4.1 INTRODUCTION

When a federal agency proposes a major federal action significantly affecting the quality of the human environment, that agency is required by the National Environmental Policy Act of 1969 (NEPA) to identify and analyze the impacts that could result from the proposed action. This disclosure provides full and fair discussion of environmental impacts and informs decision-makers and the public of the reasonable alternatives that avoid or minimize adverse impacts or enhance the quality of the human environment. The Council on Environmental Quality (CEQ), established by Title II of NEPA, provides policy guidance for the implementation of NEPA.

Guidance established by the CEQ defines effects (or impacts) to resources as:

- **Direct effects** are defined as those effects that are immediately experienced by implementing an alternative.
- **Indirect effects** are caused by the action and occur later in time or are farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of population density or growth rate, and related effects on air, water, and other natural systems, including ecosystems.
- **Cumulative effects** result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Based on input from scoping meetings, public meetings, and the analysis of resources, cumulative effects were evaluated for the following resources:
  - land use and induced growth
  - wildlife habitats
  - wetlands
  - water quality
  - air quality

This chapter describes the affected environment and environmental consequences associated with the development of multi-modal transportation improvements in the United States Highway 36 (US 36) corridor. For each of the resources evaluated in this chapter, the affected environment discussion presents the current setting of the project area. The impact evaluation discussion describes the environmental consequences of proposed transportation improvements in the corridor. The description includes how that setting is expected to change over the planning horizon.

The planning horizon all of the packages is based on the Denver Regional Council of Government's (DRCOG) *2035 Metro Vision Regional Transportation Plan,* as amended (DRCOG 2009), which incorporates transportation improvements through 2035. Therefore, impacts for these packages are evaluated relative to a 2035 condition.

Project Area Segments

Due to the length of the US 36 corridor, the project area was subdivided into six segments. These segments generally follow (but not always) jurisdictional boundaries and from south to north include the Denver, Adams, Westminster, Broomfield, Superior/Louisville, and Boulder segments.

The segments were used to organize the data and results geographically. This approach by segment was not appropriate for some resources, such as air quality, which is a regional consideration. In other cases it was more appropriate to combine segments for a particular resource. An example is the water quality resource area, where a drainage basin covers more than one segment.

Packages Under Consideration

Chapter 2, Alternatives Considered, describes the four packages that are evaluated in this Final Environmental Impact Statement (FEIS). The four packages are briefly described below. Additional information about the screening of alternatives and how these packages were developed is provided in Chapter 2.

Package 1: No Action

Although it does not meet the Purpose and Need of the project, Package 1 must be considered throughout the NEPA process for comparison purposes to the build packages, pursuant to the CEQ requirements. Package 1 does not propose any new build elements for US 36. However, the package assumes that committed improvements, like the Northwest Rail Corridor Project, bus, and park-n-Ride improvements from the locally funded FasTracks Program, would be implemented as planned by other projects.

Package 2: Managed Lanes/Bus Rapid Transit

In general, Package 2 would add two managed lanes in each direction on US 36. The managed lanes would connect to and be an extension of the existing Interstate 25 (I-25) express lanes that go to and from downtown Denver. The managed lanes would be bi-directional, located in the median and separated from the general-purpose lanes by a concrete barrier. Bus rapid transit (BRT) stations would be located in the median and connected to adjacent parking via pedestrian bridges or underpasses. Access to and from the managed lanes would be provided by a combination of drop- and slip-ramps. The drop-ramps would provide access to and from the managed lanes at the existing Westminster Boulevard bridge and a new bridge at Midway Boulevard.

Package 2 would also include a bikeway facility adjacent to US 36. In general, the bikeway would be an off-street separated multi-use path adjacent to the US 36 alignment. Where appropriate, the bikeway would connect to and make use of existing on-street and off-street facilities. Consistent with Colorado Department of Transportation (CDOT) practice, maintenance of the US 36 bikeway would be the responsibility of the local jurisdictions through an Intergovernmental Agreement (IGA) with CDOT.

Package 2 roadway changes would include improvements to intersections with cross streets at interchanges. Those improvements would include upgrading lane transitions of ramp terminals, widening cross streets at the intersection, lengthening turn-lanes, and adding turn-lanes. Package 2 would provide BRT improvements including new and more frequent bus service in the US 36 corridor. Package 2 would also include Transportation Demand Management (TDM) improvements throughout the corridor, such as strategies designed to make the most efficient use of existing transportation facilities by reducing the actual demand placed on these facilities.

Package 4: General-Purpose Lanes, High-Occupancy Vehicle, and Bus Rapid Transit

The basic configuration in Package 4 consists of one additional general-purpose lane and one additional BRT/high-occupancy vehicle (HOV) lane in each direction. The BRT/HOV lanes would be located in the median of US 36 in a buffer-separated configuration similar to the existing condition between Sheridan Boulevard and Pecos Street, with new median BRT stations connected to adjacent park-n-Rides via pedestrian bridges or underpasses. Rather than exiting the highway to pick up and drop off passengers at park-n-Rides, buses would stop at the median stations for passenger boarding and alighting.

Package 4 includes the US 36 bikeway, cross street and interchange improvements, BRT, and TDM elements as described in Package 2.

Options A and B (for Package 2 and Package 4)

Two options were considered for the project terminus at Foothills Parkway/Table Mesa Drive. The options are summarized below:

- **Option A**: The express lanes would become general-purpose lanes just west of Cherryvale Road. These lanes would extend to 28th Street. Traffic exiting to Foothills Parkway or South Boulder Road would merge into the general-purpose lanes.
- **Option B**: This option would provide a bus only lane directly into the Table Mesa Station via a new bridge to and from the express lanes in the median. All westbound vehicles in the express lanes, except for buses, would be required to exit the express lanes just west of Cherryvale Road and merge into the general-purpose lanes.

Both options were considered in Package 2 and Package 4. If impacts differed between the options, they are presented and discussed. However, in many cases, the options had the same or no impact. In these instances, the options are not mentioned. As part of the FEIS development, Option A was identified for inclusion in the Combined Alternative Package (Preferred Alternative). The impacts associated with this option are included in the impact discussions for the Combined Alternative Package (Preferred Alternative).

Combined Alternative Package (Preferred Alternative): Managed Lanes, Auxiliary Lanes, and Bus Rapid Transit

The Combined Alternative Package (Preferred Alternative) would add one managed lane in each direction on US 36 and auxiliary lanes between most interchanges. The managed lanes would connect to and be an extension of the existing I-25 express lanes that go to and from downtown Denver. The reversible managed lane between Sheridan Avenue and Pecos Street would remain and traffic would continue to use the existing I-25/US 36 managed lane ramp. The managed lanes from Pecos Street to west of Cherryvale Road in Boulder would be bi-directional, located in the median of US 36, and separated from the general-purpose lanes by a painted buffer. Buses would exit the highway to pick up and drop off passengers at stations located on ramps and adjacent park-n-Rides. Access to the managed lane(s) would be provided at separate ingress and egress points located between each interchange.

At the Foothills Parkway/Table Mesa Drive interchange, two options were evaluated to provide access from the University of Colorado, Boulder South Campus (South Campus) to Table Mesa Drive. The Combined Alternative Package (Preferred Alternative) preserves the existing access. The Local Streets Option provides access from Loop Drive to Table Mesa Drive through a connection to Tantra Drive. These options are shown in Appendix A, Corridor Reference Maps. If impacts differed between the options, they are presented and discussed.

The Combined Alternative Package (Preferred Alternative) would also include TDM improvements throughout the corridor, such as strategies designed to make the most efficient use of existing transportation facilities by reducing the actual demand placed on these facilities. Additionally, the Combined Alternative Package (Preferred Alternative) would offer the ability to use intelligent transportation system messaging to alert drivers to roadway conditions. A task force would be established to develop a TDM program.

The Combined Alternative Package (Preferred Alternative) includes bikeway, cross-street, and interchange improvements as described in Package 2.

Chapter 4 — Content and Organization

Chapter 4, Affected Environment and Environmental Consequences, is divided into sections that address each of the environmental resource areas expected to be impacted by the proposed packages. Each section consists of a summary, description of the current environment that could be affected by the proposed packages (the affected environment), impacts methodology and evaluation (environmental consequences), and proposed mitigation measures.

Summary

This subsection introduces the topics that are considered in each resource section, describes the regulatory framework (i.e., guiding statutes and regulations), and if appropriate, provides a brief description of the approach to the analysis. A summary of the level of impact expected under each package is also provided.

Affected Environment

The Affected Environment subsection describes the environmental conditions encountered during preparation of the analysis. The affected environment is first described broadly, and then in more detail (i.e., first by the entire corridor, and then by segment).

Impact Evaluation

The Impact Evaluation subsection describes the methodology applied to each analysis and summarizes the impacts for the environmental resource areas evaluated. Environmental impacts are then evaluated in detail for each package, beginning with Package 1. The intent of the evaluation is to present discriminators among the packages to facilitate making an informed decision.

Direct and indirect impacts were calculated using Geographic Information Systems mapping and limits of construction defined by conceptual engineering drawings. Construction footprints were defined as the toe of slope (the bottom of the slope that falls away from the edge of the highway) plus 15 feet to include room for construction and dedication of an easement for future operations and maintenance.

Mitigation

A discussion of proposed mitigation measures for each of the resource areas is included at the end of each section. Mitigation measures are provided for each of the build packages evaluated. Mitigation measures resulting from standard construction permits, such as erosion controls, were not repeated. Mitigation measures will be refined during final design. A mitigation summary is included as Section 4.26, Mitigation Summary.