

Appendix H.
Other Resources Technical Memorandum (HDR, 2015)



120TH AVENUE TO SH 7



Other Resources Technical Memorandum



RECORD OF DECISION 2

FINAL September 28, 2015

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1.0 INTRODUCTION

1.1 Purpose of Document

The purpose of this technical memorandum is to document any changed conditions associated with the 12 resources listed below since the publication of the *North I-25 Final Environmental Impact Statement (FEIS) Record of Decision1* (ROD1) (CDOT, 2011). In virtually all cases, there are no changes to existing conditions or impacts to these resources. The only change typically occurs related to changes in laws, regulations, or guidance.

Resources considered in this technical memorandum include:

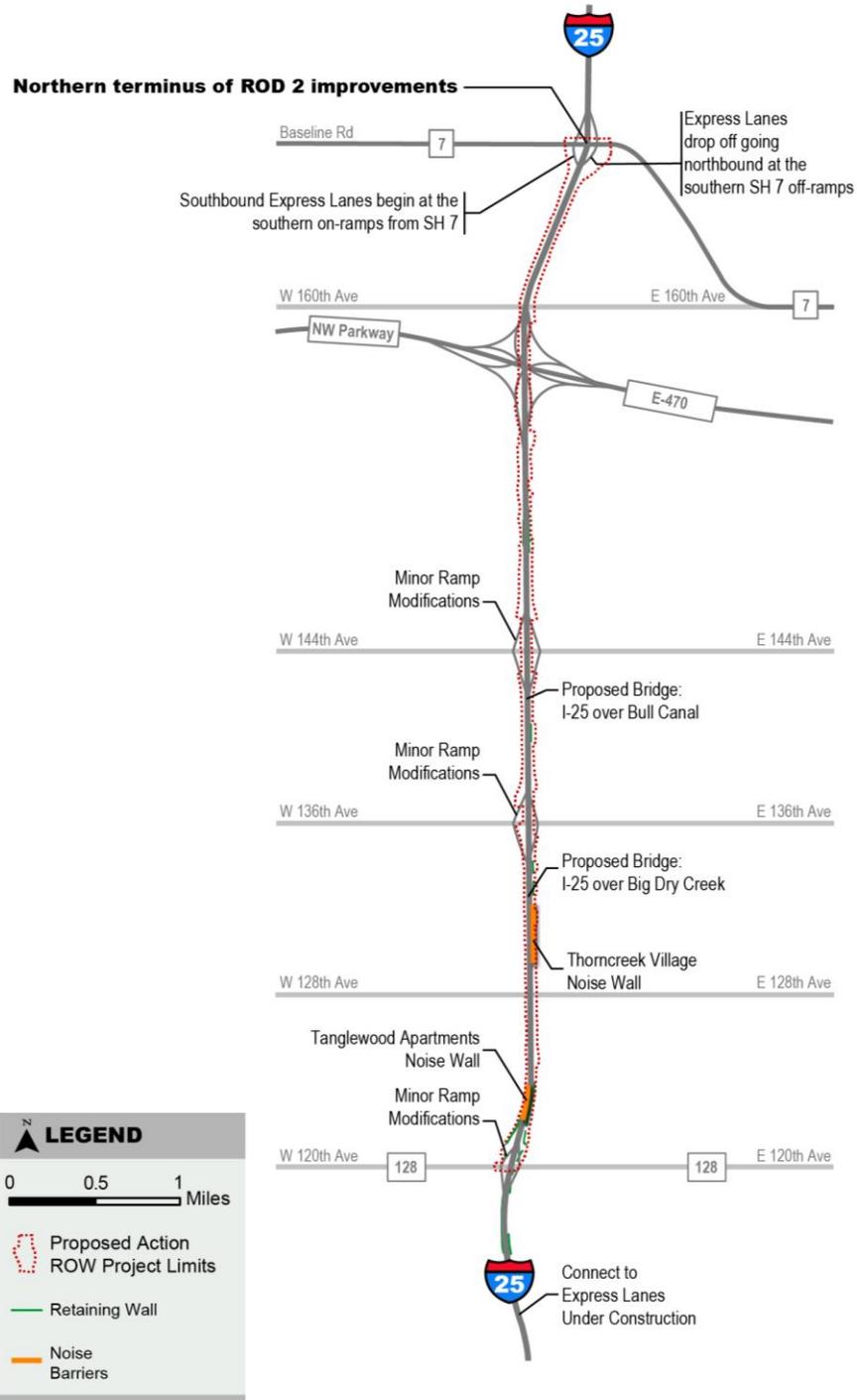
1. Water resources and water quality
2. Wetlands
3. Floodplains
4. Vegetation and noxious weeds
5. Wildlife and threatened and endangered species
6. Visual quality
7. Paleontological resources
8. Farmlands
9. Energy
10. Public safety and security
11. Construction
12. Cumulative

1.2 Description of the ROD2 Selected Alternative

Subsequent to the North I-25 Record of Decision (CDOT, 2011), CDOT has secured funding for a portion of the 2011 Preferred Alternative from 120th Avenue to SH 7. The Record of Decision2 (ROD2) updates the findings in the 2011 FEIS and documents the environmental analyses for all improvements that are a part of the ROD2 Selected Alternative. The ROD2 Selected Alternative is shown in Figure 1 and is described as follows:

The ROD2 Selected Alternative for the North I-25 segment from 120th Avenue to just south of SH 7 would consist of adding one buffer-separated Express Lane in each direction of I-25 from just south of 120th Avenue to just south of SH 7. The buffer-separated lanes would be separated from the existing general purpose lanes by a painted 4-foot strip. The new Express Lanes would tie into the Express Lanes that are currently under construction just south of 120th Avenue. The widening of I-25 would occur to the outside because the existing cross section does not include a median. A concrete barrier would separate the northbound and southbound lanes. Interchange configurations, water quality features, drainage improvements, retaining walls, and express bus station configurations are all planned to be identical to the design developed for the Preferred Alternative in the *2011 FEIS and ROD1*.

Figure 1. Location of the Selected Alternative in the ROD2 Study Area



2.0 WATER RESOURCES

2.1 Changes in Laws, Regulations, and Guidance

The primary change in regulations since the 2011 FEIS is that CDOT is in the process of negotiating a new MS4 permit with CDPHE. On May 22, 2014, CDPHE issued a conditional approval to the current MS4 New Development Redevelopment Program modification. The ROD2 project will follow this program modification. This project would be a Priority Project under the modified New Development and Redevelopment Program. The new program allows use of alternative techniques and requires treatment for an area equaling 90% of the new impervious surface within the project limits.

2.2 Summary of Findings from the 2011 FEIS

The primary water quality concern associated with the project results from the discharge of stormwater to receiving waters. The 2011 FEIS Preferred Alternative would cause an increase in the amount of pollutants being washed from the roadway due to increased impervious surface and traffic volumes. Under the 2011 FEIS Preferred Alternative, water quality ponds will treat more impervious surfaces in the project area compared to the No-Action Alternative. Consequently, it is anticipated that proposed water quality treatments will improve existing conditions.

Construction of the 2011 FEIS Preferred Alternative could also require addressing wells that are within the proposed right-of-way. Active wells would need to be relocated, and all active and non-active wells would need to be plugged, sealed, and abandoned.

2.3 Changes in Resource Base since 2011

There are no changes in resource base since 2011.

2.4 Changes in Impacts

Because the design for the ROD2 is identical to the design of the 2011 FEIS Preferred Alternative, there are no changes in impacts.

2.5 Mitigation

To reduce the impacts to water resources, a combination of mitigation measures consisting of permanent structural, nonstructural, and temporary construction BMPs will be implemented in the project area, in compliance with the Clean Water Act and CDOT's MS4 permit requirements. BMPs will include water collection and passive treatment of stormwater, which is currently being directly discharged into existing water systems. In addition, the BMPs may also provide protection to receiving waters from chemical spills that could occur in the project area.

The application of water quality ponds as part of the 2011 FEIS Preferred Alternative is expected to reduce the amount of iron discharged from I-25 to Segment 1 of Big Dry Creek. Rip-rap will be placed at bridge abutments, piers, and at critical portions of a channel or floodplain to avoid progressive or catastrophic failure of a structure.

3.0 WETLANDS AND WATERS OF THE U.S.

3.1 Changes in Laws, Regulations, and Guidance

There are no relevant changes in laws, regulations or guidance.

3.2 Summary of Findings from the 2011 FEIS

The 2011 FEIS and subsequent Section 404 permit received on May 17, 2013, documented impacts of 0.62 acre to wetlands and 0.08 acre of impact to waters of the U.S. between 120th Avenue and SH 7. A total of 0.15 acre of this occurs at the Big Dry Creek crossing. Retaining walls were included on both sides of I-25 to minimize impact to wetlands at this location. The walls extend 100 feet north and south of the wetland areas.

Other wetlands occur adjacent to 136th Avenue and along I-25 between 136th Avenue and 120th Avenue. Figure 2 illustrates existing wetland impacts in this segment of I-25. The Section 404 permit application (CDOT, 2011) notes 15 different wetland impact locations.

3.3 Changes in Resource Base Since 2011

There are no changes in resource base since 2011.

3.4 Changes in Impacts

There are no changes in impacts.

3.5 Mitigation

Wetland impacts were mitigated at St. Vrain State Park. The mitigation site was constructed in 2014.

4.0 FLOODPLAINS

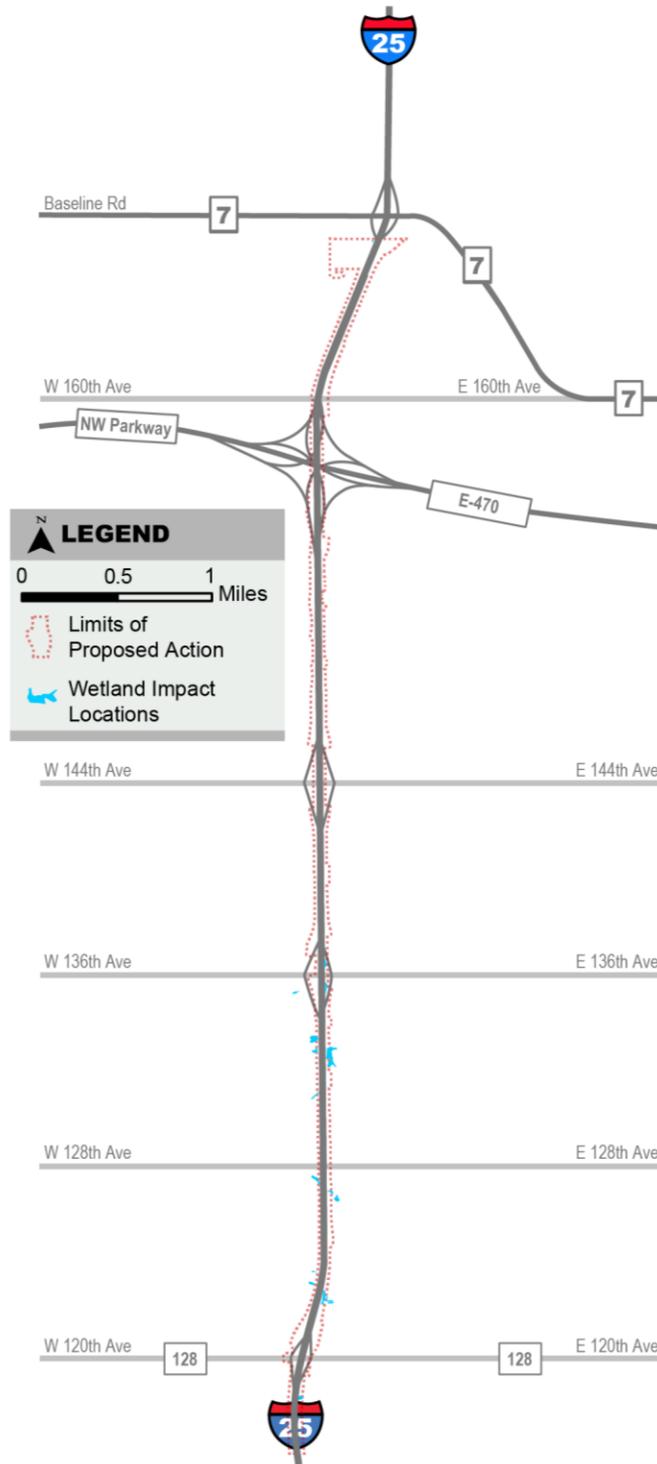
4.1 Changes in Laws, Regulations, and Guidance

There are no applicable changes in laws, regulations or guidance.

4.2 Summary of Findings from the 2011 FEIS

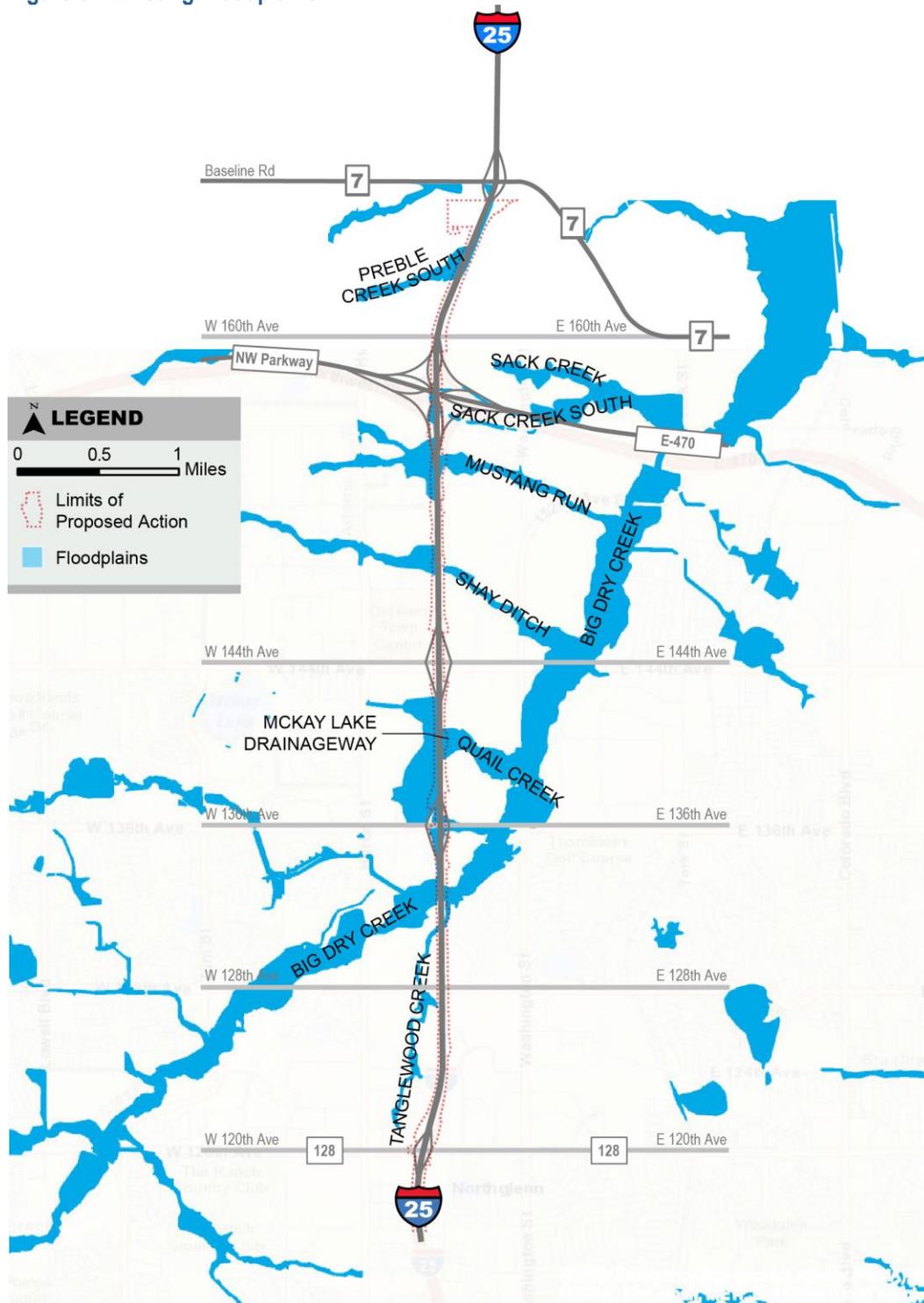
There are ten Federal Emergency Management Agency (FEMA) regulated floodplains in the project area: Preble Creek, Preble Creek South, Sack Creek, Sack Creek South, Mustang Run, Shay Ditch, McKay Lake Drainage, Big Dry Creek, Quail Creek, and Tanglewood Creek (see Figure 3). The 2011 FEIS notes impacts to three drainage structures at floodplains in the study area.

Figure 2. Existing Wetland Impacts



Source: Section 404 Permit Application (CDOT, 2011)

Figure 3. Existing Floodplains



Source: DRAFT Baseline Hydrology Report Major Drainageway Planning and Flood Hazard Area Delineation for Big Dry Creek (Wright Water Engineers, 2010)

4.3 Changes in Resource Base Since 2011

There are no changes in the resource base.

4.4 Changes in Impacts

There are no changes in impacts.

4.5 Mitigation

Mitigation includes enlarging the three crossing structures so they can pass a 100-year flood flow without overtopping I-25.

5.0 VEGETATION AND NOXIOUS WEEDS

5.1 Changes in Laws, Regulations, and Guidance

There are no changes in laws, regulations or guidance

5.2 Summary of Findings from the 2011 FEIS

Direct and indirect impacts on various vegetation types including noxious weeds were noted in the 2011 FEIS.

5.3 Changes in Resource Base Since 2011

The only changes in resource base since 2011 are associated with increasing development activity which has reduced the native vegetation base and increased the prevalence of noxious weeds.

5.4 Changes in Impacts

There are no changes in impacts.

5.5 Mitigation

An Integrated Noxious Weed Management Plan will be prepared prior to construction.

6.0 WILDLIFE AND THREATENED AND ENDANGERED SPECIES

6.1 Changes in Laws, Regulations, and Guidance

The new SB 40 Programmatic Agreement, signed in 2013, incorporates three new general condition mitigation measures as outlined in the mitigation section below. There are no new listed species or habitats.

6.2 Summary of Findings from the 2011 FEIS

There were no threatened or endangered species noted in this segment of I-25. Big Dry Creek was noted as a wildlife movement corridor as well as an aquatic resource of concern. There is an active bald eagle nest called the Thornton Nest that is nearby, south of E-470 and east of I-25. Effects to black-tailed prairie dog habitat were anticipated to total 36.58 acres, between SH 7 and US 36. In the 2011 FEIS, totals were not broken out for 120th Avenue to SH 7, only US 36 to SH 7.

6.3 Changes in Resource Base Since 2011

The lead agencies signed a Programmatic Biological Opinion (PBO) which is contained in Appendix E of the ROD1. This stipulates that as individual projects are proposed, the lead agencies will provide information to the U.S. Fish and Wildlife Service (USFWS) that describes the proposed action, the species that may be affected, results of habitat assessments, an updated baseline of the project area, a description of how the action may affect the species, a determination of effects, a cumulative total of incidental take that has occurred to date, a description of any additional actions or effects not considered in the programmatic consultation and a description of conservation measures or mitigation activities already implemented and their effectiveness. The lead agencies will also develop revegetation success criteria for revegetated sites.

The information required as part of the PBO will be submitted to the USFWS during the final design process.

One change in resource base that could have occurred since 2011 would be additional raptor nests. The *North I-25 Planning and Environmental Linkages Study* (CDOT, 2014) noted eight nests in a study area 0.5 mile on both sides of I-25 between 120th Avenue and SH 7.

Further changes include the additional prairie dog colonies within one-half mile of the 2011 FEIS Preferred Alternative. East of I-25, colonies can be found at SH 7/I-25, south of E-470 continuing to just north of East 136th Avenue, and along the north and south sides of East 128th Avenue. The towns are also located west of I-25 just north of the I-25 and SH 7 interchange and south of West 136th Avenue extending south to 128th Avenue, and in the northeast quadrant of SH 7/I-25. Planned development and the construction of the 2011 FEIS Preferred Alternative would impact these colonies.

Western Burrowing Owls (*Athene cunicularia hypugaea*) are a migratory bird commonly found in prairie dog towns throughout Colorado. The burrowing owl requires prairie dog or other suitable burrows for nesting and roosting. Federal and state laws prohibit harming or killing burrowing owls and the destruction of active nests (CPW, 2008). It is not known whether there are burrowing owls currently occupying any of the prairie dog habitat in the study area.

6.4 Changes in Impacts

The recalculated impacts to prairie dog towns come to 23.5 acres compared to 36.58 acres in the 2011 FEIS.

6.5 Mitigation

To mitigate for impacts to migratory birds requirements of the Migratory Bird Treaty Act (MBTA) of 1918 will be followed. CDOT has proposed special provisions creating a new Standards and Specification Section 240—Protection of Migratory Birds to address the requirements of the MBTA. A raptor nest survey will be conducted prior to project construction to identify raptor nests and nesting activity in the vicinity of the proposed project.

The project will comply with Colorado SB 40, which requires any agency of the State of Colorado to obtain wildlife certification from CPW when the agency plans construction in any stream or its bank or tributaries. Three new mitigation measures have been added as of the latest edition of the SB 40 Programmatic Agreement. These measures include controlling

invasive aquatic nuisance species by cleaning equipment, spraying/soaking equipment with quaternary ammonium or hot water, and not moving water from one water body to another. The new measures also include using permanent fencing designs that accommodate unrestricted movement of wildlife as well as using erosion control blankets that are biodegradable and do not contain plastic monofilament netting. Impacts to big game will be minimized through construction of crossing structures that will be designed to maintain wildlife movement corridors. In particular, the bridge at Big Dry Creek would be replaced with a larger structure to better accommodate big game movement across I-25.

To offset temporary impacts to aquatic species from habitat disturbance, aquatic habitats will be restored after construction activities have ceased. CDOT's water quality temporary and permanent BMPs will be applied, and will include the installation of mechanisms to collect, contain, and/or treat roadway run-off.

The USFWS has indicated there is not a need for supplemental consultation under the Endangered Species Act for this ROD2.

In areas where avoidance of prairie dogs is not possible, CDOT will follow its Impacted Black-tailed Prairie Dog Policy (CDOT, 2009). CDOT's prairie dog policy is described in greater detail in the 2011 FEIS *Wildlife Technical Report* (ERO, 2008) and Addendum (ERO, 2011) and includes avoidance and minimization of impacts to prairie dog colonies greater than two acres during design and construction of CDOT projects. If avoidance is not practicable, the policy calls for relocation, humane euthanization of prairie dogs for donation to raptor rehabilitation facilities, or donation to the black-footed ferret reintroduction program. At no time will CDOT authorize earth-moving activities that result in the burying of living prairie dogs. Any prairie dog relocation or removal activities will be carried out in accordance with CRS 35-7-203, as well as any other applicable laws or regulations, and with close coordination with CPW.

The following mitigation for western burrowing owl will be implemented:

- Burrowing owl surveys will be conducted prior to any work in prairie dog colonies between March 15 and October 31 (when burrowing owls are present in Colorado) (CDOW, 2007).
- If burrowing owls are found in the construction footprint during preconstruction surveys, nests will be left undisturbed and additional avoidance measures will be developed in coordination with CDOW.
- No human encroachment or disturbance will occur within 150 feet of a known nesting site until after November 1, or until it can be confirmed that owls have left the prairie dog town (CDOW, 2007).
- Direct impacts to burrowing owls will be avoided by covering or destroying prairie dog burrows prior to construction (prior to March 15) in order to prevent burrowing owls nesting in the construction area. Prairie dogs will be humanely removed following CDOT's prairie dog policy prior to destruction of burrows.

7.0 VISUAL QUALITY

7.1 Changes in Laws, Regulations, and Guidance

There are no changes in laws, regulations, or guidance relevant to visual resources.

7.2 Summary of Findings from the 2011 FEIS

The 2011 FEIS noted both short and long-term changes in visual quality resulting from the new interchanges, retaining walls, and noise walls.

7.3 Changes in Resource Base Since 2011

There is one change that affects the resource base. It includes the changes in existing land uses that affect the viewers of the new transportation improvements. There are more commercial, retail, and residential uses in the corridor than existed in this area in 2011.

7.4 Changes in Impacts

There is one change in impacts that occurs because of the new CDOT 2013 noise guidance. The new TNM modeling that has been done recommends a noise barrier north of 120th Avenue and west of I-25. This change would affect the views from the residential areas to the east. Views to the east of this residential area, which is broken by a row of trees along the highway, consist primarily of the mainline highway and two single story commercial buildings located on the east side of the highway. The views of the trees, cars, and trucks on I-25 and the commercial buildings east of that would now be obscured by a noise wall that is 12 feet tall. This change in visual quality is determined to be minor.

This change also affects foreground views for motorists on I-25 looking west toward this residential area. The foreground view will now be of the proposed noise wall. Background views would not be altered as the residential area, a multi-level apartment complex, already obscures views towards the horizon.

7.5 Mitigation

Mitigation measures to address the visual effects of highway widening will include incorporating landscaping at interchanges and along the highway. Mitigation measures to address the visual effects of structural elements will include providing architectural interest or color into retaining walls, sound walls, and reducing the effect of overpasses by providing architectural detailing of the railings and other features.



Photos from the residential area and to the residential area.

8.0 PALEONTOLOGICAL

8.1 Change in Laws, Regulations and Guidance

There are no changes in laws, regulations or guidance.

8.2 Summary of Findings from the 2011 FEIS

The 2011 FEIS Preferred Alternative would result in varying degrees of ground disturbance associated with construction. Unmitigated excavations in Pierre Shale, Fox Hills Sandstone, Laramie Formation, Denver Formation, and Pleistocene-age surficial deposits have the potential to adversely impact scientifically significant paleontological resources. There are no such deposits located in the study area.

8.3 Change in Resource Base Since 2011

There are no changes in resource base.

8.4 Changes in Impacts

There are no changes in impacts

9.0 FARMLANDS

9.1 Change in Laws, Regulations or Guidance

There are no changes in laws, regulations or guidance.

9.2 Summary of Findings since the 2011 FEIS.

The 2011 FEIS Preferred Alternative in this stretch of I-25 affected prime farmland parcels east and west of I-25 and south of the I-25/SH 7 interchange. Less prime farmland will be impacted than in the 2011 FEIS because of development in the area.

9.3 Changes in Resource Base Since 2011

The primary change in resource base since 2011 has been increasing urbanization which has resulted in the loss of land previously used for agriculture. In addition to residential and commercial development in the vicinity of the I-25/SH 7 interchange, the *Imagine Adams County, Comprehensive Plan*, adopted December 2012, shows the following future land uses in the vicinity of the I-25/SH 7 interchange: mixed use and municipal areas. This area, being slated for future development, precludes protection from the Farmland Policy and Protection Act, and therefore lowers the overall farmland impacts presented in the 2011 FEIS.

9.4 Change in Impacts

There are no changes in impacts.

9.5 Mitigation

There is no need for mitigation.

10.0 ENERGY

10.1 Changes in Laws, Regulations, and Guidance

There are no changes in laws, regulation, or guidance associated with energy.

10.2 Summary of Findings from the 2011 FEIS

The 2011 FEIS Preferred Alternative would use energy for construction. The added capacity provided by the build packages would attract vehicle miles traveled (VMT) from other areas. This, in turn, would create an increase in daily VMT within the regional study area and a corresponding decrease from surrounding areas as more trips would be diverted. This would be offset by the decrease in energy consumption associated with traffic congestion.

10.3 Changes in Resource Base Since 2011

The only change in resource base since 2011 has been that vehicular energy consumption has continued to decrease as the fleet is turned over.

10.4 Changes in Impacts

The only change in impacts is that the consumption of energy for construction and the decrease in energy consumption associated with improved traffic congestion will occur sooner than predicted in the 2011 FEIS because this segment of I-25 will be constructed sooner.

10.5 Mitigation

There is no change in mitigation from that proposed in the 2011 FEIS.

11.0 PUBLIC SAFETY AND SECURITY

11.1 Changes in Laws, Regulations, and Guidance

There are no changes in laws, regulations, or guidance affecting public safety and security.

11.2 Summary of Findings from the 2011 FEIS

Key safety and security impacts associated with implementing the 2011 FEIS Preferred Alternative would occur temporarily during construction and permanently after implementation. A temporary impact includes potential increased theft during construction phase, potential modest increase to police services in response to increased crime, and an increased security presence needed on proposed stations and park and rides.

The 2011 FEIS also identified safety improvements associated with reductions in congestion on I-25.

11.3 Changes in Resource Base Since 2011

A new Safety Assessment Report was completed in August 2014, which found that a high proportion of rear-end accidents occurred on I-25 between south of 120th Avenue and SH 7.

11.4 Changes in Impacts

A similar reduction in congestion-related crashes is expected to occur.

11.5 Mitigation

Potential losses at construction sites will be mitigated through fencing and on-site security provided by contractors. All construction contractors will be responsible for safety at their respective sites and be required to follow all Occupational Safety and Health Administration (OSHA) requirements applicable to construction site safety.

12.0 CONSTRUCTION

12.1 Changes in Laws, Regulations, and Guidance

There are no changes in laws, regulations, and guidance affecting construction.

12.2 Summary of Findings from the 2011 FEIS

Construction detours and delays can create short-term impacts on local traffic circulation and congestion and inter- and intra-state travelers using the I-25 for commuting. Emergency service response may be negatively impacted as a result of construction. In the more populated areas, such as the Denver Metro Area, these impacts could cause greater congestion.

Construction of the 2011 FEIS Preferred Alternative would temporarily affect access to the different land uses within the project area throughout the duration of the project.

The economic benefit of additional employment within the project area because of construction would be evident. This additional employment includes construction-related jobs that are directly and indirectly related to the project, such as direct construction activity and jobs that indirectly support the construction efforts. Restricted access to businesses located adjacent to the rights-of-way during construction could negatively impact the performance of some of the businesses.

Some additional land would be required in areas adjacent to the existing rights-of-way for construction staging purposes. These necessary areas would be purchased or leased, usually as temporary construction easements, before the start of construction.

Without mitigation, excavation, grading, and fill activities associated with construction could increase local fugitive dust emissions. Construction activity would also increase emissions from additional traffic and detouring. Additionally construction would require the disturbance of soil, which would produce fugitive dust or particulate pollution. Construction vehicles and equipment would generate the same exhaust emissions as motor vehicles on area roadways, and while this increase in emissions would be short-term and minor when compared to usual emission levels from day-to-day traffic, they could temporarily impact sensitive receptors located adjacent to the areas of construction.

Construction noise would present the potential for short-term impacts to receptors located along the existing rights-of-way and along the designated construction access routes. The primary source of construction noise is expected to be diesel-powered equipment, such as trucks, earth-moving machinery, and demolition equipment. Vibration caused by construction activities would

present the potential for short-term impacts in areas where pile driving and compaction equipment are being used.

Wildlife habitats adjacent to the roadway improvements would be impacted during construction. Some wildlife would be driven away during construction activities due to the increased noise and activity.

Farmlands adjacent to the alignments would be impacted if construction activities are required to extend beyond the right-of-way or if access must be modified. Also, dust generated from construction activities could settle on agricultural lands, possibly temporarily altering soil composition.

Construction could damage or remove archaeological or paleontological resources that have become buried beneath the soil surface. The amount of damage would vary, depending upon soil strata, type, and condition, materials, and type of structure. Construction could have both short- and long-term impacts on cultural landscapes by introducing intrusive elements into the landscape, or by removing character-defining elements of that landscape, such as large trees, irrigation features, or open spaces.

Parks located adjacent to construction activity could experience temporary impacts during construction. Impacts to these areas could include construction noise, dust, visual degradation, and increased traffic congestion inhibiting access to the park and recreation areas.

Visual impacts would include the presence of construction equipment and material storage, temporary barriers, guardrail, detour pavement and signs, temporary shoring and retaining walls, lighting for night construction, and removal of existing vegetative cover in the construction zone. Residential areas near construction activities could experience visual impacts resulting from construction activities.

During construction, stormwater runoff could present the potential for violations of water quality standards if discharge occurs without the application of best management practices. Without mitigation measures, stormwater runoff could cause erosion and sedimentation and transport spilled fuels or other hazardous materials off the construction site.

Hazardous materials could be encountered during the movement of earth, particularly excavation, and could uncover sites with hazardous chemicals or petroleum products. Former or current gas stations can frequently contain petroleum contamination that could be encountered during construction. During construction, it is expected that there would be excavation and drilling for caissons to support underpasses, overpasses, and bridge development, which could cause impact to soils or groundwater containing hazardous waste.

Construction would require excavation, grading, boring and other activities that would have short-term effects on utilities. This would include crossing existing lines, relocation, modification, and usage of temporary easements. The process of relocating these utilities could cause temporary planned or accidental disruptions in service to local residents in the project area.

The 2011 FEIS Preferred Alternative would require substantial one-time energy expenditures related to the manufacture of construction materials, transporting of materials to the site, and construction of new facilities.

12.3 Changes in Resource Base Since 2011

There are no changes in resource base.

12.4 Changes in Impacts

The only changes in impacts are associated with timing of construction. Because these improvements are occurring much sooner than originally planned, there will be fewer disruptions to people in the study area and on I-25.

12.5 Mitigation

Mitigation measures to address construction impacts were defined in the 2011 FEIS. These remain the same.

13.0 CUMULATIVE IMPACTS

13.1 Changes in Laws, Regulations, and Guidance

There are no changes in laws, regulations, or guidance related to cumulative impact assessment.

13.2 Summary of Findings from the 2011 FEIS

13.2.1 Land Use

In the early 20th century, the regional study area mostly contained small farming or mining communities. Construction of I-25 north out of Denver began in the early 1960s. By the time the final segment between Fort Collins and Wellington was completed in 1968, low-density, suburban residential development was expanding outward from major city centers along the highway. Acres of land devoted to agricultural uses in the regional study area decreased by 17 percent between 1950 and 2005. During the same time period, acres of land devoted to employment and residential uses have increased by 8 percent and 14 percent respectively. As part of this Record of Decision, reasonably foreseeable future developments and land use plans were reviewed to assess future growth patterns. Based on this review, it is expected that the general pattern of urbanization would continue. Challenges within the project area that require attention include severe traffic congestion that can impede economic development and job creation; concerns about air quality, water quality and water supply; the burden of paying for new facilities and services required to serve growth; and preservation of open space for current and future generations.

Likely major impacts resulting from development are increased impervious surfaces (e.g., roads, driveways, rooftops, parking lots), loss of agricultural lands, loss and fragmentation of wildlife habitat, degradation of air and water quality, loss of wetlands and aquatic resources, declining quality of life, and stress on infrastructure, water availability and water supply.

13.2.2 Water Quality

The Big Dry Creek is the only watershed in the study area; however, there are six other canals and ditches that cross under I-25. Some surface waters in the regional study area do not currently meet water quality standards. Streams that do not meet established water quality standards are required to go through a remediation process (i.e., total maximum daily load

analysis) to help improve water quality conditions. All but two streams identified as impaired or potentially impaired within the regional study area are attributed to pollutants that are not related to highway construction and operations (E. coli, aquatic life use, organic sediment, and selenium). Segments of Big Dry Creek are impaired or potentially impaired from pollutants that are associated with highway construction and operations. As part of the design, water quality BMPs will remove copper and iron from the runoff to a level approximately the same as existing conditions.

Cumulative impacts to water quality would primarily result from changes in hydrologic conditions caused by development already planned in the regional study area. Implementation of the 2011 FEIS Preferred Alternative would result in additional impervious surfaces as a result of highway widening. While the project results in greater total impervious surface area than the No-Action Alternative, the percentage of the area that will be treated with best management practices is also greater.

Future impacts to water quality could arise from maintenance activities, such as snow plowing, sanding, and deicing. The additional impervious surface area would contribute minimally to water quality impacts when compared to what is expected from planned development. These impacts to water quality would be reduced through implementation of maintenance programs and best management practices in both construction and design.

13.2.3 Wildlife

Past actions affecting wildlife distribution and movement corridors in the regional study area include commercial and residential development and road construction. These activities have directly displaced wildlife habitat, increased habitat fragmentation, and altered wildlife movements. The amount and connectivity of wildlife habitat has declined in the regional study area since 1950. Land uses that provide habitat for wildlife include agriculture, open space, parks, surface water areas, and vacant lands. Residential and commercial land uses are less likely to provide habitat for wildlife because they are more developed. Between 2000 and 2035 more agriculture and vacant lands are expected to be converted to residential and commercial land used. Open space and parks are also expected to increase during the same period. Lands protected or enhanced for wildlife would help to offset some of the effects of overall habitat loss.

Big Dry Creek, McKay Drainageway, Shay Ditch, and Mustang Run at their crossings of I-25 will be impacted by new commercial and residential developments planned on both sides of I-25. New development will likely affect wildlife movements in the area. Big Dry Creek at I-25 is located in an area that is already developed; therefore, impacts to wildlife movements from new development are expected to be low.

There are also active bald eagle nests known to occur in the study area in 2010, and several of these occur within three miles of the I-25 improvements. Loss of foraging habitat, especially loss of prairie dog towns, and increased disturbance from new commercial and residential development, may lead to stabilizing or declining numbers of bald eagles in the regional study area in the future.

13.2.4 Wetlands

As the Denver Metropolitan Corridor spreads northward, planned development is likely to result in further direct and indirect impacts to wetland communities. A conservative estimate of this

loss could be up to 300 acres by 2035, assuming the same rate of wetland loss as occurred between 1970 and 1990. The 2011 FEIS Preferred Alternative would cause direct impacts to wetlands and jurisdictional open waters identified in the project area.

13.2.5 Air Quality

Effective November 20, 2007, the EPA designated the Denver metro area and the north Front Range as a non-attainment area for the 8-hour ozone (O₃). The cities of Broomfield, Thornton, and Westminster are part of Adams County included in the Denver-Metro/North Front Range Region for air quality. This region is the largest population area of the state, with 2.8 million people living in the seven-county Denver-metro area and another half-million living in the northern Colorado area of Larimer and Weld counties.

The area has been exceeding the EPA's most recent ozone standards since the early 2000s, and in 2007 was formally designated as a "nonattainment" area. This designation was reaffirmed in 2012 when the U.S. Environmental Protection Agency (EPA) designated the region as a "marginal" nonattainment area for the more stringent ozone standard adopted by EPA in 2008.

Potential carbon monoxide and PM₁₀ hot spots were identified through evaluation of intersections in the regional study area. No carbon monoxide (CO) or PM₁₀ hot spots emissions in violation of the NAAQS are predicted to result from the 2011 FEIS Preferred Alternative. Within the Denver criteria pollutant attainment/maintenance areas, design year total CO emissions for the 2011 FEIS Preferred Alternative would be well below local attainment/maintenance plan emissions budgets, although slightly above No-Action levels because of the increase in VMT.

Historic Properties and Districts

Implementation of the 2011 FEIS Preferred Alternative would not result in adverse impacts to any historic properties or districts within the Project Area as no historic properties have been identified within the project area. This is in keeping with the assessment of historic properties completed for the Final EIS.

13.3 Changes in Resource Base Since 2011

There have been multiple changes in the resource base since 2011. These consist of changes to existing conditions and changes in reasonably foreseeable future actions.

- A substantial increase in oil and gas development, particularly in Weld County has occurred. This has been a major factor in deteriorating ozone conditions in the northern Front Range communities (Pétron, et al., 2012).
- New oil and gas regulations associated with methane have been adopted by the Colorado Air Quality Control Commission in February 2014.
- Substantial increases in commercial and residential development have occurred, including new commercial developments on both sides of I-25 in this segment.
- Delays in construction funding available for the FasTracks program which has particularly affected the northern Denver metropolitan area. Instead of an end-of-line at 162nd Avenue,

the North Metro commuter rail line, which is now under construction, will end at 124th Avenue. For the NW Corridor commuter rail line, its planned end-of-line is at 71st Avenue and Lowell Boulevard in south Westminster (to be completed in 2016). Both of these commuter rail lines will likely be completed to their original planned ends-of-line sometime after 2040.

- Two Planning and Environmental Linkage (PEL) studies have been completed. The SH 7 PEL Study recommends consideration of a Diverging Diamond Interchange at SH 7/I-25 (CDOT, 2014). The North I-25 PEL Study recommends adding continuous acceleration/deceleration lanes in this segment of I-25, adding park-n-rides at 128th Avenue, 136th Avenue, and 144th Avenue and adding a bus only tunnel north of 120th Avenue for southbound buses to more easily access the Wagon Road park-n-ride (CDOT, 2014).
- A study of high-speed rail along I-25 (called the Inter-Connectivity Study) has been completed and a second one is planned, studying a new high-speed rail line along I-25 from Fort Collins south. This could be placed on the east side of I-25.
- Construction has begun on the Express Lane project immediately south of 120th Avenue.
- CDOT has begun bus service, called the Bustang, on I-25. This service consists of five round trips per weekday, one during the off-peak period and four during the peak period.
- CDOT has recently completed a Commuter Rail Update, which updated costs and operational requirements for the commuter rail element of the 2011 FEIS Preferred Alternative.

13.4 Changes in Impacts

13.4.1 Land Use

The change in reasonably foreseeable future projects since the 2011 FEIS could result in land use that is more dispersed, since most of the rail transit projects have been delayed due to lack of funding or delays in funding availability. This could also occur because of the increased oil and gas development activity which has accelerated growth and development in areas north and east of the ROD2 improvements. All other cumulative impacts noted in the 2011 FEIS are still the same.

13.4.2 Water Quality

The change in CDOT's MS4 permit since the 2011 FEIS allows the use of alternative technologies when compared to the treatments and technologies in the 2011 FEIS. The accelerated development in the study area since the 2011 FEIS has affected water quality but water quality treatment measures have been included in these developments to alleviate any negative impacts. All other cumulative impacts noted in the 2011 FEIS are still the same.

13.4.3 Wildlife

The mitigation for this segment of I-25 included an enlarged structure for wildlife to cross under I-25 at Big Dry Creek. That is an improvement to the existing situation. The increase in oil and

gas development in the area northeast of the study area likely affects wildlife movement and habitat in those areas. All other cumulative impacts noted in the 2011 FEIS remain the same.

13.4.4 Wetlands

Mitigation for wetland impacts in this segment of I-25 has been completed. This mitigation creates a much larger area of wetland impacts than those impacted for this segment of I-25 so will represent a net increase for a period of time since most of the wetland impacts are projected to occur over a much longer period of time.

Mitigation for wetland impacts for the entire PA was completed in 2014 at St. Vrain State Park.

13.4.5 Air Quality

The area has experienced degradation in air quality since the 2011 FEIS due primarily to increased oil and gas development, producing methane, volatile organic compounds, and benzene gases. This has resulted in higher ozone concentrations. The Colorado Air Quality Control Commission recently adopted stricter methane rules intended to reduce methane pollution from the oil and gas development. Over time, these rules are expected to reduce the methane pollution from oil and gas.

The analysis done for this ROD2 confirms the original finding from the 2011 FEIS which is that no CO or PM 10 violations of the NAAQS are expected to occur as a result of implementation of the ROD2 project. The project provides a reduction in traffic congestion sooner than anticipated in the 2011 ROD, which will reduce air pollution associated with congestion.

13.4.6 Historic Properties

There is no change in cumulative impacts to historic properties from those documented in the 2011 FEIS.

13.5 Mitigation

Environmental impacts from the 2011 FEIS Preferred Alternative, when added to past, present, and reasonably foreseeable future projects, would result in additional cumulative impacts to environmental resources of concern. However, the majority of these cumulative impacts are a result of the growth and development already expected to occur in the study area, with or without any transportation improvements. The construction of the 2011 FEIS Preferred Alternative would not change the overall cumulative impacts noticeably.

To avoid additional impacts to the identified resources of concern, local authorities and planning entities must continue to review and scrutinize development proposals to ensure that new development is consistent with local area planning goals. One way local planning jurisdictions can reduce environmental impacts is through the implementation of smart growth initiatives. These initiatives can provide economic, social, and environmental benefits to a community. Nearly every community in the regional study area incorporates smart growth principles into their comprehensive/land use plans. Of the 29 planning documents that were reviewed for smart growth principles, 65 percent included eight to ten of the smart growth principles. The next step is for local jurisdictions to strictly enforce these principles through their development review process.

Local authorities and planning entities should also require appropriate avoidance or mitigation as part of any new development project. Resources most at risk that could be protected are riparian areas, floodplain areas, historic properties, and wildlife habitat areas. For transportation projects, CDOT will ensure that all best management practices and mitigation measures specified in this Final EIS are followed appropriately.

14.0 REFERENCES

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