CENTRAL PARK BOULEVARD
INTERCHANGE

I-70 / CENTRAL PARK BOULEVARD INTERCHANGE

WETLAND FINDINGS REPORT

PREPARED FOR:
CITY AND COUNTY OF DENVER

IN PARTNERSHIP WITH
US DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

COLORADO DEPARTMENT OF TRANSPORTATION

PREPARED BY:
PINYON ENVIRONMENTAL
ENGINEERING RESOURCES, INC.

APRIL 2009

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I-70/Central Park Boulevard Interchange Environmental Assessment

WETLAND FINDING REPORT

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Federal Highway Administration

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April 2009

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ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
BTPD	Black-tailed prairie dog
CCD	City and County of Denver
CDOT	Colorado Department of Transportation
CEQ	Council on Environmental Quality
CPB	Central Park Boulevard
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
DRCOG	Denver Regional Council of Governments
EA	Environmental Assessment
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-70	Interstate 70
I-270	Interstate 270
NEPA	National Environmental Policy Act
PCMD	Park Creek Metropolitan District
ROW	right-of-way
SWMP	Stormwater Management Plan
TEA-21	Transportation Equity Act for the 21st Century
USACE	United States Army Corps of Engineers
WUS	waters of the United States

1.0 INTRODUCTION

The following is a wetland finding report for the proposed Central Park Boulevard (CPB) and Interstate 70 (I-70) Interchange project, and has been written in compliance with the Executive Order 11990, "Protection of Wetlands," and in accordance with 23 CFR 771, 23 CFR 777, and Technical Advisory T6640.8A.

Wetland resources are protected under Section 404 of the Clean Water Act (CWA) and Executive Order 11990, Protection of Wetlands (United States of America, 1977). Many wetlands and open water features are considered jurisdictional Waters of the US (WUS) by the U.S. Army Corps of Engineers (USACE). Wetlands and WUS features are regulated by the USACE, and projects that will discharge dredged or fill materials into these features are subject to permitting by the USACE.

Non-jurisdictional wetlands are not subject to permitting by USACE under Section 404; however, all federal agencies are required to avoid and minimize wetland impacts to the extent possible per Executive Order 11990. In certain cases, non-jurisdictional wetlands may be regulated under provisions of the National Environmental Policy Act (NEPA); for instance when Individual Permits are issued for wetland disturbances by the USACE under provisions of Section 404 of the CWA. In order to be consistent with Federal Transit Administration (FTA) and Federal Highway Administration (FHWA) policies, the Colorado Department of Transportation (CDOT) follows guidelines that require mitigation of impacts to non-jurisdictional wetlands on a 1:1 ratio. CDOT requires mitigation for all project impacts that occur within CDOT right-of-way (ROW). Non-jurisdictional wetlands subject to CDOT mitigation requirements include areas with wetland soils, hydrology and vegetation. They do not include open waters that may be under the jurisdiction of the USACE.

The City and County of Denver (CCD) Public Works Department is conducting comprehensive environmental planning and roadway design services for the proposed Interchange. Additional information on this process is presented in the I-70/CPB Interchange Environmental Assessment (EA).

Part of the I-70 East Draft Environmental Impact Statement (DEIS) included a study of a new interchange at CPB, to provide access to the Stapleton Redevelopment Area (PBS&J 2008a). Each of the build alternatives considered in the I-70 East DEIS includes an interchange with CPB. Because completion of the I-70 East DEIS and its resulting decision document may be well into the future, in December 2007 the CCD determined, and the FHWA concurred, that adherence to the Council on Environmental Quality (CEQ) regulations can be maintained while advancing a new interchange at CPB through the NEPA process as an independent project.

Pinyon Environmental Engineering Resources, Inc. (Pinyon) has been contracted to complete various assessments for the CPB Interchange, including wetlands. A letter was previously submitted to the USACE, by Lisa Streisfeld of CDOT, requesting a need for permit determination for potential wetland impacts from the project.

This report has been prepared to meet CDOT environmental documentation requirements, and describes wetlands within the proposed project area as well as avoidance, minimization,

and impacts resulting from construction of the proposed project. Proposed mitigation measures for these impacts are also described.

1.1 Site Location

The project area, shown on Figure 1, extends along I-70 and Interstate 270 (I-270) from Quebec Street to Havana Street, bisecting the Stapleton Redevelopment area, in Sections 21 and 22, Township 3S, Range 27W. CPB, a planned and funded project of the Park Creek Metropolitan District (PCMD) now under design and proposed for construction in 2010, will provide a new arterial connection across I-70, connecting the existing and planned development areas of Stapleton.

Existing and proposed land uses in the immediate project area are commercial and retail associated with existing business parks and the Stapleton redevelopment. North of I-70, the major retail use is the Shops at Northfield Stapleton. Residential development is also planned for the area north of I-70. South of I-70 is the Quebec Square retail area and the main residential development of Stapleton.

1.2 Project Description

One build alternative was advanced from the alternatives development and screening phase of the EA. Environmental impacts of the build alternative, along with the No Action Alternative, are discussed in Chapter 3 of the Environmental Assessment (Affected Environment, Impacts, and Mitigation), as well as in Section 1.3 of this document.

During the screening process, Alternative 3B: New Bridge, Braided Ramp Interchange, Consecutive On/Off-ramps was identified as the Preferred Alternative (Figure 2). This alternative best meets the purpose and need of the project and has minor cumulative impacts and/or mitigation. The primary reasons for identifying Alternative 3B as the Preferred Alternative include:

- The proposed improvements would provide for acceptable traffic operations when tested against forecast 2035 traffic conditions.
- A six-lane cross-section of CPB over I-70 is in conformance with the Denver Regional Council of Governments (DRCOG) *2035 Regional Transportation Plan*.
- The alternative provides for pedestrian and bicycle access in the corridor through the provision of continuous multi-use paths in the northbound and southbound directions along CPB.
- ROW to implement the needed bridge, ramps, and landscaping can be readily acquired.
- Impacts to black-tailed prairie dog (BTPD) colonies and floodplains can be mitigated.

N

Legend

Wetlands

Proposed Project Footprint

0 125 250 500 Feet

Pinyon Environmental Engineering Resources

Environmental Engineering Resources, Inc.

WETLANDS

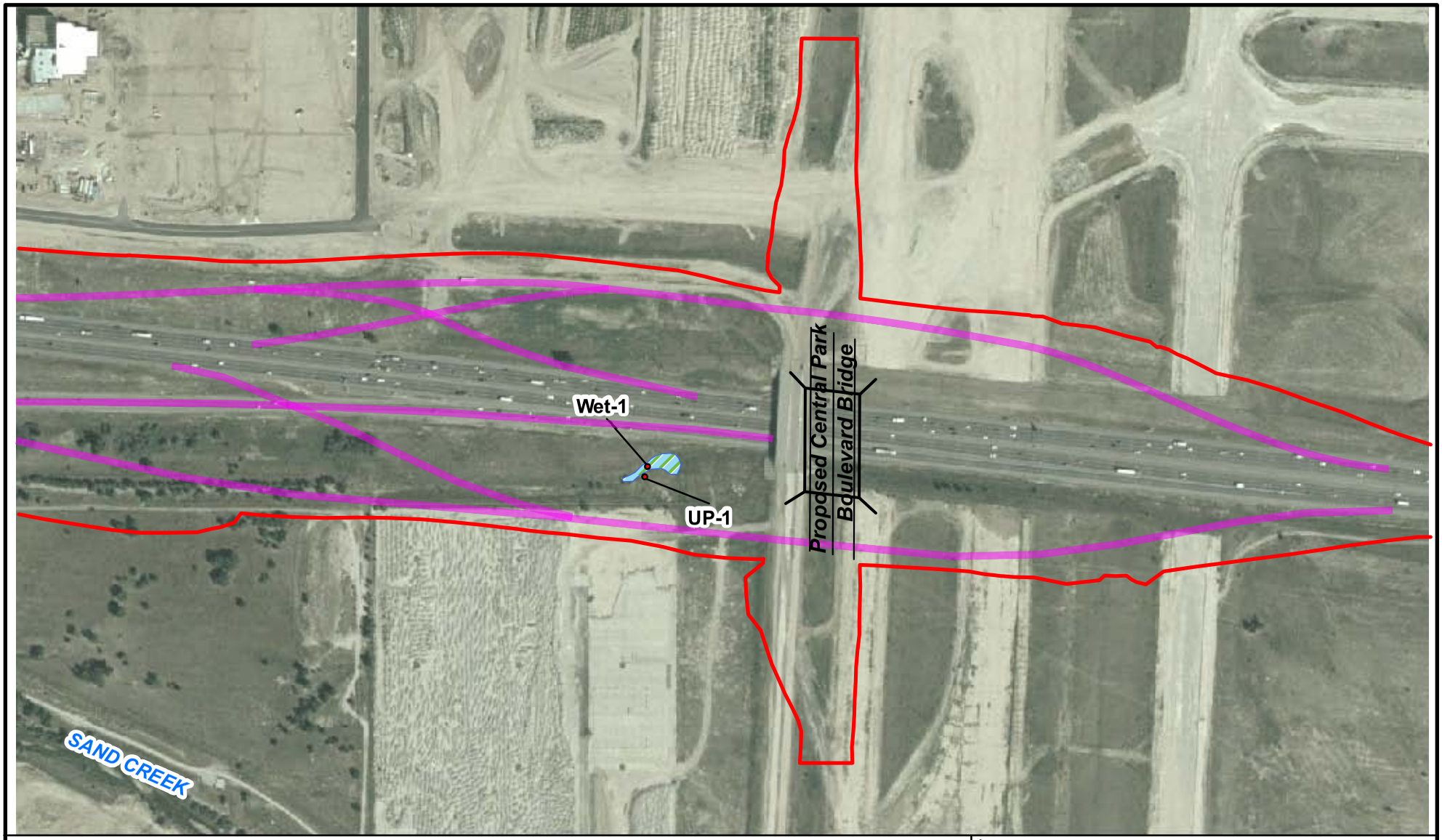
Central Park Boulevard Interchange
I-70 & I-270 Interchange
to Havana Street
Denver, Colorado

Site Location: Section 21-23, Township 3S, Range 67W, 6th Principal Meridian

Drawn By: MJS | Figure 1

Projects\10835902 Central Park Blvd Interchg\Wetlands\Wetlands Fig. 1.pdf | Job No. 1/08-359-02.8000

Reviewed By: BRP | Revision 0



Legend

- Project Footprint
- Wetlands
- Soil Pit Location
- Alternative 3B Ramps

N

0 165 330 660 Feet

PINYON Environmental Engineering Resources, Inc.

Project Area

Central Park Boulevard Interchange
I-70 & I-270 Interchange to Havana Street
Denver, Colorado

Site Location: Section 21-23, Township 3S, Range 67W, 6th Principal Meridian

Drawn By: MJS | Figure 2

Projects\10835902 Central Park Blvd Interchg\Wetlands\Wetlands Fig. 1.pdf | Job No. 1/08-359-02.8000 | Reviewed By: BRP | Revision 03/16/09

Under Alternative 3B, eastbound I-70 would have one off-ramp to CPB, one on-ramp from I-270, and one on-ramp from CPB. Westbound I-70 would have one off-ramp to CPB, one off-ramp to I-270, and one on-ramp from CPB. Figure 2 illustrates a typical section of CPB on the new bridge for the Preferred Alternative.

1.3 Project Alternatives

This section describes the process used to develop and evaluate a range of interchange alternatives. Five alternatives were developed based on public and agency involvement, previous planning documents, and environmental and technical considerations. Two levels of screening were applied to these five alternatives. The first level of screening was based on "fatal flaw" criteria including purpose and need, environmental impacts, and practicality and feasibility. Remaining alternatives were then advanced to the second level of "detailed" screening including engineering, environmental, and other criteria. This second level of screening resulted in the build alternative studied in detail. This alternative has been identified as the Preferred Alternative.

Alternatives were developed after the need for the project was determined and input was obtained from nearby neighborhoods, businesses, local jurisdictions, and stakeholders. Previous planning documents were considered in the development of the alternatives. These planning documents were used to focus the range of alternatives considered for the CPB interchange EA. Of note, the ongoing I-70 East DEIS considered several design alternatives, including different interchange configurations for the CPB interchange. Alternatives were developed with the various potential impacts to the environment in mind, of which wetlands were a part.

The following interchange configurations were evaluated in the I-70 East DEIS: Compressed Diamond, Tight Urban Diamond, Single Point Diamond, Rural Diamond, Three Point Diamond, Three Level Diamond, Partial cloverleaf with ramps in quadrants A, B, or AB, Single Loop (SE Quadrant), Single Loop (SW Quadrant), Single Loop (NE Quadrant), Single Loop (NW Quadrant), Full Cloverleaf, Fully Directional. Advanced engineering analysis was completed on the Compressed Diamond (access through collector/distributor roads) and Diamond with Braided Ramp configurations. These interchange forms were evaluated through a series of screening processes in the *I-70 East DEIS Alternatives Analysis and Screening Process Technical Report* (PBS&J 2008a). The fourth level of screening, Alternative Refinement, was used to determine the alternatives most responsive to the project purpose, need, goals, and objectives. This level of screening considered engineering feasibility; potential effects on social, environmental, and economic resources; and analysis of capital, operations, and maintenance costs.

Through this screening process, the I-70 East DEIS eliminated the Compressed Diamond Interchange option at CPB (when compared to the braided ramp option) for the following reasons:

- Had similar traffic operations, safety characteristics, and permanent wetland impacts.

- Is $27 to $73 million lower for capital construction and operation/maintenance costs due primarily to the reduced number and area of bridge structures and fewer total lane miles.
- Had over 50 percent less permanent impacts to riparian area and a one-acre reduction in impacts to Northfield Pond Park multi-use facility.

These additional screening factors recommend proceeding with braided ramps as the preferred interchange concept for the ultimate CPB interchange. Based on this recommendation, variations of this interchange concept were developed as alternatives for the CPB interchange.

Detailed discussion of all alternatives is discussed in detail in Chapter 3 of the EA.

2.0 METHODS

An initial assessment of the jurisdictional status of the project was made using topographic maps, aerial photographs, and the I-70 East DEIS. Brian Partington with Pinyon surveyed the project area on November 18, 2008, by driving and walking the project area to identify and delineate existing wetlands and other water features within 300 feet of the project centerline. The delineation was performed in conformance with the 1987 "Army Corps of Engineers Wetland Delineation Manual" (Wetland Training Institute, 1995). The "Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region" was also used as a reference (USACE, 2008).

Wetlands were defined by vegetative, hydrologic and soil features, and the data were recorded onto field data sheets (Appendix A). Wetland indicator plant species were referenced in the National List of Plant Species (USFWS, 1988). Species were classified as OBL (obligate wetland species), FACW (facultative wetland species), FAC (facultative species), FACU (facultative upland), or UPL (upland species). A plus (+) or minus (-) sign represents species nearer to wetter or drier ends of the indicator categories, respectively. Plant species classified as FAC, FACW, or OBL, are considered hydrophytic plants, and are wetland indicators.

Hydrology and soil data were also collected from the selected soil pits on the project. Hydrology indicators may include topographic positions, presence of standing water and/or saturated soil, profiles conditions, drainage patterns, water marks, sediment deposits, and/or oxidized root channels in the upper 18 inches of the soil profile. Wetland soil indicators may include presence of color streaking (mottling), gleying (grayish coloration), reducing conditions, sulfidic odor, high organic content and organic matter streaking in the surface layer of sandy soils. Soil pits were hand excavated within, and adjacent to, potential wetlands to verify indicators of vegetation, wetland hydrology and hydric soils.

Once wetland vegetation was identified and wetland hydrology and soils were confirmed, the upland-wetland boundary was then recorded with a Trimble GeoXT Global Positioning System (GPS) unit. That data was downloaded and mapped in ArcGIS 9.2 mapping software (Figure 2).

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3.0 RESULTS

3.1 Vegetation

The entire project area lies within a developed, urban area of the CCD. The project area consists of paved roads with moderately vegetated roadside areas adjacent to I-70 and I-270. The project area is surrounded by CCD open space, mixed-use commercial properties including the Shops at Northfield, and CDOT ROW.

There are three upland vegetation communities and habitat types present within the study limits. Nearly all of the vegetation has been altered by past human activities. The past transportation, industrial and commercial activities have all played a role in creating the existing vegetation composition within the project area. The vegetation is characterized as the following community and habitat types:

- Tree groves: Tree groves include clusters of trees in upland areas, not associated with streams or flowing ditches. Five small areas are present within the project area located on the south side of I-70, in a slight roadside depression that extends from the proposed Central Park Boulevard Bridge west approximately 0.50 mile. The roadside depression areas are dominated by eastern cottonwood (*Populus deltoides*), Russian olive (*Elaeagnus angustifolia*) and Siberian elm (*Ulmus pumila*) trees, and sandbar willow (*Salix exigua*).
- Prairie dog community: This community occurs on both sides of I-70, mainly west of the purposed Central Park Boulevard Bridge. BTPD (*Cynomys ludovicianus*) habitat is dominated by weedy forb species that are either eaten or cut short by the prairie dogs. Common vegetation species include field bindweed (*Convolvulus arvensis*), Russian thistle (*Salsola tragus*), kochia (*Kochia scoparia*), and hoary cress (*Cardaria draba*).
- Disturbed community: This community occupies the largest area within the project boundaries and includes roadsides, median areas, and CDOT ROW. Disturbed habitat has been previously cleared of vegetation, or disturbed from localized activities such as road maintenance, mowing and construction. These areas are currently either sparsely vegetated or occupied by weedy and non-native species. Species found in disturbed habitat include kochia, cheatgrass (*Bromus tectorum*), field bindweed, Russian thistle, smooth brome (*Bromus inermis*), crested wheatgrass (*Agropyron cristatum*), leafy spurge (*Euphorbia esula*), Canada thistle (*Cirsium arvense*) and annual sunflower (*Helianthus annuus*). The vegetation in this community may grow to be four feet tall or higher in favorable sites, but is often mowed to a shorter height.

The survey of wetlands identified one wetland feature within the project limits totaling 0.146 acre. This feature is located southwest of the Interchange (Figure 2). This is a palustrine emergent/palustrine scrub/shrub (PEM/PSS) wetland with an herbaceous layer dominated by cattails (*Typha latifolia*) and reed canary grass (*Phalaris arundinacea*), and a shrub layer

dominated by sandbar willow (*Salix exiqua*). There are also some small narrow-leaf cottonwood trees (*Populus angustifolia*) on the perimeter of the wetland area.

There is a well defined wetland-upland line. Upland species surrounding the wetland are dominated by herbaceous species including crested wheatgrass and cheatgrass.

3.2 Hydrology

Maps of the project area indicate depth to ground water is expected to be between 10 and 20 feet below ground surface (Hillier, et. al, 1983). Typically, ground-water flow direction mimics topography. Based on the topographic conditions of the project area (Figure 1), the ground-water flow direction is likely to the northwest, toward Sand Creek.

No ephemeral or perennial surface water features have been identified within the project limits (Figure 1).

3.3 Soils

No surficial soil data is available for the City and County of Denver (NRCS, 2008). The surficial geology at the eastern portion of the Site is classified as Upper Pleistocene epoch silts, with minor clays and sands, deposited by wind (Trimble and Machette, 1979; Lindvall, 1980). The surficial soils in the western portion of the Site are classified as Post-Piney Creek Alluvium of Upper Holocene epoch. These soils are comprised of clay, silt, sand and gravel deposits of modern stream flood plains, deposited by Sand Creek. These deposits have been economic sources of aggregate in the past (Trimble and Machette, 1979; Lindvall, 1980). Additionally, artificial fills have been documented in the project area, and include engineered fills below former runways and roadways, and potential landfills and rubbish dumps along Sand Creek (Lindvall, 1980).

3.4 Wetlands

One wetland was identified within the project limits (Figure 2). Two data points were completed for the wetland delineation, including one wetland and one upland. The wetland was defined as a palustrine emergent/palustrine scrub/shrub (PEM/PSS) wetland (Cowardin, et al, 1979). The findings from information gathered at these soil pits are summarized below. Data sheets are included in Appendix A.

UP-01: Upland

This soil pit was excavated in an upland area on a terrace above, and south of, the wetland area (Figure 2). Vegetation in this area was consistent with the Disturbed Community described in Section 3.1, and was dominated by crested wheatgrass and cheatgrass. Soil at this point consisted of one horizon, was composed of sand with clay, and was brown (10YR 4/3). No hydrological indicators were present at this location.

Wet-01: Wetland

Vegetation in this area was dominated by an understory of wetland plants including cattails and reed canarygrass. Shrubs present included sandbar willows, and small narrow-leafed cottonwood trees bordered the wetland in this area. The soil in this area was generally consistent with the upland soils encountered in soil pit UP-01; however, subtle redox conditions were observed, and were likely a function of hydraulic inputs and the presence of hydrophytic vegetation. The color of the soil at this location was brown (10YR 4/3), and consisted of sand with clay. Hydrological indicators included saturation at a depth of 12 inches.

The wetland is located southwest of the Interchange, and was determined to have a total area of 0.146 acre. Hydrology within the wetland feature is primarily associated with an underground culvert which formerly drained the Stapleton Airport employee parking lot historically located southwest of the Interchange. Surface runoff from the surrounding uplands appears to be a secondary source of water. Ground-water seepage is not considered a significant hydrologic source. The entire wetland is located within the current boundaries of CDOT ROW.

3.5 Waters of the U.S.

No WUS features were identified within the project limits. The nearest feature is Sand Creek which will not be impacted by the Preferred Alternative.

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4.0 IMPACTS

4.1 Direct Impacts

It is anticipated that the Preferred Alternative would result in the loss of all 0.146 acre of wetlands. The final construction impacts are not yet finalized; however, the preliminary project area of disturbance shows a complete impact to this area. A Jurisdictional Determination by the USACE is in the process of being obtained for the wetland area identified. If the USACE determines the feature to be jurisdictional, then a Nationwide Permit will be prepared with the impacts being less than 0.5 acre. Since impacts are greater than 0.10 acre, it is anticipated that the USACE will require mitigation for this wetland impact. Moreover, the wetland is located in CDOT ROW. CDOT requires mitigation of all wetlands, regardless of USACE jurisdiction. Therefore, CDOT will require mitigation of impacts to this wetland area at a 1:1 ratio (see Section 5.0).

4.2 Indirect Impacts

The Preferred Alternative would result in some indirect impacts. Indirect impacts to wetlands and WUS include loss of habitat for birds, sedimentation, erosion, and noxious weed invasion. In general, these impacts are not quantifiable. Construction plans are currently in the final development stages; therefore, it is not known precisely how much indirect impact would result from those activities.

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5.0 WETLAND MITIGATION

Per Section 404 of the CWA, impacts to wetlands and other water features must be avoided, minimized, or mitigated (in order of preference). All USACE jurisdictional wetlands and WUS features will be mitigated in accordance with current USACE mitigation policies, and the conditions of the USACE Section 404 Permit. CCD is currently coordinating with the USACE on the determination of this wetland area and will prepare the USACE Section 404 Permit if required. CDOT will require that all wetlands be mitigated, regardless of USACE jurisdiction. Additionally, provisions in NEPA may also require non-jurisdictional wetlands, WUS, or other aquatic features be mitigated. All mitigation plans will be developed in coordination with the USACE and other appropriate agencies during the Section 404 permitting process. All mitigation for the wetlands within the CPB project area will also be in accordance with CDOT and FHWA policies.

The Transportation Equity Act for the 21st Century (TEA-21) established a preference for mitigation banking to compensate for unavoidable losses to wetlands or other natural habitat caused by transportation projects receiving Federal assistance under Title 23 of the US Code (FHWA 2003). TEA-21 states "with respect to participation in a natural habitat or wetland mitigation effort related to a project funded under this title that has an impact that occurs within the service area of a mitigation bank, preference shall be given, to the maximum extent practicable, to the use of the mitigation bank if the bank contains sufficient available credits to offset the impact and the bank is approved in accordance with the Federal Guidance for the Establishment, Use and Operation of Mitigation Banks." The FHWA revised its regulations to conform to provisions of TEA-21 in January 2001. In determining the suitability of banking as compensatory mitigation, four criteria are factors used in determining if a bank serves as suitable compensatory mitigation:

1. **Use of Mitigation Bank vs. On-Site Mitigation**. Mitigation banks should be used in preference to on-site mitigation. All candidate banks should be identified for consideration as part of the mitigation proposal. Impacts that affect locally important aquatic functions that a bank cannot provide (e.g., local flood control, local water quality enhancement, sensitive species), consideration should be given to practicable opportunities to replace these functions at or near the impact site(s). Circumstances may warrant a combination of on-site and bank mitigation to compensate for functional losses.

2. **Impacts within an Approved Bank Service Area**. Approved mitigation banks have designated service areas, with boundaries typically defined by watershed and ecoregion boundaries, and represent an area where the bank can reasonably provide appropriate compensation for impacts. Authorized impacts should occur within a bank's designated service area.

3. **In-kind vs. Out-of-kind Mitigation Determinations**. In-kind compensation of aquatic resource impacts is generally preferred. However, this factor should not preclude the use of an available bank providing out-of-kind mitigation if it is practicable and environmentally preferred.

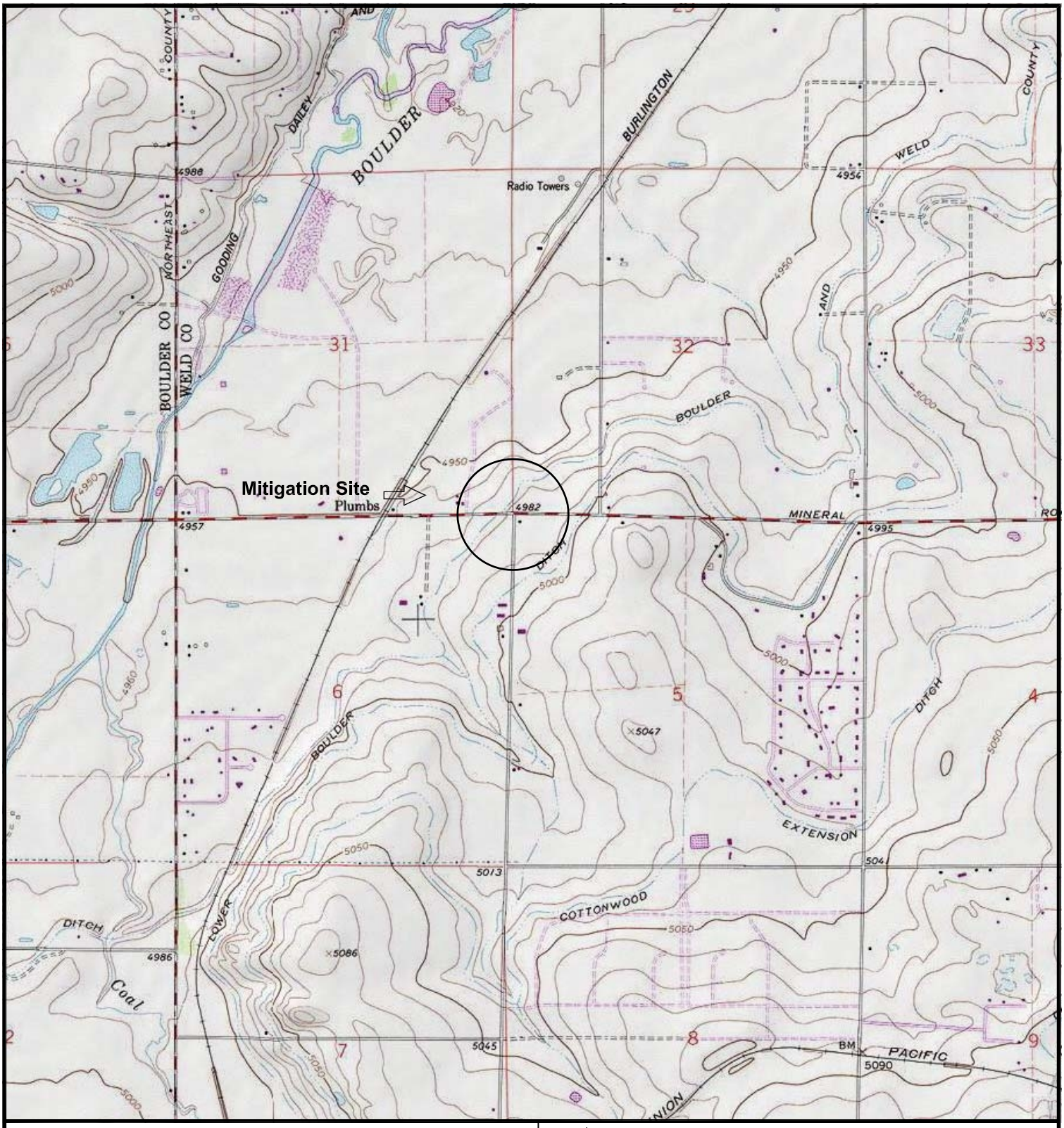
4. **Availability of Credits**. It should be determine if credits are available to compensate for authorized impacts from a suitable bank whose service area encompasses the impact area.

The project area was evaluated for the potential to complete on-site mitigation for permanent impacts to wetlands. Most of the immediate area is not suitable for wetland mitigation because it is primarily located in upland habitat and soils. The majority of hydraulic inputs supporting the existing wetland were from a storm water culvert which formerly drained an employee parking lot at the Stapleton International Airport. Since decommissioning of the airport, the parking lot has been removed, and is currently utilized by a concrete recycling company. It is expected that this area will be redeveloped, and hydraulic inputs to support a wetland at the site cannot be quantified. On-site mitigation will result in a costly and time consuming process, with no guarantee of the establishment of a successful wetland habitat.

Therefore, an off-site mitigation bank has been selected as the preferred form of CDOT- and USACE-required mitigation for this project. The project will utilize the Middle South Platte River Wetlands Mitigation Bank (Mitigation Bank) located in Weld County (Figure 3). The project is located in the primary service area of this bank, thus the required mitigation will be 1:1 as required by CDOT. In order to meet CDOT and FHWA environmental clearance requirements, CCD will purchase credits for 0.146 acre at the bank prior to the project going to advertisement. Upon receipt of payment, the Mitigation Bank will issue a certificate documenting the transaction and submit a copy to CDOT. Additional details on site selection are summarized in the CDOT Mitigation Site Selection Form (Appendix C).

Temporary wetland impacts occur from short-term or minor activities that cause a temporary modification of functions, where the wetlands would be returned to their preconstruction (or improved) condition after construction. Temporary impacts will not occur at the Site. All impacts to wetlands will be permanent.

Indirect impacts will be minimized through the implementation of a Stormwater Management Plan (SWMP) and CDOT Best Management Practices (BMPs). The planting of native vegetation areas will further minimize indirect impacts.



LEGEND

USGS 7.5' Topographic Map
Erie, Colorado 1978 (revised 1979)

SITE ⇨ O

N

0 1,500

Approximate Scale in Feet

*Using the Middle South Platte River Wetland Mitigation Bank

PINYON *Environmental Engineering Resources, Inc.*

WETLAND MITIGATION BANK LOCATION

I70/Central Park Boulevard Interchange
Denver, Colorado

Site Location: NW 1/4, NW 1/4, Section 21, Township 3 S, Range 67 W, 6th Principal Meridian		Drawn By: MJS	Figure 3
\\Server2\company2\Projects\10835902 Central Park Blvd Interchg\Wetlands\Figure 3 .dwg	Job No. 1/08-359-02.8000	Reviewed By: BRP	Revision 0

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6.0 CLOSING STATEMENT

Based on the above considerations, it is determined that there is no practicable alternative to the proposed new construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

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APPENDIX A — DATA SHEETS

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WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Central Park Boulevard/Interstate 70 Interchange City/County: Denver Sampling Date: November 18, 2008

Applicant/Owner: City and County of Denver State: CO Sampling Point: Up-1

Investigator(s): Brian Partington – Pinyon Environmental Engineering Resources, Inc. Section, Township, Range: S22 T3S R67W

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Terrace Slope (%): 5

Subregion (LRR): LRR G Lat: N 39° 46.608 Long: W 104° 53.091 Datum: NAD 83

Soil Map Unit Name: None available for City and County of Denver NWI classification:

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

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

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

Hydrophytic Vegetation Present? Yes ____ No X Hydric Soil Present? Yes ____ No X Wetland Hydrology Present? Yes ____ No X	**Is the Sampled Area within a Wetland? Yes ____ No X**

Remarks: Upland area south of Sampling Point Wet-1

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. *Agropyron cristatum*	*50%*	*Yes*	*NI*
2. *Bromus tectorum*	*25%*	*Yes*	*NI*
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	75% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: *All upland species*

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-12	10YR 4/3	100					Sand with clay	Redox not prevalent

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

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

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5) (**LRR F**)
___ 1 cm Muck (A9) (**LRR F, G, H**)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Loamy Mucky Mineral (F1)
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No __X__

Remarks: *Upland conditions*

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes _____ No __X__ Depth (inches): _____

Water Table Present? Yes _____ No __X__ Depth (inches): _____

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

Wetland Hydrology Present? Yes _____ No __X__

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: *Aerial photographs available online (e.g. GoogleEarth)*

Remarks: *No hydrology present*

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Central Park Boulevard/Interstate 70 Interchange City/County: Denver Sampling Date: November 18, 2008

Applicant/Owner: City and County of Denver State: CO Sampling Point: **Wet-1**

Investigator(s): Brian Partington – Pinyon Environmental Engineering Resources, Inc. Section, Township, Range: S22 T3S R67W

Landform (hillslope, terrace, etc.): Drainage Basin Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR): LRR G Lat: N 39° 46.612 Long: W 104° 53.089 Datum: NAD 83

Soil Map Unit Name: None available for City and County of Denver NWI classification:

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

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

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

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

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	5%	No	FAC
2.			
3.			
4.			
	5% = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. *Salix exigua*	10%	No	OBL
2.			
3.			
4.			
5.			
	10% = Total Cover		
Herb Stratum (Plot size:)			
1. *Typha latifolia*	50%	Yes	OBL
2. *Phalaris arundinacea*	35%	Yes	FACW+
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	85% = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 1	x 1 = 1
FACW species 3	x 2 = 6
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: 4 (A)	7 (B)

Prevalence Index = B/A = 7/4

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Hydrophytic Vegetation Present? **Yes X No**

Remarks: *Hydrophytic vegetation dominate sampling point*

SOIL

Sampling Point: _____

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 4/3	100					Sand with clay	Redox Matrix (subtle)

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

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

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks: *Area naturally located in upland area created as a result of discharge from a stormwater culvert. Soils appear moderately-well drained, subtle redox matrix observed in soil sample showing influence of hydrology and Hydrophytic vegetation on the soils in this area.*

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 12

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: *Aerial photographs available online (e.g. GoogleEarth)*

Remarks: *Saturated in bottom of pit; hydrology introduced to area from stormwater culvert which drained former SIA employee parking lot to the south. Hydraulic inputs appear limited due to removal of lot, and recent re-grading in that area.*

APPENDIX B — PHOTOLOG

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Wetland at location of Data Point Wet-01

Wetland and Upland Boundary, View to the West

Soil at Data Point Wet-01

Soil at Data Point Up-01

APPENDIX C — WETLAND MITIGATION SITE SELECTION FORM

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Wetland Mitigation Site Selection Form
Colorado Department of Transportation
Attachment to Wetland Finding

Project Name	**I-70/Central Park Boulevard Interchange**
Project Number	
Sub-account Number	
Author Name	**Pinyon Environmental Engineering Resources, Inc.**
CDOT Region or Firm	**Region 6**
Date Submitted	**April 2009**

Mitigation Options Available	**(1) Mitigation bank available?** (yes/no)	**Yes**
	(2) Project impacts in 1^o, 2^o service area?	**Primary**
	(3) HUC units	**10190005**
	(4) On-site mitigation available? (yes/no)	**No – Hydrology is limited**
	(5) Off-site mitigation available? (yes/no)	**Yes - Middle South Platte River Wetlands Mitigation Bank**
	(6) In-lieu fee arrangement available? (yes/no)	**No**
	(7) Mitigation ratio(s) used (mitigation : impact)	**1:1**

		Impact Site	Mitigation Site
Site Characteristics	**(8) Geographic location**	Proposed I-70 Central Park Interchange, Sections 21-23, Township 3 S, Range 67 W, 6^{th} PM	Section 31, Township 2 N, Range 68 W, 6^{th} PM
	(9) Cowardin Classification, size of each type	~10% Palustrine Scrub/Shrub (PSS) ~85% Palustrine Emergent Nonpersistent (PENP)	~ 95 PEP, ~5%PENP
	(10) Functions, values	Functions-Rating: GW-L,SR-L, Values-Rating: NA	Functions-Rating: GW-M, SR-L, N-M, WH-H Values-Rating: ED-L, U-M; EB-M
	(11) Size of impacts, % of total area	0.146 acre impacts, 100% of total area	Not Applicable (NA)
Wildlife/Habitat	**(12) T&E species/habitat present?**	No	No
	(13) Species? Status?	NA	NA
	(14) Migratory Bird Treaty Act?	Possibly (addressed in EA)	NA
	(15) Other wildlife issues?	No	No
	(16) Status of aquatic resource?	None	NA
	(17) Special aquatic site?	No	NA
	(18) Unique? Quality? Ranking?		Multiple types of habitat; common and uncommon; high species diversity; assume few weeds.
	(19) Watershed, ecosystem issues?	NA	NA

		Impact Site	Mitigation Site
Other	**(20) Likelihood of success?**	NA	High
	(21) Interagency agreement?	NA	NA
	(22) Project logistics, size/scope?	Project impacts small area of wetlands created by stormwater runoff	NA
	(23) Cost considerations?	Land prices (~$15/square foot) plus, permitting, design, construction, maintenance	Relatively low cost: ~$1.70/square foot for everything
	(24) Buffer used?	NA	NA
Water Issues	**(25) Individual 404 permit condition?**	NA	NA
	(26) 404 (b)(1) Guidelines?	NA	NA
	(27) NWP gen. reg. conditions?	Unknown. Expect a non-jurisdictional determination by the USACE. If jurisdictional, expect a NWP with 1:1 compensatory mitigation on 0.146 acre of Wetlands and WUS	NA
	(28) Regulatory letters?	NA	NA
	(29) S.B. 40?	NA	NA
	(30) Water rights issues?	NA	NA – mitigation bank has water rights
NEPA Issues	**(31) Cumulative impact issues?**	NA	NA
	(32) Agency policy, input?	NA	NA
	(33) Public involvement?	NA	NA

(34) Basis for Decision (Describe factors that are instrumental in the selection of the chosen mitigation decision.)
According to recent USACE guidance and TEA-21 guidance, in order to reduce risk and uncertainty and help ensure that the required compensatory mitigation is provided, the USACE establishes a preference hierarchy for mitigation. The most preferred option is mitigation bank credits USACE website: http://www.usace.army.mil/cw/cecwo/reg/citizen.htm); FHWA website: http://www.fhwa.dot.gov/environment/wetland/tea21bnk.htm

The project area was evaluated for the potential to complete on-site mitigation for permanent impacts to wetlands. Most of the immediate area is not suitable for wetland mitigation because it is primarily located in upland habitat and soils. The majority of hydraulic inputs supporting the existing wetland were from a storm water culvert which formerly drained an employee parking lot at the Stapleton International Airport. Since decommissioning of the airport, the parking lot has been removed, and is currently utilized by a concrete recycling company. It is expected that this area will be redeveloped, and hydraulic inputs to support a wetland at the site cannot be quantified.

(35) Decision
The project area was evaluated for the potential to do on-site mitigation for the 0.146 acre of permanent impacts to wetlands. Most of the immediate area is not suitable for wetland mitigation because it is primarily upland habitat and soils. Major drainage alternations would be necessary to create and support a wetland ecosystem. Therefore, use of the Middle South Platte Mitigation Bank has been selected as the preferred form of CDOT required mitigation for this project.

(36) Contingency Plans
Planned impacts are not expected to be exceeded during construction.