5.15 Wetlands and Other Waters of the U.S.

This section discusses wetlands, open waters, and other waters of the U.S. in the study area and explains why these resources are important to the project. The impacts of the project alternatives on wetlands, open waters, and other waters of the U.S. also are evaluated and proposed mitigation measures are discussed to offset any potential adverse effects.

Since the Supplemental Draft EIS was published in August 2014, additional analyses and content review have been performed for many of the resources discussed in this document. These updates, along with changes resulting from the comments received on the Supplemental Draft EIS, have been incorporated into this Final EIS. In this section, the updates include the following items:

- New wetlands, open waters, and other waters of the U.S. were surveyed, leading to new analysis that is included.
- Based on the revised construction limits, impacts were updated.
- The impact calculation methodology was refined.
- The study area was revised. Figures and text were changed to reflect this.
- A *Wetland Finding*, Attachment N, was completed in compliance with Executive Order 11990.

5.15.1 What are wetlands, open waters, and other waters of the U.S. and why are they important to this project?

The primary vehicle for protection and regulation of wetlands, open waters, and other waters of the U.S. is Section 404 of the Federal Water Pollution Control Act amendments of 1972, as amended by the Clean Water Act of 1977. These regulations set the basic structure for regulating discharge of pollutants to waters of the U.S. Section 404 of the Clean Water Act established a program to regulate the discharge of dredged and fill material into waters of the U.S., including wetlands. Any dredge or fill activity proposing to impact waters of the U.S. must request a permit from the U.S. Army Corps of Engineers (USACE). Under the guidance of these and other regulations, it is FHWA and CDOT policy to mitigate for all wetland impacts, regardless of their jurisdictional status.

Clean Water Act, Section 404, jurisdictional waters

Jurisdictional waters are those waters that: (1) are subject to the ebb and flow of the tide, and/or (2) are presently used, or have been used in the past, or may be susceptible to use, to transport interstate or foreign commerce, including the territorial seas; including their tributaries and adjacent wetlands and isolated waters where the use, degradation, or destruction of such waters could affect interstate or foreign commerce.

Wetlands are specifically defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and other similar areas. Wetland boundaries are delineated (defined) by the presence of hydrophytic vegetation (plant life that thrives in wet conditions) and soil, in addition to the presence of hydrological indicators (USACE, 1999).

The term "waters of the U.S." generally is defined as all waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce. According to 33 CFR §328, this includes the territorial seas, intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, wetlands adjacent to waters, sloughs, wet meadows, natural ponds, and all tributaries of those waters. These waters are referred to as jurisdictional waters. The boundaries of waters of the U.S., other than wetlands, are delineated by their bed, bank, and ordinary high water mark.

Open waters found in the study area associated with isolated stormwater basins that do not have wetland (hydrophytic) vegetation and do not connect to waters of the U.S. are referred to as open waters.

Wetlands, open waters, and other waters of the U.S. are important to this project for several reasons, including providing water quality improvement from runoff into the local watershed, flood protection, and erosion control. The other waters of the U.S. within the project area—the South Platte River and Sand Creek—provide water for human consumption and for recreation, and create integral habitat for fish and wildlife species within the area.

5.15.2 What study area and evaluation process were used to analyze wetlands, open waters, and other waters of the U.S.?

The study area reviewed for wetlands and wetland impacts occurs within 50 feet of the existing edge of pavement or within 50 feet of the proposed construction limits. **Exhibit 5.15-1** shows the locations of the wetlands, open waters, and other waters of the U.S. located in the study area.

Field surveys and delineation (defining the boundaries) of wetlands have been conducted several times over the life of this project, but were most recently completed in 2012, 2013, and 2015. Wetland functions were assessed using CDOT's Functional Assessment of Colorado Wetlands (FACWet) method. FACWet is a rapid assessment methodology that rates wetland condition by evaluating ecological stressors and their effects on nine state variables that drive wetland function. Stressors are used as indicators of functional impairment.

What does FACWet evaluate?

The following seven functions were evaluated for this analysis (Johnson et al., 2011):

1. Support of characteristic wildlife habitat
2. Support of characteristic fish/aquatic habitat
3. Flood attenuation
4. Short- and long-term water storage
5. Nutrient/ toxicant removal
6. Sediment retention/ shoreline stabilization
7. Production export/food chain support

5.15.3 What are the existing conditions of wetlands, open waters, and other waters of the U.S.?

The study area evaluated for wetlands, open waters, and other waters of the U.S. lies entirely within developed urban areas. Due to the urban nature of the project corridor, hydrology has been altered in many areas. Streams throughout the study area have been channelized and the removal of meanders in streams has removed hydrology in areas that historically received creek overflow. Also, stormwater detention ponds and roadside drainages have been constructed to prevent flooding, creating wetland conditions in areas that historically were dry. Wetlands, open waters, and other waters of the U.S. that exist within the study area are summarized in **Exhibit 5.15-2**.

Exhibit 5.15-1 Wetlands, Open Waters, and Other Waters of the U.S. in the Study Area

Exhibit 5.15-2. Summary of Wetlands, Open Waters, and Other Waters of the U.S. Found in the Study Area

Jurisdiction	Water Body	Type	Size (acre)
Jurisdictional	Sand Creek	Other Waters of the U.S	4.510
		Wetlands	0.304
	South Platte River	Other Waters of the U.S	6.019
		Wetlands	—
Non-Jurisdictional	Roadside Ditches	Open Water	—
		Wetlands	0.781
	Stormwater Basins	Open Water	0.805
		Wetlands	6.058
Total Wetlands, Open Waters, and Other Waters of the U.S.:			**18.477**

Wetlands

Wetlands in the study area contain both emergent and scrub-shrub vegetation. Emergent wetlands primarily support herbaceous vegetation. Scrub-shrub wetlands support small trees and shrubs that are less than 20 feet in height. The characteristics of the existing plant communities vary, but the typical dominant species are noted in the sidebar to the right.

Jurisdictional wetlands within the study area are associated with the South Platte River and Sand Creek. Non-jurisdictional wetlands, which are associated with stormwater detention basins and roadside ditches in the study area, generally lack a hydrologic connection to jurisdictional waters, so the USACE does not regulate them. The jurisdictional status for each wetland and water of the U.S. (excluding the four wetlands surveyed in April 2015) was determined based on the current guidance and approved by the USACE on July 9, 2013.

Mapped wetlands in the study area include four scrub-shrub wetlands, two scrub-shrub/emergent wetlands, and 25 emergent wetlands totaling 7.143 acres. Approximately 0.304 acres are considered jurisdictional and 6.839 acres are considered non-jurisdictional wetlands. The portions of the South Platte River and Sand Creek that exist within the study area were mapped as open water, and are referred to as waters of the U.S. Open waters found in the study area associated with isolated stormwater basins that do not have wetland (hydrophytic) vegetation and do not connect to waters of the U.S. are referred to as open waters.

Dominant wetland plant species in the study area

- Cattails (*Typha* spp.)
- Bulrushes (*Scirpus* spp.)
- Sedges (*Carex* spp.)
- Barnyard grass (*Echinochloa* spp.)
- Spikerushes (*Eleocharis* spp.)
- Smartweeds (*Polygonum* spp.)
- Western dock (*Rumex crispus*)
- Coyote willow (*Salix exigua*)
- Plains cottonwood trees (*Populus deltoides*)

Other waters of the U.S.

Two major open water bodies are located within the study area: the South Platte River and Sand Creek. Both are considered jurisdictional waters.

South Platte River

South Platte River intersecting with I-70

The South Platte River is a perennial (continuous water flow) water body with a relatively large watershed. The primary sources of stream flow in the South Platte River include groundwater, snowmelt, precipitation, effluent discharge, and stormwater runoff. The river intersects I-70 just north of downtown Denver near the Globeville Neighborhood, where its banks have been highly disturbed. The existing spillway in Globeville Landing Park, which is connected to the river and serves as a stormwater detention pond, also is an open water body. Wetland and riparian areas were mapped adjacent to the river and the spillway.

Sand Creek

Sand Creek is a perennial stream with a relatively small watershed. The primary sources of stream flow are groundwater, precipitation, and stormwater runoff, although it may be influenced by effluent discharge and/or irrigation runoff. The creek crosses the project corridor west of the I-70/I-270 interchange. As with the South Platte River, Sand Creek also has been highly disturbed by urban development; however, the creek has retained more of a floodplain and wetland and riparian areas than the South Platte River through Denver.

5.15.4 How do the project alternatives potentially impact wetlands, open waters, and other waters of the U.S.?

An analysis of the potential impacts on wetlands, open waters, and other waters of the U.S. was conducted for each alternative and option. The Build Alternatives result in greater impacts to wetlands, open waters, and other waters of the U.S. than the No-Action Alternative, so they are discussed in greater detail.

Impact calculations to wetlands, open waters, and other waters of the U.S. were completed using GIS. Permanent impacts were calculated by intersecting all mapped wetlands, open waters, and other waters of the U.S. with each alternative's respective construction limits. A 10-foot buffer outside each alternative's construction limits that intersected with the mapped wetlands, open waters, and

other waters of the U.S was used to calculate the temporary impacts.

The majority of impacts associated with the Build Alternatives will be permanent. Permanent impacts result from construction activities—specifically, placement of bridge piers, fill, shading, or new roadway where a complete change in functionality of a wetland, open water, or other waters of the U.S. occurs.

Temporary impacts include those that temporarily alter the function of wetlands, open waters, and other waters of the U.S. due to modification or disturbance during construction. Effects such as erosion, sedimentation, hydrologic modification, or noxious weed invasion can result from vegetation removal, soil exposure, and construction activities taking place in or adjacent to wetlands. These effects can be mitigated and the resources can be returned to their pre-construction condition after construction activities are complete, if proper management is applied. **Exhibit 5.15-3** summarizes the impacts by the alternatives.

Exhibit 5.15-3 Impacts to Wetlands, Open Waters, and Other Waters of the U.S. in the Study Area

Alternative/Option	Jurisdictional				Non-Jurisdictional			
	Wetlands (acres)		Waters of the U.S. (acres)		Wetlands (acres)		Open Waters (acres)	
	Perm	Temp	Perm	Temp	Perm	Temp	Perm	Temp
No-Action Alternative	—	—	0.005	0.013	—	—	—	—
Revised Viaduct, General-Purpose Lanes Option	0.098	0.009	0.291	0.043	4.254	0.233	0.402	—
Revised Viaduct, Managed Lanes Option	0.104	0.010	0.310	0.042	4.338	0.234	0.402	—
Partial Cover Lowered, General-Purpose Lanes Option	0.098	0.009	0.350	0.081	4.254	0.233	0.402	—
Partial Cover Lowered, Managed Lanes Option	0.104	0.010	0.369	0.080	4.338	0.234	0.402	—

Note: Impacts were calculated based on conceptual design and are subject to change.

No-Action Alternative

The No-Action Alternative will require an upgraded drainage system on the west end of the corridor, to the north of I-70, which will outfall to the South Platte River. Impacts to wetlands, open waters, and other waters of the U.S. will result from this construction in the form of minor fill-related impacts. The construction of the drainage pipe will account for 0.005 acre of permanent impacts and 0.013 acre of temporary impacts. All impacts resulting from this alterative will be to the South Platte River, which is classified as a jurisdictional other water of the U.S.

Build Alternatives

The I-70 East project has two Build Alternatives analyzed for wetlands impacts: the Revised Viaduct Alternative and the Partial Cover Lowered Alternative. The project also analyzed two Operational Options associated with each of the Build Alternatives: the General-Purpose Lanes Option and the Managed Lanes Option. Each of the proposed Build Alternatives includes the north drainage system that is described previously for the No-Action Alternative. The Partial Cover Lowered Alternative requires an additional drainage system that is proposed to be constructed on the south side of I-70; it also will discharge to the South Platte River. The following subsections describe the impacts each Build Alternative will have to wetlands, open waters, and other waters of the U.S. in further detail.

Build Alternatives, General-Purpose Lanes Option

The Revised Viaduct Alternative, General Purpose Lanes Option and the Partial Cover Lowered Alternative, General-Purpose Lanes Option have similar impacts to wetlands, open waters, and other waters of the U.S. The difference between the two is the additional impacts for the construction of the south drainage as part of the Partial Cover Lowered Alternative, which only has impacts to riparian areas (discussed in Section 5.13, Biological Resources) and jurisdictional other waters of the U.S.

The Build Alternatives with the General-Purpose Lanes Option will permanently impact a total of 0.098 acre of jurisdictional wetlands and 4.254 acres of non-jurisdictional wetlands. Temporary impacts for the Build Alternatives with General-Purpose Lanes will total 0.009 acre of impacts to jurisdictional wetlands and 0.233 acre of non-jurisdictional wetlands.

The Revised Viaduct Alternative, General-Purpose Lanes Option will result in 0.291 acre of permanent impacts and 0.043 acre of temporary impacts to other waters of the U.S, while the Partial Cover Lowered Alternative, General-Purpose Lanes Option increases these impacts by 0.059 acre and 0.038 acre, respectively. Additionally, all the Build Alternatives will permanently impact 0.402 acre of other non-jurisdictional open waters.

Build Alternatives, Managed Lanes Option

Each Build Alternative with the Managed Lanes Option will have similar impacts and will show a minimal increase or decrease compared to the Build Alternatives with the General-Purpose Lanes Option. Impacts to wetlands for the alternatives with managed lanes will have increased permanent impacts of 0.006 acre to jurisdictional wetlands and 0.001 acre of temporary impacts to jurisdictional wetlands. Impacts for these alternatives will increase permanent non-jurisdictional impacts by 0.084 acre and temporary non-jurisdictional impacts by 0.001 acre.

Compared to the Build Alternatives with the General-Purpose Lanes Option, permanent impacts to other waters of the U.S. for the Managed Lanes Option will increase by 0.019 acre and temporary impacts will decrease by 0.001 acre. As mentioned above, all Build Alternatives also will permanently impact 0.402 acre of other non-jurisdictional open waters.

All of the Build Alternatives are expected to have minimal fill-related impacts caused by the installation of two bridge piers in Sand Creek for the proposed off-ramps. Total permanent fill-related impacts to jurisdictional wetlands, open waters, and other waters of the U.S. will be less than 0.001 acre.

5.15.5 Can impacts to wetlands, open waters, and other waters of the U.S. be avoided? If not, how are impacts minimized?

Each alternative results in unavoidable impacts to wetlands, open waters, and other waters of the U.S. A number of measures were implemented for each alternative to reduce the overall construction footprint of the roadway improvements and other associated facilities.

All the alternatives include drainage improvements on the north side of I-70 to capture and convey the onsite water runoff. The additional runoff will follow existing flow patterns and the necessary drainage infrastructure will be in place to avoid an adverse impact to the surrounding areas. The location and design of the structure was determined using a number of factors. The drainage pipe must traverse the Burlington Ditch/O'Brien Canal, which runs along the east side of the South Platte River, prior to discharging. The canal narrows further south, terminating at the South Platte River near the Franklin Street Bridge. The proposed outfall location makes the most sense because moving it further north or south would impact wetland areas or the Union Pacific railroad line, respectively.

The south drainage outfall, needed for the Partial Cover Lowered Alternative, has been located at the northernmost location to avoid impacts to a wetland area at the south side of Globeville Landing Park. Moving the outfall location from this location, further south, also would impact an existing trail that runs along the South Platte River.

The majority of the impacts to wetlands, open waters, and other waters of the U.S. at Sand Creek result from shading due to the construction of new on- and off-ramps to Quebec Street. The existing I-70 bridge spanning Sand Creek will remain in place. The Build Alternatives propose widening the structure, however no new piers for the main structure will need to be constructed. The new ramps for all Build Alternatives require piers near the Sand Creek channel. One pier for the north off-ramp will be constructed within a wetlands area, causing fill-related impacts to wetlands. This unavoidable impact is caused by the fact that design standards need to be upheld to ensure roadway safety for motorists using the off-ramp.

I-70 has a number of roadway ditches and stormwater basins that exhibit wetland functions. These water-quality features along the corridor are non-jurisdictional wetlands

and open stormwater basins. The remaining impacts to wetlands for the Build Alternatives will result from widening the roadway, which impacts the non-jurisdictional water-quality features.

5.15.6 How are the negative effects from the project alternatives mitigated for wetlands, open waters, and other waters of the U.S.?

Per CDOT policy, all permanent and temporary impacts to wetlands, open waters, and other waters of the U.S.—both jurisdictional and non-jurisdictional—will be replaced at a 1:1 ratio. At this time, unavoidable impacts will be mitigated at a wetland mitigation bank in the South Platte River watershed.

Based on current estimates for the Build Alternatives, compensatory mitigation will be required totaling from 5.045 to 5.213 acres from permanent impacts and 0.285 to 0.324 acres from temporary impacts. Non-jurisdictional wetlands also may form at planned new stormwater detention facilities, but these are not currently included in proposed mitigation measures.

Wetlands, open waters, and other waters of the U.S. temporarily impacted by both the No-Action Alternative and Build Alternatives will be returned to pre-construction conditions after construction is complete. Temporary erosion control and sediment control BMPs will be installed before ground-disturbing activities begin. Completed areas will be permanently stabilized within seven days.

All contractors will be required to consider methods, where feasible, to limit the effects of construction on water resources, as listed in the *Wetlands Finding* provided in Attachment N.

Permitting

All alternatives are expected to have minimal dredge and fill-related permanent and temporary impacts to waters of the U.S., including wetlands, and will require a Section 404 permit. It is likely that a Nationwide Permit 14 (Linear Transportation Projects) will permit the project because impacts to jurisdictional wetlands are less than the threshold of 0.5 acre. In addition, Senate Bill 40 certification from Colorado Parks and Wildlife will be required, and an internal Wetland Finding written in compliance with Executive Order 11990 is included as an attachment to this

Final EIS. CDOT will complete the Senate Bill 40 and obtain a permit from the USACE before starting work.

Completion of the Section 404/NEPA merger process currently is not necessary because of the limited amount of fill-related permanent impacts to jurisdictional wetlands (less than 0.5 acre). This will be revisited in the event additional jurisdictional impacts are identified. **Exhibit 5.15-4** summarizes impacts to wetlands, open waters, and other waters of the U.S. and outlines mitigation.

5.15.7 What is the only practicable alternative finding?

A *Wetland Finding* for the I-70 East project has been prepared in compliance with Executive Order 11990, and is provided in Attachment N. Section 5.15.5 in this chapter and the Wetland Finding provide detailed avoidance and minimization measures to wetlands, open waters, and other waters of the U.S. for the Preferred Alternative. Based on the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands, open waters, and other waters of the U.S. and that the proposed action includes all practicable measures to minimize harm to wetlands, open waters, and waters of the U.S. that may result from this use.

Exhibit 5.15-4 Summary of Wetlands, Open Waters, and Other Waters of the U.S. Impacts and Mitigations

Alternative / Option	Impacts and / or Benefits	Mitigation Measures Applicable to All Alternatives
No-Action Alternative	• No permanent wetland impacts • 0.005 acre of permanent other waters of the U.S. impacts • 0.013 acre of temporary impact to other waters of the U.S.	• Mitigate unavoidable, permanent impacts at a 1:1 ratio in a wetland mitigation bank in the South Platte River watershed • Install temporary erosion control and sediment control BMPs before ground-disturbing activities; permanently stabilize completed areas within seven days; proposed BMPs are listed in the *Wetlands Finding* provided in Attachment N • Restore wetlands temporarily affected during construction to pre-construction conditions • Obtain and follow requirements of Section 404 permitting and Senate Bill 40 certification
Revised Viaduct Alternative, General-Purpose Lanes Option	• 4.352 acres of permanent and 0.242 acre of temporary wetland impacts • 0.693 acre of permanent and 0.043 acre of temporary impacts to other waters of the U.S. and open waters	
Revised Viaduct Alternative, Managed Lanes Option	• 4.442 acres of permanent and 0.244 acre of temporary wetland impacts • 0.712 acre of permanent and 0.042 acre of temporary impacts to other waters of the U.S. and open waters	
Partial Cover Lowered Alternative, General-Purpose Lanes Option	• 4.352 acres of permanent and 0.242 acre of temporary wetland impacts • 0.752 acre of permanent and 0.081 acre of temporary impacts to other waters of the U.S. and open waters	
Partial Cover Lowered Alternative, Managed Lanes Option	• 4.442 acres of permanent and 0.244 acre of temporary wetland impacts • 0.771 acre of permanent and 0.080 acre of temporary impacts to other waters of the U.S. and open waters	

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