3.0 SUMMARY OF IMPACTS, MITIGATION MEASURES, AND PERMIT REQUIREMENTS

3.1 Summary of Impacts

The EA evaluated the environmental impacts associated with the proposed I-70/CPB interchange project. Mitigation measures described in the EA will be implemented by CCD during the construction of the Preferred Alternative. These mitigation measures are listed in Table 3-1 of this FONSI document. A summary of impacts and mitigation of the Preferred Alternative for resources that exist in the study area include:

- **Wildlife.** Impacts to wildlife are expected to be minimal. The construction of the Preferred Alternative will not cause a new division of previously contiguous habitat. Mitigation efforts will be implemented to avoid any impacts to nesting migratory birds, including raptors that may be in the project area.

  Raptor nest surveys will be conducted to evaluate the presence of active raptor nests within the project area. If an active nest is located in or near the project area, the United States (U.S.) Fish and Wildlife Service (USFWS) and Colorado Division of Wildlife (CDOW) will be contacted regarding use of seasonal buffers to prevent disturbance to nesting birds during construction. Human encroachment is restricted within a 1/3-mile radius of active red-tailed hawk nests beginning February 15.

  Land-clearing activities in natural habitats will be timed to avoid the breeding season to avoid impacts to active bird nests. If needed, trees in the construction area of disturbance will be cleared prior to February 15 or after August 31 to prevent raptors (and other birds) from nesting on site and to avoid the taking of, or disturbance to, active nests during the breeding season.

- **Threatened, Endangered, and Sensitive Species.** The Preferred Alternative will have no affect on federally listed threatened or endangered species. There will be permanent impacts to prairie dogs, which are considered a state species of special concern. The I-70/CPB Interchange project will permanently impact 21.9 acres, and temporarily impact 1.8 acres of prairie dog habitat. The project will comply with the

Impacted Black-tailed Prairie Dog Policy (CDOT 2009) and the *Black-tailed Prairie Dog Relocation Guidelines* (CDOT 2002). Since prairie dog colonies are abundant in the project area, burrowing owls may occupy portions of the colonies.

Burrowing owls are a state-listed threatened species, and protected under the Migratory Bird Treaty Act (MBTA). A burrowing owl survey was completed for the project area between April 28, 2009 and May 7, 2009. Burrowing owls were not identified within the project boundaries during the survey. Additional surveys will be conducted prior to construction to determine whether there are active nests present in the project area. If burrowing owls are located prior to construction, activities will be avoided within 150 feet of burrows used by burrowing owls, which is typically between March 1 and October 31.

- **Hazardous Materials.** Contaminated soil and/or groundwater may be encountered during construction of the Preferred Alternative. Based on the findings in the Modified Environmental Site Assessment (MESA) report, four sites were identified which may directly impact the Preferred Alternative construction plans in the surface or near surface soils. Five sites were identified with the potential to impact road and bridge construction at depths approaching the ground-water surface elevation. A materials management plan (which includes asbestos-containing materials) and a health and safety plan will be prepared as required by Section 250 of the CDOT Standard Specifications for Road and Bridge Construction. In addition, a Phase II Environmental Site Assessment may be required in areas where groundwater may be encountered during construction, or if road excavation is within five feet of the groundwater table.
- **Water Quality.** Minor water quality impacts are anticipated resulting from the design and construction of the Preferred Alternative. The Preferred Alternative will comply with state and local water quality permits and regulations. Two dry detention ponds will be constructed in the areas between the mainline and ramps on the west side of the project to provide water quality treatment for the run-off from the improved roadway and new ramps. Vegetated swales will also be constructed throughout the interchange to provide stormwater quality treatment.

- **Floodplains.** The Preferred Alternative will have impacts on the Sand Creek floodplain. All of the ramp improvements in the southwest quadrant of the interchange are within the 100-year floodplain. The Preferred Alternative will be constructed on an embankment that will create a berm to direct floodwaters away from both I-70 and I-270, causing a localized increase in the 100-year water surface by approximately four feet. To mitigate the associated floodplain rise, a channel adjacent to the new I-270 southeast-bound ramp will be constructed to convey overland flows to the west, back to the Sand Creek channel. This mitigation will result in less than a one-foot rise in floodplain levels. During the design/build process, a Conditional Letter of Map Revision (CLOMR) will be submitted to Urban Drainage & Flood Control District (UDFCD)/Federal Emergency Management Agency (FEMA) for approval prior to construction in the floodplain. Final improvements in the floodplain will require a letter of map revision (LOMR) submitted to UDFCD/FEMA at the completion of construction.
- **Wetlands.** One wetland feature was identified in the project area totaling 0.146 acre. This feature is located southwest of the proposed crossing of CPB over I-70. It is anticipated that the Preferred Alternative will result in the loss of all 0.146 acre of wetlands. Mitigation for the wetlands within the CPB project area will be in accordance with CDOT and FHWA policies, which will include purchasing credits from a bank within the same watershed in which the impacts occurred. Wetlands will be mitigated for at a 1:1 ratio by purchasing credits from the Middle South Platte River Mitigation Bank. Since permanent impacts are anticipated to be greater than 500 square feet (0.0115 acre), a Wetland Finding Report was prepared for CDOT and is located on the compact disc on the back cover of this document.

- **Other Resources**. The EA evaluated resources for which there were either minor, or no direct or indirect impacts, and consequently no cumulative effects as a result of the Preferred Alternative. In some cases, the resources were not present within the project area. BMPs or mitigation required for temporary impacts of these resources during construction are discussed in Section 3.2 and Table 3-1.

OTHER RESOURCES WITH EITHER MINIMAL OR NO DIRECT OR INDIRECT IMPACTS

- Land Use
- Vegetation
- Farmlands
- Noise
- Transportation Network
- Public Service and Utilities
- Socioeconomics
- Environmental Justice
- Historic Preservation
- Paleontological Resources
- Native American Consultation
- Parklands and Recreation
- Geology and Soils
- Air Quality
- Aesthetics

3.2 Construction Impacts and Mitigation

The construction of the Preferred Alternative will also create short-term impacts. These impacts, described below, include the potential for wildlife impacts, untreated stormwater runoff, air quality impacts, and disruptions to the transportation network. Mitigation for potential impacts is addressed following the specific impact.

3.2.1 Wildlife

Impacts

Several types of impacts to wildlife may be associated with construction activities from the Preferred Alternative including BTPD habitat loss and degradation, disturbance (avoidance and displacement), and direct mortality. There will be minimal effects to wildlife corridors because the majority of the animals are accustomed to the fragmented environment common in urban areas.

The proposed construction will impact the BTPD colonies located along the project corridor. Construction activity is likely to temporarily displace animals from the construction zone due to noise, human presence, and heavy equipment. Impacts will be temporary and will not affect long-term use of the areas by wildlife.

Mitigation

The *Impacted Black-tailed Prairie Dog Policy* (CDOT 2009) and the *Black-tailed Prairie Dog Relocation Guidelines* (CDOT 2002) have been used as guidance in determining appropriate actions for impacts on the BTPD colonies. CDOT policy states that impacted BTPD colonies greater than two acres must be: 1) avoided and minimized; 2) relocated; 3) donated to ferret and/or raptor rehabilitation programs; and/or 4) humanely euthanized.

To reduce temporary impacts to BTPD colonies, efforts will be made during final design to reduce the construction footprint to avoid and minimize impacts to BTPD colonies. In addition, BTPD colonies not to be disturbed by contractors will be fenced off during construction. As previously stated, it is anticipated the Preferred Alternative will permanently impact 21.9 acres of BTPD colonies.

To mitigate for unavoidable impacts to BTPD colonies, conversations have been initiated with CCD, CDOW, USFWS, RMANWR, and the Rocky Mountain Raptor Program regarding appropriate mitigation. These conversations have indicated that increased urbanization in the Denver area has reduced opportunities to relocate BTPD. CCD is considering purchase of a property in summer 2009 specifically for BTPD relocation. This would provide an opportunity for relocation if an area is available before the contractor is ready to relocate the BTPD. Biologists at the RMANWR indicated that approximately 3,000 acres of BTPD colonies currently exist at that location, and that the RMANWR is not currently accepting additional animals.

The next options include donation of BTPD for black-footed ferret rehabilitation programs, or for raptor rehabilitation programs. The Rocky Mountain Raptor Program has indicated that they will accept BTPD that have been humanely euthanized by their certified contractor.

CCD will continue conversations with appropriate agencies so that mitigation is completed before construction in a manner that maintains CDOT's heightened sense of ecological stewardship, and in accordance with Colorado Revised Statute (CRS) 35-7-203.

3.2.2 Hazardous Materials

Impacts

The following construction concerns are associated with areas of soil and/or groundwater contamination, or with the demolition of buildings and bridges:

- asbestos and lead based paint
- health and safety of workers encountering contaminated material
- special handling and disposal requirements for contaminated material and a corresponding cost increase
- the inability to reuse contaminated soil as fill in other areas of the project

Mitigation

Prior to the demolition of the cargo bridge, an asbestos and lead-based paint survey will be conducted. This survey will need to be completed before the Colorado Department of Public Health and Environment (CDPHE) can issue a demolition permit. A materials management plan (which includes asbestos-containing materials) and a health and safety plan will be prepared as required by Section 250 of the CDOT Standard Specifications for Road and Bridge Construction. See Table 3-1 for additional project mitigation, commitments, and Best Management Practices (BMPs).

3.2.3 Water Quality

Impacts

The proposed construction will present construction-related erosion and sediment control issues related to earthwork and loss of vegetation. The resulting bare surfaces will be highly susceptible to erosion from rain and wind. The erosion and sediment effects on water quality will be relatively short-lived, as numerous BMPs will be implemented to mitigate adverse impacts.

Mitigation

A Stormwater Management Plan (SWMP) will be prepared during the design phase of the project, as per CDPHE Water Quality Control Division (WQCD) guidelines. The SWMP will include detailed designs of the BMPs to be implemented at the site and a plan describing when and where each BMP will be implemented during phases of construction. Construction-site stormwater runoff control will meet the requirements of CDOT and/or CCD Municipal Separate Storm Sewer System (MS4) permit requirements. The more stringent requirements of the two permit programs will be followed. Construction BMPs may include:

- Erosion prevention, including using temporary soil stabilizers (terracing, mulching, blankets) and structures such as berms or swales, to prevent and/or slow runoff across disturbed areas and/or to divert runoff to sediment traps or basins
- Sediment control measures, including straw bales, silt fences, sediment traps, and/or sediment basins
- Pollution prevention measures, including construction material and water management, and measures to prevent spills into watercourses
- Minimal disturbance of vegetated areas and staging of such disturbance
- Disturbed areas will be revegetated as quickly as possible after completion of construction activities in disturbed areas

In addition to the MS4 permit requirements, the project will comply with the CDOT Compliance Order on Consent including daily inspection of BMPs. A Consent Order was issued by CDPHE to CDOT and is effective as of January 1, 2009.

3.2.4 Air Quality

Impacts

Although motor vehicle emissions in the project area may increase, they will not result in any exceedance of the National Ambient Air Quality Standards (NAAQS); therefore, no direct project air quality mitigation is necessary (Pinyon 2008b). Construction activities from excavation, grading, and fill activities could increase local fugitive dust emissions. Airborne

fugitive dust particles have a relatively large particle size (>100 micrometers in diameter) and typically settle within 30 feet of their source. The smaller particles could travel as much as several hundred feet depending on the wind speed.

Mitigation

Construction phase air quality impacts (road dust and engine exhaust emissions) may be controlled by implementing the following measures:

- Wetting exposed soils and soil piles for dust suppression
- Covered trucks hauling soil and other fine materials
- Stabilized and covered stockpile areas
- Re-vegetation of exposed areas
- Minimization of off-site tracking of mud and debris by washing construction equipment and temporary stabilization
- Limit vehicle speed of construction-related equipment when off road
- Prohibiting unnecessary idling of construction equipment
- Using low-sulfur fuel
- Locating diesel engines and motors as far away as possible from residential areas
- Locating staging areas as far away as possible from residential areas
- Where possible, heavy construction equipment to use the cleanest available engines or to be retrofitted with diesel particulate control technology
- Where possible, use alternatives for diesel engines and/or diesel fuels (such as: biodiesel, liquefied natural gas, compressed natural gas, fuel cells, or electric engines)
- Installing engine pre-heater devices to eliminate unnecessary idling during winter time construction
- Prohibiting tampering with equipment to increase horsepower or to defeat emission control devices effectiveness

- Requiring construction vehicle engines to be properly tuned and maintained
- Where practicable, use construction vehicles and equipment with the minimum practical engine size for the intended job

3.2.5 Transportation System

Impacts

The transportation system will be disrupted during construction. Motorists on I-70 will experience lane closures, reduction in travel speeds, and delay during bridge construction, cargo bridge demolition, and connection of new ramps. Lane closures will be limited to night-time hours. During planning and construction, the project will coordinate with Colorado State Patrol to minimize impacts to traffic circulation during construction.

Mitigation

Mitigation measures to minimize the impacts to traffic circulation during construction include:

- Development of a traffic control and management plan to be approved by CDOT
- All travel lanes will remain open during daytime hours. Temporary lane closures may be necessary for pier construction and girder erection and shall occur at night. Construction will be coordinated with CDOT for lane or highway closures
- Coordination of construction activities to reduce traffic congestion caused by overloading local streets
- Maintenance of access to local businesses and residences at all times. Access to I-70 at Havana and Quebec Streets shall not be closed
- Provide public notices announcing major lane shifts or temporary closures
- Coordination with CDOT Public Information Office regarding lane closures during construction

3.3 Summary of Mitigation Measures

A summary of the relevant and required mitigation and commitments and BMPs are listed in Table 3-1. BMPs are intended to minimize impacts associated with the Preferred Alternative before and during construction.

Table 3-1
Summary of Proposed Project Mitigation, Commitments, and BMPs

Environmental Component	Mitigation
Wildlife	Conduct raptor nest surveys in February, April, June and August of each year to evaluate the presence of active raptor nests within the project area. If an active nest is located in or near the project area, the USFWS and CDOW will be contacted regarding use of seasonal buffers to prevent disturbance to nesting birds during construction; Maintain a restricted zone of no construction 1/3-mile radius of active red-tailed hawk nests beginning February 15. If needed, trees in the construction area of disturbance will be cleared prior to February 15 or after August 31 to prevent raptors (and other birds) from nesting on site and to avoid the taking of, or disturbance to, active nests during the breeding season; If land-clearing operations cannot be avoided during the migratory bird breeding season, a survey for nesting birds will be conducted prior to construction. If no active nests are present, construction may proceed. If active nests are found that cannot be avoided during the period when eggs or young birds are present, construction will be suspended until the USFWS is contacted with the results of the survey and a plan of action is developed. The existing cargo bridge structure was visually inspected by team biologists for the presence of cliff swallows (*Petrochelidon pyrrhonotaon*) on May 1, 2009. At that time, swallows were not observed nesting on the bridge structure. The following mitigation will be required: Work on structures. The Contractor shall take one of the two following options: 1. Complete all construction activities on structures, including large (equal or greater than 48 inch) culvert pipes, prior to April 1 or after August 31; or 2. If construction occurs on structures between April 1 and August 31, prevent swallow nests from being constructed. If Option (2) is chosen, the Contractor shall perform the following: i. The Contractor shall remove existing swallow nests prior to April 1. If the Contract is not awarded prior to April 1 and CDOT has removed existing swallow nests, then the monitoring of nest building shall become the Contractor's responsibility upon Notice to Proceed. ii. During the time that the swallows are trying to build or occupy their nests, between April 1 and August 31, the Contractor shall monitor the structures at least once every three days for any nesting activity. iii. If the birds have started to build any nests, the nests shall be removed immediately, before a substantial portion of the nest is constructed. Using water to remove the nests is prohibited. Wear an appropriate respirator that can filter particles as small as 0.3 microns. Wear disposable protective gloves, hat, coveralls and boots. Using netting or another approved method to prevent swallows from building nests at a site is acceptable. If active swallow nests become established (eggs or young in the nest), all work that impacts the nests shall be avoided until the chicks have fledged or the nest is unoccupied as determined by the wildlife biologist. The Contractor shall prevent construction activity from displacing swallows after they have laid their eggs and before the young have fledged. If the project continues into the following spring, this cycle shall be repeated.
Threatened and Endangered Species	No mitigation required.

Table 3-1
Summary of Proposed Project Mitigation, Commitments, and BMPs

Environmental Component	Mitigation
Special Status Species	Implement CDOT *Impacted Black-tailed Prairie Dog Policy*, dated January 15, 2009; Conduct burrowing owl surveys within potential impacted black-tailed prairie dog (BTPD) colonies between March 1 and October 31; Calculate acreage of impacted colonies and an estimated number of BTPDs in affected area during the final design phase; Survey area for BTPD colonies prior to construction; Coordinate manipulation of BTPD colonies with CCD and CDOW Wildlife Manager prior to disturbance of habitat.
Hazardous Materials	Conduct individual, site-specific ASTM Standard Phase I Environmental Site Assessments of properties, as necessary, before acquisition of ROW; Prepare Phase II Environmental Site Assessment in areas where groundwater may be encountered during construction, and in areas where soil contamination may be encountered; Conduct an asbestos and lead-based paint survey of the cargo bridge prior to demolition; If required, complete necessary asbestos abatement on bridge structure for issuance of demolition permit from CDPHE; Develop a Materials Management Plan (which includes asbestos-containing materials) and a health and safety plan, as required by Section 250 of the CDOT Standard Specifications for Road and Bridge Construction, if contaminated soil, asbestos-containing material and/or groundwater may be encountered; Implement BMPs for storage of fuels and lubricants such as Spill Prevention, Control, and Countermeasure plans.
Water Quality	Construct channel adjacent to I-270 southeast-bound ramp to capture 100% Water Quality Capture Volume (WQCV); Implement BMPs per CDOT *Erosion Control and Stormwater Quality Guide;* Prepare Construction CDPS stormwater discharge permit; Obtain Section 402 dewatering permit; Install silt fence/erosion controls; Construct two water quality detention ponds; Minimal disturbance of vegetated areas and re-seeding as soon as practical; Follow the City's Title 8 and CDOT's Standard Specifications, Sections 101, 107, and 208 and new procedures in the Erosion Control for Contractor manual; Comply with CDPHE Water Quality Consent Decree with CDOT.
Floodplains	Prepare LOMR for impacts to floodplains at completion of construction. Obtain floodplain development permit from CCD before construction in the floodplain area.
Wetlands and Waters of the US	CCD will purchase credits for impacts to 0.146-acre impact to wetland habitat from the Middle South Platte River Wetlands Mitigation Bank. Send certificate from Bank to CDOT to confirm transaction.
Land Use	No mitigation required.
Right-of-Way (ROW)	No mitigation is required.

Table 3-1
Summary of Proposed Project Mitigation, Commitments, and BMPs

Environmental Component	Mitigation
Vegetation	Avoid impacting areas outside limits of construction; Reseed with weed-free native seed mix or designated seed mix within seven (7) days after the topsoil has been replaced; Install silt fences, erosion logs, and temporary berms to prevent degradation of habitats adjacent to the construction area by transport of eroded sediment; Replace vegetation and grasses in disturbed areas to match existing conditions outside of landscaping area Obtain Tree Removal Permit from CCD. Bill Cassel, CCD Arboreal Inspector, can assist with necessary documentation. Impacted trees within the ROW greater than 1 inch at Diameter at Breast height to be replaced on a 1:1 basis.
Noxious Weeds	Prepare Integrated Noxious Weed Management Plan; Contractors' vehicles will be washed before they are used for construction to ensure they are free of soil and debris capable of transporting noxious weed seeds or roots; Treat noxious weeds with herbicides or physically remove to prevent seeds from blowing into disturbed areas during construction; Conduct periodic weed surveys during the construction period to identify and treat noxious weed populations that have developed; Assess potential areas of topsoil salvage for presence and abundance of noxious weeds prior to salvage. Topsoil from heavily infested areas will either be treated by spraying, taken offsite, or buried during construction; Reclaim areas of temporary disturbance in phases throughout construction, and seed using a permanent native seed mixture. Only certified weed-free mulch and bales will be used.
Farmlands	No mitigation required.
Noise	Restrict construction activities after 10 p.m. and before 7 a.m.; Schedule noise intensive construction activities to occur simultaneously; Use well-maintained equipment (particularly with regard to mufflers); Use quiet-use generators; Obtain Construction Noise Variance Permit from CCD if necessary.
Transportation Network	Traffic on all streets will remain open, though temporary lane closures will be necessary. Maintain access to businesses per CCD and CDOT requirements; Coordinate with emergency and law enforcement services regarding any potential road closures or delays; Prepare a Traffic Control Plan to be implemented during construction. The Traffic Control Plan will require approval by CDOT.
Public Services and Utilities	Coordinate with utility owners/operators, as necessary; Coordinate with CDOT's utility and access permits office.
Socioeconomics	No mitigation required.
Environmental Justice	No mitigation required.
Historic Preservation	Any subsurface archaeological discovery will result in an immediate halt in construction activities in the area and notification to CDOT, SHPO, and FHWA. Construction activities will not resume until all materials have been evaluated and adequate measures have been taken for their protection.
Paleontological Resources	Any subsurface historical discovery will result in an immediate halt in construction activities in the area and notification to CDOT Construction activities will not resume until all materials have been evaluated and adequate measures have been taken for their protection. If paleontological resources are uncovered during project construction in areas not being actively monitored, the CDOT staff paleontologist will be notified immediately. The project will follow the City's Title 8.

Table 3-1
Summary of Proposed Project Mitigation, Commitments, and BMPs

Environmental Component	Mitigation
Native American Consultation	No mitigation required.
Parks and Recreation	No mitigation required.
Geology and Soils	Salvage topsoil.
Air Quality	Use proper construction scheduling to lessen impacts; Implement appropriate BMPs including but not limited to: Cover loads; wet disturbed soils and soil piles; stabilize and cover stock pile areas; Minimize off-site tracking of mud by washing construction equipment or using temporary stabilization; Limit vehicle speed of construction related equipment; Obtain Air Pollution Emission Notice and Application for Construction Permit from the CDPHE APCD; and Prepare a Fugitive Dust Control Plan. Construction phase air quality impacts (engine exhaust emissions) will be controlled by implementing the following measures: • Prohibiting unnecessary idling of construction equipment • Using low-sulfur fuel • Locating diesel engines and motors as far away as possible from residential areas • Locating staging areas as far away as possible from residential areas • Where possible, heavy construction equipment to use the cleanest available engines or to be retrofitted with diesel particulate control technology • Where possible, use alternatives for diesel engines and/or diesel fuels (such as: biodiesel, liquefied natural gas, compressed natural gas, fuel cells, or electric engines) • Installing engine pre-heater devices to eliminate unnecessary idling during winter time construction • Prohibiting tampering with equipment to increase horsepower or to defeat emission control devices effectiveness • Requiring construction vehicle engines to be properly tuned and maintained • Where practicable, use construction vehicles and equipment with the minimum practical engine size for the intended job
Aesthetics	Should re-vegetate with native species; Comply with *Central Park Boulevard Interchange Aesthetic Design Guidance (URS 2009)*.

Source: URS Corporation
Notes:
APCD - Air Pollution Control Division
BMPs - Best Management Practices
BTPD - black-tailed prairie dog
FHWA - Federal Highway Administration
SHPO - State Historic Preservation Office
USFWS – U.S. Fish and Wildlife Service
CDPHE - Colorado Department of Public Health and Environment
CDPS - Colorado Discharge Permit System
CFR - Code of Federal Regulations
CCD - City and County of Denver
CDOT - Colorado Department of Transportation
CDOW - Colorado Division of Wildlife
WQCV - Water Quality Capture Volume

3.4 Permit Requirements

The following permits from the CDOT, CDPHE, and UDFCD and other agencies may be required before construction begins:

- Colorado Discharge Permit System (CDPS) Permit issued by CDPHE for stormwater discharge
- Demolition Permit and Construction Dewatering Permit issued by CDPHE
- MS4 Stormwater Permit issued by CDPHE (SWMP to be approved by CDOT)
- BTPD removal permit
- Construction access permits for traffic control from CDOT
- Property access and local permits as required
- Air Pollutant Emission Notice and Application for Construction Permit from the CDPHE Air Pollution Control Division (APCD)
- Nest Take Permit from USFWS
- Tree Removal Permits from CCD
- Construction Noise Variance Permit from CCD
- Other permits as required

This page is intentionally left blank.