



Water Quality Technical Memorandum

PREPARED FOR: CDOT Region 1
COPY TO: FHWA CO Division
PREPARED BY: EA Team
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1.0 Introduction

The Colorado Department of Transportation (CDOT) and the Federal Highway Administration (FHWA), in conjunction with local partners Adams County and Commerce City, are proposing improvements to 6 miles of Interstate 270 (I-270) in Adams County, Commerce City, and the City and County of Denver, Colorado, primarily between Interstate 25 (I-25) and Interstate 70 (I-70) (Figure 1). CDOT and FHWA are preparing an Environmental Assessment (EA) for the project, referred to as the I-270 Corridor Improvements project. Sections 1 and 2 of the EA, and EA Appendix A, contain the project setting and a detailed description of alternatives.

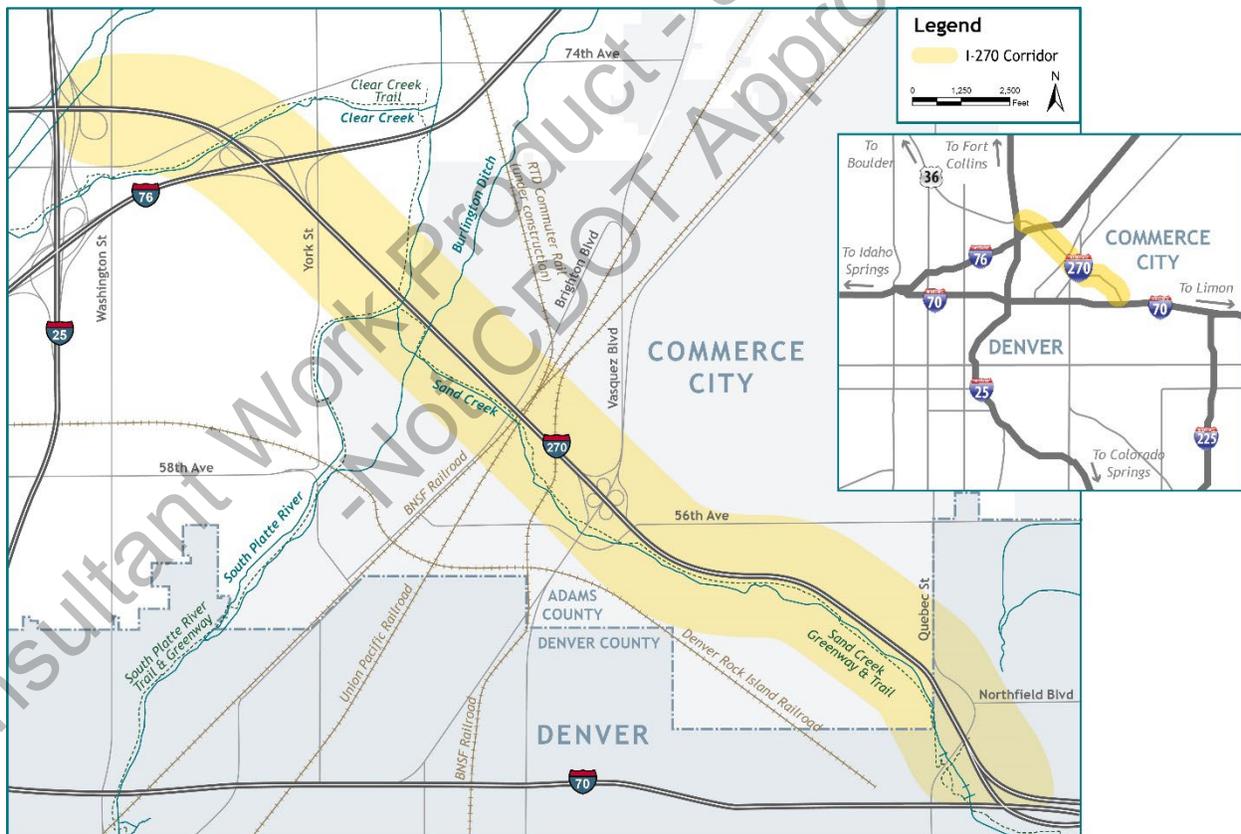


Figure 1. Project Setting
 Source: Jacobs

This technical memorandum presents the water quality and water resources within the study area. Water-related resources generally include lakes, ponds, rivers, draws, ditches, and irrigation canals.

These resources provide many important functions including irrigation to support agriculture, recreational opportunities such as fishing and rafting, quality habitat for resident and migrating wildlife, filtration of pollutants and sediments, and groundwater recharge.

1.1 Regulatory Context

Water quality regulations are numerous and occur at the federal, state, and local levels.

1.2 Federal Regulations

The following federal regulatory requirements apply to water-related resources:

- **Sections 401 and 402 of the Clean Water Act (CWA)** – Establishes the basic structure for regulating discharges of pollutants into navigable waters. It provides the statutory basis for the National Pollutant Discharge Elimination System permit program and the basic structure for regulating discharge of pollutants into waters of the United States (U.S) (EPA 2010).
- **Section 404 of the CWA** – Regulates waters of the U.S., such as traditional navigable waters and associated wetlands. Impacts to these resources require permitting through the U.S. Army Corps of Engineers. Waters of the U.S. and wetlands are covered under a separate memorandum and not discussed further in the section.
- **Safe Drinking Water Act (SDWA) (40 Code of Federal Regulations Parts 141–143)** – Protects public health by regulating the nation’s public drinking water supply and protecting drinking water and its sources. CDOT is a stakeholder in the Colorado Source Water Assessment and Protection program mandated by the SDWA.
- **Erosion and Sediment Control on Highway Construction Projects (25 Code of Federal Regulations 650 Subpart B)** – Requires all highways that are funded in whole or in part by FHWA to be designed, constructed, and operated according to standards that will minimize erosion and sediment damage to the highway and adjacent properties and abate pollution of surface and groundwater resources.

1.3 State Regulations

The following state regulatory requirements apply to water-related resources:

- The Environmental Protection Agency (EPA) has delegated authority for enforcement of Sections 303(d), 401, and 402 of the CWA, SDWA, and Municipal Separate Storm Sewer System (MS4) to the Colorado Department of Public Health and Environment (CDPHE). Under this authority, the Colorado Water Quality Control Act was passed, and the Water Quality Control Commission (WQCC) was created to provide regulations to be implemented by CDPHE that keep Colorado in compliance with the CWA.
- **Colorado Water Quality Control Act (Colorado Revised Statutes Title 25, Article 8)** – Protects and maximizes the beneficial uses of state waters and regulates water quality.
- **Regulation 93 – Colorado’s Section 303(d) List of Impaired Waters** – Establishes Colorado’s Monitoring and Evaluation (M&E) List of Water-Quality-Limited Segments requiring total maximum daily loads (TMDL) (CDPHE 2020). This list was prepared to fulfill Section 303(d) of the CWA, which requires that states submit to the EPA a list of those waters for which technology-based effluent limitations and other required controls are not stringent enough to implement water quality standards.

Once listed, the state is required to prioritize these waterbodies or segments (rivers, streams, lakes, and reservoirs) based on the severity of pollution and other factors. The state will then determine the causes of the water quality problem and allocate responsibility for controlling the pollution. This analysis is called the TMDL process, and the results include the following:

- The determined amount of a specific pollutant that a segment can receive without exceeding a water quality standard (the TMDL)
- The apportionment to the different contributing sources of the pollutant loading (the allocation)

The TMDL must include a margin of safety, waste load allocation (for point sources), and a load allocation (for nonpoint sources and natural background). The TMDL must include upstream loads in the assessment and apportionment process.

- **Regulation 61 – Colorado Discharge Permit System (CDPS) Regulation 5 CCR 1002-61** – Establishes the regulations for stormwater discharges in Colorado. There are many discharge programs under the CDPS Regulation 61 that are not related to this assessment and are not listed. The most common programs are the following:
 - **MS4** – Based on population, operators are required to implement a practice-based reduction of the discharge of pollutants from their MS4s. This is achieved through compliance with the following minimum control measures (CMs): public education and outreach, public participation and involvement, illicit discharge detection and elimination, construction site runoff control, post-construction runoff control, and pollution prevention and good housekeeping.
 - **Stormwater Construction Program** – Operators are required to regulate and reduce the discharge of pollutants associated with construction activities from their permitted site.
 - **Construction Dewatering Discharge** – Operators are required to regulate and reduce the discharge of pollutants associated with construction dewatering activities from the source water drawn from the specific permitted site. Source water can include groundwater, surface water, or stormwater commingled with groundwater or surface water.
 - **Discharges from Subterranean Dewatering Activities** – Operators are required to regulate and reduce the discharge of pollutants associated with source water from subterranean dewatering (for example, foundation dewatering) activities. Subterranean dewatering discharges are typically long term, although short-term discharges are also eligible for coverage under the general permit. Source water can include groundwater, surface water, or stormwater commingled with groundwater or surface water. Different types of permitting will apply to contaminated versus noncontaminated waters, which will be explored during final design.
 - **CDOT MS4** – Based on requirements promulgated under Section 402 of the CWA, the WQCC has implemented Regulation 61 and identified CDOT as a Phase I, Non-Standard regulated MS4. By definition, a separate storm sewer system comprises a storm drainage system but also includes ditches, gutters, or other similar means of collecting and conveying stormwater runoff that do not connect with a wastewater collection system or wastewater treatment facility. The project is within CDOT's MS4 Urban Area. CDOT's MS4 Program lists 15 roadway pollutants of concern. Permanent Water Quality (PWQ) will be required in accordance with CDOT's new PWQ program requirements (CDOT MS4 Permit Modification #42017 [CDOT 2020]).

1.4 Local Regulations

The following local regulatory requirements apply to water-related resources outside CDOT right-of-way:

- **City and County of Denver:** Based on requirements, the City and County of Denver has been identified as a Phase I regulated MS4. The project is within the City and County of Denver's MS4 boundary area. Post-Construction Stormwater Management will be required in accordance with the New Development Redevelopment program (NDRD) requirements.

- **Adams County and Commerce City MS4:** Based on requirements, Adams County and Commerce City have been identified as Phase II regulated MS4s. The project is within the Adams County and Commerce City MS4 boundary areas. PWQ will be required in accordance with Adams County and Commerce City's Phase II Post-Construction Stormwater Management in NDRD. NDRD will be required in accordance with Adams County and Commerce City NDRD program requirements.

2.0 Methods

Water resources in the study area are impaired for CDOT pollutants of concern. Transportation projects have the potential to impact water features and the quality of the water moving within them. Water resources can be used for a variety of purposes including recreation, drinking water, wildlife and fish habitat, and agriculture. Evaluating the project's potential impact to water quality requires consideration of surface water, groundwater, and geomorphological conditions (geology, soils, topography) that dictate where and how water flows. Impacts to water resources can occur during the construction and operation phases of a project.

2.1 Data Gathering

The following information was gathered to evaluate the project's impacts to water resources and water quality:

- Number and location of any existing PWQ features (such as detention ponds and water quality vaults) and the areas that these CMs treat
- General watershed information including receiving waters, tributaries, ponds, diversions, and channelization
- Special water body designations such as wild and scenic, outstanding, gold stream, aquatic class, water supply source (source water protection plans), and wellhead protection area
- Soil erosivity data gathered from the Natural Resources Conservation Service and geotechnical report
- MS4 boundaries and requirements for capture and treatment volumes (If overlapping MS4 requirements were present, the most stringent was applied.)
- Stream restoration plans and watershed reports
- The 303(d) list for water bodies that did not meet water quality standards
- National Hydrography Dataset flow line data
- Municipal water quality regulations
- Reclaimed areas of previous impervious surface and new areas of impervious surface
- Mile High Flood District master plans

2.2 Analysis Approach

The analysis of impacts will consider how the proposed alternatives do the following:

- Impact existing water features and water quality in the study area during and following construction. Using a graphic information system, alternative impact limits will be superimposed onto mapping to show water resource and existing water quality features.
- Capture and treat new roadway runoff (compliance with MS4 requirements). Capture volume and treatment requirements to comply with MS4 requirements will be determined and conceptual

engineering conducted to determine needed water quality infrastructure and stormwater routing and conveyance.

- Determine the MS4, CDPS, and design and permitting issues per CDOT's PWQ program.

Based on discussion with CDOT Region 1 water quality staff, water quality modeling will not be conducted. Mitigation measures will be recommended based on project impacts and in compliance with MS4 requirements.

3.0 Existing Conditions

The study area is located within the South Platte River Basin, and the South Platte River is the primary drainage near the study area. Smaller creeks and drainages on or adjacent to the study area include Sand Creek, South Platte River, and Clear Creek. The project also crosses the Burlington Ditch. Sand Creek parallels a large portion of the study area. The South Platte River, Burlington Ditch, and Clear Creek cross near the north end of the study area. The South Platte River has TMDL completed within the study area and has TMDL water quality targets for cadmium and E. coli. The cadmium water quality target is $Ch\ TVS = (1.101672 - (\ln(\text{hardness}) \times (0.041838)))^{*0.7998[\ln(\text{hardness})] - 4.4451}$ and $Ac\ TVS = (1.136672 - (\ln(\text{hardness}) \times (0.041838)))^{e^{0.9151[\ln(\text{hardness})] - 3.1485}}$. The E. coli water quality target is 126 colony forming units per 100 milliliters.

Land use in the study area is primarily highway and industrial surrounded by a mixture of residential and commercial development. Regulatory 100-year floodplains and floodways are present in the study area along Sand Creek, the South Platte River, and Clear Creek. Potential impacts to floodplains and floodways are discussed in detail in the *Floodplains Technical Memorandum* (CDOT 2021a). The depth to groundwater is highly variable. Samples taken during the hazardous materials investigation identified hydrocarbon and metal contamination in the groundwater. The adjacent heavy industrial land uses have contributed to regionally impacted groundwater. Groundwater conditions in the study area are evaluated in detail in the *Phase II Environmental Site Assessment* (CDOT 2021b).

Surface waters within the study area are 303(d) impaired. These classifications and impaired waters are listed in Table 1. No waterways within the study area are designated as wild and scenic rivers.

Table 1. 303(d) Status of Waters within the Study Area

Water Body ID	Waterway Description	Stream Impairments	Roadway Pollutants of Concern	Listing
COSPUS16i	Mainstem Sand Creek from the confluence with Westerly Creek to the confluence with the South Platte River	E. coli, selenium (dissolved)	None	303(d)
COSPUS15.C	Mainstem of the South Platte River from Sand Creek to 180 meters below 120 th Avenue	Temperature TMDL: Cadmium-D, E. coli	None Cadmium	M&E List 303(d)
COSPCL15	Mainstem of Clear Creek from Wadsworth Boulevard to the confluence with the South Platte River	Iron Ammonia, temperature, E. coli, arsenic, manganese (dissolved), organic sediment	Iron Manganese	M&E List 303(d)

Source: CDPHE 2020

E. coli = *Escherichia coli*

As indicated by the impairments of the three streams in the study area, water quality conditions in the I-270 corridor have been impacted by the adjacent industrial operations and by the interstate itself. With respect to the interstate, roadway runoff enters the adjacent streams in the following primary ways:

- Vehicular traffic on the I-270 corridor. This activity is a generator of surface water pollutants in the study area, which can include metals such as iron, zinc, and copper from fuels, brake pads, and vehicle wear. In addition, oil or grease (petroleum hydrocarbons) deposited by vehicles on roadways and parking areas also contribute to the contaminants in receiving waters in the study area. Surface water impairments within the study area include roadway pollutants of concern, which include cadmium, iron, and manganese.
- The application of deicers to paved surfaces during the winter months, which may increase chloride levels and suspended solids in snowmelt, which in turn may enter the receiving waters.
- Sedimentation from soil erosion. Soil erosion is a natural process that can have substantial impacts on the surface water quality. Soils eroded into streams or other water bodies contribute suspended solids and add to the sediment load in the stream or other water bodies. The increased contact between water and soil that occurs when the soil is eroded can increase the concentration of dissolved constituents in the water (that is, salts, metals, and other chemicals) from the soil.

Pollutants can enter and impair water bodies from natural and synthetic causes. The ultimate source of the pollutants identified in the streams in the study area is not isolated to one cause.

The study area crosses through or is adjacent to the following MS4 permit areas: CDOT, City and County of Denver, Adams County, and Commerce City. PWQ CMs would be required for study areas within the adjacent MS4 jurisdictions and must comply with the applicable permit requirements.

Current drainage conditions include direct conveyance from the roadway into adjacent surface waters. Sheet flow on the roadside leaves the roadway across shoulders into ditches, where water is conveyed to pipes, then under the roadway, where it is discharged into the adjacent surface water.

CDOT's Online Transportation Information System database identifies the existing PWQ CMs in the study area (CDOT n.d.). The existing drainage system consists of small infiltration facilities concentrated between the I-270/Vasquez Boulevard and I-270/Quebec Street interchanges and at the I-270/Interstate 76 (I-76) interchange. In general, the infiltration facilities are not well connected and discharge individually to Sand Creek. Extended detention basins (that is, water quality ponds) are inadequate and are present only at the limits of the study area at the I-270/I-25 and I-270/I-70 interchanges (Figure 2).

A number of groundwater monitoring wells are located along the study area to monitor groundwater impacts from the surrounding industrial developments. The monitoring wells have been installed by organizations such as Conoco Inc., Suncor Energy USA, Inc., and Sprint Express Trucking Inc. Potential impacts and mitigations to existing monitoring wells in the study area are addressed in detail in the *Phase II Environmental Site Assessment* (Appendix A). No drinking water supply wells or wellhead protection areas are located in the study area.

Originally constructed in the 1960s, the Robert W. Hite Treatment Facility is located adjacent to the Suncor oil refinery and the South Platte River crossing of I-270. The facility is owned and maintained by the Metro Wastewater Recovery (formerly the Metro Wastewater Reclamation District). The largest wastewater facility in the Rocky Mountain region, this facility provides wastewater treatment for approximately 2 million residents across the Denver metropolitan area and surrounding communities (Metro Wastewater Recovery 2022). Abandoned gravel pits immediately across I-270 from the Robert W. Hite Treatment Facility have been converted into destratification diffuser ponds that support the wastewater reclamation process. The facility's discharge point to the South Platte River is located immediately upstream of its confluence with Sand Creek. The project does not impact the treatment facility.

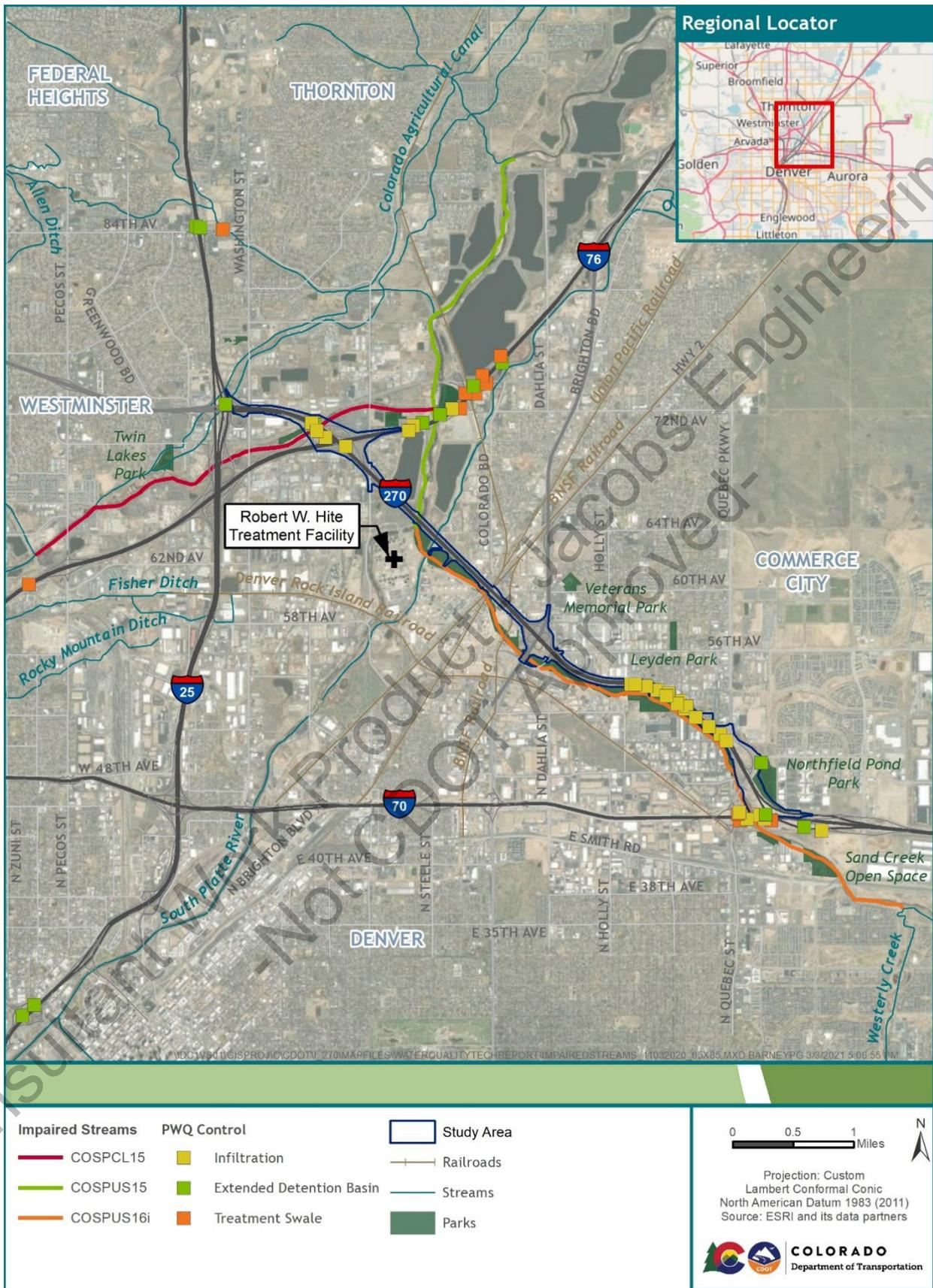


Figure 2. Impaired Streams and Existing PWQ CMs

Source: Jacobs

4.0 Impacts Assessment

Surface water quality impacts are evaluated in the immediate vicinity of the streams and stream crossings, where surface water runoff from the project generated during the construction of the improvements or from the operation of the transportation system could collect and be discharged into the adjacent streams.

4.1 No Action Alternative Impacts

The No Action Alternative would maintain the existing drainage patterns and water quality conditions that include treatment of portions of the study area as well as direct runoff or discharge to receiving waters, with no capture and treatment of roadway runoff before it enters the adjacent streams. Maintaining the existing drainage system would likely continue to have negative impacts on water quality in the corridor by allowing untreated roadway runoff to enter the adjacent streams.

4.2 Proposed Action Impacts

Temporary and permanent impacts to water quality could occur because of the Proposed Action. These impacts are typical of interstate development projects and include the following:

- Permanent impacts related to operation of the Proposed Action
 - Runoff from impervious surface
 - Highway-related pollutants, including those related to winter maintenance
- Temporary impacts related to construction of the Proposed Action
 - Erosion and sedimentation
 - Dewatering activities
 - River crossings
 - Stream diversions

During project development, avoidance, minimization, and mitigation measures are developed to address potential impacts to water quality. No temporary or permanent impacts to ongoing wastewater treatment operations at the Robert W. Hite Treatment Facility would result from the Proposed Action.

4.2.1 Permanent Impacts

The Proposed Action would improve water quality conditions in the I-270 corridor through modernization of the corridor's drainage infrastructure. The undersized and disconnected infiltration facilities would be replaced with a system of new inlets, pipes, and ditches. In addition, outfalls to the adjacent surface waters would be consolidated in some areas to reduce the number of CMs and reduce future maintenance needs. The Proposed Action includes new interstate lanes, increased shoulder widths, reconfigured interchange ramps, new bridges, and a new sidewalk and trail, resulting in the addition of approximately 33 acres of impervious surface. PWQ feature locations, including extended detention basins and concrete extended detention basins (Figure 3), have been developed to mitigate additional impervious surfaces and to meet CDOT's MS4 permit capture and treatment volume requirements.

Although the Proposed Action would increase the amount of impervious surface in the study area by approximately 33 acres, the modernized drainage design and CMs to meet CDOT's current MS4 permit requirements are anticipated to improve water quality conditions in the long term when compared with the No Action Alternative. Section 303(d) impairments are not anticipated to be exacerbated by the project because increased roadway runoff would be captured and treated before entering the adjacent streams, providing a level of filtration not offered by the existing I-270 drainage system.

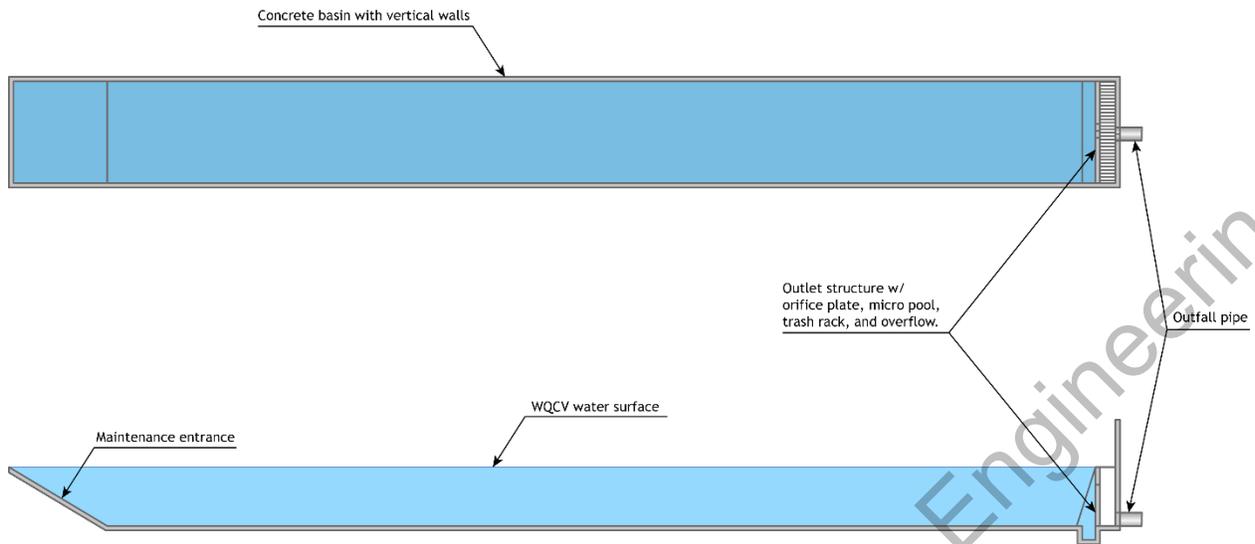


Figure 3. Concrete Extended Detention Basin Schematic

Source: Jacobs

4.2.2 Temporary Impacts

Temporary impacts are primarily associated with construction, namely sediment sourced from clearing and grubbing, stream channel work, dewatering, and roadway construction. Import of soils and earthmoving activities may further increase the risk of erosion and sediment transport.

Some existing dynamics of the study area would increase the risk of soil erosion and transport until final stabilization for construction is reached. These dynamics include the following:

- Steep slope grades
- Impacted wetlands, vegetation buffers, and riparian areas
- Proximity to stream channels

Soil dynamics play a role in erosion and sediment transport. Evaluation of soils within the study area revealed that the soils have a low erosion factor, also known as k factor (USDA 2021). Low k factors are defined as those below 0.25. Exceptions within the study area include loamy alluvial land and Nunn clay loam, which display moderate erodibility. These low erodibility factors suggest that earthmoving and clearing activities would impact water quality less during construction, as compared with highly erodible soils. Although the site dynamics listed previously would increase the erosion and transport risks associated with construction, the low erodibility characteristic further aids in the effectiveness of the CMs installed for construction because soil detachment and sediment loading are less than more highly erodible soils.

5.0 Mitigation Measures

Per CDOT's CDPS Modification 4, Permit Number COS000005 (CDOT 2020), CDOT, and coordination with CDOT Region 1 water quality staff, PWQ CMs would be required for the Proposed Action to mitigate for the project's increase in impervious surface. To meet the CDOT MS4 requirements, the project will use PWQ CMs that capture and treat the water quality capture volume (WQCV). PWQ CMs would be employed to treat total areas currently addressed by existing PWQ CMs that would be impacted by the project, as well as 90 percent of the new impervious area. Extended detention basins (EDB) that capture and treat the WQCV are the preferred CM and are proposed unless project conditions such as hazardous materials, contaminated groundwater, or limited right-of-way make the use of traditional EDBs unreasonable. Concrete EDBs are proposed in areas where traditional EDBs are impractical. The

concrete EDBs are basins with vertical walls that are sized to capture the WQCV and designed with an outlet to slowly release stormwater over a period of 40 hours. During final design, the outlet will be designed to pass through stormwater in excess of the WQCV. Mitigation measures will follow current CDOT Drainage Design Manual guidance, including CMs located within floodplains to be designed to withstand the 100-year flood event.

Some EDB locations may encounter contaminated groundwater or soil. During preliminary and final design, a Materials Management Plan will be prepared and implemented to specify characterization and management practices for contaminated soil, debris, impacted groundwater, and landfill gases that may be encountered during construction. The Phase II Environmental Site Assessment discusses other mitigation measures that may be implemented should contaminated material be encountered.

One of the proposed basins (that is, the cyan colored basin) treats less than the existing treatment area for that basin. The area not treated in the cyan basin is accounted for in adjacent basins that outfall to the same stream segment and result in a total increase to the treated area (Table 2).

Table 2. Permanent Water Quality Basins and Treatment Areas

Basin Color	Existing		Proposed		Increase in Impervious Area (acres)	90% of Increased Impervious Area (acres)	Required Treatment Area 90% of Increased Area and Existing Treated Area (acres)
	Impervious Area (acres)	Area Treated (acres)	Impervious Area (acres)	Area Treated (acres)			
	8.30	3.89	8.59	5.26	0.29	0.26	4.15
	5.13	3.67	5.75	3.94	0.62	0.56	4.23
	13.35	0.66	21.92	19.02	8.57	7.71	8.37
	3.72	0.00	5.11	3.66	1.39	1.25	1.25
	3.58	0.00	9.95	0.00	6.37	5.73	5.73
	10.93	0.00	11.91	11.18	0.98	0.88	0.88
	3.44	0.00	3.93	2.00	0.49	0.44	0.44
	8.35	5.82	16.83	4.57	8.48	7.63	13.45
	10.28	5.23	11.58	7.57	1.30	1.17	6.40
	12.87	6.77	17.80	8.88	4.93	4.44	11.21
Total	79.95	26.05	113.37	66.08	33.42	30.08	56.12

Source: Jacobs

The resulting recommended mitigation measures that are anticipated to be constructed as part of the Proposed Action consist of extended detention basins and concrete EDBs are summarized in Table 3 and shown on Figure 4 through Figure 8.

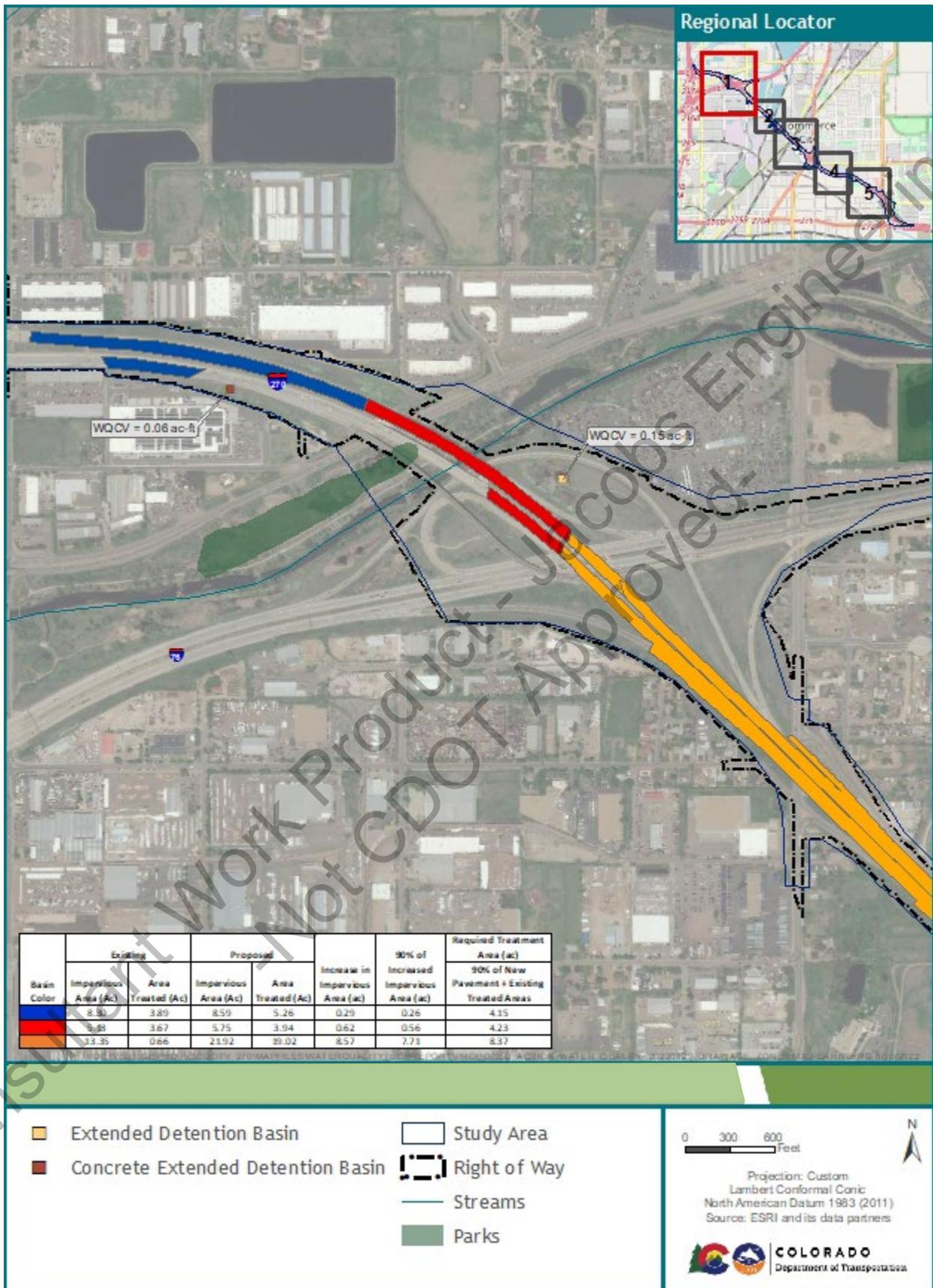


Figure 4. PWQ CM and Treated Areas Map

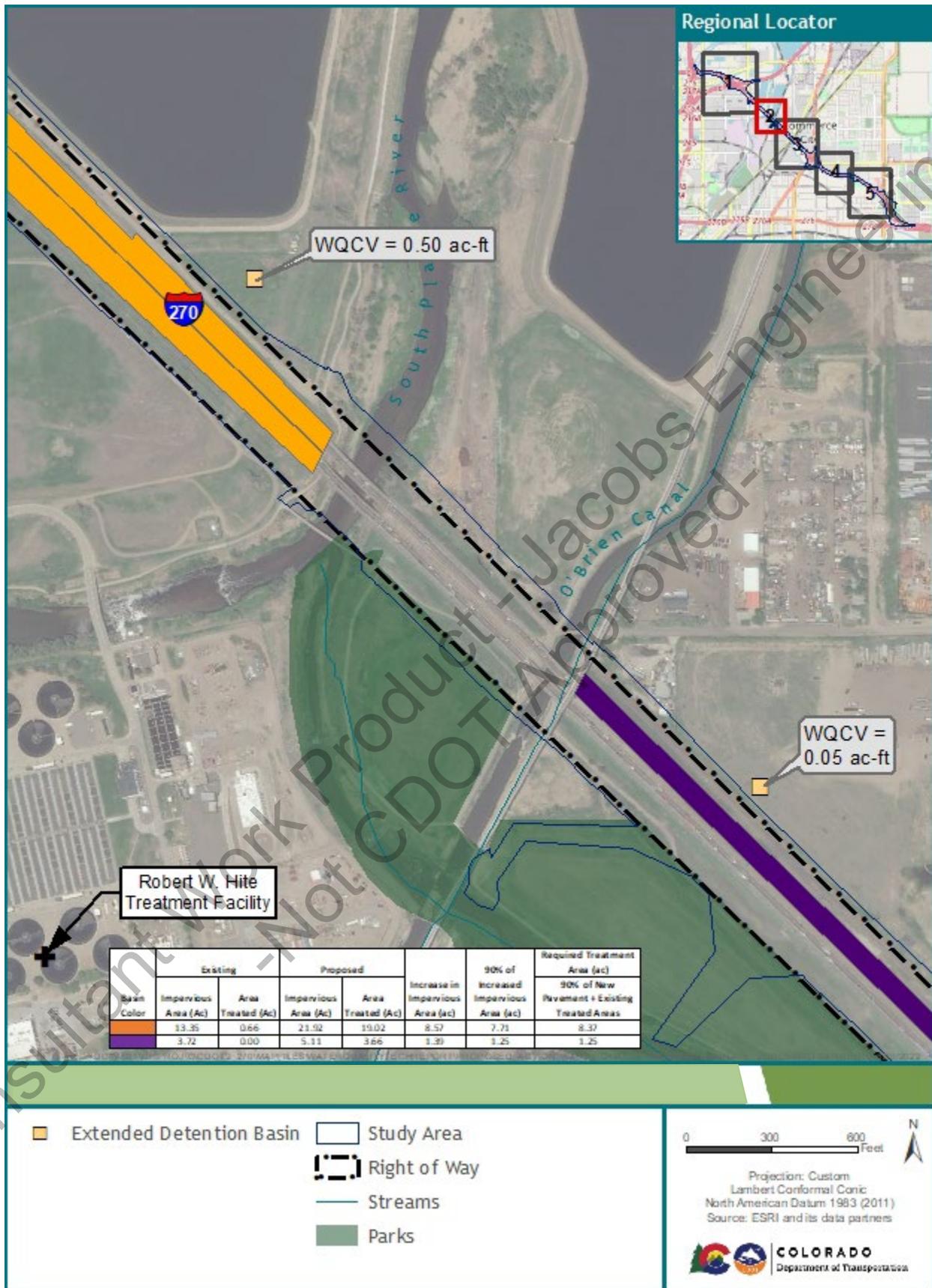


Figure 5. PWQ CM and Treated Areas Map

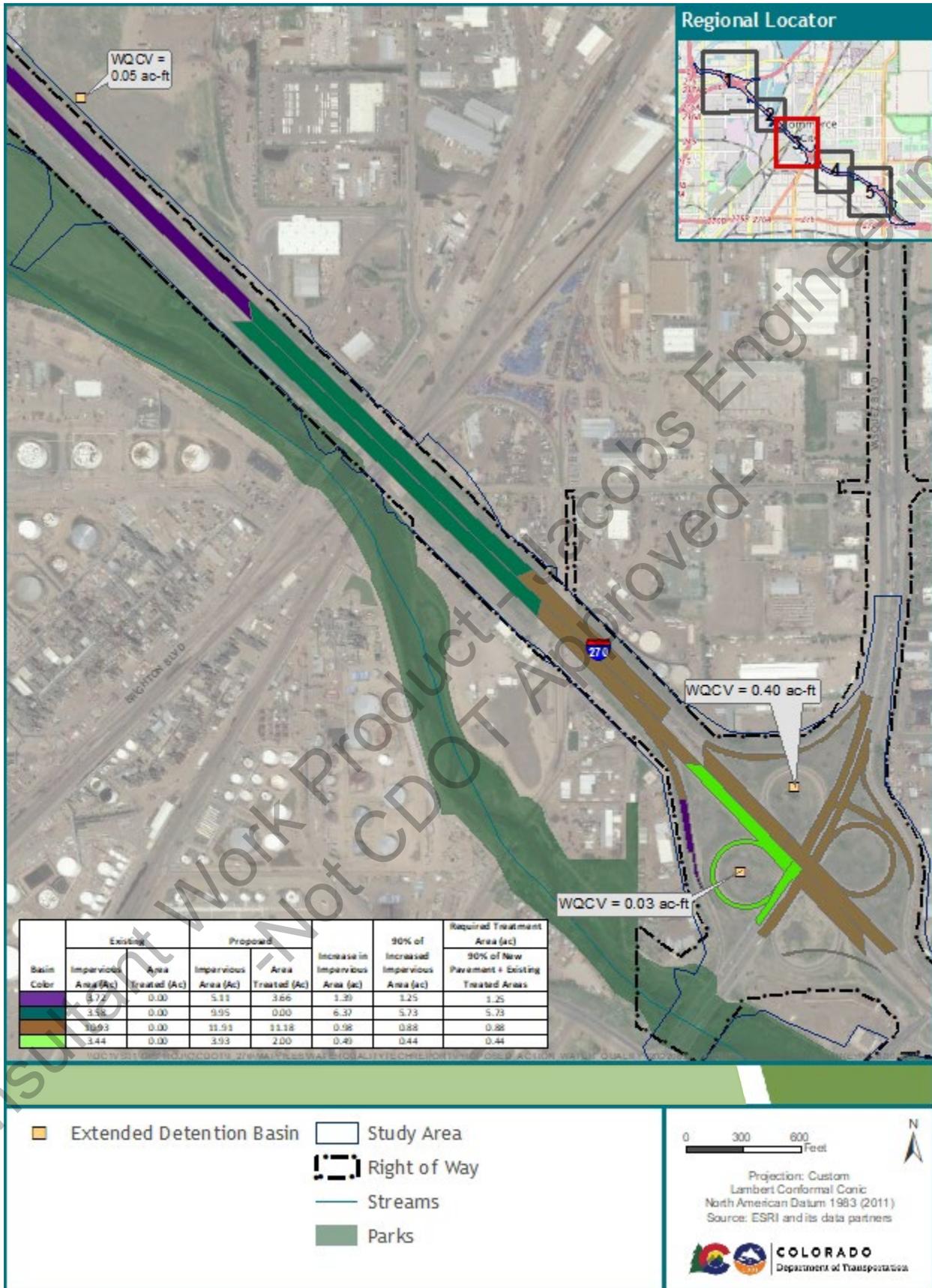


Figure 6. PWQ CM and Treated Areas Map

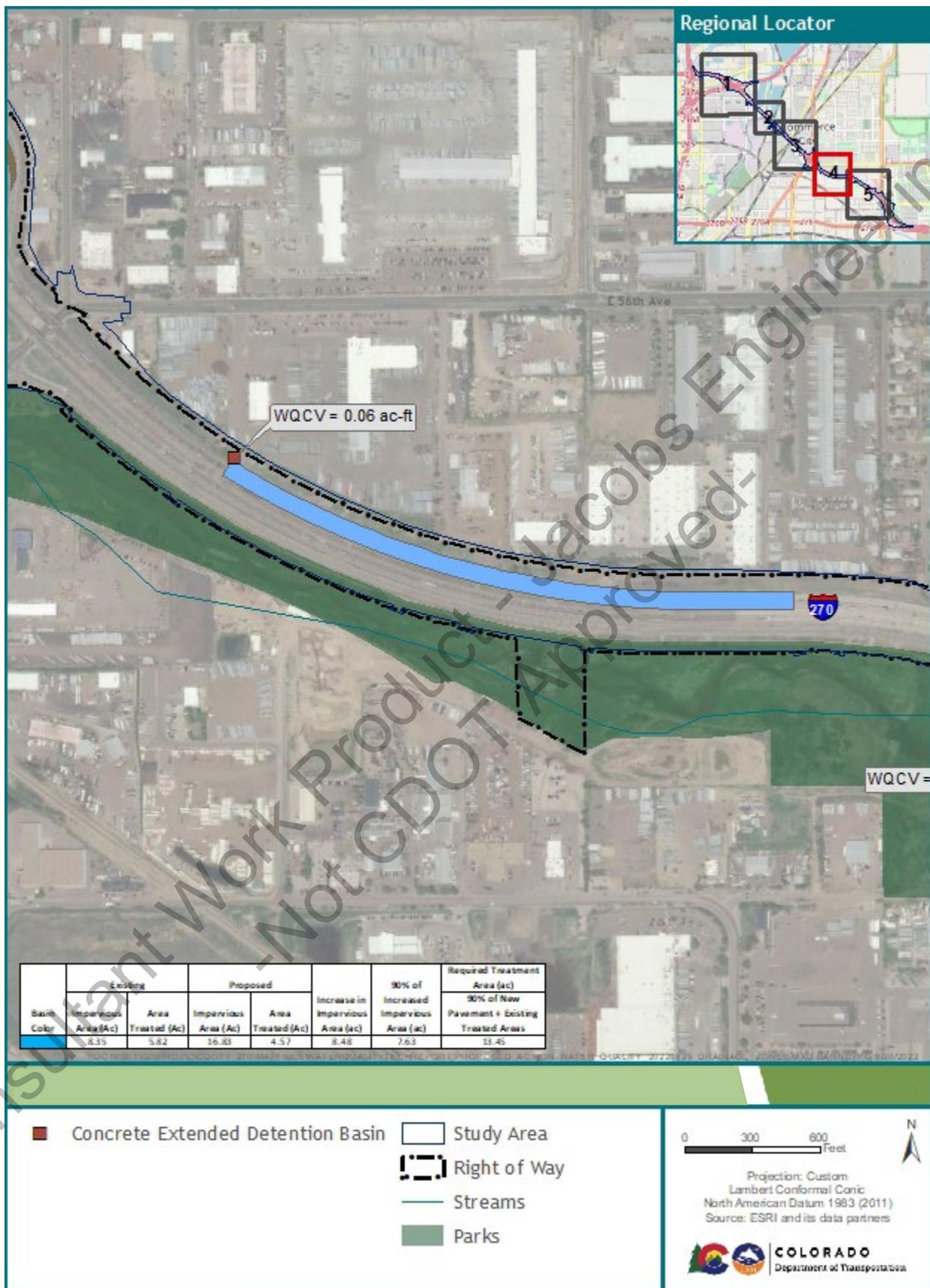


Figure 7. PWQ CM and Treated Areas Map



Figure 8. PWQ CM and Treated Areas Map

Table 3. Permanent Water Quality Mitigation Measures

Location	PWQ CM	Impact	Mitigation
270B MP 0.6	Concrete Extended Detention Basin	Increased impervious area	New concrete extended detention basin to contain WQCV of contributing area.
270B MP 1.0 – NW quadrant of I-270 and I-76 interchange	Extended Detention Basin	Increased impervious area	Upgrade existing stormwater pond to extended detention basin to contain the WQCV.
270A MP 0.8	Extended Detention Basin	Increased impervious area	New extended detention basin to contain WQCV of contributing area.
270A MP 1.2	Extended Detention Basin	Increased impervious area	New extended detention basin to contain WQCV of contributing area.
270A MP 2.3 – Vasquez Boulevard and I-270 (NW)	Extended Detention Basin	Increased impervious area	New extended detention basin to contain WQCV of contributing area.
270A MP 2.3 – Vasquez Boulevard and I-270 (SW)	Extended Detention Basin	Increased impervious area	New extended detention basin to contain WQCV of contributing area.
270A MP 2.7	Concrete Extended Detention Basin	Increased impervious area	New concrete extended detention basin to contain WQCV of contributing area.
270A MP 3.4	Extended Detention Basin	Increased impervious area	New extended detention basin to contain WQCV of contributing area.
270A MP 3.9	Extended Detention Basin	Increased impervious area	New extended detention basin to contain WQCV of contributing area.

Source: Jacobs

% = percent

NW = northwest

The recommended mitigation measures for temporary impacts resulting from the build alternative are summarized in Table 4.

Table 4. Temporary Water Quality Mitigation Measures

Activity	Location	Impact	Mitigation
Runoff from construction activities	Throughout the Preferred Alternative construction area	Water resources and water quality contamination and degradation	Appropriate CMs would be implemented for erosion and sediment control according to the CDOT Erosion Control and Stormwater Quality Guide. A stormwater management plan would be developed in accordance with the requirements of the construction stormwater permits.
Erosion impacts from soil disturbances that occurred during construction	Throughout the Preferred Alternative construction area	Erosion and increased sedimentation to adjacent water resources	Permanent stabilization would be achieved through revegetation and permanent erosion controls and maintenance of temporary CMs and plantings to stabilize soil.
Spills of regulated materials during construction	Throughout the Preferred Alternative construction area	Water resources and water quality contamination and degradation	A spill prevention, control, and countermeasure plan would be developed and implemented for the construction site that would establish standard operating procedures and required employee training to minimize the accidental release of pollutants.

Dewatering of groundwater has specific requirements (CDOT 107.25(b)(7)), such as a construction dewatering permit from CDPHE for discharge of uncontaminated groundwater to state waters and a potential remediation permit for contaminated groundwater (Section 250, such as 250.05(c)), which requires the contractor to “prepare a dewatering plan proposing at least three types of treatment and/or disposal options of contaminated groundwater as required by applicable statutes and regulations. One of the treatment options shall include permitting and onsite treatment prior to discharge or disposal.” Discharge to state waters from dewatering is prohibited except in accordance with conditions under the permit. Dewatering of uncontaminated groundwater can be discharged to the ground if conditions under CDPHE’s *Low Risk Guidance Document for Discharges of Uncontaminated Groundwater to Land* are met (2009). The general conditions include the following:

- It is solely uncontaminated groundwater that does not contain pollutants in concentrations that exceed water quality standards for groundwater.
- It does not leave the project boundary limits.
- It is conducted at a rate and location that does not pond (unless as an engineering control) or allow for any runoff into state waters; no sheen develops; and stormwater controls are implemented.

Locations where dewatering and treatment are expected as well as the types of contamination expected to be encountered will be detailed in the *Environmental Hazardous Materials Assessment for Interstate 270 between Interstate 70 and U.S. Highway 36, Denver and Commerce City, Colorado, Phase II Environmental Site Assessment*.

6.0 Required Permits

The following permits related to water quality or actions may be required as part of the proposed project:

- Stormwater permits required for the Proposed Action include a CDPHE Stormwater Discharge Associated with Construction Activities (COR 40000) General Permit. CDOT’s Transportation and Erosion Control Program includes contract provisions and other regulatory mechanisms to require erosion and sediment controls at construction sites.
- During final design, CDOT will develop a Stormwater Management Plan that must be finalized and maintained by the construction contractor qualified staff throughout construction in accordance with CDOT’s Stormwater Management Plan procedures.
- Additional local agency stormwater permits may be required with the City and County of Denver, Adams County, and Commerce City for any work outside of CDOT’s right-of-way and in their respective MS4 permit areas.
- A construction dewatering permit would be required, if groundwater were to be discharged from an excavation to any waters of the state.
- A floodplain development permit would be required for any work within floodplains.

7.0 Related Technical Memorandums and Reports

The following technical memorandums and reports prepared for the I-270 Corridor Improvements project include additional information related to water quality:

- *Floodplains Technical Memorandum*
- *Environmental Hazardous Materials Assessment for Interstate 270 between Interstate 70 and U.S. Highway 36, Denver and Commerce City, Colorado, Phase II Environmental Site Assessment*

- *Soils and Geology Methodology Memorandum*
- *Wetland & Aquatic Resources Technical Report*

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