	steep cut b	anks.				

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the abse	nce of indicators.)		
Depth Matrix Redox Features										
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks		
0 - 4	10YR3/2	100					sand	saturated		
4 - 8	Gley13/N	20					sand	saturated		
4 - 8	10YR3/2	80					sand	saturated		
	1011(0)2	00					Cana			
¹ Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. ² Location: PL = Pore Lining, M = Matrix										
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ³ :										
Hist	osol (A1)		X San	dy Gleye	d Matrix ((S4)	1 cm Muck (A9)	(LRR I, J)		
Hist	ic Epipedon (A2)		San	dy Redo	x (S5)		Coast Prairie Re	edox (A16) (LRR F, G, H)		
Blac	ck Histic (A3)		Strip	oped Mat	rix (S6)		Dark Surface (S	7) (LRR G)		
Hyd	Irogen Sulfide (A4		Loa	my Muck	y Mineral	(F1)	High Plains Dep	ressions (F16)		
	mileu Layers (A5)		Loa	my Gleye	triv (E2)	(F2)		e of WILKA / 2 & / 3) (E19)		
		F, G, H)			uix (⊢3) Surfaca //	E6)		(F 10) arial (TE2)		
	neteu Below Dalk ok Dark Surface (A	Junace (12)			ouriace (I rk Surface) (F7)		enar(112) ark Surface (TE12)		
San	dv Mucky Mineral	(S1)	Bed	lox Depre	essions (F	-8)	X Other (Explain ii	Remarks)		
2.5	cm Mucky Peat or	Peat (S2	2) Hiat	n Plains [Depressio	ons (F16)	³ Indicators of hydro	onhytic vegetation and wetland		
(LI	RR G, H)		(M	LRA 72 8	& 73 of L	RR H)	hvdroloav must be	e present. unless disturbed or		
5 ci	m Mucky Peat or F	Peat (S3)	(LRR F)			,	, , , , , , , , , , , , , , , , , , , ,	problematic.		
Restrictive	l aver (if observ	ed).								
Type: C	ompacted soils	cu).					Hydric Soil Prese	ent? Y		
Depth (inche	es): 8"				-			<u> </u>		
Domorkov	,				-					
Remarks.										
			Young s	andy soil	ls, possit	ly sandy	gleved soils.			
HYDROLO	DGY									
Wetland Hy	drology Indicate	ors:								
Primary Indi	cators (minimum	of one is	required; check	all that a	<u>pply)</u>		Secondary Ir	dicators (minimum of two required)		
Surface	Water (A1)			Salt Cru	st (B11)		Surface	e Soil Cracks (B6)		
High Wa	ter Table (A2)			Aquatic	Invertebra	ates (B13	5) Sparse	ly Vegetated Concave Surface (B8)		
X Saturatio	on (A3)			Hydroge	en Sulfide	Odor (C	1) <u>X</u> Draina	ge Patterns (B10)		
Water M	larks (B1)			Dry-Sea	son Wate	er Table (U2) UXIDIZE	d Rhizospheres on Living		
X Drift Der	(B2)			Roots ((C3) (whe	ere not ti	lled) Cravfis	h Burrows (C8)		
Algal Ma	at or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Saturat	ion Visible on Aerial Imagery (C9)		
Iron Dep	osits (B5)			Thin Mu	ck Surfac	e (C7)	X Geomo	prphic Position (D2)		
Inundatio	on Visible on Aeria	al Imagery	y (B7)	Other (E	xplain in	Remarks) X FAC-N	eutral Test (D5)		
Water-S	tained Leaves (B9)		•			Frost-H	leave Hummocks (D7) (LRR F)		
Field Obser	vations (of the w	etland a	rea):							
Surface Wat	ter Present?	Yes	No	<u> </u>	Depth (i	nches):				
Water Table	Present?	Yes		X	Depth (i	nches):		Idicators of Wetland		
(includes ca	pillary fringe)	165				16165).				
Docoribo Do	poordod Data (atr		no monitoring wa		nhotoo	provious	increations) if available			
Describe Re		sanı yau	ye, monitoring we	a, aelidi	priotos,	previous	mapecuons), ii available			
Pemarka:										
INCINGINS.										
		Abuttin	g Coal Creek, wh	ich is a v	wide, sha	allow, bra	ided channel at this loca	tion.		

WETLAND DETERM	MINATIO	N DATA FO	RM - Gre	eat Plains Region
Project/Site: 6th Avenue Extension Coal Creek	City	/County:	Aurora	a Sampling Date: 7/16/15
Applicant/Owner: Aurora		State:	CC	D Sampling Point: SP-12
Investigator(s): Keith Hidalgo and Marissa Finney		Sect	ion, Townsł	nip, Range: Section 12 - T4S - R66W
Landform (hillslope, terrace, etc.): terrace	9	Local relief	(concave, o	convex, none): None Slope (%):3 - {
Subregion (LRR): LRR G	Lat:	39.721142	Long:	-104.732038 Datum: NAD 83
Soil Map Unit Name: Sandy Alluvial Land			NW	classification:
Are climatic/hydrologic conditions on the site typical for th	nis time of t	he year?	Y	(If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrol	logy	significantly	disturbed?	Are "normal circumstances" present? Yes
Are Vegetation , Soil , or Hydrol	logy	naturally pro	blematic?	(If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS - Attach site map sho	wing sam	pling point loc	ations, tra	nsects, important features, etc.
Hydrophytic Vegetation Present? N	_			
Hydric Soil Present? N	_	Is the Sa	ampled Ar	ea Within a Wetland? N
Indicators of Wetland Hydrology Present? N	_	lf yes, op	otional wetla	and site ID:
 Remarks:		l		
Outpoint used for Wetlands CCC, CCD, and CCE	(outpoint to	SP-11, SP-13	3, SP-14, a	nd SP-15 due to similar upland characteristics).
VEGETATION Use scientific names of plan	ts			
	Absoluto	Dominant	Indicator	Dominance Test Worksheet
Tree Stratum (Plot size:)	% Cover	Species	Status	Number of Dominant Species
1 Populus deltoides	5	Ŷ	FAC	that are OBL, FACW, or FAC: 1 (A)
2				Total Number of Dominant
3				Species Across all Strata: <u>3</u> (B)
4				Percent of Dominant Species
5	E	Total Cauran		that are OBL, FACW, or FAC: 33.33% (A/B)
Sanling/Shruh Stratum (Plot size:	<u>></u>			Brevalence Index Worksheet
1				Total % Cover of: Multiply by:
2		· ·		OBL species $0 \times 1 = 0$
3		· ·		FACW species $0 \times 2 = 0$
4				FAC species $5 \times 3 = 15$
5				FACU species 0 x 4 = 0
	0	= Total Cover		UPL species $60 \times 5 = 300$
Herb Stratum (Plot size:)				Column totals 65 (A) 315 (B)
1 Bromus inermis	40	· <u> </u>	UPL	Prevalence Index = $B/A = 4.85$
2 Euphorbia esula	15	· <u> </u>		Hydrophytic Vegetation Indicators:
4				1 - Rapid Test for Hydrophytic Vegetation
5		· ·		2 - Dominance Test is >50%
6				3 - Prevalence Index is ≤3.0 ¹
7				4 - Morphological Adaptations ¹ (provide
8				supporting data in Remarks or on a
9				separate sheet)
10		Total Cauran		Problematic Hydrophytic Vegetation
Woody Vino Stratum (Plot size:	60	= Total Cover		
				¹ Indicators of hydric soil and wetland hydrology must be
2				Hydrophytic
	0	= Total Cover		Vegetation
% Bare Ground in Herb Stratum	-			Present? N
Remarks:				
Upland	Outpoint c	on terrace abov	ve the char	nnel.

Profile Desc	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the abse	nce of indicators.)	
Depth <u>Matrix</u> <u>Redox Features</u>									
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0 - 6	10YR3/2	100					sand	moist	
-									
17		Developitere	DM Deduced				21	i Di Dans L'istan M. Mateira	
i ype: U = Concentration, D = Depletion, RM = Reduced Matrix, US = Covered or Coated Sand Grains. Cocation: PL = Pore Lining, M = Matrix									
Hydric Soli	Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils':								
Hist			San	dy Gleye	d Matrix ((S4)			
Hist	ic Epipedon (A2)		San	dy Redo	x (S5)			adox (A16) (LRR F, G, H)	
Blac	CK HISTIC (A3)		Strip	oped Mat	rix (S6)	(54)	Dark Surface (S	7) (LRR G)	
Hyd	rogen Sulfide (A4)		Loa		y Mineral	(F1)	High Plains Dep	ressions (F16)	
	med Layers (A5)			iny Gleye		(⊢∠)		(E40)	
	II IVIUCK (A9) (LRR	г, G, H) Силбала (leted Ma	trix (F3) Surfess //			$(F1\delta)$	
	Neteu Below Dark	5urrace (12)	Keo	Inter Dark		רס) ה (ד ד)		$\exists a (F2)$	
	K Dark Surface (A	12) (C4)	Dep	leted Dal	rk Surrace	e (F7)	Very Shallow Da	ark Sufface (TF12)	
San	ay Mucky Mineral	(51) Deet (00		ox Depre	essions (F	-8)		n Remarks)	
		Peat (52		I Plains L			Indicators of hydro	ophytic vegetation and wetland	
(LI	кк G, П) m Mucky Post or E	Poat (\$2)			x / 3 01 L	кк п)	nyarology must be	e present, unless disturbed or	
5 Cl	III MUCKY Feat OF	reat (33)				-			
Restrictive	Layer (if observe	ed):							
Type: C	ompaction				-		Hydric Soil Prese	ent? Y	
Depth (inche	es): 6"				-				
Remarks:						1			
			Upla	and Outp	point with	dry, san	dy soils.		
HYDROLO	JGY								
Wetland Hy	drology Indicato	rs:							
Primary Indi	<u>cators (minimum</u>	of one is	required; check	all that a	<u>pply)</u>		Secondary Ir	ndicators (minimum of two required)	
Surface	Water (A1)			Salt Cru	st (B11)		Surface Soil Cracks (B6)		
High Wa	ter Table (A2)			Aquatic	Invertebra	ates (B13	3) Sparse	ly Vegetated Concave Surface (B8)	
Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C1	1) Draina	ge Patterns (B10)	
Water M	larks (B1)			Dry-Sea	son Wate	er Table (C2) Oxidize	ed Rhizospheres on Living	
Drift Dor	It Deposits $(B2)$				(C3) (whe	neres on	Living Roots	h Burrows (C8)	
	ot or Crust (B4)			Presenc		iced Iron	(C4) Clayins	tion Visible on Aerial Imageny (C9)	
Iron Dep	nosits (B5)			Thin Mu	ck Surfac	e (C7)	Geomo	prohic Position (D2)	
Inundatio	on Visible on Aeria	l Imager	/ (B7)	Other (E	xplain in	Remarks) FAC-N	eutral Test (D5)	
Water-S	tained Leaves (B9)					Frost-H	leave Hummocks (D7) (LRR F)	
	(-								
Field Obser	vations (of the w	etland a	rea):						
Surface Wat	ter Present?	Yes	, No	Х	Depth (i	nches):			
Water Table	Present?	Yes	No	Х	Depth (i	nches):	Ir	ndicators of Wetland	
Saturation P	resent?	Yes	No	X	Depth (i	nches):		Hydrology Present? N	
(includes ca	pillary fringe)								
Describe Re	corded Data (stre	eam gau	ge, monitoring we	ll, aerial	photos, j	previous	inspections), if available	:	
Remarks:									
			No hydrologic	indicato	ors on ter	race abo	ve wetland areas		
	No hydrologic indicators on terrace above wetland areas.								

WETLAND DETERMINATIO	ON DATA FORM	I - Great	Plains Region
Project/Site: 6th Avenue Parkway Extension Cit	y/County:	Aurora	Sampling Date: 7/16/15
Applicant/Owner: Aurora	State:	CO	Sampling Point: SP-13
Investigator(s): Keith Hidalgo and Marissa Finney	Section,	Township, F	Range: Section 12 - T4S - R66W
Landform (hillslope, terrace, etc.): sandbar	Local relief (cor	ncave, conv	ex, none): <u>concave</u> Slope (%): <u>0 - 5</u>
Subregion (LRR): LRR G Lat:	39.720709	Long:	-104.731148 Datum: NAD 83
Soil Map Unit Name: Sandy Alluvial Land		NWI cla	ssification: PSSA
Are climatic/hydrologic conditions on the site typical for this time of	the year? Y	/ (If no	o, explain in Remarks.)
Are Vegetation, Soil, or Hydrology	significantly distu	urbed? A	Are "normal circumstances" present? Yes
Are Vegetation, Soil, or Hydrology	naturally problem	natic? (If needed, explain any answers in Remarks.)
SUMMARY OF FINDINGS - Attach site map showing sam	pling point location	ons, transeo	cts, important features, etc.
Hydrophytic Vegetation Present? Y			
Hydric Soil Present? Y	Is the Samp	pled Area V	Nithin a Wetland? Y
Indicators of Wetland Hydrology Present? Y	If yes, option	nal wetland	site ID: Wetland CCD
Remarks:			
Condhan deminated by	e e re elle e e su ill e su elle :		Orrach
Sandbar dominated by	sandbar willow ab	utting Coal	Creek.
VEGETATION Use scientific names of plants.			
Absolute	e Dominant Ind	licator C	Dominance Test Worksheet
Tree Stratum (Plot size:) % Cover	Species St	tatus Nu	umber of Dominant Species
1		tha	at are OBL, FACW, or FAC: 2 (A)
2		To	tal Number of Dominant
<u> </u>		Sp	ecies Across all Strata: <u>3</u> (B)
5		Pe	rcent of Dominant Species at are OBL_EACW_or_EAC'66.67% (A/B)
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)		F	Prevalence Index Worksheet
1 Salix interior 75	Y F4	ACW T	Total % Cover of: Multiply by:
2			DBL species <u>15</u> x 1 = <u>15</u>
3		F	ACW species $75 \times 2 = 150$
4			AC species $0 \times 3 = 0$
⁵ <u>75</u>	= Total Cover	[$\frac{12}{12} \times 4 = \frac{46}{12}$
Herb Stratum (Plot size:)			Column totals 102 (A) 213 (B)
1 Carex pellita 15	Y (OBI F	Prevalence Index = $B/A = 2.09$
2 Melilotus officinalis 10	Y F/	ACU	
3 Helianthus annuus 2	N F	ACU F	Hydrophytic Vegetation Indicators:
4			1 - Rapid Test for Hydrophytic Vegetation
5			X 2 - Dominance Test is >50%
6			X 3 - Prevalence Index is ≤3.0°
/			4 - Morphological Adaptations ¹ (provide
°			supporting data in Remarks or on a separate sheet)
10			Problematic Hydrophytic Vegetation ¹
27	= Total Cover		(Explain)
Woody Vine Stratum (Plot size:)	_		¹ Indicators of hydric soil and wetland hydrology must be
1			present, unless disturbed or problematic
2			Hydrophytic Verstation
0	= Total Cover		Present? Y
Bare Ground in Herb Stratum			
Sandhar Wi	illow dominates sa	ndbar	
	aominates sa		

Profile Des	cription: (Descri	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the abse	ence of indicators.)	
Depth Matrix Redox Features									
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0 - 20	10YR3/2	100					sand	saturated	
¹ Type: C = C	¹ Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. ² Location: PL = Pore Lining, M = Matrix								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ³ :									
Hist	osol (A1)		San	dy Gleye	d Matrix ((S4)	1 cm Muck (A9) (LRR I, J)	
Hist	ic Epipedon (A2)		San	dy Redox	k (S5)	. ,	Coast Prairie R	edox (A16) (LRR F, G, H)	
Blac	ck Histic (A3)		Strip	oped Mat	rix (S6)		Dark Surface (67) (LRR G)	
Hyd	rogen Sulfide (A4)	1	Loa	my Muck	y Mineral	(F1)	High Plains De	pressions (F16)	
Stra	tified Layers (A5)	(LRR F)	Loa	my Gleye	ed Matrix	(F2)	(LRR H outsi	de of MLRA 72 & 73)	
1 cn	n Muck (A9) (LRR	F, G, H)	Dep	leted Ma	trix (F3)		Reduced Vertic	: (F18)	
Dep	leted Below Dark	Surface (A11) Red	ox Dark	Surface (F6)	Red Parent Ma	terial (TF2)	
Thic	k Dark Surface (A	12)	Dep	leted Da	rk Surface	e (F7)	Very Shallow D	ark Surface (TF12)	
San	dy Mucky Mineral	(S1)	Red	ox Depre	essions (F	-8)	X Other (Explain	in Remarks)	
2.5	cm Mucky Peat or	Peat (S2) High	n Plains L	Depressio	ns (F16)	°Indicators of hydi	ophytic vegetation and wetland	
(LI	RR G, H) m Musley Deat an F		(M	LRA 72 8	& 73 of L	RR H)	hydrology must b	e present, unless disturbed or	
^{5 Cl}	m Mucky Peat or F	Peat (53)	(LRR F)					problematic.	
Restrictive	Layer (if observe	ed):							
Туре:							Hydric Soil Pres	ent? Y	
Depth (inche	es): <u>20"</u>				-				
Remarks:									
		Saturate	d sandy soils. So	ils too yo	oung to s	how hydi	ric indicators. Assumed	hydric.	
	JG T								
wetland Hy	arology indicato	ors:	and the standard standards	- 11 (1 (-					
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Secondary I	ndicators (minimum of two required)	
X Surface	Vvater (A1)			Salt Cru	st (B11) Invortobri	atao (P12	Surfac	e Soll Cracks (B6)	
	$(\Delta 3)$			Hydroge		Odor (C	1) X Draina	ery vegetated Concave Surface (Bo)	
X Water M	arks (B1)			Drv-Sea	son Wate	er Table (C2) Oxidiz	ed Rhizospheres on Living	
X Sedimer	nt Deposits (B2)			Oxidized	l Rhizosp	heres on	Living Root	s (C3) (where tilled)	
X Drift Dep	oosits (B3)			Roots (C3) (whe	ere not ti	lled) Crayfi	sh Burrows (C8)	
Algal Ma	at or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Satura	tion Visible on Aerial Imagery (C9)	
Iron Dep	osits (B5)			Thin Mu	ck Surfac	e (C7)	X Geom	orphic Position (D2)	
Inundatio	on Visible on Aeria	I Imagery	/ (B7)	Other (E	xplain in	Remarks) <u>X</u> FAC-N	Neutral Test (D5)	
Water-S	tained Leaves (B9)					Frost-	Heave Hummocks (D7) (LRR F)	
Field Obser	vations (of the w	etiand a	rea):		Donth /:	nohoo);	。		
Water Table	Present?	Yee			Depth (i	nchee)	<u> </u>	ndicators of Wetland	
Saturation P	Present?	Yes	X No		Depth (i	nches):		Hydrology Present? Y	
(includes ca	pillary fringe)				(·				
Describe Re	corded Data (stre	eam gau	ge, monitoring we	ell, aerial	photos,	previous	inspections), if availabl	e:	
Pemarka:									
INCINGINS.									
				Sandbar	r abutting	g Coal Cr	eek.		

WETLAND DETERMINA	TION DATA FO	ORM - Great I	Plains Region	
Project/Site: 6th Avenue Parkway Extension	City/County:	Aurora/Arapaho	De Sampling Date:	3/17/2015
Applicant/Owner: City of Aurora	State:	CO	Sampling Point:	SP-14
Investigator(s): Keith Hidalgo, Jake Lloyd, Anthony Marsha	all See	ction, Township, F	Range: SEC 12 ·	- T4S - 66W
Landform (hillslope, terrace, etc.): depression	Local relie	ef (concave, conv	ex, none): concave	Slope (%): 0-5
Subregion (LRR): LRR G Lat:	39.719354	Long:	-104.730081 Datum	n: NAD 83
Soil Map Unit Name: Sandy alluvial land		NWI clas	ssification:	PEMA
Are climatic/hydrologic conditions on the site typical for this time	ne of the year?	Y (If no	o, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology	significantly	/ disturbed? A	re "normal circumstances" p	resent? Yes
Are Vegetation, Soil, or Hydrology	naturally pr	oblematic? (I	f needed, explain any answ	vers in Remarks.)
SUMMARY OF FINDINGS - Attach site map showing	sampling point lo	ocations, transed	ts, important features, et	с.
Hydrophytic Vegetation Present? Y				
Hydric Soil Present? Y	Is the	Sampled Area V	Vithin a Wetland?	Y
Indicators of Wetland Hydrology Present? Y	If yes,	optional wetland s	site ID: Wetland CCE	
Remarks: (Explain alternative procedures here or in a separ	rate report.)			
			с	
Wetland area in additional survey area west of	E-470 public High	way Authority of	ices. Area outlets into Co	al Creek.
VEGETATION Use scientific names of plants.				
Abs	olute Dominant	Indicator C	Oominance Test Workshe	et
Tree Stratum (Plot size:) % C	Cover Species	Status Nu	mber of Dominant Species	
1 Populus deltoides 2	20 Y	FAC that	at are OBL, FACW, or FAC	: <u>3</u> (A)
2		To	tal Number of Dominant	а (D)
3		Sp	ecles Across all Strata:	<u> </u>
5		Pe	rcent of Dominant Species at are OBL, FACW, or FAC	100.00% (A/B)
	20 = Total Cove	er and		
Sapling/Shrub Stratum (Plot size:)		P	vevalence Index Works	neet
1 Salix interior 2	20 Y	FACW T	otal % Cover of: M	ultiply by:
2		C	DBL species 65 x	1 =65
3		F	ACW species 20 x	2 = 40
4			AC species 20 x	3 = 60
<u> </u>	20 = Total Cove		IPL species 0 x	4 = 0
Herb Stratum (Plot size:)			Column totals 105 (A) <u>165</u> (B)
1 Typha angustifolia	50 Y	OBL F	Prevalence Index = $B/A =$	1.57
2 Lemna spp.	5 N	OBL		
3		F	lydrophytic Vegetation I	ndicators:
4			1 - Rapid Test for Hydro	ophytic Vegetation
5			X 2 - Dominance Test is >	•50%
6				≤3.0
/			4 - Morphological Adap	otations' (provide
9			separate sheet)	narks of on a
10		-	Problematic Hydrophy	tic Vegetation ¹
6	5 = Total Cove	er	(Explain)	J
Woody Vine Stratum (Plot size:)			¹ Indicators of hydric soil and we	etland hydrology must be
1			present, unless disturbe	ed or problematic
2			Hydrophytic	
% /Dava Cround in Llark Stratum	0 = Total Cove	er	Present? Y	
Remarks: (Include photo numbers here or on a separate sh	leet)			
Narrowleaf ca	ttails growing with	in standing wate	ſſ.	
		5		

SP-14

Profile Des	cription: (Descr	ibe to th	e depth needed	to docu	ment the	e indicat	or or confirm the abs	ence of indicators.)
Depth	Matrix		Re	dox Feat	ures			
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
								Assumed hydric
¹ Type: C = C	concentration, D =	Depletior	, RM = Reduced	Matrix, CS	S = Cover	ed or Co	ated Sand Grains. ² Lo	cation: PL = Pore Lining, M = Matrix
Hydric Soil	Indicators: (App	licable t	o all LRRs, unle	ess othe	rwise no	ted.)	Indicators for Pre	oblematic Hydric Soils ³ :
Hist	tosol (A1)		Sar	ndy Gleye	d Matrix ((S4)	1 cm Muck (As	9) (LRR I, J)
Hist	tic Epipedon (A2)		Sar	ndy Redo	x (S5)	. ,	Coast Prairie F	Redox (A16) (LRR F, G, H)
Blac	ck Histic (A3)		Stri	pped Mat	rix (S6)		Dark Surface ((S7) (LRR G)
Hyd	Irogen Sulfide (A4)		Loa	 my Muck	y Mineral	(F1)	High Plains De	epressions (F16)
Stra	atified Lavers (A5)	(LRR F)	Loa	mv Gleve	ed Matrix	(F2)	(LRR H outs	ide of MLRA 72 & 73)
1 cr	m Muck (A9) (LRR	F, G, H)	Der	pleted Ma	trix (F3)	. /	Reduced Verti	c (F18)
Der	leted Below Dark	Surface (A11) Red	dox Dark	Surface (F6)	Red Parent Ma	aterial (TF2)
 	ck Dark Surface (A	.12)	, Der	pleted Da	rk Surfac	, e (F7)	Verv Shallow [Dark Surface (TF12)
San	dv Mucky Mineral	, (S1)	Rec	dox Depre	essions (F		Other (Explain	in Remarks)
2.5	cm Mucky Peat or	Peat (S2	2) Hia	h Plains [Depressio	ons (F16)	³ Indicators of hyd	Irophytic vegetation and wetland
(L	RR G. H)		.,	ILRA 72	& 73 of L	RR H)	hydrology must	be present unless disturbed or
5.0	m Mucky Peat or F	Peat (S3)	(LRR F)			,	nyarology mast	problematic.
			(=)			1		problemater
Restrictive	Layer (if observe	ed):						
Type:					-		Hydric Soil Pre	sent? Y
Depth (inche	es):				-			
Remarks:								
		Soil profi	le assumed to be	e hydric d	lue to the	e abunda	nce of cattails and ope	n water.
	1/							
HYDROLO	JGY							
Wetland Hy	drology Indicato	ors:						
Primary Indi	cators (minimum	of one is	required; check	all that a	<u>pply)</u>		Secondary	Indicators (minimum of two required)
X Surface	Water (A1)			Salt Cru	st (B11)		Surfa	ce Soil Cracks (B6)
High Wa	ater Table (A2)			Aquatic	Invertebra	ates (B13) Spars	sely Vegetated Concave Surface (B8)
Saturatio	on (A3)			Hydroge	en Sulfide	Odor (C1	l) Drain	age Patterns (B10)
Water N	larks (B1)			Dry-Sea	son Wate	er Table (C2) Oxidi	zed Rhizospheres on Living
Sedimer	nt Deposits (B2)			Oxidized	d Rhizosp	heres on	Living Roo	ts (C3) (where tilled)
Drift Dep	posits (B3)			Roots	(C3) (whe	ere not ti	lled) Crayf	ish Burrows (C8)
Algal Ma	at or Crust (B4)			Presenc	e of Redu	uced Iron	(C4) Satur	ation Visible on Aerial Imagery (C9)
Iron Dep	osits (B5)			Thin Mu	ck Surfac	e (C7)	X Geon	norphic Position (D2)
Inundation	on Visible on Aeria	l Imager	y (B7)	Other (E	xplain in	Remarks) FAC-	Neutral Test (D5)
water-S	tained Leaves (B9)					-rost	-neave Hummocks (D7) (LKK F)
Field Obser	vations:	N/ -			Dest "		40	
Surrace Wa	ter Present?	Yes	X No	V	Depth (i	ncnes):	12	Indicators of Matland
Soturotion	e Present?	Yes		<u> </u>	Deptn (I	ncnes):		
Saturation P	nillany fringa)	res	<u> </u>	Χ		ncnes):	<u> </u>	nyurology riesent? Y
					.1	·		
Describe Re	ecorded Data (stre	eam gau	ge, monitoring we	eii, aerial	photos,	previous	inspections), if availab	IE:
Remarks:								
Standing	g water within wet	land poc	ket; saturation as	sumed b	out soil te	st not co	nducted due to obvious	s hydric soil indicators and lack of
		-		access	due to sta	anding w	ater.	

WETLAND DETERMINA	TION DATA FO	RM - Gre	at Plains Region	
Project/Site: 6th Avenue Parkway Extension	City/County:	Aurora	Sampling Date:	7/16/15
Applicant/Owner: Aurora	State:	CC	Sampling Point:	SP-15
Investigator(s): Keith Hidalgo and Marissa Finney	Sect	ion, Townsh	nip, Range: Section 12 - T4	4S - R66W
Landform (hillslope, terrace, etc.): streambank	Local relief	(concave, c	convex, none): <u>concave</u> S	lope (%): <u>3 - 5</u>
Subregion (LRR): LRR G Lat:	39.718998	Long:	-104.730027 Datum:	NED 83
Soil Map Unit Name: Sandy Alluvial Land		NWI	classification: PF	OA
Are climatic/hydrologic conditions on the site typical for this tim	e of the year?	Y ((If no, explain in Remarks.)	
Are Vegetation, Soil, or Hydrology	significantly	disturbed?	Are "normal circumstances" prese	ent?
Are Vegetation, Soil, or Hydrology	naturally pro	blematic?	(If needed, explain any answers	in Remarks.)
SUMMARY OF FINDINGS - Attach site map showing	sampling point loc	ations, trai	nsects, important features, etc.	
Hydrophytic Vegetation Present? Y				
Hydric Soil Present? Y	Is the S	ampled Are	ea Within a Wetland?	Y
Indicators of Wetland Hydrology Present? Y	lf yes, o	ptional wetla	and site ID: Wetland CCD	
Remarks:				
Wetland beteen	the floodplain OHV	vivi on Coal	Сгеек.	
VEGETATION Use scientific names of plants.				
Abso	olute Dominant	Indicator	Dominance Test Worksheet	
Tree Stratum (Plot size:) % C	Cover Species	Status	Number of Dominant Species	
1 Populus deltoides 5	50 Y	FAC	that are OBL, FACW, or FAC:	4 (A)
2 Salix amygdaloides 1	<u> </u>	FAC	Total Number of Dominant	
3	·		Species Across all Strata:	(B)
5	· ·		that are OBL FACW, or FAC	100.00% (A/B)
<u></u>	5 = Total Cover			(100.0070 (100)
Sapling/Shrub Stratum (Plot size:)			Prevalence Index Workshee	t
1 Salix interior 5	50 Y	FACW	Total % Cover of: Multip	oly by:
2			OBL species 0 x 1 =	0
3			FACW species $70 \times 2 =$	140
4			FAC species $65 \times 3 =$	195
<u> </u>	50 = Total Cover		$\frac{1}{100} \text{ species } 0 \text{ x } 5 = 0$	0
Herb Stratum (Plot size:)			Column totals 135 (A)	335 (B)
1 Typha angustifolia 2	20 Y	FACW	Prevalence Index = B/A =	2.48
2				
3	·		Hydrophytic Vegetation Indi	cators:
4			1 - Rapid Test for Hydrophy	/tic Vegetation
5			X 2 - Dominance Test is >50%	%
6	·		χ 3 - Prevalence index is \leq 3.0	1
/	·		4 - Morphological Adaptati	ions' (provide
9	·		supporting data in Remain separate sheet)	s of off a
10			Problematic Hydrophytic \	Vegetation ¹
2	20 = Total Cover		(Explain)	0
Woody Vine Stratum (Plot size:)			¹ Indicators of hydric soil and wetlan	d hydrology must be
1			present, unless disturbed or	r problematic
2			Hydrophytic	
(0 = I otal Cover		Present? Y	
Remarks:			<u> </u>	
Wetland vegetation along the I	banks and in the m	iddle of the	Coal Creek Channel.	

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth <u>Matrix</u> <u>Redox Features</u>								
(Inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0 - 3	10YR3/2	100					sandy silt loam	dry
3 - 14	10YR3/2	100					sand	saturated
14 - 18	10YR3/2	85					sand	saturated
14 10	Glov(12/N	15					cand	saturated
14 - 10	Gley 13/14	10					Sanu	Saturateu
¹ Type: C = Concentration, D = Depletion, RM = Reduced Matrix, CS = Covered or Coated Sand Grains. ² Location: PL = Pore Lining, M = Matrix								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils ³ :								
Hist	osol (A1)		X San	dy Gleye	d Matrix (S4)	1 cm Muck (A9) (LRR I, J)
Hist	ic Epipedon (A2)		San	dy Redox	k (S5)		Coast Prairie Rec	lox (A16) (LRR F, G, H)
Blac	k Histic (A3)		Strip	oped Mat	rix (S6)		Dark Surface (S7) (LRR G)
Hyd	rogen Sulfide (A4)		Loa	my Muck	y Mineral	(F1)	High Plains Depre	essions (F16)
Stra	tified Layers (A5)		Loa	my Gleye	ed Matrix	(F2)	(LRR H outside	of MLRA 72 & 73)
	II WIUCK (A9) (LRR	г, G, H) Surface (eted Ma	trix (F3) Surfoco /′	=6)	Reduced Vertic (F	- 18) ial (TE2)
	k Dark Surface (A	3011ace (12)	ATT) Red	lotod Daik	sunace (i rk Surface	-0) > (E7)		Iar(1F2)
San	dv Mucky Mineral	(S1)	Dep	ox Denre	essions (F	5 (17) 58)	X Other (Explain in	Remarks)
2.5	cm Mucky Peat or	Peat (S2) High	η Plains Γ)epressio	o, ns (F16)	³ Indicators of hydror	bytic vegetation and wetland
(LF	RR G, H)		(M	LRA 72 8	& 73 of L	RR H)	hvdrology must be	present. unless disturbed or
5 cr	m Mucky Peat or F	Peat (S3)	(LRR F)			,	pi	oblematic.
Restrictive	l aver (if observe	ed).						
Type: C	ompacted sand						Hvdric Soil Preser	nt? Y
Depth (inche	es): 18"				•			
Pomorko:	,							
Remarks.								
	:	Sandy So	oil. Young soil, m	ay have :	sandy gle	eved mat	rix, otherwise assumed hy	/dric.
			0		, ,			
HYDROLO	DGY							
Wetland Hy	drology Indicato	ors:						
Primary Indi	cators (minimum	of one is	required; check	all that a	pply)		Secondary Inc	licators (minimum of two required)
X Surface	Water (A1)			Salt Cru	st (B11)		Surface	Soil Cracks (B6)
X High Wa	ter Table (A2)		Х	Aquatic	Invertebra	ates (B13) Sparsely	Vegetated Concave Surface (B8)
X Saturatio	on (A3)			Hydroge	n Sulfide	Odor (C1	I) <u>X</u> Drainage	e Patterns (B10)
X Water M	arks (B1)			Dry-Sea	son wate Phizosp	er Table (G	U2) UXIdized	C3) (where tilled)
X Drift Den	(B3)			Roots ((C3) (whe	ere not til	lled) Cravfish	Burrows (C8)
Algal Ma	it or Crust (B4)			Presenc	e of Redu	iced Iron	(C4) Saturatio	on Visible on Aerial Imagery (C9)
Iron Dep	osits (B5)			Thin Mu	ck Surfac	e (C7)	X Geomor	ohic Position (D2)
Inundatio	on Visible on Aeria	I Imagery	/ (B7)	Other (E	xplain in	Remarks) X FAC-Ne	utral Test (D5)
X Water-S	tained Leaves (B9)					Frost-He	ave Hummocks (D7) (LRR F)
Field Obser	vations (of the w	etland a	rea):					
Surface Wat	er Present?	Yes	X No		Depth (i	nches):	3	lipstore of Watland
Saturation P		TES			Depth (I	nches):		vdrology Present? V
(includes car	pillary fringe)	163				nenes).	<u> </u>	
Describe Re	corded Data (stre	eam gau	ge, monitoring we	ll, aerial	photos, j	orevious	inspections), if available:	
Remarks:								
	Hydrology associated with the ppresence of Coal Creek.							