

EXECUTIVE SUMMARY

This Environmental Assessment (EA) was prepared by the Federal Highway Administration (FHWA) in conjunction with the Colorado Department of Transportation (CDOT) in compliance with the National Environmental Policy Act (NEPA) of 1969. NEPA requires that actions requiring federal funding or approval be evaluated based on a “systematic, interdisciplinary approach to insure the integrated use of the natural and social sciences.” This document evaluates transportation solutions and their associated environmental effects in addressing congestion, delay and reliability problems on the C-470 Corridor from Kipling Parkway to I-25. The project area is shown in **Figure ES-1**.

This summary highlights the following topics:

- Purpose and Need
- Alternatives Considered
- Environmental Consequences
- Mitigation Measures
- Preferred Alternative Identification
- Public and Agency Involvement

Publication of this EA coincides with a public comment period. Following the public comment period, the FHWA and CDOT will prepare a final decision document. The decision document will respond to comments on the EA, update impact analyses as necessary, and identify required mitigation.

ES.1 PURPOSE AND NEED

The FHWA and CDOT have identified a need for improvements to C-470 from Kipling Parkway to I-25. The purpose of this project is to provide congestion relief, decrease travel delay, and improve corridor reliability. The FHWA and CDOT seek to select an implementable transpor-

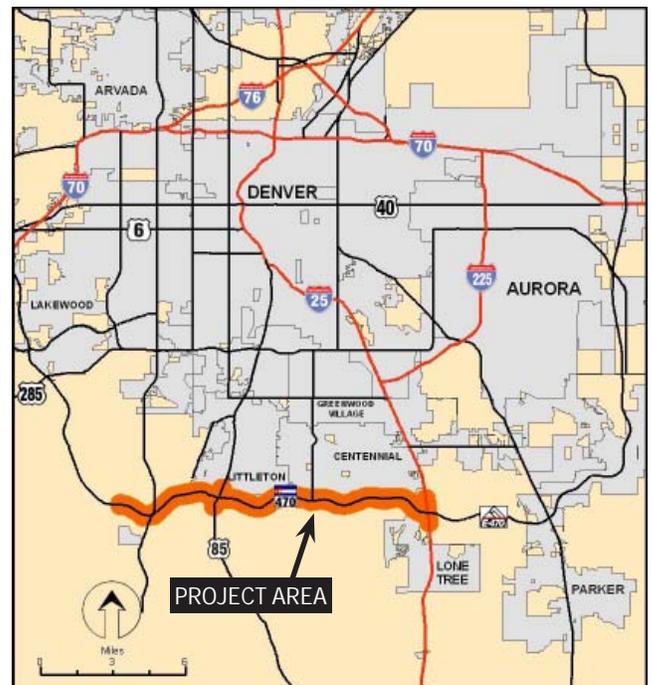
tation alternative that provides reliable and consistent travel times and commuting travel choices to accommodate an expected increase in the intensity and duration of congestion forecasted for the design year, 2025.

The need for this project is based on congestion, delay, and reliability. Additional considerations included implementation and safety. Specific need-based statements for the C-470 Corridor from Kipling Parkway to I-25 are highlighted here.

ES.1.1 Congestion

- Existing peak hour volumes on C-470 between Kipling Parkway and I-25 range from 5,800 to 9,000 total vehicles in both directions
- By 2025, peak hour volumes on C-470 will increase 30 to 40 percent

**Figure ES-1
C-470 Corridor Project Area**



- By 2025, C-470 will be approximately 30 percent over capacity relative to CDOT’s acceptable level of service (LOS), which is 8,000 total vehicles per hour in both directions
- Existing peak hour operations on C-470 range from LOS C to LOS F
- By 2025, nearly every link on C-470 will operate at LOS F during the peak hour

ES.1.2 Delay

- Existing peak hour delay on C-470 between Kipling Parkway and I-25 is approximately 11-18 minutes per vehicle
- By 2025, the peak hour delay per vehicle between Kipling Parkway and I-25 is estimated to be 20-22 minutes, resulting in over 2,900 vehicle-hours of delay in the peak hour

ES.1.3 Reliability

- As traffic volumes increase, C-470 will be more prone to congestion and accidents, and thus reliability will continue to worsen

ES.1.4 Safety

- While the corridor as a whole can be characterized as a relatively safe highway, the Santa Fe Drive interchange area stands out with regard to recurring accidents that have been attributed to specific geometric attributes of the highway and interchange

ES.1.5 Implementation

- Traditional transportation funding is in short supply for capacity expansion projects like C-470
- This study explores non-traditional funding methods to implement transportation solutions

ES.2 ALTERNATIVES CONSIDERED

Numerous alternatives were developed and evaluated during the screening process. These alternatives were carried through a three-step screening process. They were analyzed based on evaluation criteria that were consistent with the project purpose and need, and other considerations such as the ability to implement improvements in a short time frame, minimizing harm to the environment, ease of movement, and safety. Initially, families of alternatives were assessed for their ability to meet the purpose and need, which included No-Action, general purpose lanes, tolled express lanes, transit, and mobility enhancements. Of these families, only the general purpose lanes and tolled express lanes families were identified as having the potential to meet the purpose and need as stand alone alternatives, and thus were carried forward as action alternatives. The transit and mobility enhancement families were not carried forward as a whole, but certain elements of them were later repackaged with the action alternatives. At the end of the screening process, three alternatives were carried forward for detailed environmental analysis:

- No-Action Alternative
- Eight-Lane General Purpose Lanes with Auxiliary Lanes Alternative (GPL Alternative)
- Four Tolled Express Lanes with Existing General Purpose Lanes Alternative (EL Alternative)

Detail on the alternatives considered and the screening process can be found in **Chapter 2**.

While the implementation of a specific route structure for commuter bus service would not be provided as a part of this project, RTD has indicated that commuter service would be desirable to provide increased mobility along the C-470 Corridor if the highway was less congested.



51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100

Specific mobility enhancement strategies that are included in both of the action alternatives include:

- Providing signage on C-470 and at RTD park-n-ride lots to market the Denver Regional Council of Governments’ (DRCOG) ridesharing program
- Developing an incident management plan for the C-470 Corridor to provide traffic operators with the information to make decisions that will allow quick and efficient response to accidents, hazardous spills, and other emergencies
- Providing advanced traveler information systems including variable message signs as well as other technology to communicate travel related information directly to commuters
- Installing a remote weather system within the C-470 Corridor to provide updated road and weather conditions to maintenance crews, resulting in more responsive maintenance activities that can help enhance safety and mobility

ES.3 ENVIRONMENTAL CONSEQUENCES

The No-Action, GPL and EL Alternatives are evaluated in this EA for their ability to meet the project purpose and need, their effect on the environment, and the mitigation measures necessary to address those effects. Alternatives are compared to each other based on mitigated packages. Therefore, mitigation commitments are part of each alternative.

The direct, indirect, and cumulative environmental effects resulting from each of the alternatives were evaluated in **Chapter 3** of this EA. The environmental effects of the alternatives’ elements are summarized in **Sections ES.3.1** through **ES.3.3**.

ES.3.1 No-Action Alternative

- Transportation and traffic – The peak hour travel time between Kipling Parkway and I-25 is estimated to be ten minutes longer in each direction by the year 2025, resulting in over 2,900 vehicle-hours of delay in the peak hour. Congested conditions on C-470 would also contribute to higher congestion levels on surrounding arterial streets. Accidents would generally be expected to increase as congestion increases
- Noise – 21 locations would have noise levels higher than CDOT’s noise abatement criteria (NAC)
- Water quality – Stormwater runoff would continue to discharge directly into receiving waters without being treated

ES.3.2 General Purpose Lanes Alternative

- Environmental Justice – The Wolhurst Community in the northwest quadrant of the Santa Fe Drive interchange would experience an increase in noise levels, a changed visual landscape, right-of-way (ROW) encroachment, and improved capacity at intersections adjacent to the community
- Transportation and traffic – The added capacity on C-470 and resulting traffic redistribution would increase congestion at several arterial intersections. Traffic operations, travel times, and safety would improve on C-470, as compared to the No-Action Alternative
- Noise – 43 locations would have noise levels higher than CDOT’s NAC
- Water quality – Construction improvements would include water quality ponds to meet permitting requirements, thus offering the opportunity to improve the quality of water entering receiving streams

- 1 ■ Hazardous materials – Four hazardous materials sites could be affected during construction
- 2
- 3
- 4
- 5 ■ Visual and aesthetic character – The visual character of the project area would change from adding structural elements related to the additional lanes and flyover at Santa Fe Drive. New retaining walls along the highway would be visible from neighboring communities and Chatfield State Park
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14 ■ Utilities – Various utility lines would require relocation
- 15
- 16
- 17 ■ C-470 trail – 7.5 miles of the C-470 trail would be shifted and reconstructed
- 18
- 19
- 20 ■ Construction – Temporary construction activity would result in traffic disruption and detours that would increase congestion on surrounding arterial streets and intersections. Best management practices (BMP) would be used to minimize storm runoff from the temporary soil disturbance. Short-term noise may be generated by construction equipment
- 21
- 22
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30 ■ Wildlife – Minor habitat loss for deer and elk; 12.5 acres of black-tailed prairie dog habitat would be lost; an additional barrier to wildlife movement from a concrete barrier separating the eastbound and westbound lanes; temporary disturbance to raptor movement, foraging, and perching behavior during construction; other bird nests may be disturbed during construction; temporary effects on aquatic species include downstream turbidity. Long-term effects on aquatic resources are likely to be positive due to BMPs to improve the quality of stormwater runoff
- 31
- 32
- 33
- 34
- 35
- 36
- 37
- 38
- 39
- 40
- 41
- 42
- 43
- 44
- 45 ■ Threatened and Endangered Species - Loss of black-tailed prairie dog colonies would result in a minor reduction to bald eagle prey and habitat loss for the burrowing
- 46
- 47
- 48
- 49
- 50

owl. These effects are considered minor to these species, given the amount of other prey sources and habitat available in the surrounding area

- Wetlands – 1.66 acres of wetlands and waters of the U.S. would be permanently impacted. Of these, 0.47 acre are jurisdictional, 1.19 acres are non-jurisdictional
- Vegetation – 3.80 acres of riparian habitat would be disturbed or eliminated

ES.3.3 Express Lanes Alternative

- Environmental Justice – The Wolhurst Community in the northwest quadrant of the Santa Fe Drive interchange would experience an increase in noise levels, a changed visual landscape, ROW encroachment, and improved capacity at intersections adjacent to the community
- Transportation and Traffic – The added capacity on C-470 and resulting traffic redistribution would increase congestion at several arterial intersections. Traffic operations, travel times, and safety would improve on C-470, as compared to the No-Action Alternative. While the traffic patterns would be different than the GPL Alternative, the effects are comparable in magnitude
- Noise – 42 locations would have noise levels higher than CDOT’s noise abatement criteria
- Water quality – Construction improvements would include water quality ponds to meet permitting requirements, thus offering the opportunity to improve the quality of water entering receiving streams
- Hazardous materials - Four hazardous materials sites could be affected during construction

- 1 ■ Visual and aesthetic character - The visual
2 character of the project area would change
3 from adding structural elements related to
4 the additional lanes and flyover at Santa Fe
5 Drive. New retaining walls along the
6 highway would be visible from neigh-
7 boring communities and Chatfield State
8 Park
- 9
- 10 ■ Utilities – Various utility lines would
11 require relocation
- 12
- 13 ■ C-470 trail – 8.1 miles of the C-470 trail
14 would be shifted and reconstructed
- 15
- 16 ■ Construction – Temporary construction
17 activity would result in traffic disruption
18 and detours that would increase
19 congestion on surrounding arterial streets
20 and intersections. BMPs would be used to
21 minimize storm runoff from the temporary
22 soil disturbance. Short-term noise may be
23 generated by construction equipment
- 24
- 25 ■ Wildlife – Minor habitat loss for deer and
26 elk; additional barriers to wildlife
27 movement from concrete barriers
28 separating the tolled express lanes; 14.3
29 acres of black-tailed prairie dog habitat
30 would be lost; temporary disturbance to
31 raptor movement, foraging, and perching
32 behavior during construction; other bird
33 nests may be disturbed during
34 construction; temporary effects on aquatic
35 species include downstream turbidity.
36 Long-term effects on aquatic resources are
37 likely to be positive due to BMPs to
38 improve the quality of stormwater runoff
- 39
- 40 ■ Threatened and Endangered Species - Loss
41 of black-tailed prairie dog colonies would
42 result in a minor reduction to bald eagle
43 prey and habitat loss for the burrowing
44 owl. These effects are considered minor to
45 these species, given the amount of other
46 prey sources and habitat available in the
47 surrounding area
- 48
- 49
- 50

- 51 ■ Wetlands – A total of 1.84 acres of
52 wetlands and waters of the U.S. would be
53 permanently impacted. Of these, 0.50 acre
54 are jurisdictional, 1.34 acres are non-juris-
55 dictional
- 56
- 57 ■ Vegetation – 4.10 acres of riparian habitat
58 would be disturbed or eliminated
- 59

ES.4 MITIGATION MEASURES

Mitigation measures for project-related direct and indirect effects are also discussed in detail in **Chapter 3**. Because the effects resulting from the GPL and EL Alternatives are so similar, mitigation of these effects would be similar for both alternatives. The mitigation measures are:

- 60
- 61
- 62
- 63
- 64
- 65
- 66
- 67
- 68 ■ Environmental Justice – The noise wall on
69 the south side of the Wolhurst Community
70 would be reconstructed. Additional noise
71 mitigation would be provided by either a
72 retaining wall associated with the flyover
73 structure or a separate noise wall on the
74 east side of Wolhurst, north of County
75 Line Road. Landscaping elements and
76 aesthetic enhancements would be incorpo-
77 rated into the alternatives to mitigate
78 visual impacts
- 79
- 80 ■ Right-of-way – Retaining walls and other
81 design strategies would be used exten-
82 sively throughout the project to avoid and
83 minimize impacts to the ROW. All acqui-
84 sitions would be performed in accordance
85 with the Uniform Relocation Assistance
86 and Real Property Acquisition Policy Act,
87 as amended
- 88
- 89 ■ Transportation and traffic – Capacity
90 improvements to arterial intersections
91 would be made in coordination with local
92 jurisdictions
- 93
- 94 ■ Highway noise – Noise barriers (walls or
95 earthen berms) are recommended for
96 eleven locations along C-470 to reduce the
97 effects from highway noise
- 98
- 99
- 100

- 1 ■ Water quality –BMPs would be imple- 51
- 2 mented and water quality ponds would be 52
- 3 constructed to detain stormwater runoff 53
- 4 from the highway and filter out sediment
- 5
- 6 ■ Hydrology and hydraulics – One under- 54
- 7 sized culvert would be replaced with a 55
- 8 culvert designed to pass a 100-yr storm 56
- 9 event 57
- 10
- 11 ■ Floodplains – Retaining walls and other 58
- 12 design strategies would be used exten- 59
- 13 sively throughout the project to avoid and 60
- 14 minimize impacts to floodplains 61
- 15
- 16 ■ Paleontological resources – A qualified 62
- 17 paleontologist would be on-site during 63
- 18 construction excavation to monitor for 64
- 19 buried paleontological resources, where 65
- 20 known deposits have been mapped 66
- 21
- 22 ■ Geology and soils – Several design strat- 67
- 23 egies would be employed during final 68
- 24 design to ensure that the roadway 69
- 25 foundation and subgrade elements are 70
- 26 stable enough to avoid any potential 71
- 27 adverse effects of poor geologic conditions 72
- 28
- 29 ■ Hazardous materials – Soil and ground- 73
- 30 water testing and hazardous materials 74
- 31 surveys would be performed prior to 75
- 32 construction activities to identify any 76
- 33 potential hazards and to quickly and 77
- 34 appropriately respond should any be 78
- 35 encountered 79
- 36
- 37 ■ Visual and aesthetic character – Architec- 80
- 38 tural treatments would be employed to 81
- 39 maintain consistency throughout the 82
- 40 corridor. CDOT has been working with 83
- 41 project stakeholders and will continue to 84
- 42 do so to ensure that they have adequate 85
- 43 input in the selection of specific architec- 86
- 44 tural elements 87
- 45
- 46 ■ Utilities – Utility conflicts would be 88
- 47 identified during final design and reloca- 89
- 48 tions would be performed in accordance 90
- 49 with standard CDOT policy 91
- 50
- 51 ■ C-470 trail – The GPL Alternative would 92
- 52 require reconstruction of 7.5 miles of trail, 93
- 53 while the EL Alternative would require 8.1 94
- 54 miles of reconstruction. Both alternatives 95
- 55 would allow the trail to remain open 96
- 56 during construction, with minor detours to 97
- 57 ensure bicycle and pedestrian safety 98
- 58
- 59 ■ Construction – A construction phasing and 99
- 60 traffic control plan would be developed 100
- 61 during final design and any increase in 101
- 62 traffic on local streets would be mitigated 102
- 63 with minor operational improvements. 103
- 64 Minor capacity improvements such as 104
- 65 restriping turn bays or acceleration/decel- 105
- 66 eration lanes would be made at several 106
- 67 arterial intersections to reduce congestion 107
- 68 during construction. Water quality BMPs 108
- 69 would be implemented to prevent erosion, 109
- 70 sediment, and nutrient loading in the 110
- 71 watershed. Construction noise would be 111
- 72 monitored, and where necessary, 112
- 73 temporary noise barriers would be 113
- 74 installed. 114
- 75
- 76 ■ Wildlife – CDOT would improve the 115
- 77 existing wildlife crossing at the South 116
- 78 Platte River by expanding the bridge both 117
- 79 in width and height, adding a natural 118
- 80 substrate to better accommodate wildlife 119
- 81 passage, and re-vegetating near the bridge 120
- 82 with native shrubs. CDOT would limit 121
- 83 construction activity within 1/3-mile of 122
- 84 known active raptor nests between 123
- 85 February 15 and July 15. If this is not 124
- 86 possible, replacement nests may be 125
- 87 constructed in areas with adequate prey 126
- 88 base to mitigate for the lost ability for the 127
- 89 raptors to produce young. Effects to black- 128
- 90 tailed prairie dogs would be further 129
- 91 avoided and minimized in the design 130
- 92 process. If only partial colonies would be 131
- 93 affected, a visual barrier would be placed 132
- 94 between affected burrows and undisturbed 133
- 95 portions of the colony. Burrow openings in 134



1 the project area would be collapsed prior
 2 to construction to encourage abandonment
 3 of affected burrows. CDOT would notify
 4 the Food and Drug Administration prior to
 5 transporting any dead or living prairie
 6 dogs for the purpose of relocation

- 8 ■ **Threatened and Endangered Species -**
 9 Prior to construction, the project area
 10 would be re-surveyed to confirm the
 11 existence of state and federally listed
 12 species and work with the U.S. Fish and
 13 Wildlife Service (USFWS) and the
 14 Colorado Division of Wildlife (CDOW) as
 15 appropriate. CDOT would plant
 16 vegetation as suitable cover for alternative
 17 prey habitat. CDOT would also install
 18 perch poles for hunting roosts and nesting
 19 platforms to encourage nesting attempts
 20 within the three-mile foraging area of the
 21 existing bald eagle nest. Some prairie dogs
 22 would also be relocated within the three-
 23 mile foraging area. If burrowing owls are
 24 found during the survey, prairie dog
 25 evacuation and initial disturbance of
 26 prairie dog colonies where owls are
 27 present would be planned between
 28 October 31 and March 1, prior to
 29 construction, when burrowing owls would
 30 not be present in the project area
- 32 ■ **Wetlands -** All permanently affected
 33 wetlands (jurisdictional and non-jurisdic-
 34 tional) would be replaced on a 1:1 basis
- 36 ■ **Vegetation -** Areas temporarily disturbed
 37 during construction would be seeded
 38 immediately after construction with a
 39 native seed mix. Trees adjacent to the
 40 project area that would not be removed
 41 would be protected to avoid damage. The
 42 Noxious Weed Management Plan
 43 developed for the Corridor would also be
 44 implemented

51 **ES.5 PREFERRED ALTERNATIVE**
 52 **IDENTIFICATION**

53 Following the environmental analysis of the
 54 three alternatives carried forward, the FHWA
 55 and CDOT identified a Preferred Alternative.
 56 This was based on the ability to fund and
 57 implement one of the alternatives, as evaluated
 58 during the Financial Analysis and
 59 Implementation Committee (FAIC) process. The
 60 FAIC was a collaborative process with cities,
 61 counties, and other agencies within the project
 62 area to investigate potential funding strategies
 63 for the two action alternatives and provide input
 64 to the FHWA and CDOT on the identification of
 65 the preferred approach for improving C-470.
 66 This group investigated potential funding
 67 mechanisms and assessed the extent to which
 68 these mechanisms were practical. Based on the
 69 funding information analyzed, it was concluded
 70 that the EL Alternative is financially self-
 71 supporting, and therefore is eligible for
 72 amendment into the Denver Regional Council of
 73 Government’s (DRCOG) fiscally-constrained
 74 Regional Transportation Plan (RTP). The FAIC
 75 also investigated potential GPL Alternative
 76 funding, and concluded that at the present time,
 77 it does not have a viable funding source and
 78 therefore cannot be implemented. While both
 79 action alternatives meet this project’s purpose
 80 and need and have comparable environmental
 81 effects, only the EL Alternative has the demon-
 82 strated financial ability to be implemented at this
 83 time. As a result, the FHWA and CDOT have
 84 identified the EL Alternative as the Preferred
 85 Alternative. The FHWA and CDOT will consider
 86 public comments on this EA and revisit financial
 87 feasibility of both action alternatives before
 88 making a final decision.

89 **ES.6 PUBLIC AND AGENCY**
 90 **INVOLVEMENT**

91 The outreach program for the C-470 Corridor EA
 92 was designed to ensure public input and partici-
 93 pation in the planning and environmental
 94 process. Public involvement was part of an
 95 overall communications program that involved
 96 community relations, media relations, and
 97 agency coordination.
 98
 99

1 A contact database was developed consisting of
2 nearly 22,000 businesses and households within
3 a mile of C-470. It consisted of property owners,
4 elected officials, media, homeowners associa-
5 tions (HOAs), civic groups, business owners,
6 and members of the general public who
7 requested to be included on the mailing list.

8
9 Nearly 1,200 persons attended forty-four small
10 group meetings with business, civic, and HOA
11 groups. A total of 743 people attended the 17
12 open house meetings and presentations held at
13 the end of each phase of the screening process.
14 Four newsletters were distributed at key project
15 milestones. The project Web site (www.c470.info)
16 provides access to project information, an
17 overview of the EA process, the project schedule,
18 frequently asked questions and answers,
19 meeting announcements, exhibits from open
20 house meetings, and related resources. To date,
21 the site has had over 100,000 visitors.

22
23 In order to provide ample public involvement
24 opportunities for minority and low-income
25 populations and encourage participation, special
26 outreach efforts were employed to engage these
27 groups. One such group was the Wolhurst
28 Community in the northwest quadrant of the
29 Santa Fe Drive interchange. Three separate
30 meetings were held with the Wolhurst
31 Community through which consensus was
32 reached on the Santa Fe Drive interchange
33 configuration that would result in the least
34 adverse effects to the community. A separate
35 meeting was held with community residents to
36 discuss options for aesthetic improvements to
37 the entrance of the community.

51 Agency coordination consisted of three tiers of
52 involvement. The Project Management Team,
53 composed of the FHWA, CDOT, and consul-
54 tants, conducted the study and made recommen-
55 dations to the other groups. The Technical
56 Working Group, composed of technical staff
57 from local governments and agencies, reviewed
58 study progress to ensure compliance with their
59 local transportation plans. Finally, executives
60 and elected officials from local governments
61 within the project area and agencies composed
62 the Executive Working Group, which offered
63 executive-level acceptance of study recommen-
64 dations. The outreach program also involved
65 federal and state resource agencies in the study
66 regarding evaluation of potential effects to
67 resources under their jurisdiction.

51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100