BOARD OF DIRECTORS REPORT

RTD

To: Phillip A. Washington, General Manager

From: William C. Van Meter, Acting Assistant General Manager, Planning

Date: May 4, 2010

Subject: Approval to Adopt the Northwest Rail Corridor Final Environmental Evaluation (EE) Document

Date: 5/13/10		
GM:		
Board Meeting Date: May 18, 2010		
ACTION	DISCUSSION	INFO
X		

RECOMMENDED ACTION

It is recommended by the FasTracks Monitoring Committee that the Board of Directors approve the adoption of the Northwest Rail Corridor Final Environmental Evaluation (EE) document.

BACKGROUND

In July 2007, RTD initiated the EE for the Northwest Rail Corridor, a 41-mile commuter rail corridor to connect Denver Union Station to downtown Longmont. Commuter rail service will operate generally within the existing BNSF Railway Co. (BNSF) right-of-way and will generally share tracks with the BNSF freight operations. The project partners include the Colorado Department of Transportation (CDOT) the BNSF, the local jurisdictions, public agencies and the public.

In developing the preferred alternative, which includes the corridor's alignment and station locations, the Northwest Rail Corridor project team worked very closely with the local jurisdictions, including the City and County of Denver, Adams County, the City of Westminster, the City and County of Broomfield, the City of Louisville, Boulder County, the City of Boulder and the City of Longmont. The team worked especially close with the local jurisdictions on station planning efforts. Staff anticipates that as part of the final operating agreement with the BNSF, the BNSF will construct the rail improvements required to run commuter rail in the corridor; however, RTD will construct the corridor's stations and park-n-Rides. Correspondingly, RTD has completed 30 percent level of engineering design for the corridor's track and alignment and 50 percent engineering design for the corridor's stations and park-n-Rides.

After the preferred alternative was established, a Draft EE was developed that included an analysis of the alternative alignments and station locations, identified potential impacts and recommended ways to minimize and mitigate those impacts throughout the corridor. The Draft EE was released for agency and public review and comment on February 26, 2010; the comment period closed on March 29, 2010. The project team held three public meetings in the corridor, one each in Longmont, Louisville and Northwest Denver/Unincorporated Adams County, to present and receive public comment on the summary of analysis and proposed mitigation in the Draft EE document. The Final EE includes specific mitigation commitments, which are included in the Final EE's Executive Summary and in the body of the EE document.

DISCUSSION

Although, the Northwest Rail Corridor project is expected to be locally-funded, and as a result typically would not be subject to the requirements of the National Environmental Policy Act (NEPA), a 404 Wetlands Permit will be required to construct the corridor. For that reason, the United States Army Corps of Engineers (Corps) has served as the Lead Federal Agency for this environmental analysis. The

EE document has been prepared with the guidance of the Corps and in accordance with RTD guidelines On April 1, 2010, the Corps issued a Nationwide 404 Permit for the Northwest Rail Phase I project to the South Westminster Station. RTD will be eligible to apply for an Individual 404 Permit for Phase II (the remainder of the corridor from South Westminster to Longmont) upon completion of the EE. Overall, the EE has provided a comparable level of analysis to the environmental documentation prepared for the other FasTracks corridors. And, all submitted public comments have been considered and responded to in the Final EE document. The RTD Board of Directors is the approval authority for the adoption of the Final EE document and the mitigation commitments contained therein.

FINANCIAL IMPACT

No cost is associated with this action.

ALTERNATIVES

1. Accept the Recommended Action. It is recommended by the FasTracks Monitoring Committee that the Board of Directors approve the adoption of the Northwest Rail Corridor Final Environmental Evaluation (EE) document.

2. Delay the approval of the adoption of the Northwest Rail Corridor Final Environmental Evaluation (EE) document. This action is not recommended.

3. Do not accept the Recommended Action. Do not approve the adoption of the Northwest Rail Corridor Final EE document. This action would result in not formally completing the environmental planning process. This is not recommended.

Prepared by: Chris Quinn, Northwest Rail Corridor Planning Project Manager

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Acronyms and Abbreviations

2035 MVRTP	*2035 Metro Vision Regional Transportation Plan*
ACBM	asbestos containing building materials
ACC	Activity Center Connector
AST	Above Ground Storage Tank
BE	Basic Engineering
BMP	best management practices
BRT	Bus Rapid Transit
Btu	British thermal unit
CBD	Central Business District
CCD	City and County of Denver
CDOT	Colorado Department of Transportation
CDOW	Colorado Department of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CNG	compressed natural gas
CRMF	Commuter Rail Maintenance Facility
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
DIA	Denver International Airport
DMU	diesel multiple unit
DRCOG	Denver Regional Council of Governments
DUS	Denver Union Station
EA	Environmental Assessment
E. coli	*Escherichia coli*
EE	Environmental Evaluation
EIS	Environmental Impact Statement
EMU	electric multiple unit

EO	Executive Order
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
FACWet	Functional Assessment of Colorado Wetlands
FCA	Fish Consumption Advisory
FE	Federally Endangered
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FPPA	Farmland Protection Policy Act
FRA	Federal Railroad Administration
FT	Federally Threatened
FTA	Federal Transit Administration
GIS	geographic information system
GP	general purpose
GT	Governments Team
HBW	home-based work
HHS	Health and Human Services
HOA	homeowners association
HOT	high-occupancy toll
HOV	high-occupancy vehicle
HUD	Department of Housing and Urban Development
I-#	Interstate #
ID	identification
LEDPA	Least Environmentally Damaging Practicable Alternative
LHC	locomotive-hauled coach
Longmont EE	*Longmont Diagonal Rail Environmental Evaluation*
LOS	Level of Service
LPA	Locally Preferred Alternative
LRT	light rail transit
LUST	leaking underground storage tank

LWCF	Land and Water Conservation Fund Act
MBO	Minority Business Office
MBTA	Migratory Bird Treaty Act
MESA	*Modified Environmental Site Assessment*
mph	miles per hour
MIS	*Major Investment Study*
Montana Method	Montana Department of Transportation Wetland Functional Assessment Method
MS4	Municipal Separate Storm Sewer System
MSA	Metropolitan Statistical Area
msl	mean sea level
MVRTP	*Metro Vision Regional Transportation Plan*
NDIS	Natural Diversity Information Source
NEPA	National Environmental Policy Act of 1969
NFRMPO	North Front Range Metropolitan Planning Organization
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWR	Northwest Rail
NWR Corridor EE	Northwest Rail Corridor Environmental Evaluation
PAC	Preferred Alternative Committee
PCEA	*Programmatic Cumulative Effects Analysis*
PEM	palustrine emergent
PIP	Public Involvement Plan
PSS	palustrine scrub/shrub
PUC	Public Utilities Commission
ROW	right-of-way
RTD	Regional Transportation District
RTP	Regional Transportation Plan
SC	State Species of Special Concern
SE	State Endangered
SF	square feet
SH	State Highway

SOV	single-occupant vehicle
SPCC	Spill Prevention Control and Countermeasures Plan
ST	State Threatened
SWMP	Stormwater Management Plan
TAZ	transportation analysis zone
TMDL	total maximum daily load
TMO	Transportation Mobility Organization
TIP	*2008-2013 Transportation Improvement Plan*
TOD	transit-oriented development
TOFC	Trailer-on-Flat-Car
TWC	Track Warrant Control
UDFCD	Urban Drainage and Flood Control District
UNCC	Utility Notification Center of Colorado
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended
UP	Union Pacific
URS	URS Corporation
U.S.	United States
US #	United States Highway #
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	underground storage tank
VHD	vehicle hours of delay
VHT	vehicle hours traveled
VMT	vehicle miles traveled
Walsh	Walsh Environmental Scientists and Engineers, LLC
WQCC	Water Quality Control Commission

Xcel	Xcel Energy
YOE	Year of Expenditure

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ES. EXECUTIVE SUMMARY

ES.1 INTRODUCTION

ES.1.1 Why is this report written?

In November 2004, voters in the Denver area Regional Transportation District (RTD) approved the FasTracks initiative through a sales tax increase, to be used to expand public transit services in the metropolitan Denver area over a 12-year period. The *FasTracks Plan* (RTD 2004) is a comprehensive program to construct and operate new rail lines and improve elements of bus rapid transit (BRT), bus service and park-n-Rides throughout the region.

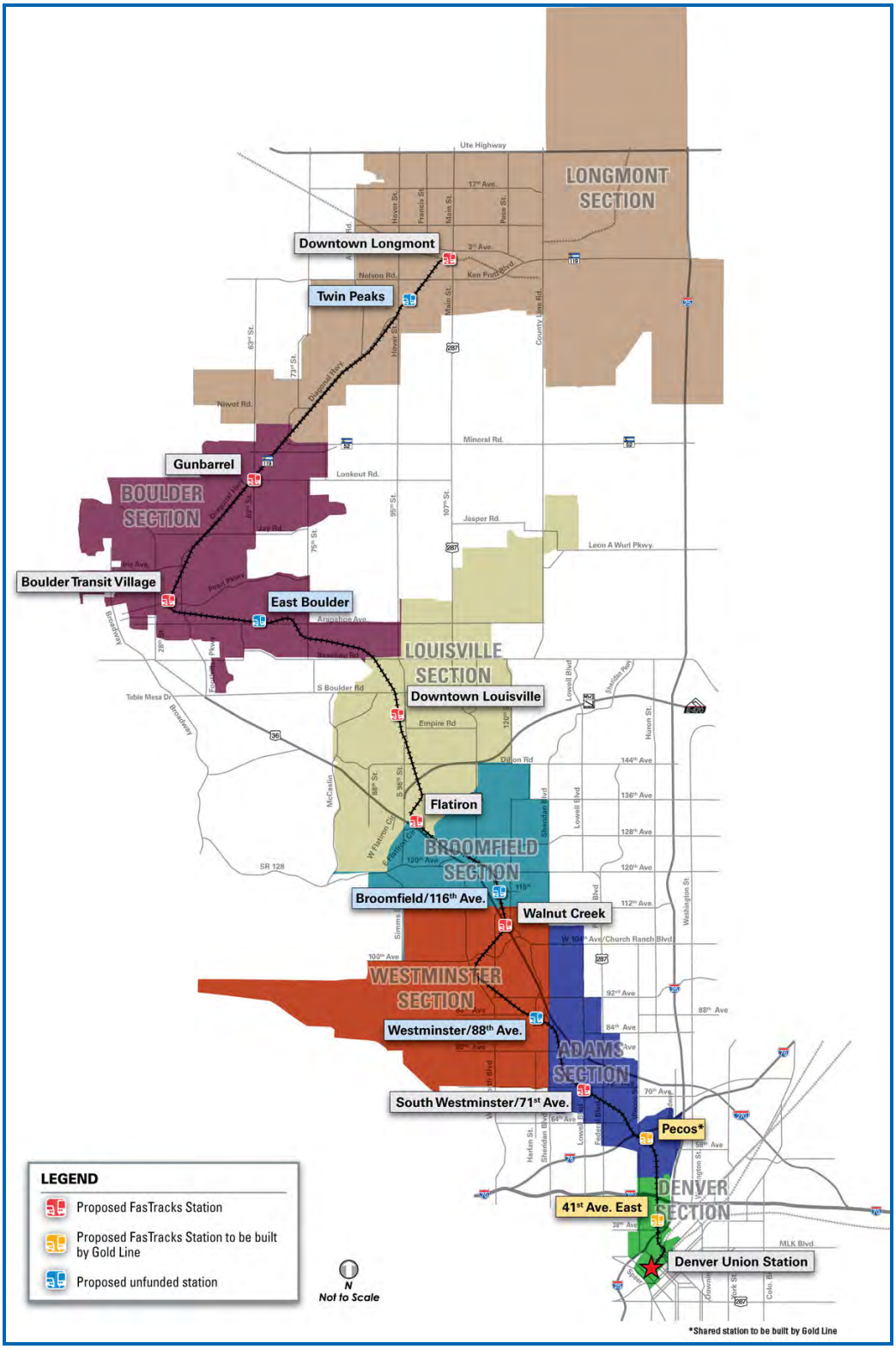
As part of FasTracks, RTD has initiated the Northwest Rail Corridor Environmental Evaluation (NWR Corridor EE) to identify and evaluate impacts of implementing a fixed-guideway, commuter rail transit service between Denver, Boulder and Longmont, Colorado. The project will be phased; the first phase, from Denver Union Station (DUS) to the South Westminster/71^{s} Avenue Station (approximately up to Bradburn Boulevard) would use Electric Multiple Unit (EMU) technology. Phase 2 would use Diesel Multiple Unit (DMU) technology from DUS to Longmont and would share tracks used by the EMU vehicles in the Phase 1 segment between DUS and the South Westminster/71st Avenue Station. The United States Army Corps of Engineers (USACE) is the lead federal agency for this project, rather than the Federal Transit Administration (FTA), because this project will not be seeking federal funds. However, the project will impact waters of the United States (US) consequently requiring wetland permits per Section 404 of the Clean Water Act. The USACE issued a Section 404 Nationwide Permit for Phase 1 on 1 April 2010. Phase 2 is expected to require an Individual Permit as part of the Clean Water Act. Comments received and their responses on the Draft EE are provided in Appendix G: Response to Comments of this Final EE.

RTD developed this document, following National Environmental Policy Act of 1969 (NEPA) processes and procedures, for use by the USACE. The USACE will utilize information contained in this document to determine compliance with NEPA, and the Section 404 (b)(1) guidelines for subsequent Section 404 permit applications submitted by RTD. See Appendix A, Section 404 (b)(1) Showing, for more details on Section 404 (b)(1) guidelines.

ES.1.2 Where is this project?

The project study area (Figure ES-1) includes portions of several communities in the northwest Denver metropolitan area that extend from DUS to Longmont, including the City of Denver, the City of Westminster, the City and County of Broomfield, the City of Louisville, the City of Boulder, the City of Longmont and unincorporated areas of Adams, Boulder and Jefferson Counties.

FIGURE ES-1. NORTHWEST RAIL CORRIDOR PROJECT STUDY AREA AND SECTIONS



Source: NWR Corridor Project Team, 2010.

More specifically, for analysis purposes, the NWR Corridor EE includes two different study areas that are discussed separately in this evaluation:

Project Study Area – Overall area within a specific boundary in which the potential of a project's indirect impacts will be assessed. This area is typically equal to the area described in the affected environment section for each environmental resource.

Resource Analysis Area – An area generally defined by direct impacts to various environmental resources, such as physical acquisition of property and impacts to wetlands. The direct impact area is determined by comparing the construction limits of the project to the physical location of the environmental resources. The construction limits have been defined through engineering design and include permanent and temporary construction features, such as construction access and staging areas.

ES.1.3 What is the organization of this EE?

This EE is organized as follows:

Executive Summary – Provides a summary of the document, including a project description, Purpose and Need, anticipated impacts, and recommended mitigation measures.

Chapter 1: Purpose and Need – Presents a discussion of the Purpose of the project, and the Need for improvements.

Chapter 2: Alternatives Considered – Describes the alternatives screening process and results used to define the Preferred Alternative for the NWR Corridor Project study area.

Chapter 3: Affected Environment and Environmental Consequences – Describes the existing social and natural environmental conditions in the project study area and describes the anticipated impacts associated with the No Action and Preferred Alternative. Proposed mitigation measures are identified. These mitigation measures will be finalized during the development of the final NWR EE. This Final EE will be prepared to assist in obtaining a Nationwide Permit for Phase 1 and eventually an Individual Permit for the remainder of this project (as may be required under the Clean Water Act and in compliance with NEPA).

Chapter 4: Transportation Systems – Discusses the existing transportation system and the anticipated benefits and impacts that would result from implementation of the No Action and Preferred Alternative.

Chapter 5: Public Involvement Program – Describes the public involvement program, including coordination with the NWR Governments Team (NWR GT) and subcommittees, state and federal resource and regulatory agencies, and the general public for selecting the Preferred Alternative.

Chapter 6: List of Preparers

Chapter 7: References – Lists the sources for all references shown in this document. A list of acronyms is provided in a section following the Table of Contents.

Appendix A – 404(b)(1) Showing – The purpose of this document is to summarize the information necessary to meet the requirements of Section 404 mandates. Information in this appendix is extracted from the NWR Corridor EE and associated technical memoranda. Content includes the Purpose and Need, alternatives considered, and impact analysis and mitigation measures associated with the Preferred Alternative for resources under USACE jurisdiction.

ES.1.4 How will this EE inform decision making?

Comments received on the Draft EE were considered as input into the development of this Final EE that was submitted to the USACE, the lead agency. This Final NWR Corridor EE was adopted by the RTD Board of Directors in May 2010.

ES.2 PURPOSE AND NEED FOR ACTION

ES.2.1 What is the purpose of this project?

The purpose of the NWR Corridor Project is to implement fixed guideway, commuter rail, mass transit service between Denver, Boulder and Longmont.

ES.2.2 Why do we need this project?

Need 1: Improve mobility – Mobility improvements are needed to provide alternatives to congested single occupant vehicle (SOV) travel for project study area residents, employees, and visitors.

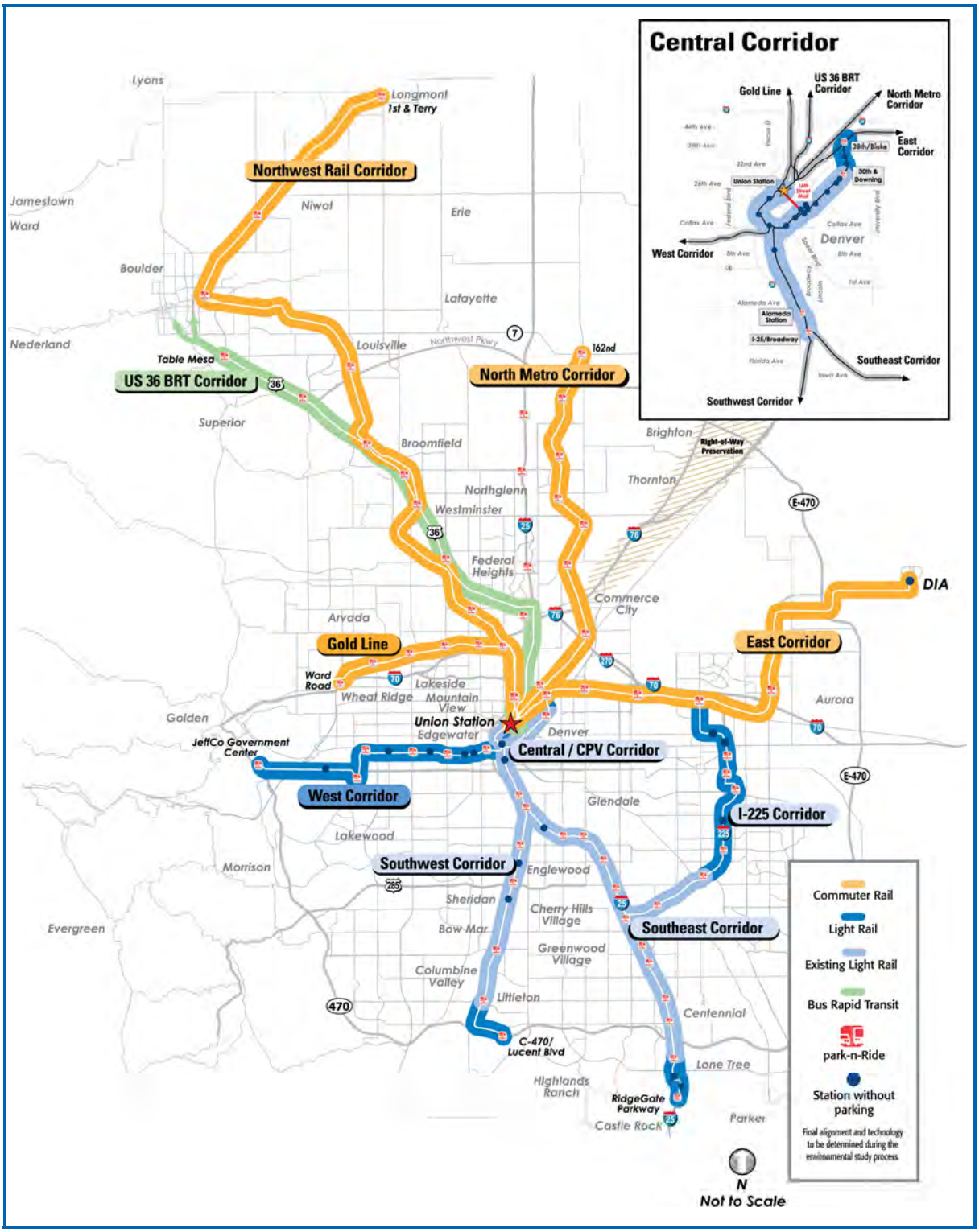
Per the *2035 Metro Vision Regional Transportation Plan (MVRTP)* (DRCOG 2007):

- By 2035, population in the project study area is forecast to increase by 43 percent and employment is forecast to increase by 58 percent.
- Programmed roadway improvements are not expected to keep pace with projected demand, as: (1) regional personal trips will increase by 59 percent, (2) regional vehicle miles traveled (VMT) will increase by 72 percent, (3) regional roadway lane miles with more than three hours per day of severe congestion will increase by 203 percent, and (4) regional vehicles hours of delay will increase by 353 percent.

Need 2: Provide consistent and reliable transit travel times – Unreliable automobile travel times are anticipated both from day to day and throughout the day (peak versus off-peak) in 2035. Travelers will also experience unexpected delays due to accidents or inclement weather. An option such as rail transit would provide more consistent, reliable, safe, and congestion-free travel on its own dedicated and protected right-of-way (ROW).

Need 3: Enhance regional connectivity – The Denver metropolitan region currently has gaps in multi-modal regional transit connectivity. FasTracks is primarily a plan to fill in major gaps with fixed guideway transit (rail) and bus rapid transit. The NWR Corridor would link with seven other RTD rail corridors at DUS (see Figure ES-2).

FIGURE ES-2. FASTRACKS PROGRAM



Source: RTD, 2009.

Need 4: Provide an affordable transit investment – Any transit improvements must be affordable within the FasTracks budget. In addition, the associated operating costs must be realistic and reasonable for RTD to assume the service. In 2004, the *FasTracks Plan* allocated $565.1 million (in year of expenditure dollars) for NWR Corridor capital costs out of the overall $4.7 billion system-wide budget. The 2009 RTD Annual Program forecasts the NWR Corridor Project capital costs at $641.1 million (in 2008 dollars).

Need 5: Reinforce local and regional transportation and land use plans – The NWR Corridor is part of the 122-mile system of new rail transit facilities proposed within the regional FasTracks Program. To assess potential local community acceptance of the NWR Corridor Project, regional and local plans were reviewed. Local plans for communities along the proposed rail alignments were found to be in support of commuter rail serving their jurisdiction. Plans found to be in support of the NWR Corridor Project include:

- *FasTracks Plan* (RTD 2004)*;*
- *2035 MVRTP* (DRCOG 2007)*;*
- *Adams County Comprehensive Plan, 2004;*
- *Adams County Transportation Plan, 1996;*
- *Adams County Transit Oriented Development and Rail Station Area Planning Guidelines, 2007;*
- *Adams County Clear Creek Valley Transit Oriented Development Plan, 2009;*
- *Westminster Comprehensive Plan, 2004;*
- *Original Broomfield Neighborhood Plan, 2008;*
- *City and County of Broomfield Comprehensive Plan, 2005;*
- *City of Broomfield Strategic Plan, 1998;*
- *The Highway 42 Revitalization Area Comprehensive Plan, 2003;*
- *Downtown Louisville Framework Plan, 1999;*
- *Boulder Transit Village Area Plan, 2007;*
- *City of Boulder Transportation Master Plan, 2003;*
- *Boulder County Comprehensive Plan, 1978;*
- *Gunbarrel Community Center Plan, 2004;*
- *Longmont Multi-Modal Transportation Plan, 2005; and*
- *Longmont/RTD Station and Transit Oriented Development (TOD) Analysis, 2005.*

ES.3 PREVIOUS PLANNING STUDIES

Previous studies recommended the implementation of rail transit in the NWR Corridor. The NWR Corridor EE uses those conclusions as the starting point for further evaluation, carries forward the outcomes of those previous rail studies as assumptions, and updates and builds upon the data collected (consistent with FHWA/FTA guidance, *Linking the Transportation Planning and NEPA Processes [FTA and FHWA 2005]*).

The studies that have analyzed transit improvements for portions of the NWR Corridor since 2000 are summarized in Table ES-1.

TABLE ES-1. PREVIOUS TRANSPORTATION STUDIES

Date Completed	Title (Agency)	Summary
2001	*US 36 Major Investment Study* (RTD)	Recommended commuter rail service in US 36 Corridor along the BNSF Railway Company alignment and highway improvements along US 36.
2004	*FasTracks Plan* (RTD)	Regional rail and bus expansion initiative adopted in December 2004 that included commuter rail, specifically DMU, along the BNSF Railway Company alignment.
2005	*Longmont Diagonal Rail Feasibility Study* (RTD)	Determined that a commuter rail transit extension from Boulder to Longmont was feasible.
2006	*Longmont Diagonal Rail Environmental Evaluation* (RTD)	Environmental Evaluation of commuter rail transit improvements along the BNSF Railway Company alignment from Boulder to Longmont.
2007	*US 36 EIS/BE (URS)**	DEIS and BE for transit and roadway improvements in US 36 Corridor between Denver and Boulder. Recommended commuter rail along the BNSF Railway Company alignment and highway improvements along US 36. The US 36 Final EIS was distributed to the public on October 30, 2009 and a ROD was signed by FHWA and FTA in December 2009.
2009	*Commuter Rail Maintenance Facility Supplemental Environmental Assessment to FasTracks Commuter Rail Corridors* (RTD)	Supplemental Environmental Assessment (SEA) for a commuter rail maintenance facility and lead track from DUS to Pecos Street. This document is a supplement to the Gold Line Final EIS that is described below. Recommended a track alignment from DUS to Pecos Street along the BNSF Railway Company alignment and a commuter rail maintenance facility at Fox North site (north of 48th Avenue and Fox Street in the City and County of Denver).
2009	*Gold Line Final EIS* (RTD)	Final EIS and BE for transit improvements primarily along the Union Pacific Railroad Company and BNSF Railway Company alignments from DUS to Ward Road in Wheat Ridge, Colorado. The Gold Line ROD was signed on November 2, 2009.

Source: NWR Corridor Project Team, 2009.

Notes:

*The early stages of US 36 DEIS/BE were a joint effort between CDOT and RTD that analyzed rail and highway improvements. In 2006, FHWA and FTA decided that the rail and highway elements of the project had independent utility and should proceed separately. The resulting US 36 DEIS/BE concluded in 2007 and only included highway improvements.

BE = Basic Engineering
CDOT = Colorado Department of Transportation
DEIS = Draft Environmental Impact Statement
DMU = diesel multiple unit
CRMF SEA = Commuter Rail Maintenance Facility Supplemental Environmental Assessment
DEIS = Draft Environmental Impact Statement
DMU = diesel multiple unit
DUS = Denver Union Station
Final EIS = Final Environmental Impact Statement
FHWA = Federal Highway Administration
DMU = Federal Transit Administration
ROD = Record of Decision
RTD = Regional Transportation District
US 36 = United States Highway 36

ES.4 ALTERNATIVES CONSIDERED

ES.4.1 What alignment alternatives were evaluated?

The NWR Corridor EE evaluated a No Action Alternative and seven Build Alternatives. Table ES-2 and Figure ES-3 through ES-5 present the reasonable range of alternatives considered during the NWR Corridor EE. Under the No Action Alternative, no new rail transit projects would be constructed within the project study area for the NWR Corridor Project. The No Action Alternative provides a basis for comparison to the build alternatives. See Section ES-4.6 for more details.

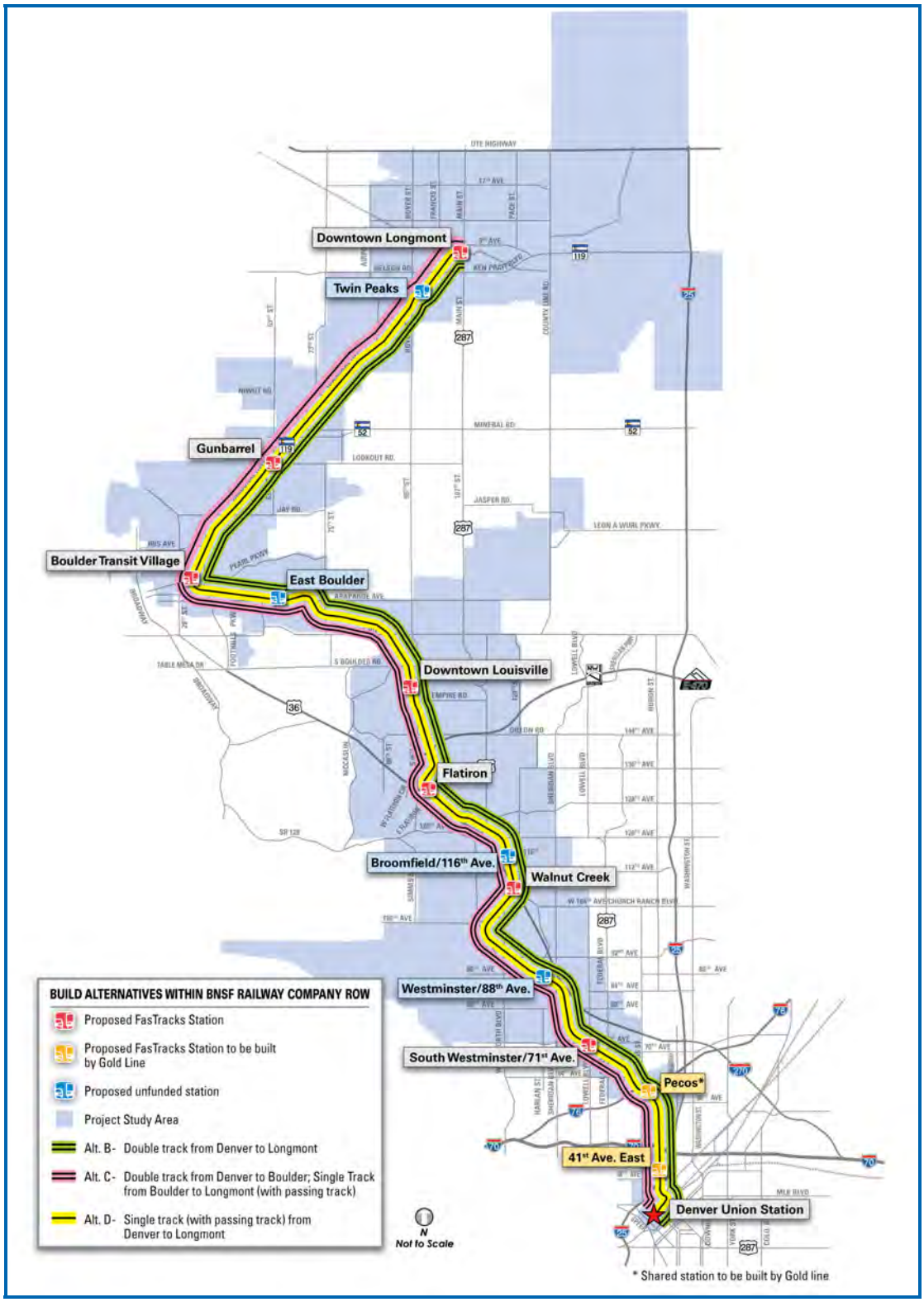
Early on in the NWR EE process, conceptual alignment alternatives were evaluated. The alternatives analysis considered alignments that would stay within the BNSF Railway Company ROW, and others that were outside of the railroad ROW. Alternative alignments outside of the BNSF Railway Company ROW considered building the project along the existing proximate highways (US 36 and SH 119) and roadways or building the project adjacent to, but not within, the BNSF Railway Company ROW. All alternatives located outside of the BNSF Railway Company ROW that were evaluated were eliminated during Level 1 screening because they did not meet the project's Purpose and Need and were not practicable, due to the requirement for additional property acquisition that would result in impacts to a large number of private properties and impacts to sensitive environmental resources.

TABLE ES-2. COMPLETE RANGE OF CONCEPTUAL ALTERNATIVES

No Action Alternative
Alternative A - No Action Alternative
Within BNSF Railway Company Right-of-Way
Alternative B – Double Track from Denver to Longmont
Alternative C – Double Track from Denver to Boulder; Single Track (with passing track) from Boulder to Longmont
Alternative D – Single Track (with passing track) from Denver to Longmont
Outside BNSF Railway Company Right-of-Way (Single Track with Passing Track)
Alternative E – Highway Corridor (US 36/SH 119)
Alternative F – BNSF Railway Company Alignment Adjacent to the East
Alternative G – BNSF Railway Company Alignment Adjacent to the West
Alternative H – BNSF Railway Company Alignment Adjacent East/West Combination

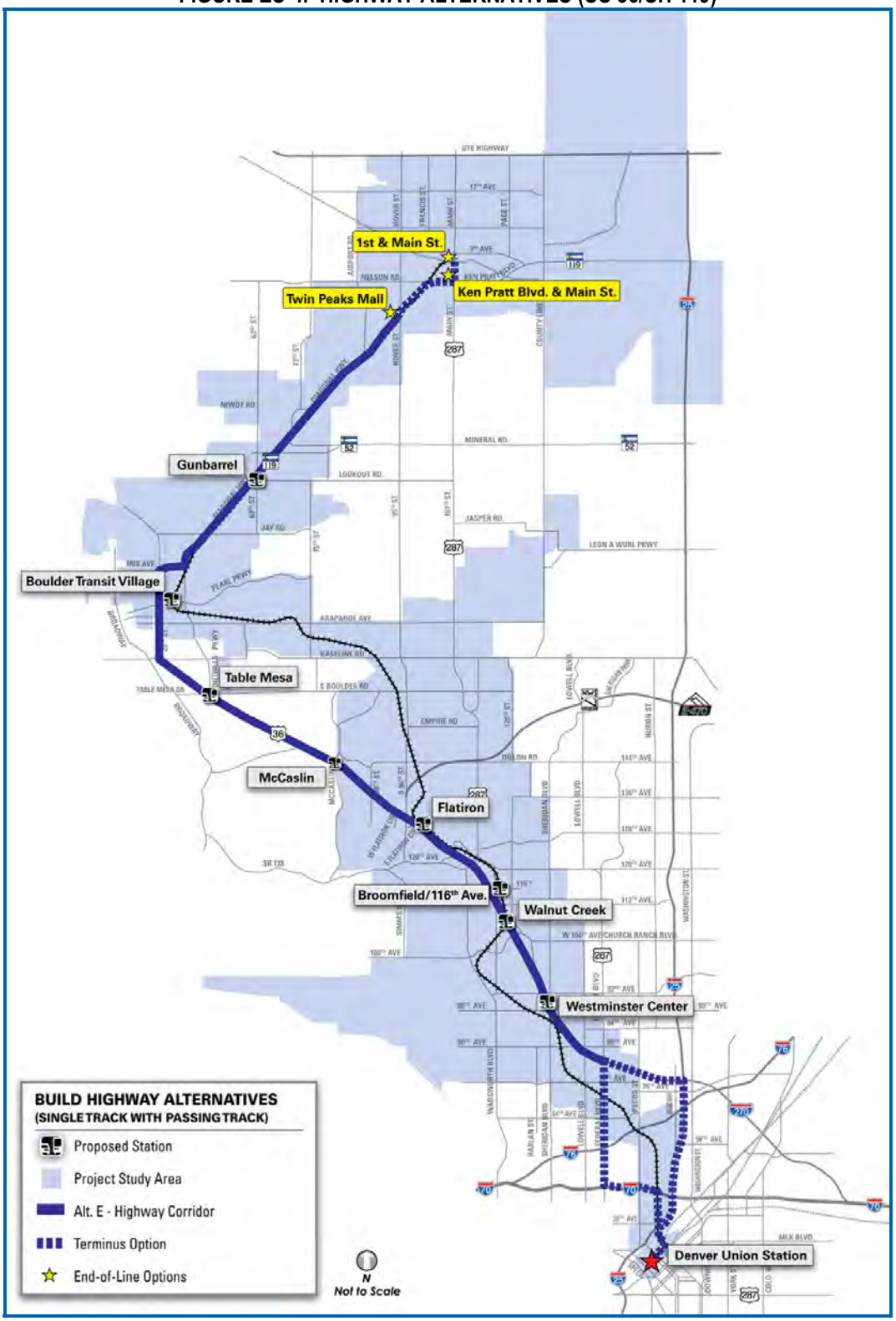
Source: NWR Corridor Project Team, 2008.

FIGURE ES-3. ALTERNATIVES INSIDE BNSF RAILWAY COMPANY RIGHT-OF-WAY



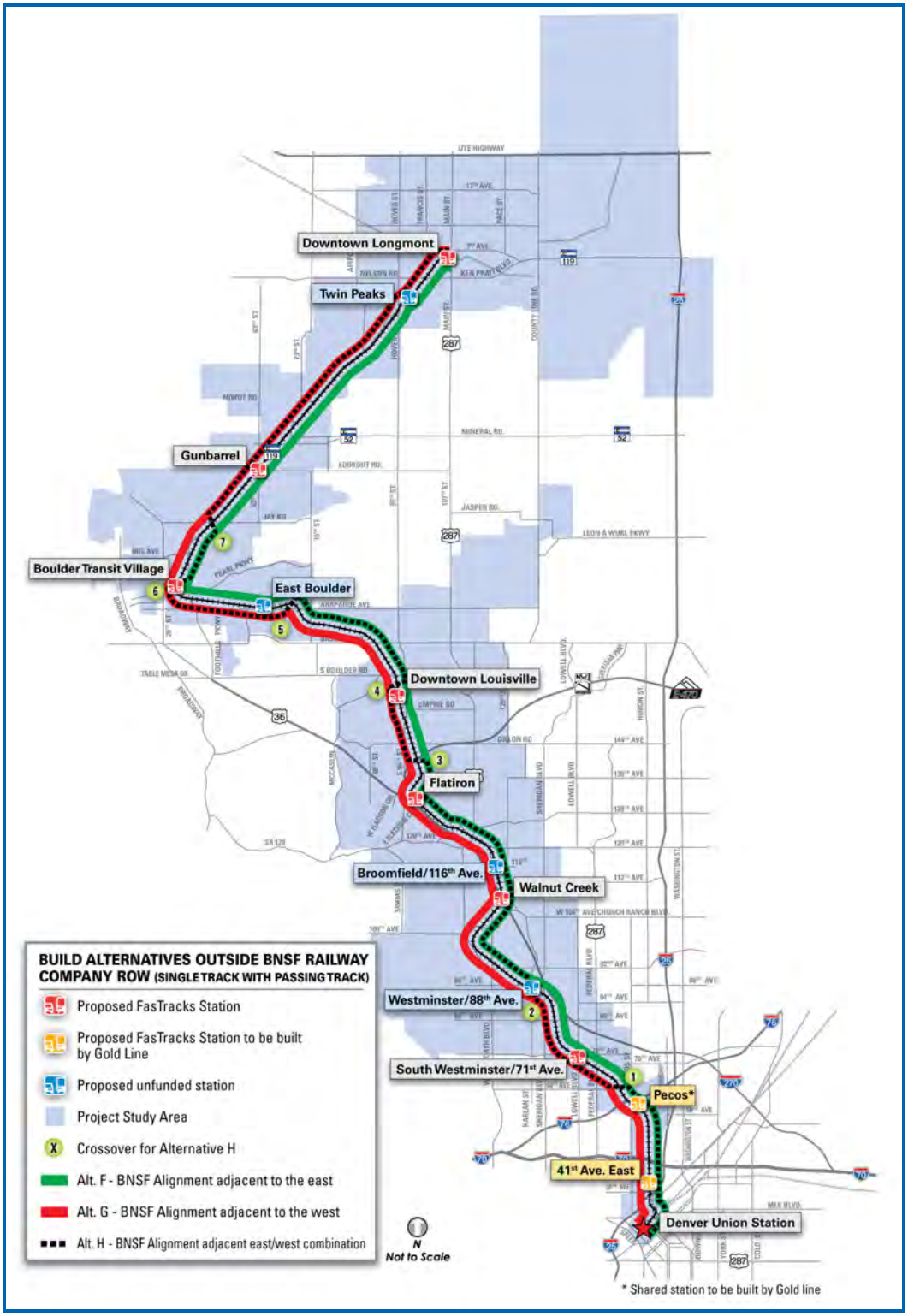
Source: NWR Corridor Project Team, 2010.

FIGURE ES-4. HIGHWAY ALTERNATIVES (US 36/SH 119)



Source: NWR Corridor Project Team, 2007.

FIGURE ES-5. ALTERNATIVES OUTSIDE BNSF RAILWAY COMPANY RIGHT-OF-WAY



Source: NWR Corridor Project Team, 2010.

ES.4.2 How were alternatives evaluated?

The alternatives underwent three levels of screening including: Level 1 – Conceptual Alternative Screening, Level 2 – Preferred Alternative Refinement, and Level 3 – Detailed Alternative Analysis. These are described in more detail below.

Level 1 – The Conceptual Alternative Screening examined a broad range of alternatives. This screening focused on meeting the Purpose and Need statement, avoiding unmitigable environmental impacts, and practicability. An alternative is practicable if it is capable of being implemented after taking into consideration cost, existing technology, and logistics. The result of this screening was the identification of a Preferred Alternative. Since the implementation of a rail transit alternative is a major action, it is important to identify how the Preferred Alternative performs compared to the No Action Alternative within the project study area for the NWR Corridor. All alternatives located outside of the BNSF Railway Company ROW that were evaluated were eliminated during Level 1 screening because they did not meet the project's Purpose and Need.

Level 2 – The Preferred Alternative Refinement focused on design modifications, a re-evaluation of vehicle technologies, development of station architectural styles, and identification of corridor fencing materials. Following the identification of a Preferred Alternative in the Level 1 – Conceptual Alternative Screening, the NWR Corridor Project Team conducted a number of refinements to avoid and/or minimize impacts to environmental resources and to select a preferred vehicle technology.

Level 3 – The Detailed Alternative Analysis subjected the Preferred Alternative to a detailed examination of capital costs, ridership, travel time, environmental impacts, and public and agency support. The Preferred Alternative was also compared with a No Action Alternative (comprised of existing and committed transportation improvements in the corridor). This level of analysis was both qualitative and quantitative and focused on the identification of the Least Environmentally Damaging Practicable Alternative (LEDPA). The LEDPA as defined in 40 CFR Part 230.10(a), is "*the alternative with the least impacts to the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences*." The identification of the LEDPA is important to meet the requirements of the USACE, the lead federal agency involved in the project as well as the overall intent of NEPA. The NWR Corridor EE document summarizes this evaluation and presents the results of the Level 3 – Detailed Alternative Analysis.

ES.4.3 What criteria were used to evaluate the alternatives?

The criteria used to evaluate the alternatives for each screening level are presented in Table ES-3.

TABLE ES-3. NWR CORRIDOR EE SCREENING EVALUATION CRITERIA

Level 1 – Conceptual Alternative Screening	Level 2 – Preferred Alternative Refinement	Level 3 – Detailed Alternative Analysis
Purpose and Need Examination of environmental impacts including: • Social Impacts • Environmental Justice • Land Use • Economic Considerations • Land Acquisition • Cultural/Historic Resources • Visual • Park Land/Open Space • Air Quality and Energy • Noise and Vibration • Biological Resources • Water Quality/Floodplains • Wetlands • Hazardous Materials • Public Safety and Security • Utilities • Transportation	**Purpose and Need** Potential for avoidance and/or minimization of resource impacts including: • Reducing Station Platform Size • Eliminating Bypass Tracks at Stations • Modifying Station Concept Plans • Modifying the Rail Track Alignment to avoid disturbing property, wetlands, and "drainages" along the entire length of the corridor. Technology Evaluation based on: • Cost effectiveness • Environmental Impacts • Noise and Vibration • Air Quality • Expandability • Alternative fuel options • Maintenance • Community Input Other: • Constructability Evaluation of: • Fencing type • Station architectural style	**Purpose and Need** • Capital cost • Ridership • Travel time • Environmental impacts • Public and agency support

Source: NWR Corridor Project Team, 2009.

ES.4.4 What were the results of the screening?

The results of the three levels of screening are presented in below.

Results of Level 1 – Conceptual Alternative Screening:

During Level 1 screening, Alternatives C & D were eliminated because they would not be able to provide reliable and consistent travel times as identified in the project Purpose and Need. Alternatives E, F, G, and H were eliminated because they would result in greater environmental impacts. As a result, the identified Preferred Alternative is Alternative B.

Results of Level 2 – Preferred Alternative Refinement

Avoidance and/or Minimization of Resource Impacts: Through the NWR Corridor EE process, the footprint of the Preferred Alternative was modified to avoid and/or minimize impacts. The following is a brief description of the minimization measures used to avoid and/or minimize impacts.

Reducing Station Platform Size
The length of all station platforms was reduced from 800 feet to 400 feet, which would accommodate a four-car train. The width of the platform was also narrowed.

Eliminating Passing Tracks at Stations
Initially, a design that completely separated the passenger rail traffic from the freight rail by adding passing tracks at each platform was considered to accommodate level boarding of the passenger trains. In the original design, at each station, one 1,500-foot long passing track would be located on each side of the mainline tracks. In order to minimize impacts, the decision was made to redesign the station platforms without passing tracks. Instead, RTD would provide high blocks, ramps, or other accommodations at each station platform to meet the Americans with Disabilities Act requirements for level boarding, while not prohibiting freight movement.

Modifying Station Concept Plans
Prior to a wetland minimization exercise, four of the 11 proposed stations would have wetland impacts. Those stations include Westminster/88th Avenue, Walnut Creek, East Boulder, and Gunbarrel. After re-evaluating each station concept plan, it was determined that the Westminster/88th Avenue Station concept plan could be modified to eliminate impacts to wetlands.

In Chapter 3 of this EE, impacts of the Preferred Alternative are divided into three categories: corridor alignment, corridor stations and Phase 1 (track from DUS to Bradburn Boulevard including the South Westminster/71st Avenue Station). Note that the wetland impacts at the East Boulder Station, Walnut Creek Station, and Gunbarrel Station are associated with the platforms for the stations, which are included in the impact calculations for the NWR Corridor alignment as opposed to the “station” category of impacts.

Modifying the Rail Track Alignment
In order to minimize wetland and drainage impacts along the length of the corridor, several modifications were made to the initial design of the rail tracks. In total, impacts to

jurisdictional wetlands and other waters were reduced by 0.92 jurisdictional (J) acre to 4.15 J acres (3.36 acres of wetlands and 0.79 acre of other waters) for the 41-mile NWR corridor.

Vehicle Technology Evaluation: Although the original FasTracks Plan, the US 36 DEIS, and the Longmont EE assumed diesel technology, the initial selection of the DMU technology was re-evaluated due to concerns and requests raised by the public. EMU and DMU commuter rail technologies were evaluated and compared to determine which was the more appropriate and viable option for the project. DMU was ultimately selected by the RTD Board as the preferred vehicle type for the project, based on the following determinations:

- More cost-effective for future service expansion to North Front Range;
- Consistency with the original FasTracks Plan (RTD 2004);
- No visual impact or additional costs from catenary system;
- Most cost-effective over 30-year planning horizon; and
- Ability to use alternate fuel in the future.

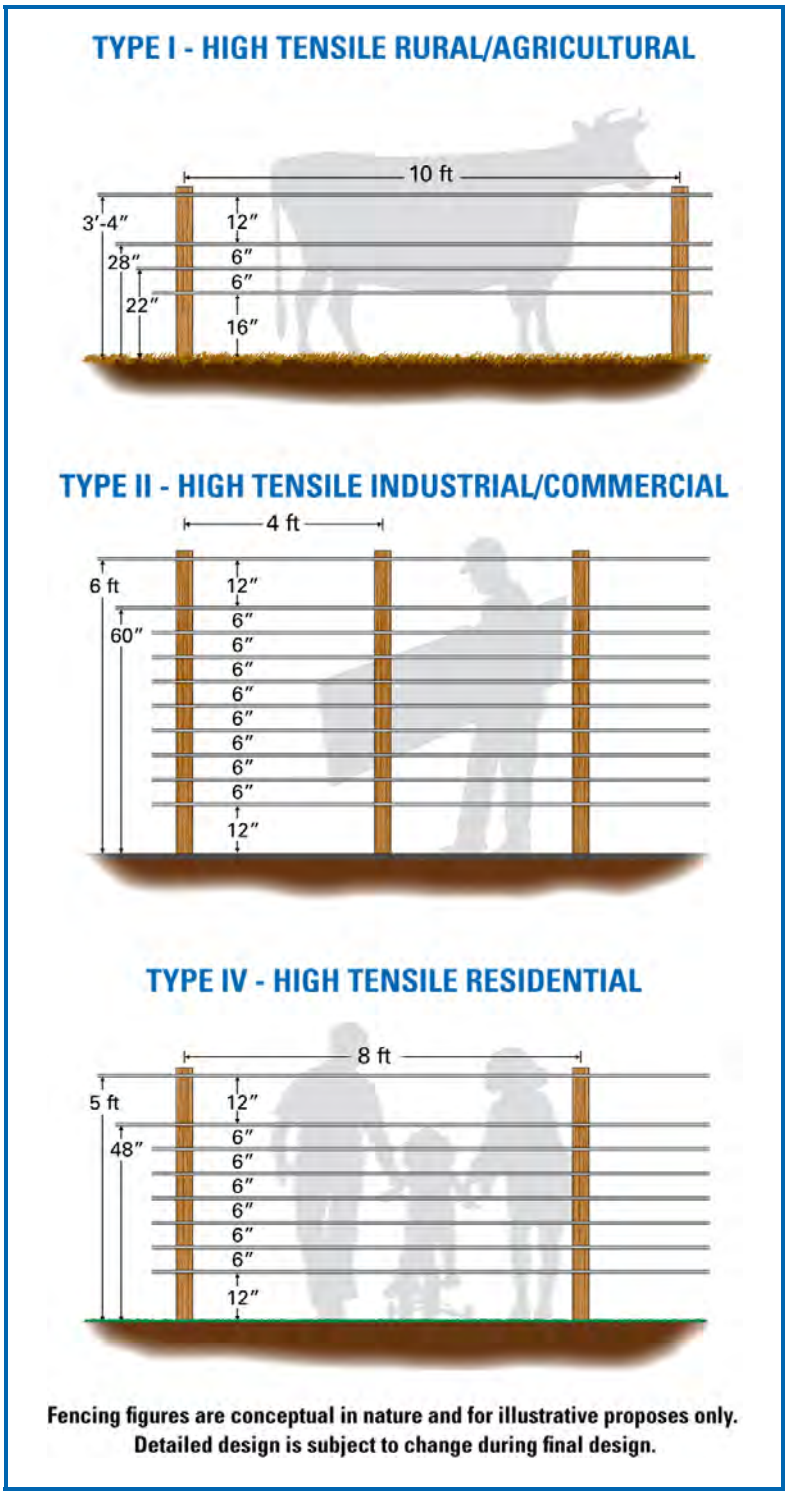
Additionally, in October 2007 the RTD Board unanimously adopted the Responsible Rail Amendment. This amendment commits RTD to work to ensure it purchases fuel efficient, environmentally responsible and sustainable commuter rail vehicles.

Evaluation and Selection of Alignment Fencing Materials: Because trespassers in commuter rail alignments have been found to be the primary cause of fatalities, RTD's Safety and Security protocols require that the alignment be fenced. The presence and aesthetic effect of alignment fencing was a concern of local agencies and jurisdictions during the NWR Corridor EE process. For this reason, RTD developed an approach to engage local governments and agencies in the selection of the proposed fencing materials. This process was conducted with the understanding that in some cases the premium for materials more costly than the chain link fence (RTD design standard) would be paid for by the local entity. The purpose of the process was to review adjacent land use types (rural/agricultural, industrial/commercial, and residential) along the corridor, identify key design issues (train speed and related safety issues, security issues, environmental concerns, and aesthetic concerns) and receive stakeholder feedback on the selected fencing types recommended for the project design, while considering safety and security.

The process involved establishing a NWR Fencing Subcommittee consisting of representatives from the local jurisdictions and resource agencies to assist RTD with developing recommendations for fencing types along the NWR Corridor. As a result of NWR Fencing Subcommittee meetings, specific fencing design and materials were recommended for the alignment. A conceptual depiction of the high-tensile fencing types is provided in Figure ES-6.

Additionally, RTD will consider utilizing existing fences along the alignment in lieu of additional NWR-provided fences in areas where desired and where RTD criteria can be met. RTD criteria includes a requirement that the fence be owned and maintained by a governmental agency or other permanent entity or organization that has authority to enter into an agreement with RTD and where the existing fence meets specific design standards. In these specific locations, RTD will continue to work with the local jurisdictions and adjacent property owners throughout final design.

FIGURE ES-6. PROPOSED FENCING TYPES PROPOSED FOR THE NWR CORRIDOR PROJECT



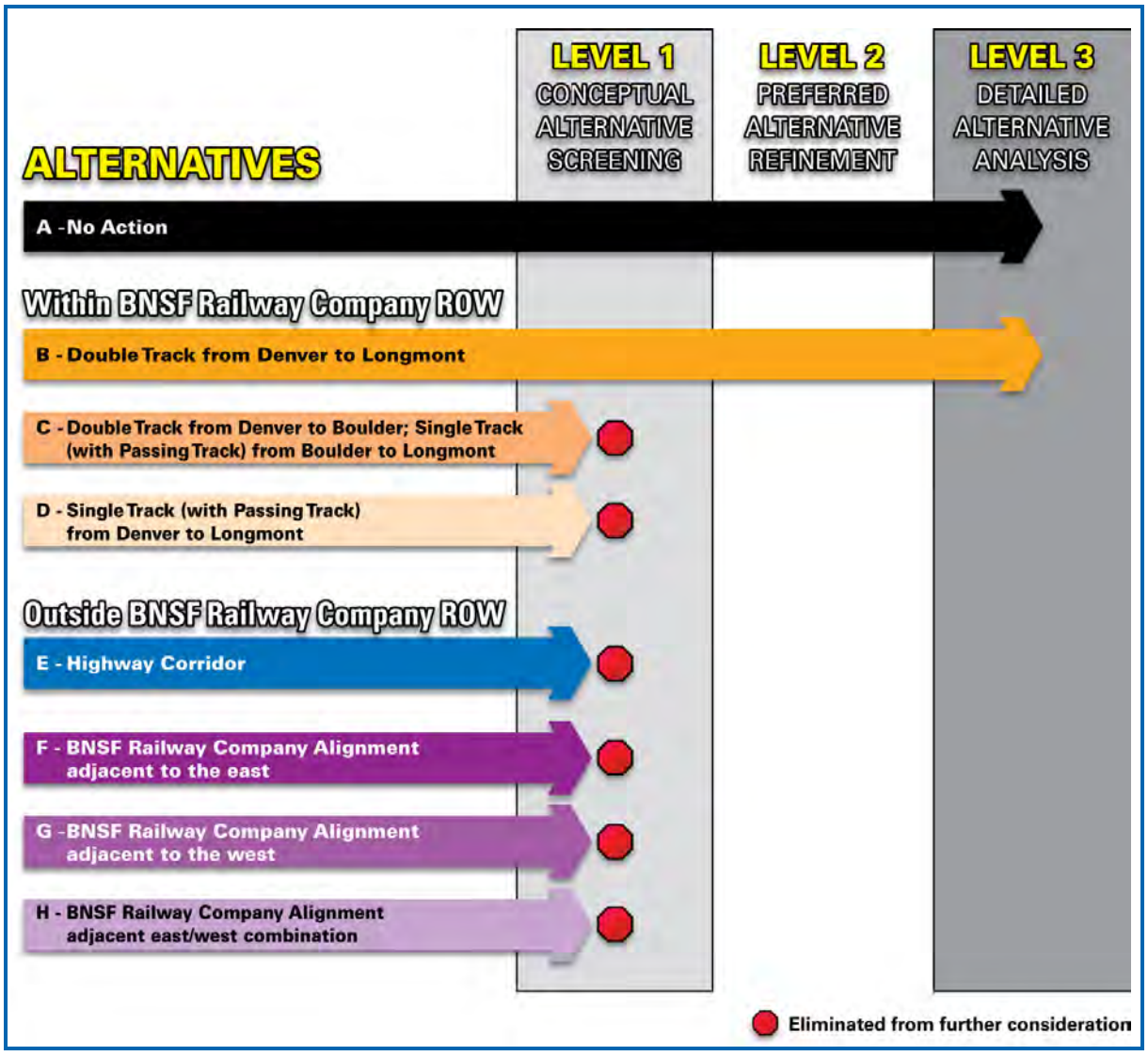
Source: NWR Corridor Project Team, 2009.

Note: This figure is conceptual in nature and for illustrative purposes only. Specific dimensions and details on materials will be identified during final design. No Type III fence was identified for use in the NWR at this preliminary stage. This is subject to change during final design.

Conclusion

As a result of the Level 1 – Conceptual Alternative Screening and Level 2 – Preferred Alternative Refinement, Alternative B – Double Track from Denver to Longmont was selected as the Preferred Alternative. Alternative A – No Action and the Preferred Alternative, with DMU vehicle technology, was carried forward to undergo detailed evaluation in the NWR Corridor EE. Figure ES-7 depicts a summary of the screening process.

FIGURE ES-7. RESULTS OF THREE LEVEL ALTERNATIVES SCREENING PROCESS



Source: NWR Corridor Project Team, 2009.

ES.4.5 What are the alternatives carried into the EE?

Alternative A, No Action, is carried forward as a baseline for comparison to the Preferred Alternative. Alternative B, Double Track within BNSF Railway Company ROW from Denver

to Boulder to Longmont with Downtown Longmont Station terminus was identified as the Preferred Alternative in the Level 1 screening evaluation and was carried forward for detailed evaluation in this EE.

ES.4.6 What is the No Action Alternative?

The No Action Alternative provides a basis of comparison for determining the impacts of project alternatives. It does not mean that "nothing happens." The No Action Alternative includes existing projects and financially committed projects within the study area to respond to the expected growth in the study area to the year 2035. These projects would be completed with or without implementation of the Preferred Alternative. By accounting for other projects to be built in a corridor or study area, the No Action Alternative provides the benchmark from which the Preferred Alternative is evaluated. Both highway and transit projects are part of the No Action Alternative.

Transit Projects

In the No Action Alternative, bus service changes or enhancements likely to occur in the next one to five years were included, as well as committed service enhancements that will occur between 2005 and 2035. The No Action Alternative assumes no additional transit facilities in the project study area for the NWR Corridor. Existing park-n-Rides in the project study area would remain in their same locations and configurations as today. Bus operation modifications for the No Action Alternative include more frequent service on existing routes B and H between Denver and Boulder, a re-routed skyRide route for service from Boulder to Denver International Airport, and new Activity Center Connector routes to activity centers in the corridor. In addition to changes in bus service, the No Action Alternative would assume the implementation of the entire FasTracks Plan, except for the NWR Corridor project.

Roadway Projects

The roadway improvement projects identified under the No Action Alternative for the 2035 planning year horizon (DRCOG, 2009) are indicated in Table ES-4.

TABLE ES-4. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE HIGHWAY IMPROVEMENTS

Project Location/Name	Project Description
SH 119 (Longmont Diagonal): Foothills Parkway to Hover Road Operational Improvements	Highway operational improvements
SH 119: SH 52 New Interchange	New interchange
US 36 Foothills Parkway to I-25	Add managed BRT/HOV lane
US 36: McCaslin Boulevard Interchange Reconstruction	Interchange reconstruction
US 36: Sheridan Boulevard Interchange Reconstruction	Interchange reconstruction
US 36: Wadsworth Parkway Interchange Reconstruction	Interchange reconstruction
US 36 Bikeway	Bikeway

Source: DRCOG, 2009.
BRT = bus rapid transit
HOV = high-occupancy vehicle
I-25 = Interstate 25
RTP = Regional Transportation Plan
SH = State Highway
US 36 = United States Highway 36

More information on the US 36 EIS/BE process is provided in Section 2.1.3, US 36 EIS and Basic Engineering. The US 36 Final EIS was distributed to the public on October 30, 2009 and a Record of Decision (ROD) was signed by FHWA and FTA in December 2009.

ES.4.7 What is the Preferred Alternative?

Elements of the Preferred Alternative include the rail alignment, station locations, and operational characteristics as described below and depicted in Figure ES-8.

Alignment

The NWR Corridor Project will be phased; the first phase, from DUS to the South Westminster/71^{s} Avenue Station (approximately up to Bradburn Boulevard) would use EMU technology. Phase 2 would use DMU technology from DUS to Longmont and would share the tracks used by the EMU vehicles in the Phase 1 segment between DUS and the South Westminster/71st Avenue Station. Ultimately, the Preferred Alternative would assume the provision of commuter rail transit from DUS in the City and County of Denver to downtown Longmont. Track from the DUS terminal to what is known as the DUS "throat" near Coors Field at Park Avenue was considered a part of the DUS Project. As a result, impacts for this segment of track (DUS to the throat) are presented in the DUS Final Environmental Impact Statement (Final EIS) document. The study area for the NWR EE initiates at the DUS “throat” and extends to the north. The first 3.5 miles of the alignment between the DUS throat and Pecos Street would be shared with the Gold Line Project. The remaining 37.5 miles of track would be dedicated to the NWR Corridor.

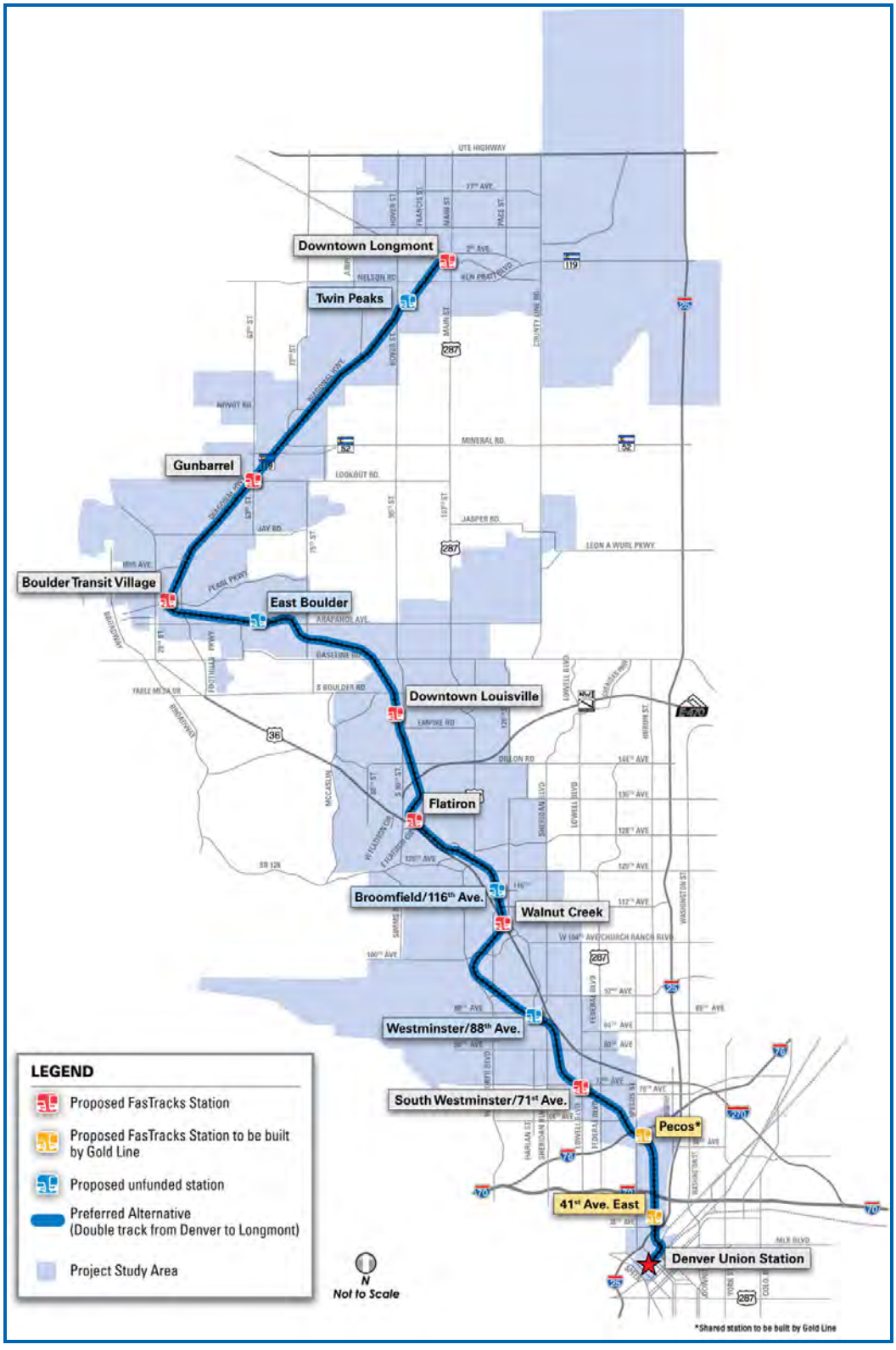
Between the South Westminster/71st Street Station and Longmont, the existing BNSF Railway Company track would be rehabilitated/replaced, and one new track adjacent to the existing BNSF Railway Company track would be constructed. Both tracks would be utilized

by freight and commuter rail vehicles. Between the South Westminster/71st Street Station and DUS, the track would be in exclusive transit ROW, owned by RTD.

The NWR Corridor cannot function without a supporting Commuter Rail Maintenance Facility (CRMF). Therefore, the Preferred Alternative assumes the provision of a CRMF located on the Fox North Site, north of downtown Denver. The CRMF would include facilities to repair, maintain, clean, fuel, and store both DMU and electric multiple unit (EMU) commuter rail trains for the FasTracks commuter rail program. The impacts associated with the CRMF were initially presented in a Supplemental Environmental Assessment (SEA), a supplement to the Gold Line DEIS, which was distributed to the public in April 2009. Since that time, the design of the CRMF was updated and environmental impacts associated with the CRMF are presented in detail in the *Gold Line Final Environmental Impact Statement* (Federal Transit Administration 2009). The Gold Line ROD was signed by FTA on November 2, 2009. The CRMF impacts are incorporated here by reference. See Figure ES-21 in Section ES.4.10, Phased Implementation, for a depiction of the location of the CRMF.

A depiction of a DMU Commuter Rail vehicle

FIGURE ES-8. PREFERRED ALTERNATIVE



Source: NWR Corridor Project Team, 2010.

Stations

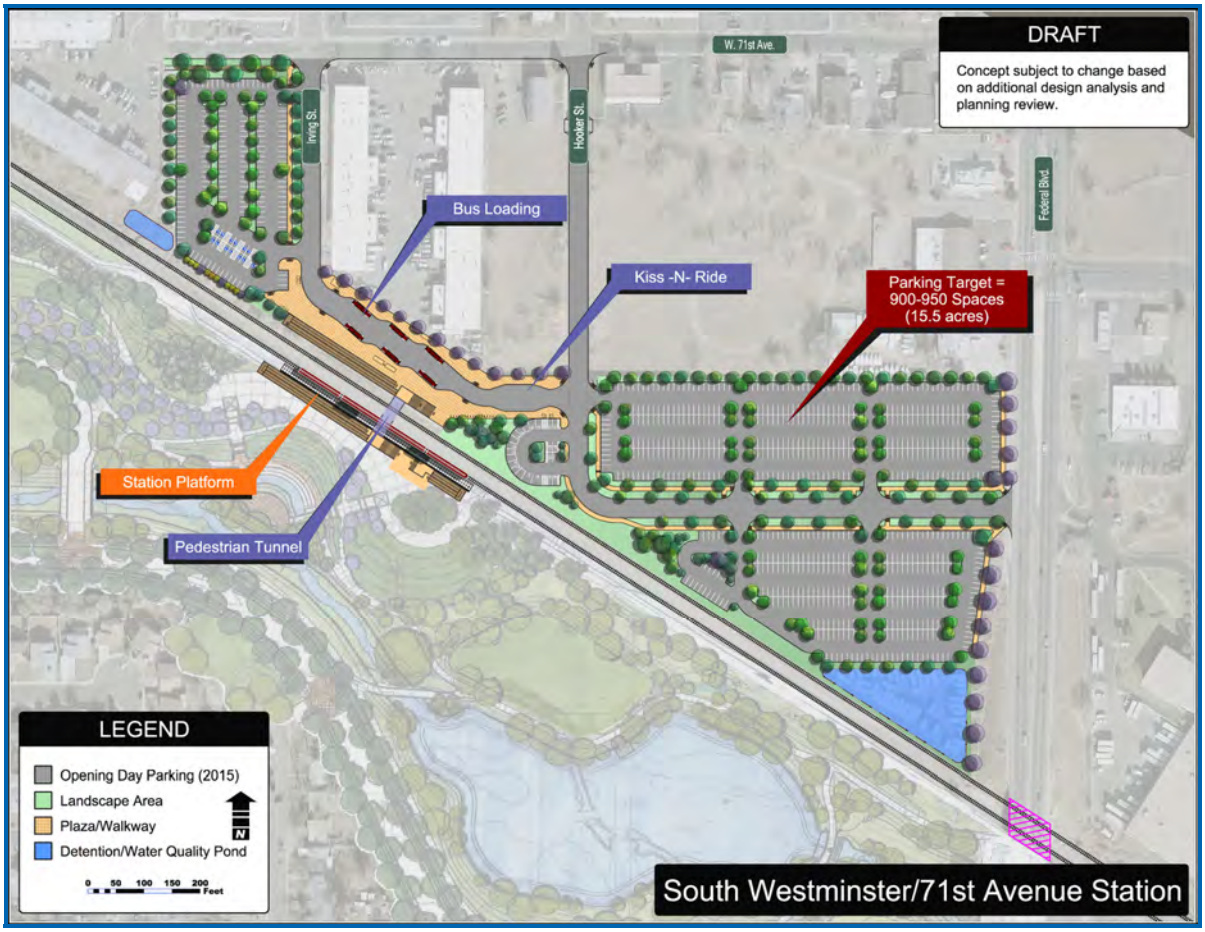
There are 11 stations included as part of the Preferred Alternative located at:

- South Westminster/71st Avenue
- Westminster/88th Avenue
- Walnut Creek
- Broomfield/116th Avenue
- Flatiron
- Downtown Louisville
- East Boulder
- Boulder Transit Village
- Gunbarrel
- Twin Peaks
- Downtown Longmont

Four of the 11 stations – Westminster/88th Avenue, Broomfield/116th Avenue, East Boulder, and Twin Peaks – would not be funded by FasTracks and would require additional funding sources in order to be constructed. The environmental impacts (including aquatic) related to the four unfunded stations are included as part of the evaluation in this EE.

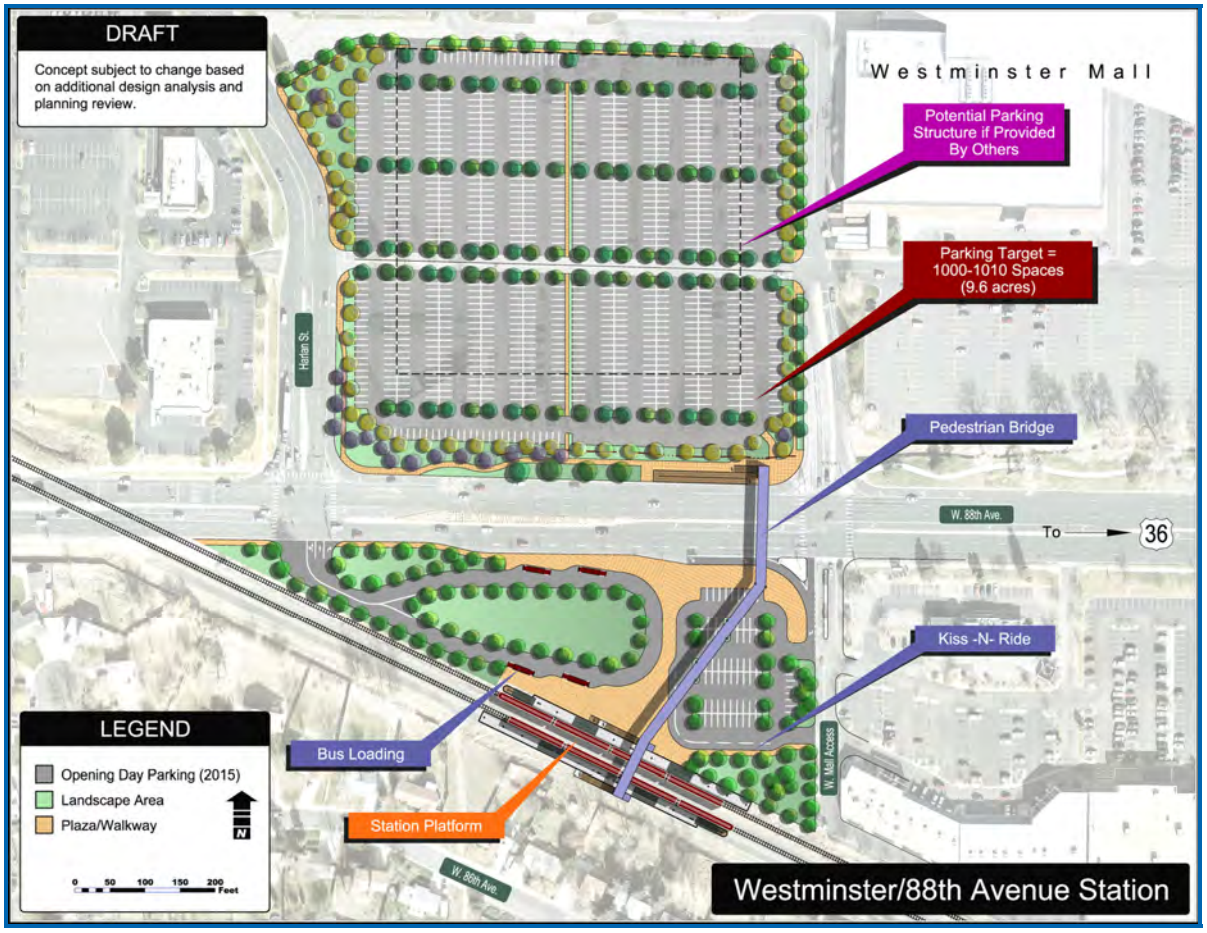
Conceptual site layouts for the proposed stations are provided in Figures ES-9 through ES-20 below.

FIGURE ES-9. SOUTH WESTMINSTER/71ST AVENUE STATION CONCEPT PLAN



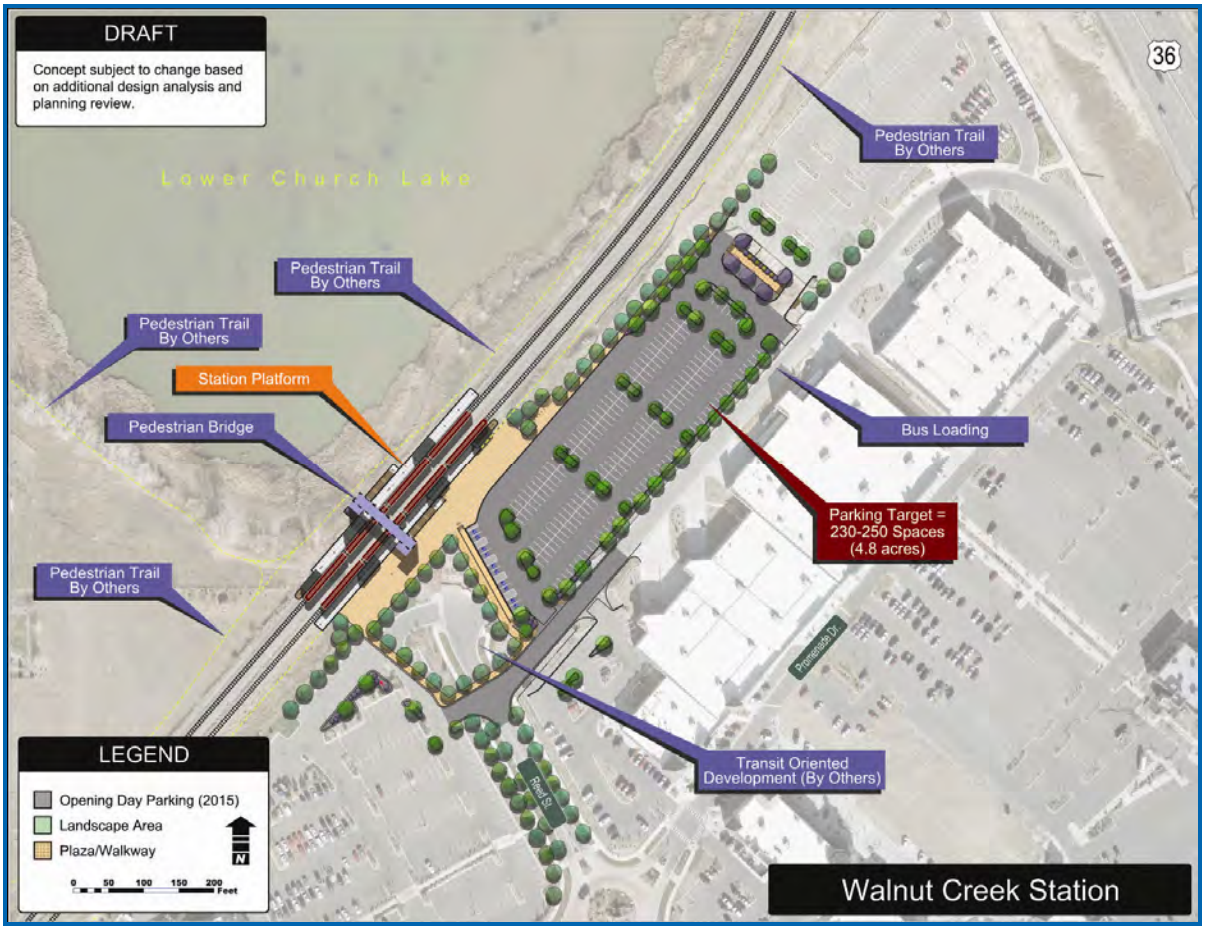
Source: NWR Corridor Project Team, 2009.

FIGURE ES-10. WESTMINSTER/88TH AVENUE STATION CONCEPT PLAN



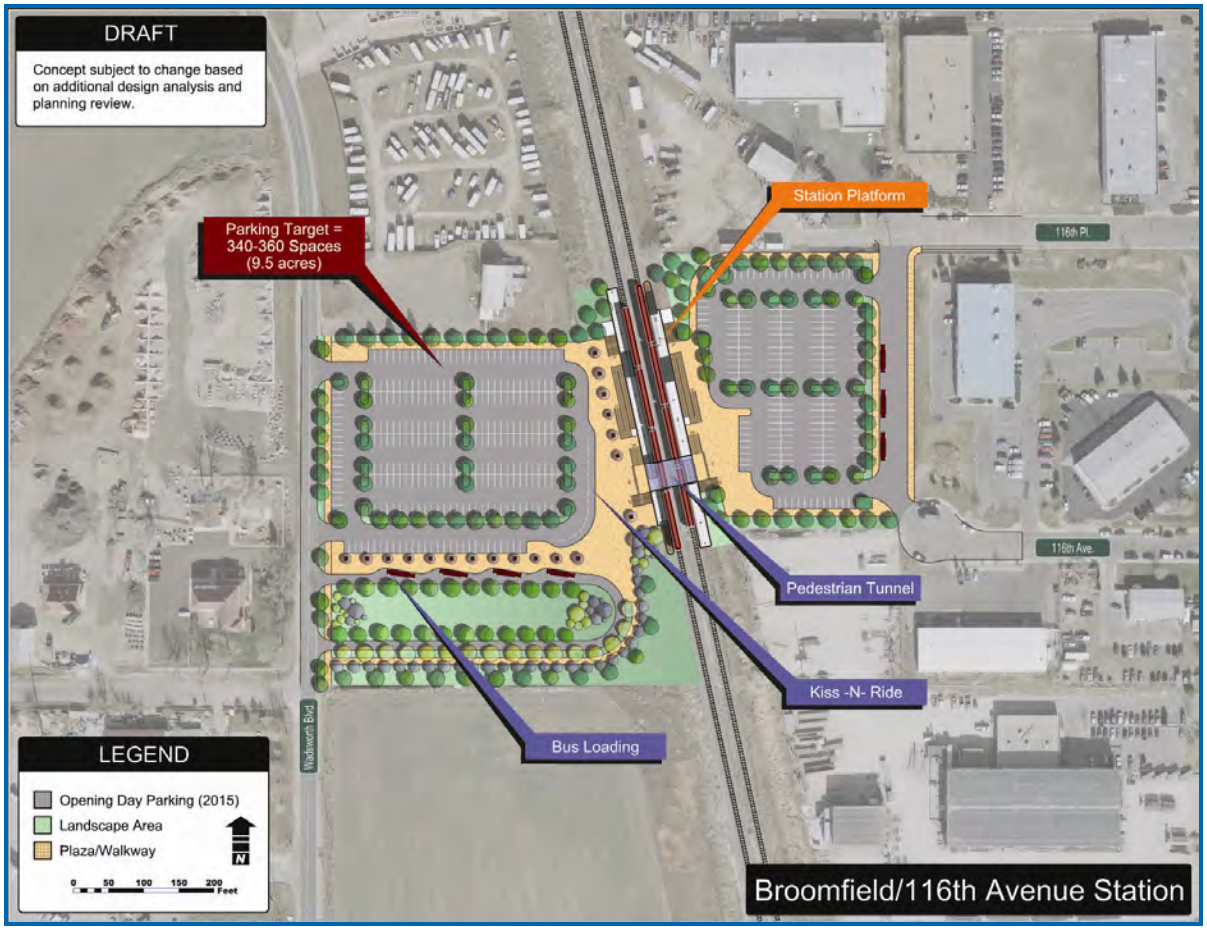
Source: NWR Corridor Project Team, 2009.

FIGURE ES-11. WALNUT CREEK STATION CONCEPT PLAN



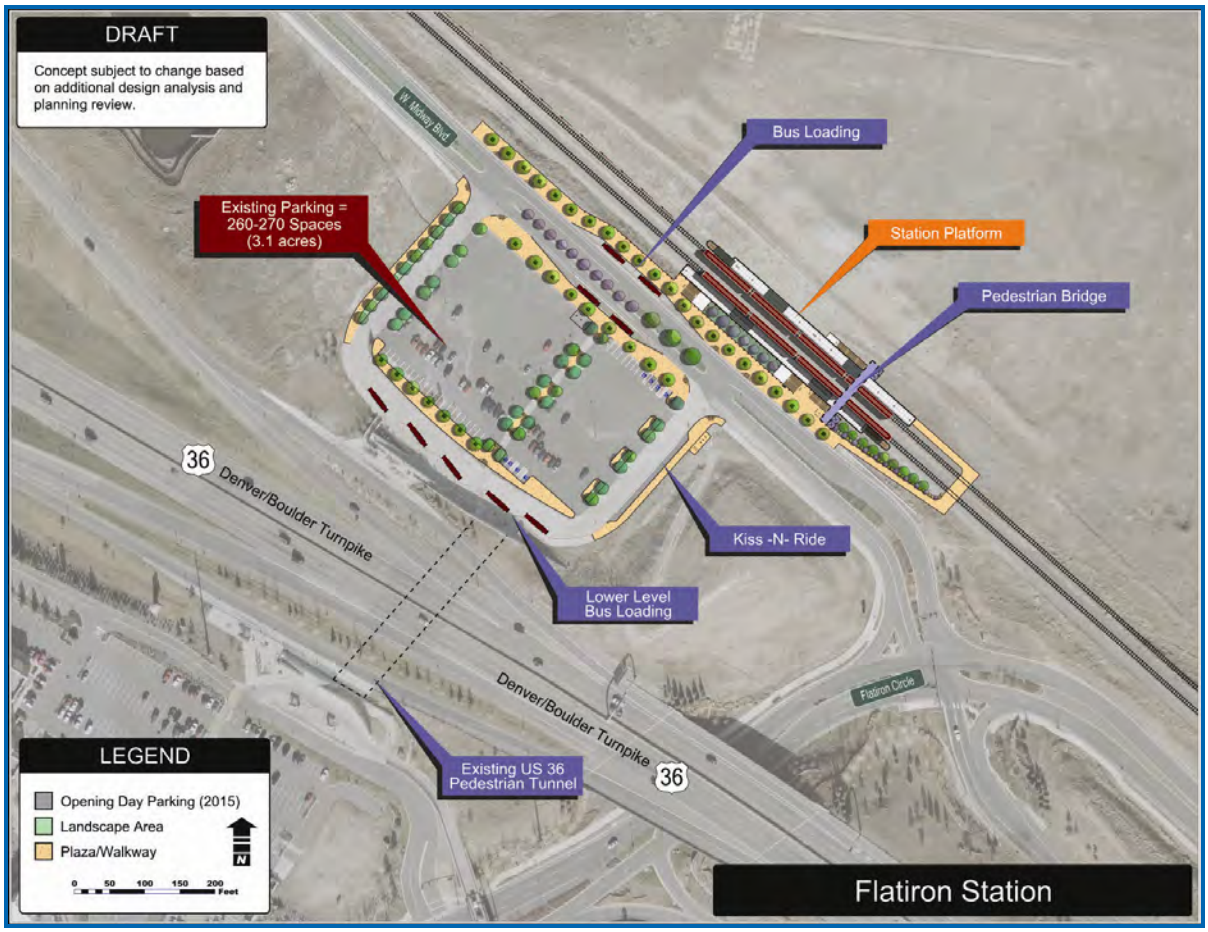
Source: NWR Corridor Project Team, 2009.

FIGURE ES-12. BROOMFIELD/116TH AVENUE STATION CONCEPT PLAN



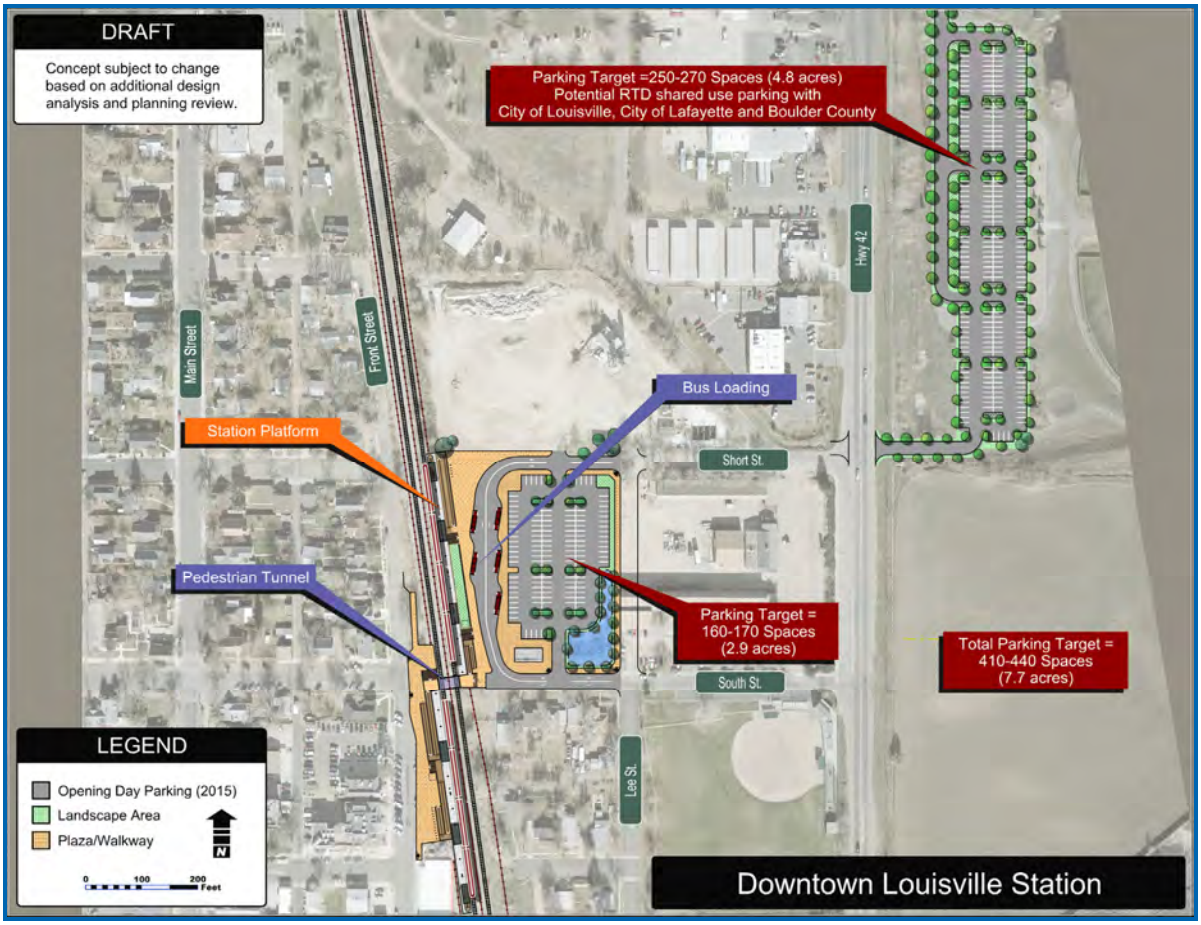
Source: NWR Corridor Project Team, 2009.

FIGURE ES-13. FLATIRON STATION CONCEPT PLAN



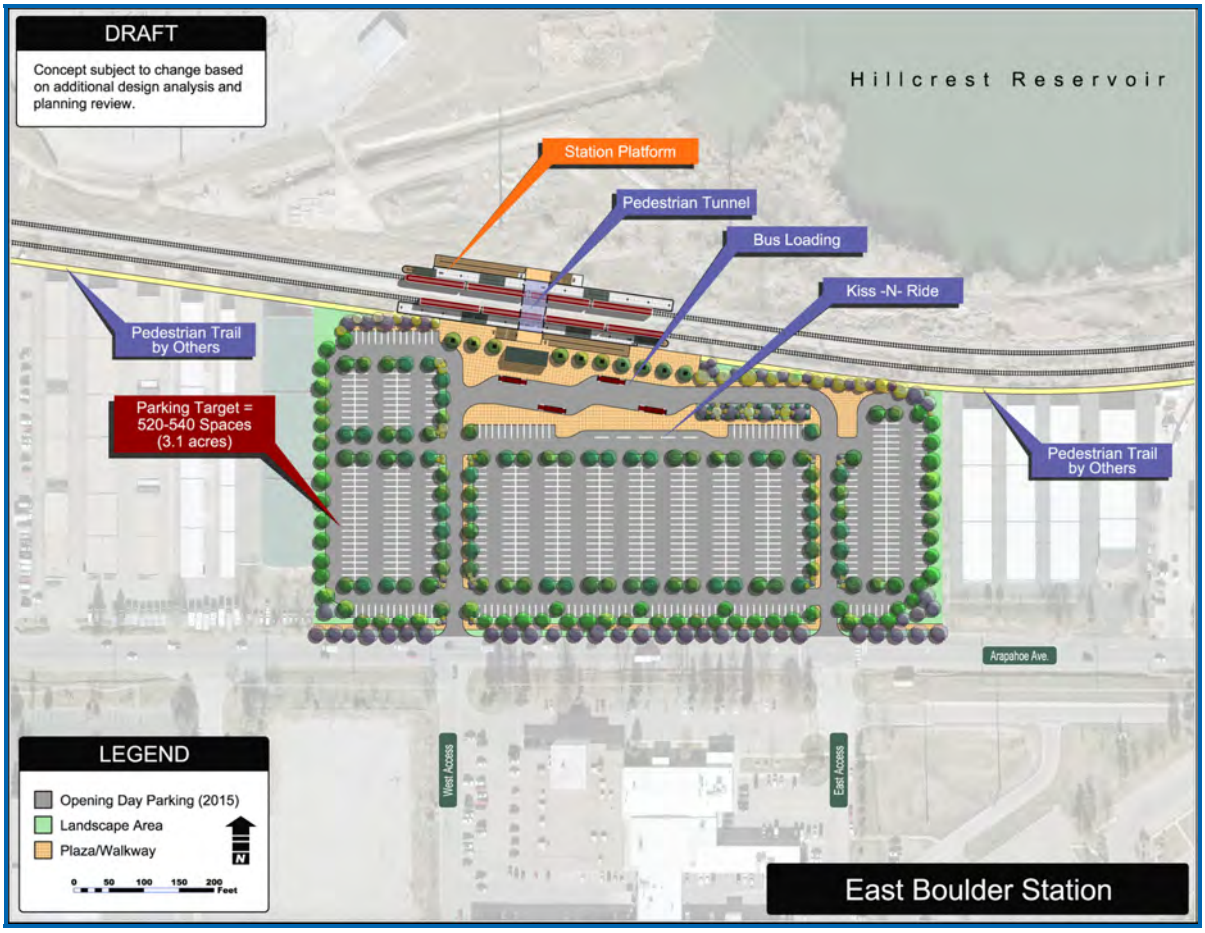
Source: NWR Corridor Project Team, 2009.

FIGURE ES-14. DOWNTOWN LOUISVILLE STATION CONCEPT PLAN



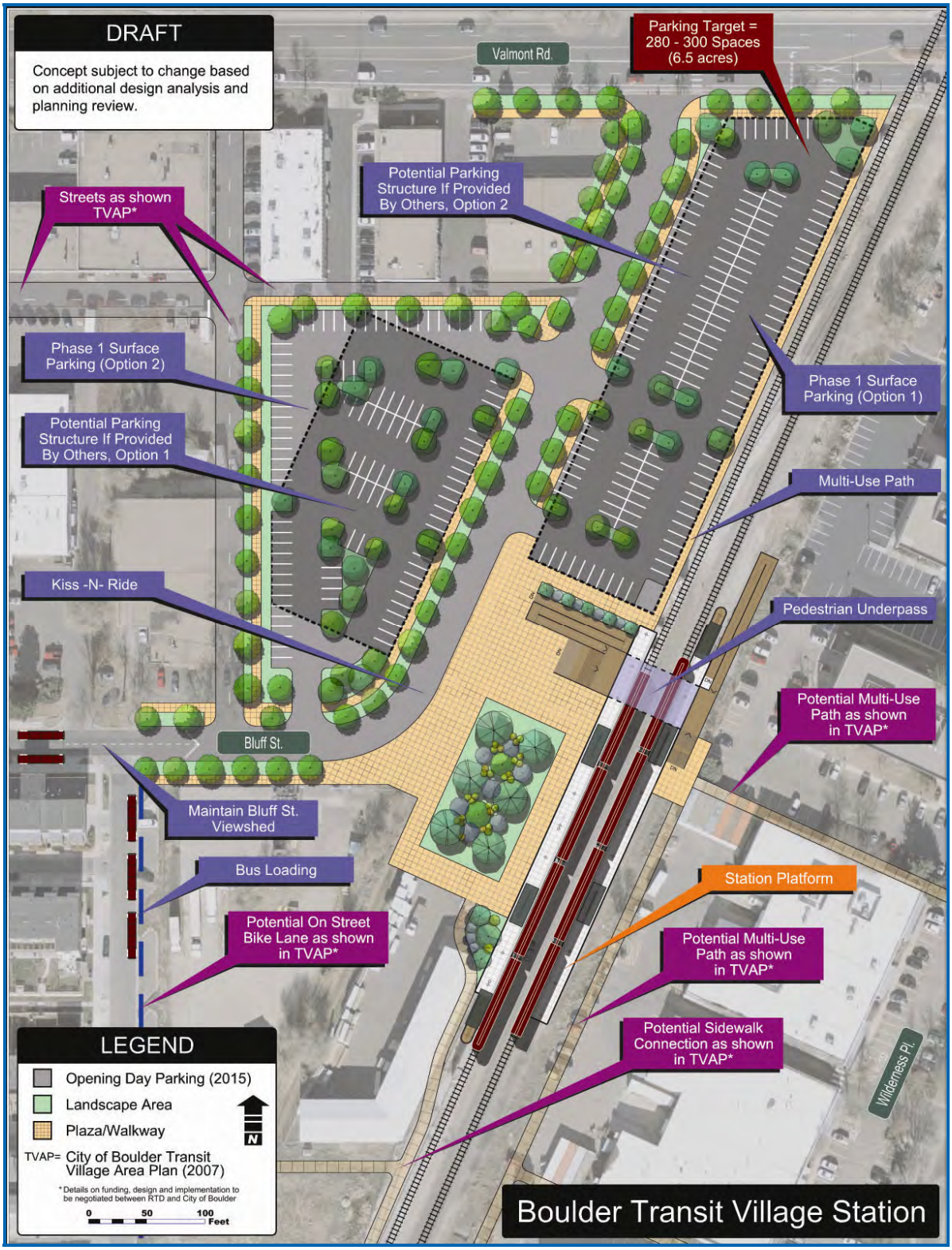
Note: The use of parking at Miners Field is dependent on an agreement between Louisville, Lafayette, and Boulder County.
Source: NWR Corridor Project Team, 2009.

FIGURE ES-15. EAST BOULDER STATION CONCEPT PLAN



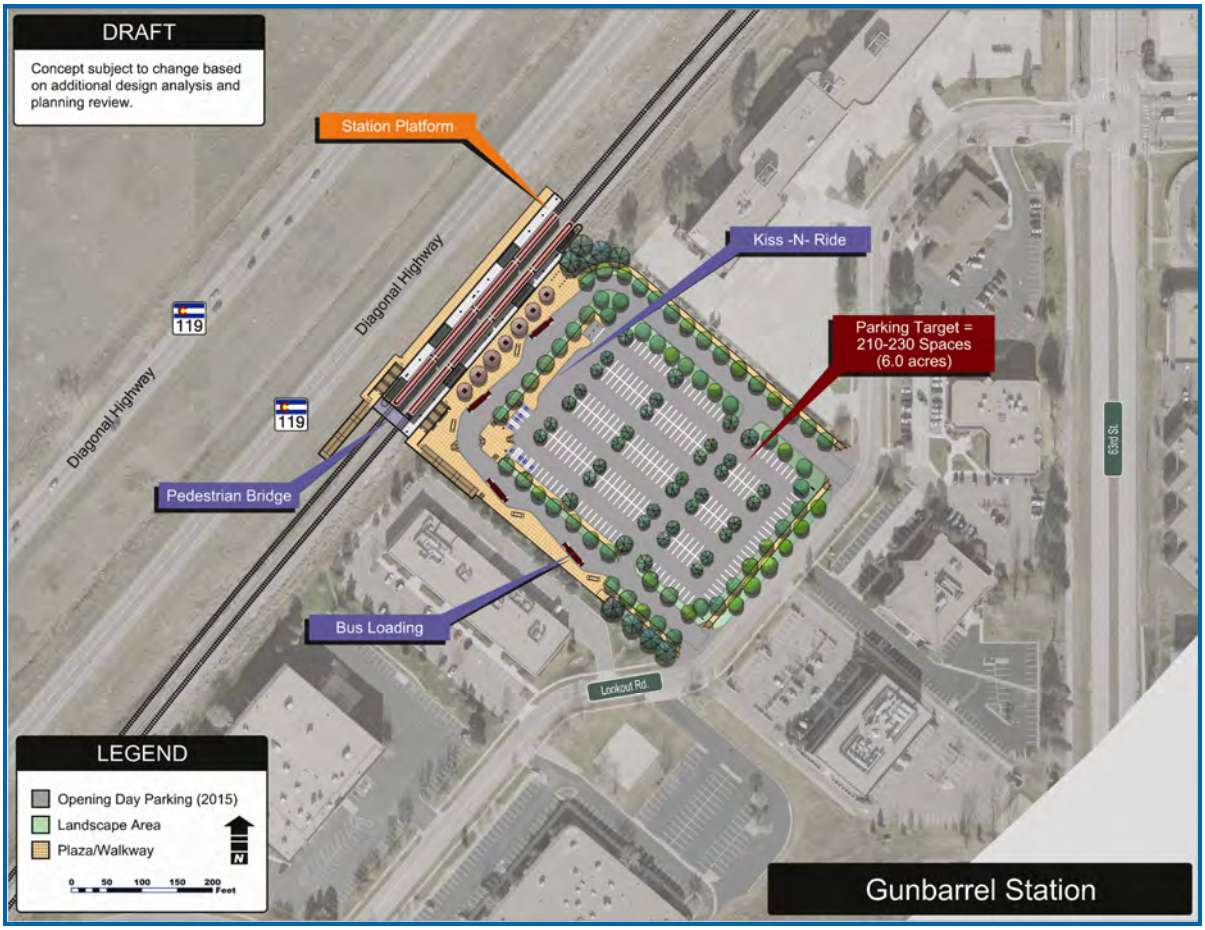
Source: NWR Corridor Project Team, 2009.

FIGURE ES-16. BOULDER TRANSIT VILLAGE STATION CONCEPT PLAN



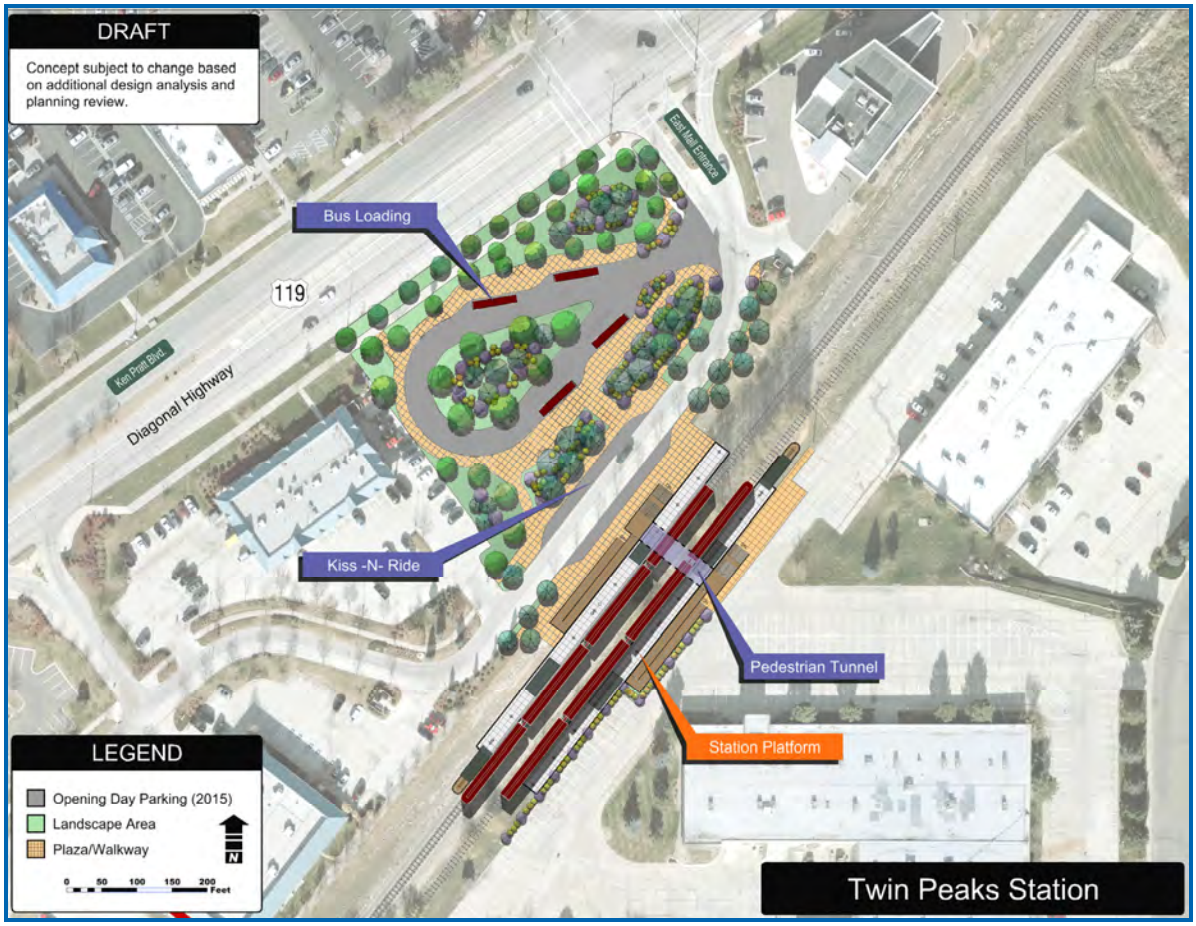
Source: NWR Corridor Project Team, 2009.

FIGURE ES-17. GUNBARREL STATION CONCEPT PLAN



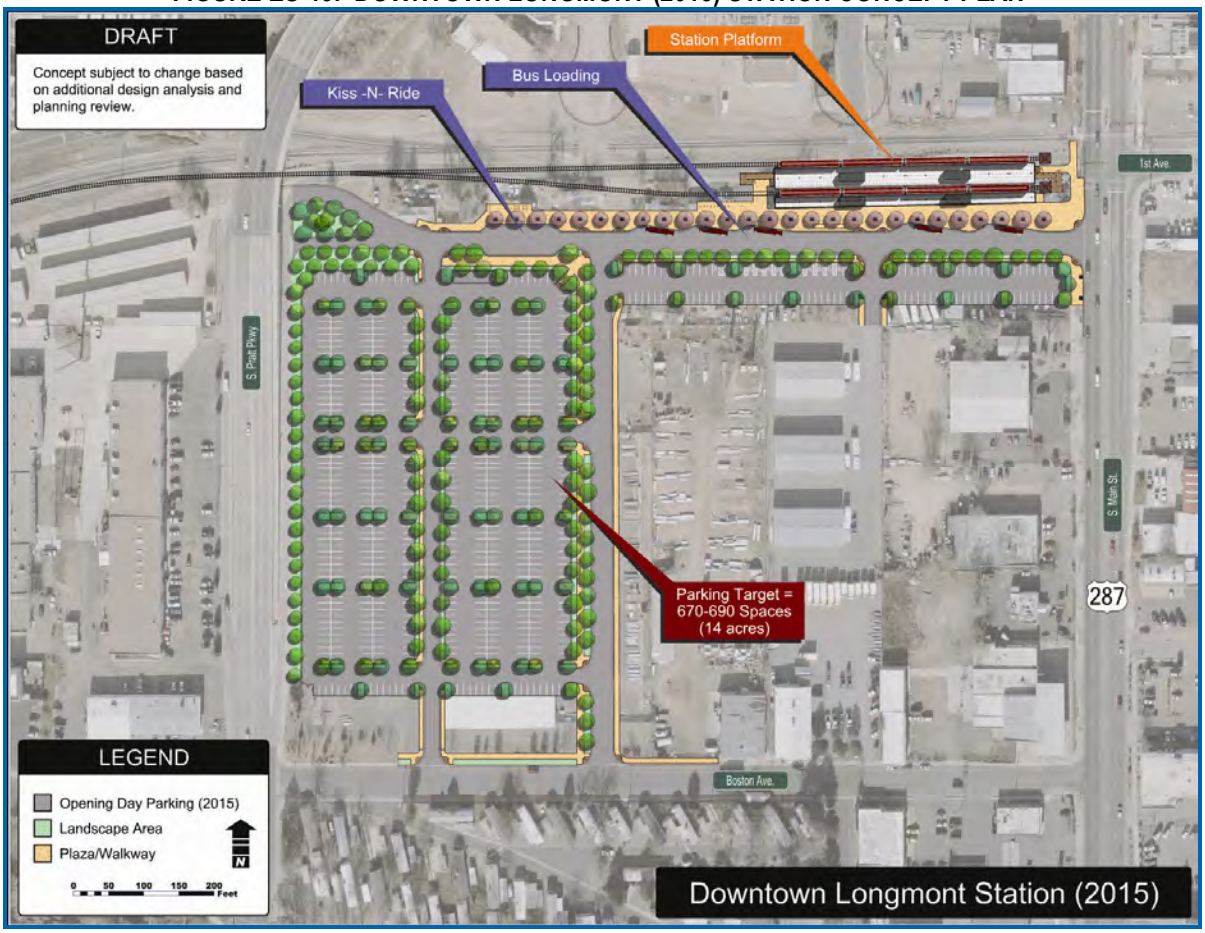
Source: NWR Corridor Project Team, 2009.

FIGURE ES-18. TWIN PEAKS STATION CONCEPT PLAN



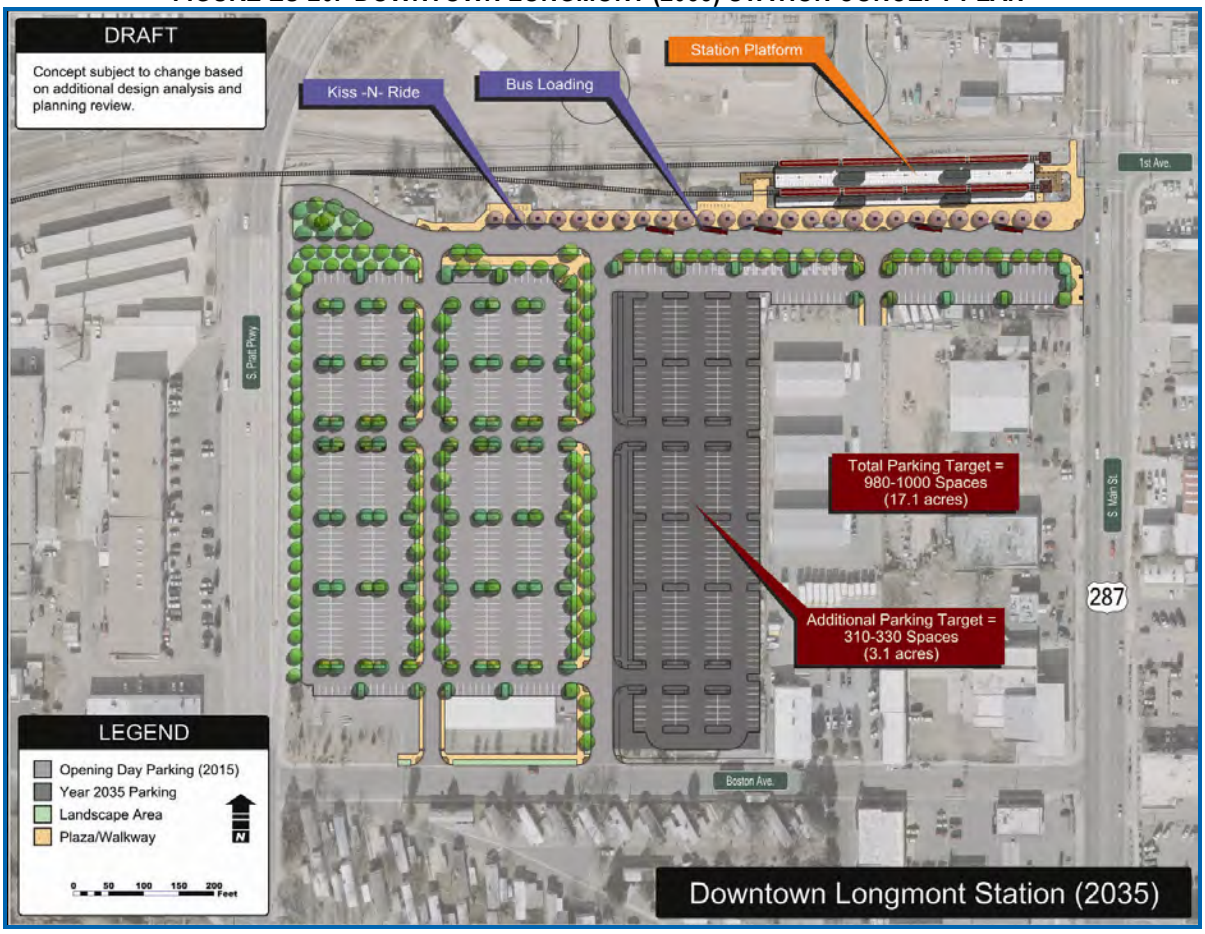
Source: NWR Corridor Project Team, 2009.

FIGURE ES-19. DOWNTOWN LONGMONT (2015) STATION CONCEPT PLAN



Source: NWR Corridor Project Team, 2009.

FIGURE ES-20. DOWNTOWN LONGMONT (2035) STATION CONCEPT PLAN



Source: NWR Corridor Project Team, 2009.

Evaluation and Selection of Station Architectural Styles: Further design refinement of the Preferred Alternative included identification of station typologies for the NWR Corridor Project. Recommended design typologies developed are depicted in Table ES-5.

TABLE ES-5. NORTHWEST RAIL CORRIDOR STATION TYPOLOGIES STYLE

Typology	Schematic Design
Neighborhood Craftsman	
Main Street Historic	
Town Center Contemporary	
Industrial Loft Modern	

Source: NWR Corridor Project Team, 2009.

Transit Improvements

The assumed bus operations for the Preferred Alternative would be the same for the No Action Alternative except that service on the BOLT would be reduced and rerouted to service the Boulder Transit Village Station, and the S route would be eliminated.

Roadway Improvements

The highway improvements assumed under the Preferred Alternative would be identical to those identified for the No Action Alternative.

ES.4.8 When will the train operate?

By 2015 the Preferred Alternative would provide 30-minute peak period service and 60-minute off-peak period service throughout the corridor (Denver to Longmont).

In 2035 the Preferred Alternative would provide 15-minute service in the morning and evening peak periods from Boulder to Denver and 30-minute service between Longmont and Boulder. Service would be provided at 30-minute headways at most other times throughout the corridor. Peak periods are defined as weekday mornings from 6:00 a.m. to 9:30 a.m. and weekday evenings from 2:30 p.m. to 7:30 p.m.

ES.4.9 What would the Preferred Alternative cost?

The capital and operational costs of the Preferred Alternative are included in Tables ES-6 & ES-7.

TABLE ES-6. CAPITAL COSTS

Preferred Alternative Element	Capital Cost* (2008 Dollars)
NWR Corridor Project with proposed FasTracks stations	$641.1 million
Shared Alignment Gold Line/NWR Corridor (DUS to Pecos Street)	$261.5 million[1]
Four Unfunded Stations	$100.3 million[2]
Total	**$1.0 billion**

Source: NWR Corridor Project Team, 2009.

Notes:

* These estimates represent the 2015 planning horizon.

1. The cost for the Shared Alignment segment, although illustrated in this estimate, will be funded as a FasTracks program-wide expense since the section from DUS to the Pecos Station will be shared jointly by the Gold Line, and the section from DUS to the Maintenance Facility will be used by the East and North Metro corridors.

2. Proposed unfunded station costs estimate the following capital cost per station:

– Westminster/88th Avenue Station: $52.9 million
– Broomfield/116th Avenue Station: $13.3 million
– East Boulder Station: $22.8 million
–Twin Peaks Station: $11.3 million

TABLE ES-7. OPERATING COSTS

Preferred Alternative Element	Annual Operations and Maintenance Cost* (2008 Dollars)
NWR Corridor Project with proposed FasTracks stations	$17.9 million
Shared Alignment Gold Line/NWR Corridor (DUS to Pecos Street)	
Four Unfunded Stations	$2.8 million
Total	**$20.7 million**

Source: NWR Corridor Project Team, 2009.

Notes:

* These estimates represent the 2035 planning horizon.

1. The cost for the Shared Alignment segment, although illustrated in this estimate, will be funded as a FasTracks program-wide expense since the section from DUS to the Pecos Station will be shared jointly by the Gold Line, and the section from DUS to the Maintenance Facility will be used by the East and North Metro corridors.

ES.4.10 Phased Implementation

Phase 1 would include construction from DUS to the South Westminster/71st Avenue Station (approximately Bradburn Boulevard). Phase 1 would be constructed as a component of RTD's Eagle P3 project. The Eagle P3 is a Public Private Partnership that will conduct final design and build RTD's East Corridor, the CRMF, Gold Line and this portion of NWR. Phase 1 would be in exclusive transit ROW, owned by RTD and would be EMU. Phase 1 includes a new grade separation where 64th Avenue would cross over the rail corridor. Future phases constructed beyond the South Westminster/71st Avenue Station would share ROW with freight operations and would require an operating agreement for RTD to use BNSF Railway Company's ROW. RTD is currently negotiating the purchase of ROW and operating agreements with the BNSF Railway Company. Because the Eagle P3 project includes EMU technology for the Gold Line and East Corridor projects, the Phase 1 Alignment would be electrified from DUS to the South Westminster/71st Avenue Station.

Future phases constructed north of the South Westminster/71st Avenue Station would be DMU. DMU technology would eventually operate seamlessly (sharing the track with the Phase 1 EMU) from DUS to downtown Longmont. See Figure ES-21 below for a depiction of the Phase 1 study area.

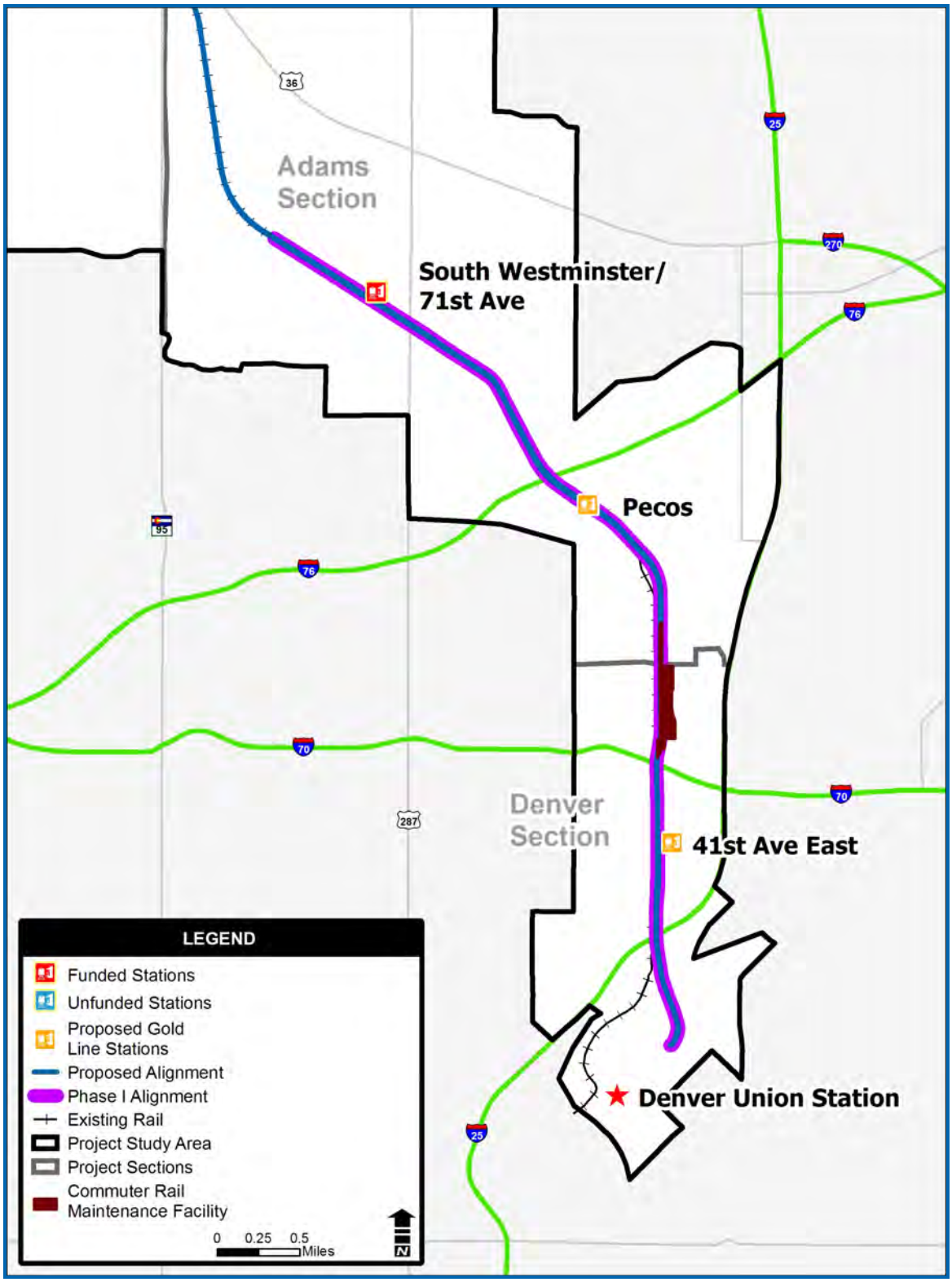
ES.4.11 Projects Linked to the NWR Corridor Project

Two projects that were conducted concurrently and are linked with the NWR Corridor Project are the Gold Line EIS and the Commuter Rail Maintenance Facility Supplemental Environmental Assessment (CRMF SEA). These proposed projects are to provide commuter rail from DUS in downtown Denver to Ward Road in Wheat Ridge, Colorado for Gold Line, and a CRMF to serve the FasTracks commuter rail system.

As indicated earlier, these projects share facilities with the NWR Corridor Project. The Gold Line shares track from DUS to Pecos Street, and the CRMF is located along this segment of track north of 48th Avenue and east of Fox Street in the City and County of Denver. Impacts from the track from DUS to Pecos Street and the CRMF are also part of the impacts of the Preferred Alternative for the NWR Corridor Project.

The CRMF SEA was distributed to the public in April 2009, and the Gold Line Final EIS, which was distributed to the public in August 2009, incorporated updates to the CRMF design and comments on the CRMF SEA document. The impacts documented in the CRMF SEA and in the Gold Line Final EIS are incorporated into this NWR EE document by reference. Subsequently, the Gold Line Project Team responded to comments on the Gold Line Final EIS and a ROD was issued by the FTA on November 2, 2009, marking the end of the project's planning process.

FIGURE ES-21. PHASE 1 STUDY AREA



Source: NWR Corridor Project Team, 2009.

ES.5 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

ES.5.1 What resources were considered?

Resources that were evaluated in the EE are listed below. Five key resources with impacts from the Preferred Alternative have been highlighted and include: land use, zoning, economic considerations, land acquisition, displacements and relocation of existing uses, noise, vibration, and wetlands. The impacts and the proposed mitigation of the Preferred Alternative are shown in Table ES-10 at the end of this Executive Summary under Section ES.8, Mitigation Measures.

- Social Impacts and Community Facilities
- Environmental Justice
- Land use/Zoning
- Farmlands
- Economic Considerations
- Land Acquisition, Displacements and Relocation of Existing Uses
- Historic, Archaeological, and Cultural Resources
- Visual and Aesthetic Qualities
- Parklands, Open Space and Recreational Resources
- Air Quality
- Energy
- Noise
- Vibration
- Biological Resources
- Mineral Resources, Geology and Soils
- Water Resources/Water Quality
- Wetlands and Other Waters
- Floodplains/Drainage/Hydrology
- Hazardous Materials
- Public Safety and Security
- Utilities
- Transportation Systems

ES.5.2 What kind of environmental effects will the project have?

Impacts to key resources are summarized below.

Locations of proposed stations would be generally consistent with planned future land use, zoning, and transportation plans.

Land Use, Zoning, and Economic Considerations

Land Use and Zoning

The intent of the land use and zoning evaluation is to determine that local land use planning around proposed station areas has been prepared to take advantage of the local transit investment. Because the proposed project involves an expansion of the existing rail line rather than construction of a new rail line, improvements are generally compatible with existing and future land uses. The conversion of existing land uses to rail facilities where ROW is currently constrained would primarily occur at the proposed station locations. And, due to the extensive level of proposed station area planning that has already been completed by municipalities, locations of proposed stations would be generally consistent with planned future land use, zoning, and transportation plans.

Implementation of the Preferred Alternative could provide an overall benefit to land use planning and help conserve land resources by promoting increased density at station locations over more consumptive, dispersed development practices. RTD will continue to work with local governments in supporting plans encouraging TOD, which is a compact and mixed-use residential or commercial area designed to maximize access to public transit.

Existing industrial uses and rail yards in Denver

Economic Considerations

Economic impacts of the Preferred Alternative are measured by effects to businesses and employees, and lost revenue from property taxes. During project development, the Preferred Alternative was modified to avoid and minimize impacts to businesses wherever possible. The Preferred Alternative would use the existing rail corridor, minimizing the amount of property required for acquisition. Station footprints were designed in coordination with local municipalities with efforts to minimize the need for business and employment relocations.

Station footprints were designed in coordination with local municipalities with efforts to minimize the need for business and employment relocations.

Even with these avoidance and minimization efforts, the Preferred Alternative would require the acquisition of 134.40 acres of property resulting in the relocation of 76 businesses and approximately 478 employees. Approximately $1,040,226 in annual property tax revenue would be lost as a result of property acquisition. However, potential development at stations associated with the Preferred Alternative could increase land values near the proposed stations and offset this loss of property tax revenue.

Existing industrial uses and railroad in Adams County

The Preferred Alternative would also generate 5,764 direct jobs over the 5-year construction period and would stimulate economic development at station sites.

Land Acquisition, Displacements, and Relocation of Existing Uses

Property acquisition is the result of the need to obtain property for public ROW for the construction of the Preferred Alternative. Concerns regarding property acquisition have been expressed by the public and project stakeholders during public involvement activities and have remained an important issue throughout project development.

Property acquisition and permitting would be a joint effort between the BNSF Railway Company and RTD. Unlike other FasTracks corridors, RTD would not own the entire ROW. Phase 1 of the project (from DUS to the South Westminster/71st Avenue Station) would be constructed as part of the Eagle P3 project. The Eagle P3 project is a Federal Transit Agency (FTA) pilot program that would allow RTD to retain a private contractor to design, build and operate the East Corridor, Gold Line and CRMF commuter rail projects. The Phase 1 portion of the NWR project would operate in exclusive transit ROW. The mainline track north of the South Westminster/71st Avenue Station would be located within BNSF Railway Company ROW to Downtown Longmont. Additionally, the BNSF Railway Company would complete final design, construct, and maintain this portion of the alignment. RTD would acquire, construct, and maintain the proposed station sites funded through the FasTracks program.

BNSF Railway Company ROW Behind Westminster Mall

The majority of property acquisition is associated with proposed stations and consists primarily of private property and slivers of public ROW.

The Preferred Alternative would require the acquisition of 134.40 acres of property, resulting in the relocation of 76 businesses and 16 residences. The majority of property acquisition is associated with proposed stations and consists primarily of private property and slivers of public ROW. The Downtown Louisville Station would impact 3.58 acres of the Louisville Sports Center for shared parking.

The acquisition of real property interests will comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act) and the Fifth Amendment of the United States Constitution. The Uniform Act applies to all acquisitions of real property or displacements of people resulting from federal or federally assisted programs or projects. In addition, all impacted owners will be provided notification of RTD and BNSF's intent to acquire an interest in property, including a written offer letter of just compensation specifically describing those property interests. A relocation analysis and relocation assistance advisory services will also be provided.

Broomfield Industrial Sports Complex

Noise

Noise is one of the principal environmental impacts associated with rail transit projects and has been defined as a public issue of concern throughout the NWR Corridor public involvement process. Prior to implementation of mitigation, the Preferred Alternative would result in both severe and moderate noise impacts at multiple residences

It is predicted that all of the severe noise impacts would be mitigated by implementing Quiet Zones to eliminate train horn noise at selected crossings.

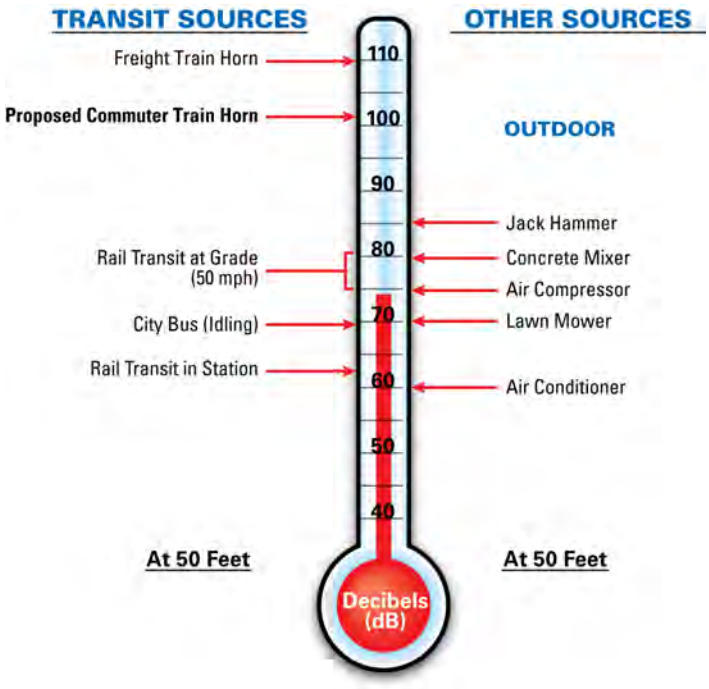
and institutional uses (museums, hospitals, day care centers, etc.) along the Northwest Rail (NWR) Corridor. The summary of severe and moderate impacts is provided in Table ES-8 below. The noise analysis accounted for all 11 stations that are part of the Preferred Alternative. However, because only seven of these stations are currently funded though the FasTracks program, the analysis also examined a scenario with only the seven funded stations for comparison.

TABLE ES-8. SUMMARY OF NOISE IMPACTS (WITHOUT MITIGATION)

		Preferred Alternative FasTracks Only (7 stations)		Preferred Alternative All Stations (11 stations)	
		2015	2035	2015	2035
Severe	Residential	538	723	583	828
	Institutional	8	9	8	9
Total Severe		**546**	**732**	**591**	**837**
Moderate	Residential	1,271	1,505	1,380	1,518
	Institutional	4	3	4	3
Total Moderate		**1,275**	**1,508**	**1,384**	**1,521**

Source: NWR Corridor Project Team, 2009.

It is predicted that all of the severe noise impacts would be mitigated (under either station scenario) by implementing Quiet Zones to eliminate train horn noise at select crossings between West 64th Avenue to State Highway (SH) 119. A Quiet Zone is an area where crossings of the rail line include sufficient safety mechanisms, so that trains are no longer required to sound their horns when crossing. Quiet Zones need to be implemented by local government through approvals from the Public Utilities Commission (PUC), Federal Railroad Administration (FRA), and the railroads. RTD is committed to assisting jurisdictions in the Quiet Zone application, but cannot itself submit the application to implement a Quiet Zone. Because implementation of Quiet Zones would eliminate horn noise from existing freight train operations (as well as from future commuter rail operations), the total horn noise exposure along the Quiet Zone would be significantly reduced from current conditions. Additionally, the Quiet Zone would be supplemented by noise barriers at three locations along the NWR Corridor.



It is expected that residual moderate noise impacts would remain in 2035 following the implementation of the Quiet Zone and noise barrier mitigation measures. However, the residual moderate impacts in 2035 would be limited to 235 residences for the all-stations scenario and to 89 residences for the FasTracks-only scenario. Moderate noise impacts in 2035 would also remain at four institutional uses under both the station scenarios.

Vibration

Vibration is a fine movement or low rumble that is radiated through the ground and is felt in the motion of room surfaces. The FTA impact criteria for a General Vibration Assessment are based on land use and train frequency and vibration impacts that exceed FTA criteria are considered to be significant and to warrant mitigation, if reasonable and feasible. Like the noise analysis, the vibration analysis also included a FasTracks-only scenario with 7 stations and an all-stations scenario with 11 stations.

Potential vibration impacts from NWR commuter trains in both opening year and 2035 are projected at 113 residences (for the FasTracks-only scenario) and 144 residences (for the all-stations scenario). The greater number of impacts for the all-stations scenario reflects higher speeds between stations needed to offset the delays from added station stops. In addition to the residential impacts, vibration impacts are projected at one school, one hotel and two day care facilities for both scenarios in both opening year and 2035.

Based on the current analysis, it is expected that the relocation or use of special hardware for selected turnouts could eliminate vibration impacts at 30 residences and three institutional uses. For the remainder of the impacts, the feasibility of track vibration isolation treatments would need to be investigated. The current General Vibration Assessment is likely to be somewhat conservative. A Detailed Vibration Analysis will be carried out to refine the impact assessment and mitigation recommendations during final design.

Wetlands and Other Waters of U.S.

Throughout the NWR EE process, the footprint of the Preferred Alternative was refined to avoid and/ or minimize impacts to wetlands.

Wetlands are defined by the U.S. Army Corps of Engineers (USACE) (33 Code of Federal Regulations [CFR] 328.3, 1986) and the US Environmental Protection Agency (40 CFR 230.3, 1980) as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” The protection of these areas is critical for maintaining the physical, chemical, and biological integrity of the waters within the United States.

Left Hand Creek

The USACE 404(b)(1) permitting process requires the consideration of all jurisdictional (J) wetlands and other water features impacted, including temporary construction impacts. As a result, the USACE considers a total of 4.91 J acres of wetlands and other water features to be impacted by the Preferred Alternative. Phase 1 of the Preferred Alternative is

considered by the USACE to impact 0.31 J acre of wetlands and other water features. A Nationwide Permit would be required for Phase 1 of this project and was issued by the USACE on 1 April 2010. An Individual Permit would be required for the remainder of this project, per Section 404 of the Clean Water Act.

Also per Section 404 of the Clean Water Act, impacts to wetlands and other water features must be avoided, minimized, or mitigated (in order of preference). Throughout the NWR EE process, the footprint of the Preferred Alternative was refined to avoid and/or minimize impacts to wetlands. All impacted wetlands and other water features will be mitigated in accordance with current USACE mitigation policies and in accordance with the USACE Section 404 Permit. In addition, all mitigation plans will be developed in coordination with the USACE and other appropriate agencies during the Section 404 permitting process. USACE requires mitigation for all impacts to jurisdictional wetlands and other water features, and focuses on maintaining existing levels of function. However, RTD policy requires 1:1 mitigation for all impacts, either jurisdictional or non-jurisdictional. All mitigation for the wetlands along the proposed alignment would be mitigated in accordance with USACE, RTD and local policies.

For the NWR EE process, wetlands and other water feature impacts, along with riparian buffers are categorized in terms of two categories: (1) direct and permanent; and (2) temporary construction. They are presented below.

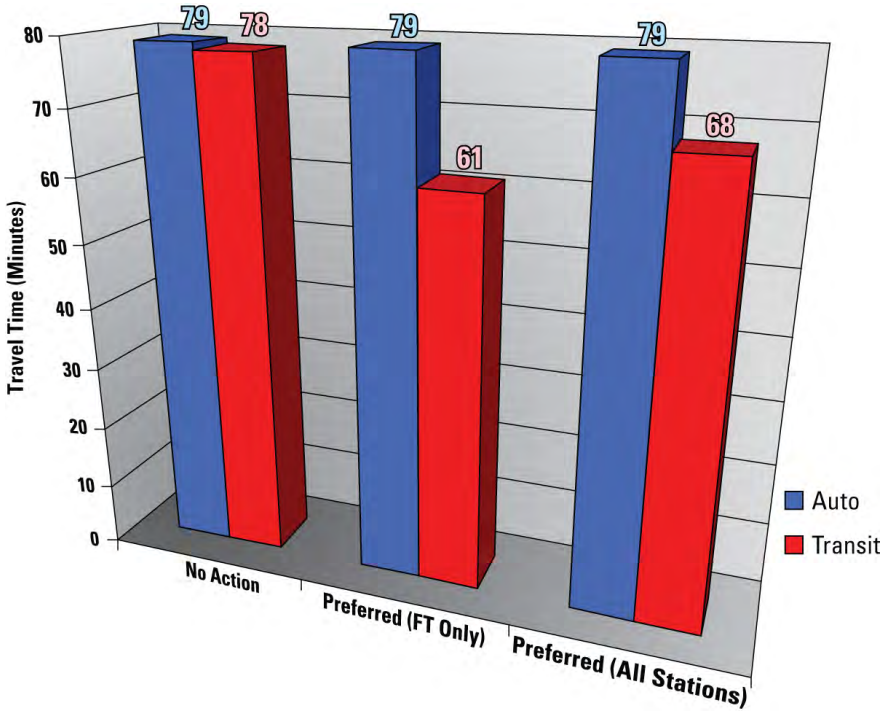
Related to the EE process, the Preferred Alternative would result in the direct, permanent impact of 6.15 acres (3.36 J and 2.79 non-jurisdictional [NJ]) of wetlands in the project study area. In addition, the project would result in direct permanent impact to 1.25 acres (0.79 J and 0.46 NJ) of other water features and 2.37 acres of impact to riparian buffers (an important consideration related to water quality). Jurisdictional waters of the United States are coastal waters, rivers, streams, lakes and other waters the Clean Water Act identifies as requiring a permit from the U.S. Army Corps of Engineers before dredged or fill materials can be put into them. Therefore, the Preferred Alternative would have a permanent impact on 4.15 J acres of wetlands and other waters of the United States. Construction of the Preferred Alternative would result in temporary impacts to.0.76 J acre of wetlands and other waters of the United States. It was determined that no impacts to waters of the US would result along the NWR Corridor Project between DUS and Pecos Street.

Jurisdictional waters of the United States are coastal waters, rivers, streams, lakes and other waters the Clean Water Act identifies as requiring a permit from the U.S. Army Corps of Engineers before dredged or fill materials can be put into them.

For Phase 1 a total of 0.06 J acre of wetlands and 0.07 J acre of other water features would be impacted by the Preferred Alternative. In addition, temporary construction impacts would occur to 0.07 J acre of wetlands and 0.11 J acre of other water features.

ES.6 TRANSPORTATION IMPACTS

This section summarizes how the Preferred Alternative would affect future transit, roadways, freight rail, bicycle and pedestrian facilities, and parking in the NWR Corridor Project study area. The picture below indicates the travel time savings for NWR users in the early morning rush hour.



2035 A.M. Peak Hour Travel Times (Longmont to DUS)

The following summarizes the primary mobility improvements and benefits of the Preferred Alternative that address the NWR Project Purpose and Need.

ES.6.1 What transit benefits would the Preferred Alternative provide?

The Preferred Alternative would provide new high-capacity commuter rail service to areas in the NWR Corridor generally along US 36 and SH 119 and meet the Purpose and Need of the project. Such service would enhance regional connectivity and reinforce regional transit plans.

Location of Proposed Downtown Longmont Station

The Preferred Alternative would provide a reliable transit option to congested roadway travel and offer improved travel times. Estimated transit travel time in the early morning peak hour in 2035 for the Preferred Alternative from the Downtown Longmont Station at 1st Avenue/Terry Street to DUS is 61 minutes with FasTracks-only stations and 68 minutes with all stations. The projected auto travel time from 1st Avenue/Terry Street in Downtown Longmont to DUS is 79 minutes along I-25 in general travel lanes.

The assumed bus operations for the Preferred Alternative would be the same as for the No Action Alternative except that service on the BOLT would be reduced so as not to compete with the new NWR Corridor rail line, and the S route would be eliminated. Existing bus routes would be routed to provide service to the proposed commuter rail stations.

Estimated transit travel time in the early morning peak hour in 2035 for the Preferred Alternative from the Downtown Longmont Station to DUS is 61 to 68 minutes while projected auto travel time is 79 minutes along I-25 in general travel lanes.

The Preferred Alternative would serve between 8,400 and 12,100 rail riders daily.

The Preferred Alternative would provide service to 8,400 rail riders under the funded FasTracks program scenario and 12,100 riders including the unfunded stations during an average weekday in 2035.

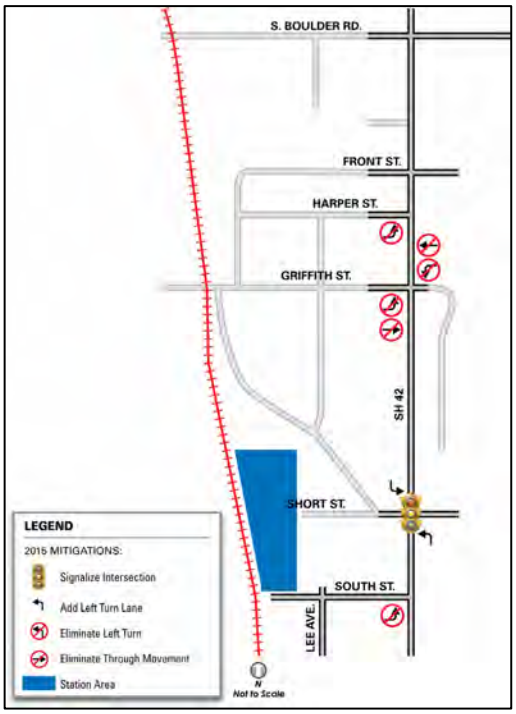
ES.6.2 How will the improvements affect existing roadways in the study area?

The Preferred Alternative would reduce regional VMT by approximately 4,710 miles per day. Implementation of the NWR Corridor would have impacts on local roadways as a result of ridership and associated parking demand. The EE forecast those impacts and made recommendations on mitigation measures for them.

The following summarizes the mitigation required for station areas.

Diagonal Highway

- South Westminster/71st Avenue: The station access intersection at Federal Boulevard would be signalized (2015). The southbound right turn lane will be converted into a shared through/right lane at the Federal Boulevard/70th Avenue intersection (by 2035). At the Federal Boulevard/71st Avenue intersection, the left turn from eastbound 71st Avenue to northbound Federal Boulevard will be prohibited (by 2035).
- Westminster Mall/88th Avenue: A westbound left turn lane will be added at the Harlan Street /Mall Access intersection (2015).
- Broomfield/116th Avenue: The Teller Street/120th Avenue intersection will be signalized (2015).
- Downtown Louisville: No project specific mitigation is required for the Downtown Louisville Station if the proposed improvements along SH 42[1] are constructed prior to the construction of the station. If the SH 42 improvements are not made prior to the construction of the station, the following mitigation measures will be made. Each mitigation is consistent with the recommendations in the *State Highway 42 Traffic & Access Study* (City of Louisville 2007).



Downtown Louisville Station Mitigations

  - Harper Street/SH 42: The eastbound left turn would be eliminated (2015).
  - Griffith Street/SH 42: The eastbound and westbound left turns, as well as the through movements would be eliminated (2015).
  - Short Street/SH 42: Northbound and southbound left turn lanes will be striped onto the existing pavement at Short Street. The east leg of the intersection will be constructed and the intersection is proposed to be signalized (2015).

[1] Proposed improvements are detailed in the State Highway 42 Traffic and Access Study (February 9, 2007)

- South Street/SH 42: The eastbound left turn would be eliminated (2015).

- East Boulder: The West access/Arapahoe Avenue intersection will have left turns prohibited from minor streets (2015), and the East access/Arapahoe Avenue intersection will be signalized (2015). A northbound right turn lane will be added to the intersection of Westview Drive/Arapahoe Avenue (2015).

Boulder Transit Village

- Boulder Transit Village: The 30th Street/Bluff Street intersection will be signalized (2015).

- Downtown Longmont: The Main Street/Boston Avenue intersection will be signalized (2015). An eastbound left turn lane on Boston Avenue would be added at the Pratt Parkway/Boston Avenue intersection in 2015, and by 2035 that intersection will be signalized.

ES.6.3 What railroad/roadway crossing improvements would be made?

Railroad Crossing Improvements

The majority of improvements to at-grade crossings under the Preferred Alternative include providing either dual gates with a raised median or quad gates (gates on all lanes to provide full closure), if the crossing does not already have these elements installed. See below for more details on improvements at railroad crossings.

At-Grade Crossing Roadway Improvements

The following summarizes the mitigation required for at-grade roadway crossings of the railroad in the year 2035:

West 72nd Avenue and Bradburn Boulevard

- Add a left turn lane with 150 feet of storage to the southbound approach of Bradburn Boulevard at 72nd Avenue. The approach would consist of one left turn lane and one shared left/right turn lane.

- Widen 72nd Avenue east of Bradburn Boulevard to six lanes by adding one westbound right turn lane and converting the two-way left-turn lane (TWLTL) to a westbound through lane. The widened segment of 72nd Avenue would consist of three westbound through lanes, a westbound right turn lane and two eastbound through lanes east of Bradburn Boulevard.

- Widen 72nd Avenue between Bradburn Boulevard and Raleigh Street to six lanes, adding one westbound through lane and one eastbound left-turn lane. The TWLTL

would be converted into a westbound left turn lane. The widened segment of 72nd Avenue would consist of two westbound through lanes, one westbound left-turn lane, two eastbound through lanes and one eastbound left turn lane.

- Change the westbound left turn signal phase of the 72nd Avenue/Raleigh Street intersection from permissive only, to protected/permissive.

- Interconnect all signals, including the four on 72nd Avenue and one on Bradburn Boulevard, into one coordinated signal system. Optimize the signal timing to reduce overall corridor delay and queue lengths.

- The widening of roadways and addition of new pavement in the mitigations would require property acquisition. Specific locations of acquisition would be identified during the design process of proposed mitigations.

South Boulder Road

Mitigations tested would not completely eliminate the traffic queues on South Boulder Road in both directions between the rail crossing and Centennial Drive. It is expected that railroad priority or preemption controls would likely be effective in eliminating the problem; however, the standard software used for analyzing FasTracks corridor traffic impacts is not sophisticated enough to test such signal controls. It is therefore recommended a more detailed study be undertaken at this location using more sophisticated software to perform further study of railroad priority/preemptions controls. If such controls prove to be ineffective, corridor capacity improvements along South Boulder road should be evaluated.

Niwot Road and 2nd Avenue

- Construct an additional through lane approximately 500 feet in length along northbound Diagonal Highway approaching Niwot Road.

- Construct an additional lane along northbound Diagonal Highway between Niwot Road and 2nd Avenue (approximately 1,000 feet). The additional lane would become a right turn lane at 2nd Avenue.

- Re-stripe westbound Niwot Road between the railroad crossing and northbound Diagonal Highway to provide a though lane and a shared through/right turn lane.

- Interconnect all four signals to operate at one coordinated system and optimize the signal system.

- The widening of roadways and addition of new pavement in the mitigations would require property acquisition. Specific locations of acquisition would be identified during the design process of proposed mitigations.

Mineral Road (SH 52)

In the DRCOG 2035 Metro Vision Regional Transportation Plan, CDOT has identified an interchange construction project at the Mineral Road (SH 52) and Diagonal Highway (SH 119) intersection. The proposed interchange includes a grade-separation of SH 52 and SH

119. However, funding for the interchange has not been fully identified. In the absence of the interchange project moving forward, potential mitigation measures for the interim at-grade condition were studied.

- Eastbound approach on Mineral Road (SH 52): Construct a second left turn lane with 300 feet of storage, and a second through lane. The widened approach would consist of two left turn lanes, two through lanes and one right turn lane. These improvements would require the widening of pavement for this approach. The second through lane would extend across Diagonal Highway (SH 119) and the rail crossing and would become a right turn lane at the intersection of Mineral Road/71st Street.

- Westbound approach on Mineral Road (SH 52): Construct a second left turn lane, a second through lane and a right turn lane. The widened approach would consist of two left turn lanes, two through lanes and a right turn lane.

- Northbound approach on Diagonal Highway (SH 119): Construct two additional through lanes. The widened approach would consist of two left turn lanes, four through lanes, and one right turn lane. The four through lanes would extend through the Mineral Road intersection. The additional lanes would end a maximum of 1,000 feet north of the intersection, with only two lanes continuing north along Diagonal Highway.

- Southbound approach on Diagonal Highway (SH 119): Construct one additional left turn lane with 300 feet of storage and two additional through lanes. The widened approach would consist of two left turn lanes, four through lanes and one right turn lane. The four through lanes would extend through the Mineral Road intersection. The additional lanes would end a maximum of 1,000 feet south of the intersection, with only two lanes continuing south along Diagonal Highway.

- Optimize the signal system.

- The traffic signal should be coordinated with the Mineral Road rail crossing.

These extensive intersection improvements proved insufficient in eliminating queue spillbacks between the intersection of SH 52/SH 119 and the railroad crossing. RTD will work with CDOT to identify funding possibilities for implementing CDOT's proposed interchange project.

ES.6.4 What parking would be provided?

As a result of the Preferred Alternative, parking will be provided at stations as indicated in Table ES-9.

TABLE ES-9. PREFERRED ALTERNATIVE STATION AREA PARKING IN 2015 AND 2035

Station	Opening Day 2015 Parking Spaces[1]	Parking Spaces Added by 2035	Total 2035 Parking Spaces
Funded Stations			
South Westminster/71st Avenue	925	0	925 surface spaces
Walnut Creek[2]	240	0	240 surface spaces
FlatIron	264	0	264 surface spaces
Downtown Louisville[4]	425	0	425 surface spaces
Boulder Transit Village	290	0	290 surface spaces
Gunbarrel	230	0	230 surface spaces
Downtown Longmont	590	435	1,025 surface spaces
Funded Subtotal	**2,964**	**435**	**3,399 surface spaces**
Unfunded Stations			
Westminster/88th Avenue[3]	1,055	0	1,055 surface spaces
Broomfield/116th Avenue	350	0	350 surface spaces
East Boulder	530	0	530 surface spaces
Twin Peaks[3]	100	250	350 surface spaces
Unfunded Subtotal	**2,035**	**250**	**2,285 surface spaces**
Corridor Total	**4,999**	**685**	**5,684 surface spaces**

Source: NWR Corridor Project Team, 2009.
Notes:
[1]Number of spaces represents average of FasTracks targets in concept plans.
[2]The Walnut Creek Station is a joint NWR/US 36 BRT station; the parking spaces shown here are for the NWR Corridor Project (not US 36 BRT)
[3]Twin Peaks and Westminster/88th Avenue stations are expected to have shared parking with the redeveloped mall adjacent to each station —no RTD-funded/managed spaces.
[4] The use of parking at the Louisville Sports Complex is dependent on an agreement between Louisville, Lafayette, and Boulder County.
US 36 BRT = United States Highway 36 Bus Rapid Transit
RTD = Regional Transportation District

ES.6.5 What are the impacts to freight operations?

The Preferred Alternative would allow for shared use of tracks for freight rail operations. It is estimated that there would be negligible effects on freight rail operations. There would be no at-grade crossings (rail to rail) of freight tracks. Details of impacts to freight operations will be further defined once RTD and BNSF have final negotiations for the operations agreement.

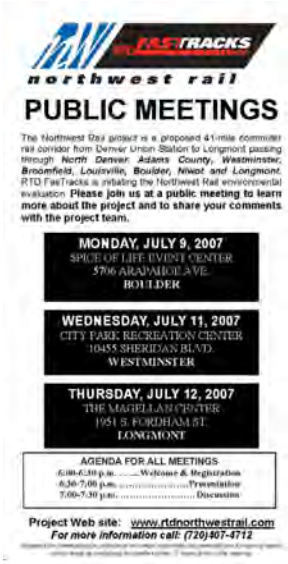
ES.6.6 How will bicyclists and pedestrians access the rail?

Connectivity between stations and bicycle and pedestrian facilities is essential to providing multi-modal connectivity at station locations. The Preferred Alternative would not permanently impact existing pedestrian and bicycle facilities and would not preclude the development of planned pedestrian and bicycle facilities in the vicinity of the proposed alignment and stations. Some trails may be temporarily impacted due to construction, but would be mitigated by providing temporary detours. Any necessary detours and closures

would be coordinated with the appropriate jurisdictions. Detours which have been agreed to as of February, 2010 appear in Appendix C, Agency and Public Coordination.

ES.7 COORDINATION, CONSULTATION, AND COMMENTS

ES.7.1 How has the public been involved with this project?



NWR Public Meeting Newspaper Ad

Between 2007 and 2010 an extensive public involvement program has been conducted for the NWR Corridor Project to engage the public and stakeholders in an exchange that would be both informative and solicit comments. More details on the public involvement process and its history are provided in Chapter 5, Public Comment and Agency Coordination.

The public involvement for the NWR Corridor EE built on the recommendations from previous studies to implement commuter rail along the BNSF Railway Company alignment between Denver and Longmont. The NWR Corridor EE public involvement focused on five key project milestones which included:

Milestone #1: Project Initiation
Milestone #2: Commuter Rail Vehicle Technology
Milestone #3: Special Issues – Station Planning, Fencing, and Noise/Quiet Zones
Milestone #4: Preferred Alternative, Impacts, and Mitigation
Milestone #5: Review of Draft NWR Corridor EE

During the NWR Corridor EE process numerous pieces of informational materials were distributed to keep the public informed of project progress starting in June 2007. Materials distributed included newspaper ads, radio announcements, flyers, meeting invitations and newsletters. Materials were distributed in both hard copy and electronic format (via e-mail).

Formal project initiation (Milestone #1) occurred with a series of public meetings that were held in July 2007 in Boulder, Westminster and Longmont. There were 372 individuals that attended these meetings.

July 2007 Open House at NWR Corridor Project Kick-off Meeting

A second series of public meetings (Milestone #2) occurred in September 2007 held in Broomfield, Denver and Gunbarrel/Boulder that reinitiated evaluation of commuter rail vehicle technology and solicited input regarding the evaluation.

In addition, several other public involvement activities were conducted with smaller groups of stakeholders to address specific concerns (Milestone #3). For example, meetings were held that focused on station planning, fencing, and

noise/Quiet Zones. A total of over 30 small group public outreach meetings were conducted between July 2007 and April 2010.

Prior to the NWR Corridor Draft EE being released, the NWR Governments Team (NWR GT) and regulatory agencies were afforded an opportunity to comment on the impacts and mitigation measures proposed to address impacts associated with the Preferred Alternative (Milestone #4).

Following the release of the Draft EE, corridor-wide public meetings and associated small group outreach meetings occurred to present the Draft EE to the public including the results of the impacts and analysis and proposed mitigations, and to collect input from members of the public on the document (Milestone #5).

Extensive public outreach was also conducted to engage environmental justice communities (minority and/or low income populations). Project publicity materials were distributed in both Spanish and English. Numerous meetings with Spanish speaking groups and Spanish radio announcements and interviews were broadcast. A total of over 90 outreach efforts with environmental justice communities and groups were conducted between September 2007 and November 2009. These efforts included one-on-one meetings, small and large group meetings, flyer distributions, television and radio programs, and information tables at fairs.

ES.7.2 How have agencies been involved?

Numerous agencies have been involved during the NWR Corridor EE process. Three primary groups of agencies involved include:

- State and Federal Resource and Regulatory Agencies
- NWR Governments Team (NWR GT)
- NWR Fencing Committee

State and Federal Resource and Regulatory Agencies: In keeping with the intent of the Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU), RTD proactively coordinated with state and federal resource and regulatory agencies. Agency involvement occurred to identify any issues of concern regarding the project's potential social, environmental, or community impacts or any issues that could substantially delay or prevent an agency from granting a permit or other approval needed for the project.

To date, a total of three meetings occurred with the state, federal and regulatory agencies during the NWR Corridor EE process, between July 2007 and September 2009.

NWR Governments Team (NWR GT): The NWR GT consists of elected officials and technical staff representatives from NWR Corridor communities. It also includes members representing other neighboring communities, local, state and federal agencies, and community organizations. The NWR GT serves several functions, including the identification of project-related issues requiring further study, the provision of input into study recommendations and technical analyses, and consideration of public input. Overall, the NWR GT provides an important mechanism for communicating the interests, concerns, and

ideas of the communities along the NWR Corridor to the Project Team and RTD decision makers.

For major milestones, the NWR Corridor Project Team took the following approach to ensure that local government input informed RTD decision making in a timely and relevant manner:

- First, the Project Team presented preliminary recommendations to the NWR GT.
- Then, corridor-wide workshops or stakeholder meetings were conducted to gather public input about the proposed recommendations.
- Finally, the Project Team returned to the NWR GT to either finalize or comment on the study recommendations before forwarding them to the RTD Board of Directors for consideration.

To date, a total of nine NWR GT meetings took place during the NWR Corridor EE process between July 2007 and September 2009. In addition, small group meetings were held with representatives from local jurisdictions for the purposes of information sharing on specific issues. Over 50 meetings (briefings and coordination) were conducted between July 2007 and September 2009.

NWR Fencing Committee: A subgroup of the NWR GT, the NWR Fencing Subcommittee, was formed to address major issues pertaining to RTD's fencing policy. A total of three Fencing Subcommittee meetings took place during the NWR Corridor EE process between May 2008 and March 2009.

ES.7.3 What issues or comments have been most common among the community?

Table ES-10 below highlights the comments received from the public and stakeholders during the NWR Corridor EE process. See Appendix G: Response to Comments for comments received during the formal comment period that occurred between 26 February 2010 and 29 March 2010.

TABLE ES-10. TOP PUBLIC COMMENT ISSUES FOR NORTHWEST RAIL CORRIDOR PROJECT

Issue	Description	Response
Noise /Mitigation Measures	Most comments in this category addressed concerns about elevated noise and vibration levels in their respective areas, and advocated for the appropriate mitigation measures to address noise. Many of these comments supported Quiet Zones as a mitigation measure.	The NWR Project Team conducted noise analysis to determine the significance of noise impacts throughout the corridor and proposed the appropriate mitigation strategies. These strategies were also coordinated with an overall RTD FasTracks programmatic effort to address noise.
Stations	Most comments indicated support for the station locations; some advocated for the inclusion of the un-funded stations; some identified specific impacts related to stations; and others requested station plans or other station related information.	The Project Team worked closely with the communities to develop and continuously refine station concept plans, which were ultimately supported by each of the NWR corridor jurisdictions.

TABLE ES-10. TOP PUBLIC COMMENT ISSUES FOR NORTHWEST RAIL CORRIDOR PROJECT

Issue	Description	Response
Cost/Funding	Many comments addressed the budget shortfall for funding the FasTracks program and how that related to Northwest Rail. Later in the project, comments focused on the programmatic decisions regarding how to pursue funding.	The Project Team periodically updated the public about RTD strategies for meeting funding challenges and how programmatic efforts related to Northwest Rail.
Project Schedule	Most comments in this category supported project completion and opening day in 2015.	The Project Team periodically updated the public about the project schedule and worked towards keeping the project on schedule.
Right-of-Way/ Property Impacts	Comments in this category addressed individual property impacts and requested responses related to specific properties along the corridor.	Project Team members continually communicated and met with property owners along the rail line to provide them with the most up-to-date information about how their properties would (or would not) be impacted.
Community Impacts	Many of these comments supported the benefits that this project will bring into their communities and for their families. Some questioned the need for the project and expressed concern for impacts that NWR may have (i.e. noise levels, property values, disrupting the current community way of life).	The Project Team presented the project at corridor-wide public meetings around the project kick-off, and subsequent milestones. Environmental and traffic impact analyses were conducted to determine the impacts and proposed mitigations for the project which were presented in the Draft EE. These impacts and proposed mitigations were communicated to the public and public comments are taken into consideration for the Final EE. Additionally, responses to comments received on the Draft EE have been provided in the Final EE.
Public Involvement	Most comments supported the public involvement process for the project. Many expressed support for frequent and substantive public communications.	Corridor-wide public meetings were held at major milestones to review project developments and elicit public comment. These meetings were held at project kick-off; technology selection; Gunbarrel Station site selection; stations, alignment, impacts/mitigations, and release of the Draft EE. Small group outreach meetings were conducted on an on-going basis throughout the study. Newsletters, email communications, and Web site postings were also provided on a regular basis to keep the public informed.
Vehicle Technology	Most comments in this category supported the selection of EMU technology over DMU for the commuter rail vehicles.	Public comment was summarized and provided to the RTD Board of Directors to be considered for their decision.
Community Preference	Most comments expressed general support for the project. Others expressed support for US 36 BRT over NWR rail service.	Public comment was solicited throughout the project and these comments were taken into consideration for RTD decision making.

TABLE ES-10. TOP PUBLIC COMMENT ISSUES FOR NORTHWEST RAIL CORRIDOR PROJECT

Issue	Description	Response
Transit Ridership	Some comments in this category expressed concern about the projected ridership numbers in relation to the project cost. Some comments indicated interest in riding Northwest Rail on a regular/daily basis and inquired about projected operating plans.	All comments were responded to by RTD to keep the public informed about the latest ridership projections and project costs. Those inquiring about operations information were responded to with the most up-to-date information.

Source: NWR Corridor Project Team, 2009.

ES.7.4 How can we provide effective input to RTD?

The Draft NWR Corridor EE was distributed to the public for review and comment on 26 February 2010. Announcements were provided via the various publicity material distribution methods including local newspaper ad, radio announcement, emails, flyers and postings on the project website. NWR Corridor Project public meetings occurred in March of 2010. Once the draft NWR Corridor EE was made available, a formal 30-day public comment period ensued. During this period a series of public meetings were conducted for the primary purpose of reviewing the NWR Corridor EE findings, including impacts and proposed mitigation, and gathering and recording public comments. At the public meetings, verbal comments were recorded. See Appendix G: Response to Comments, for the summaries of public meetings and a matrix compiling responses to comments received during the formal comment period that occurred between 26 February 2010 and 29 March 2010.

This Final EE will be made available to the public on the project Web site. Copies of the document will also be made available to the public at the following locations:

Denver

- Denver Public Library – Central Library
  10 West 14th Avenue Parkway
  Denver, CO 80204
- RTD FasTracks
  1560 Broadway, Suite 700
  Denver, CO 80202

Adams County

- Adams County Planning & Development
  12200 N Pecos Street
  Westminster, CO 80234

Westminster

- Westminster Public Library
  College Hill Branch
  3705 West 112th Avenue
  Westminster, CO 80031

Longmont

- Longmont Public Library
  409 4th Avenue
  Longmont, CO 80501

Louisville

- Louisville Public Library
  951 Spruce Street
  Louisville, CO 80027
- 36 Commuting Solutions
  287 Century Circle, Suite 103
  Louisville, CO 80027

Boulder

- City of Boulder Transportation & Planning
  1739 Broadway Blvd. 2nd Floor
  Boulder, CO 80306

Broomfield

- City and County of Broomfield
  Community Development
  1 DesCombes Drive
  Broomfield, CO 80021

Online

www.RTD-FasTracks.com

METHODS FOR THE PUBLIC TO KEEP INFORMED AND REMAIN INVOLVED

- Visit the RTD FasTracks Web site for the current information about the project
- Submit a comment by phone, email, mail or through the project Web site
- Request a meeting with your organization
- Call the RTD FasTracks information line

HOW YOU CAN CONTACT US

- Web site: www.RTD-FasTracks.com
- Email: nwrail@RTD-FasTracks.com
- Phone: (303) 299-2000
- Mail Comments to:

  RTD FasTracks Northwest Rail
  1560 Broadway, Suite 700
  Denver, CO 80202

ES.8 IMPACTS AND MITIGATION MEASURES

Table ES-11 provides a summary of impacts and mitigation measures described in greater detail in Chapter 3, Affected Environment and Environmental Consequences. The table is organized as follows:

Direct Impacts: Effects that occur immediately with implementation of the proposed action.

Direct impacts assocated with the Preferred Alternative are presented based on the following categories:

NWR Corridor Alignment – Impacts that would result from implementation of the track alignment north of the South Westminster/71st Station to Longmont.

Proposed Stations – Impacts that would result from implementation of the station platforms and associated park-n-Rides. Both funded and unfunded stations are included in the impact analysis. Impacts associated with the South Westminster/71st Station are included in Phase 1, because this station would be constructed as part of Phase 1.

Phase 1 – Impacts that would result from implementation of the project between DUS and the South Westminster/71st Street Station. Phase 1 would be constructed first, as part of RTD's Eagle P3 project.

Indirect Impacts: Impacts caused by the proposed action later in time or impacts further removed in distance but reasonably foreseeable. For example, transit-oriented development may develop over time near stations to serve the needs of transit commuters.

Temporary Construction Impacts: Temporary construction impacts have been included for consideration in this analysis. These impacts result from the actual construction of the proposed action and may include, but are not limited to, noise, dust, clearing and excavation, visual change, and traffic congestion from construction equipment.

Cumulative Impacts: Results of the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or organization undertakes those actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. See Appendix B, Programmatic Cumulative Effects Analysis, for more details.

Mitigation Measures: Describes mitigations that will be implemented to avoid, minimize, or compensate for impacts. Note that Phase 1 mitigations are called out separately.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Social Impacts and Community Facilities	
NWR Corridor Alignment and Proposed Stations Direct Impacts – With the combination of Quiet Zones and the noise barrier mitigation proposed, residual moderate noise impacts would remain at 235 residences and 4 institutional uses in 2035. – Preferred Alternative would provide a benefit to approximately 128,000 residents in neighborhoods within 0.5 mile of proposed transit stations by offering an alternative mode of transportation. – Preferred Alternative would benefit community services located within 0.25 mile of the proposed stations and serving populations with limited access to personal vehicles. – Preferred Alternative would require acquisition and relocation of the Boulder Emergency Squad, an emergency response organization that provides supplemental assistance to other emergency response providers and whose service area includes all of Boulder County.	– The Boulder Emergency Squad facility will be relocated in compliance with the Uniform Relocation Assistance and Real Property Act of 1970 (Public Law 91-646, 84 Stat.1894) as amended. To the greatest extent possible, the Boulder Emergency Squad will be relocated along a major arterial or highway to maintain easy access for responding to emergencies. – Refer to mitigations below for Land Acquisition, Displacements, and Relocation of Existing Uses, for additional information on relocation procedures. – Noise walls and quiet zones will be implemented to mitigate noise impacts and are described below for Noise and Vibration.
Phase 1 Direct Impacts – Implementation of Phase 1 would not require acquisition of community facilities. Phase 1 would not bisect residential areas along the alignment from DUS to South Westminster/71st Avenue Station. Two residual moderate level noise impacts would occur in the Adams Section.	– No mitigation required.
Preferred Alternative Indirect Impacts – Preferred Alternative could increase population density within 0.5 mile of proposed station areas due to TOD and higher density development. These changes are supported by local and regional plans.	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Temporary Construction Impacts – During the 5 year construction phase, neighborhoods would experience increased congestion and out-of-direction travel, dust, increased noise levels, and visual impacts due to construction materials storage and activities. – Harris Park Elementary school in Adams County would temporarily be affected by detours, the movement of construction materials and equipment, and increases in noise levels, vibration, and dust.	– Working with the communities, RTD will prepare a Construction Management Plan that specifies public communications and construction means and methods to reduce or mitigate the inconveniences of construction such as noise, dust, visual blight, construction traffic, and preservation of access to homes, businesses, and community facilities. – RTD will coordinate with impacted neighborhoods prior to and during construction activities. – Refer to mitigation for Transportation Systems – Refer to mitigation for Noise and Vibration – Refer to mitigation for Air Quality – Refer to mitigation for Visual and Aesthetic Qualities.
Preferred Alternative Cumulative Impacts – Preferred Alternative could encourage redevelopment opportunities surrounding the transit stations. In combination with other planned transportation improvement projects, the Preferred Alternative may promote compact development patterns, reducing the need for extensive infrastructure systems and reducing less efficient development patterns.	– No mitigation required.
Environmental Justice	
NWR Corridor Alignment and Proposed Stations Direct Impacts – The Preferred Alternative would not result in disproportionate impacts to minority or low-income populations in the project study area. Minority and low-income populations would benefit from the Preferred Alternative as a result of improved access to community facilities. – The Downtown Longmont station would require the acquisition of 15 low-income residences. Ten of these are associated with the Park Patio mobile	– Refer to mitigation for Land Acquisition, Displacement, and Relocations of Existing Uses below. – RTD will provide displaced residents with an RTD EcoPass for a one year period.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
home park at 1st Avenue and Terry Street. This area is constrained by industrial uses and a historic property to the north, with limited opportunities for realignment.	
Phase 1 Direct Impacts – Phase 1 would not result in disproportionate impacts to minority or low-income communities. No residential properties would be acquired in this segment. Adjacent neighborhoods would not be further divided. Project effects would not exceed those of the general population.	– No mitigation required.
Preferred Alternative Indirect Impacts – With access to the FasTracks system, connections between communities would be strengthened. – Proximity to mass transit stations may increase the desirability of adjacent property. This may affect minority and low-income residents near the proposed Downtown Longmont and Boulder Transit Village stations.	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Temporary Construction Impacts – Construction in minority and/or low-income areas could result in increased noise, visual effects, and traffic congestion. However, these impacts would not exceed those experienced by the general population within the NWR project study area.	– No mitigation is required.
Preferred Alternative Cumulative Impacts – With additional opportunities for TOD, the Preferred Alternative may be able to accommodate regional demand for affordable housing more efficiently than the No Action Alternative. – Preferred Alternative would provide additional transportation options throughout the NWR project study area and would moderately improve the mobility of minority, low-income, and traditional transit users to access to the rest of the RTD system.	– No mitigation required.
Land Use/Zoning	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Preferred Alternative would include conversion of existing land uses to rail facilities where ROW is currently constrained, particularly at proposed stations. – Development of the proposed alignment is compatible with all adopted land use and transportation plans, and planned future land uses.	– No mitigation required.
Phase 1 Direct Impacts – Phase 1 would include conversion of existing land uses for ROW expansion, particularly at the South Westminster/71st Avenue Station. – Development of Phase 1 would be compatible with all adopted land use and	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
transportation plans.	
Preferred Alternative Indirect Impacts – Preferred Alternative would result in higher density residential and/or commercial development within a 0.25-mile radius of proposed stations.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Land use policies and planning would be unaffected by the construction activities associated with the Preferred Alternative.	– No mitigation required.
Preferred Alternative Cumulative Impacts – Residential and commercial growth in the proximity of the proposed stations would limit the need to drive, improve localized air quality, could limit the consumption of undeveloped land, and require compact infrastructure.	– No mitigation required.
Farmlands	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Preferred Alternative would impact 4.0 acres of farmland (3.6 acres of prime farmland and 0.4 acre of farmland of statewide importance) along the alignment due to need for acquisition of small slivers of land adjacent to existing BNSF Railway Company ROW in the Broomfield, Boulder and Longmont sections. – No permanent loss of access to farmland or isolation of portions of active farm properties would result from the Preferred Alternative.	– Mitigation will be provided to agricultural properties, consistent with the ROW policies described in Section 3.3, Land Acquisition, Displacements, and Relocation of Existing Uses. – Existing, legal access to farm properties will remain available during and after construction. Typically, access rights are demonstrated by easements, license agreements, or other legal permits, etc.
Phase 1 Direct Impacts – No impacts to farmlands would occur as a result of Phase 1, because there is no farmland located within 1,000 feet of the project impact area.	– Same mitigation proposed for direct impacts.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Indirect Impacts – Approximately 229 acres of farmland (46 acres of farmland classified as prime if irrigated, and 183 acres of farmland of statewide importance) surround the Flatiron, East Boulder, and Gunbarrel station sites. Land surrounding these sites is primarily protected as open space and is not currently being used for agricultural purposes. New development around these stations would be limited by current regulations and plans that protect these lands from development.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Construction of the Preferred Alternative would temporarily impact 5.8 acres of farmlands (increase in traffic, noise, dust and need for temporary easements) but not impair the agricultural productivity of the area or the potential for agricultural activities in the future.	– All irrigation pipes and ditches will be replaced in-kind – Irrigation will not be interrupted during construction. – Mitigation will be provided to agricultural properties, consistent with the ROW policies described in Section 3.3, Land Acquisition, Displacements, and Relocation of Existing Uses. – Existing, legal access to farm properties will remain available during and after construction. Typically, access rights are demonstrated by easements, license agreements, or other legal permits, etc.
Preferred Alternative Cumulative Impacts – Preferred Alternative could result in increased densities around proposed stations, possibly delaying development of existing farmland in the fringes of local jurisdictions. By reducing the conversion of important farmlands, the Preferred Alternative could result in fewer cumulative impacts. Future development would be restricted in areas protected as open space.	– No mitigation required.
Economic Considerations	
NWR Corridor Alignment and Proposed Stations Direct Impacts	– Refer to mitigation for Land Acquisition, Displacements, and Relocation of Existing Uses.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– The NWR Corridor Alignment would require acquisition of 12.77 acres of private property that would result in a loss of $40,836 in property tax revenues each year. No business or employee relocations would be required. – Proposed station sites would require acquisition of approximately 72.99 acres of private property, resulting in the relocation of 69 businesses and 249 employees. An estimated loss of $706,190 in annual property tax revenues is anticipated.	
Phase 1 Direct Impacts – Phase 1 would require an acquisition of 48.64 acres (36.41 acres for the alignment and 12.23 acres for the station), resulting in the relocation of seven businesses and approximately 229 employees. These acquisitions would potentially result in an annual property tax revenue loss of $293,200.	– Refer to mitigation for Land Acquisition, Displacements, and Relocation of Existing Uses.
Preferred Alternative Indirect Impacts – Anticipated development surrounding stations may offset property tax impacts and create a net growth in the tax base and revenues by 2035. – Number and variety of businesses and employment opportunities could be likely to increase around proposed stations. – Approximately 369 jobs would be created for maintenance and operation of the Preferred Alternative.	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Temporary Construction Impacts – Direct construction jobs: 5,764 jobs over the 5-year construction period, or approximately 1,153 jobs per year – Jobs created indirectly by construction: 1,460 jobs – Construction activities would temporarily inconvenience shoppers and affect businesses along the proposed alignment with noise, traffic, and visual degradation. – Some businesses would temporarily experience restricted access during construction.	– Create Construction Management Plans and work with local communities and businesses. – Provide clear signage and directions for alternate access. – Coordinate with local groups, business districts, and jurisdictions using a variety of media (for example radio, flyers, advertisements, and Web Site), where appropriate. – Provide temporary access during normal business hours, where possible. – Ensure contractors obtain all necessary local permits. – Develop traffic maintenance plans to maintain access and circulation. – Refer to mitigation for Visual and Aesthetic Qualities. – Refer to mitigation for Air Quality. – Refer to mitigation for Noise and Vibration. – Refer to mitigation for Transportation Systems.
Preferred Alternative Cumulative Impacts – FasTracks is expected to save individuals $210 annually in 2030, as compared to the cost of congestion without FasTracks (RTD, 2007). – Construction of FasTracks would result in additional employment and economic activity. For every dollar spent on construction capital costs, more than 2 dollars of additional economic activity would be generated in the Denver region. In addition, every dollar spent on capital costs would translate directly into $0.72 in new wages and salary for jobs outside the construction field. Furthermore, for every 1,000 workers hired for the operation of FasTracks, 1,533 jobs would be in industries not involved in FasTracks (RTD 2007).	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Land Acquisitions, Displacements and Relocations of Existing Uses	
NWR Corridor Alignment and Proposed Stations Direct Impacts – NWR Corridor alignment would require the acquisition of 12.77 acres of private property. This excludes BNSF Railway Company ROW. No businesses or residences would be relocated as a result of the proposed alignment. – Proposed station sites would require acquisition of approximately 72.99 acres of private property, resulting in relocation of 16 residences and 69 businesses. – The Downtown Longmont Station would result in the relocation of 15 residences. Ten of these 15 residences are located in the Park Patio mobile home park. The one other residential relocation, of the 16 total residences, would occur at the Broomfield/116th Avenue Station. – The businesses impacted by proposed stations range from offices and retail/commercial businesses to larger warehouse and manufacturing operations.	– **Acquisition.** The acquisition of real property interests will comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act) and the Fifth Amendment of the United States Constitution. The Uniform Act applies to all acquisitions of real property or displacements of people resulting from federal or federally assisted programs or projects. – All impacted owners will be provided notification of the acquiring agency's intent to acquire an interest in property, including a written offer letter of just compensation specifically describing those property interests. – **Relocation Analysis.** RTD will prepare a relocation analysis to enable relocation activities to be planned in such a manner that the problems associated with the displacement of property are recognized and solutions are developed to minimize the adverse impacts of displacement. The Relocation Study will estimate the number, type, and size of businesses to be displaced and the approximate number of employees that may be affected; and consider any special advisory services that may be necessary from RTD and other cooperating agencies. – **Relocation Assistance Advisory Services**. Relocation assistance will include determining the relocation needs and preferences of each property to be displaced and explaining the relocation payments and other assistance for which each owner or tenant is eligible; providing current and continuing information on the availability, purchase prices, and rental costs of comparable replacement properties, and other programs administered by the Small Business Administration and other federal, state, and local programs offering

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	assistance to displaced businesses. – **Payments**. The relocation payments provided to displaced businesses are determined by federal eligibility guidelines.
Phase 1 Direct Impacts – Phase 1 would result in acquisition of 48.64 acres (36.41 acres for the alignment and 12.23 acres for the station). Acquisitions would result in relocation of seven businesses.	– Mitigation for Phase 1 will be the same as those measures identified for the direct impacts above.
Preferred Alternative Indirect Impacts – Property acquisitions would indirectly result in job losses as discussed under Economic Considerations.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Temporary construction impacts are related to the temporary easements that would be needed from 162 parcels on approximately 22.7 acres to build the Preferred Alternative. The needs for easements would be greatest in the Louisville, Boulder, and Longmont sections.	– No mitigation required.
Preferred Alternative Cumulative Impacts – Property acquisition required for the Preferred Alternative would be additive to the property required for the roadway and transit projects included in the No Action Alternative, plus the additional land needed for new public infrastructure to serve the 2035 population in the NWR project study area, estimated at approximately 1,800 acres. As described under the No Action Alternative, up to 31,000 acres would be required for public infrastructure to accommodate the 2035 population estimated for the Denver metropolitan area and up to 5,800 acres would be required for public infrastructure to	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
accommodate the 2035 population of the North Front Range metropolitan area.	
Historic, Archaeological, and Cultural Resources	
NWR Corridor Alignment and Proposed Stations Direct Impacts – There are no known direct impacts to National Register of Historic Places (NRHP)-eligible or –listed archaeological resources from the Preferred Alternative. – The NWR Corridor Alignment would impact 16 NRHP-eligible or –listed resources, none of which result in a finding of Adverse Effect. – There is one direct impact related to Proposed Stations. – Impacts to these resources result in a finding of No Adverse Effect.	– No mitigation would be required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Phase 1 Direct Impacts – Phase 1 results in directly impacting six NRHP-eligible or –listed resources. Impacts to these resources result in a finding of No Adverse Effect.	– No mitigation is required.
Preferred Alternative, Indirect, Temporary Construction, and Cumulative Impacts – There are no known indirect, temporary construction, or cumulative impacts to NRHP-eligible or -listed archaeological resources from the Preferred Alternative. – Historic properties within the Area of Potential Effect (APE) would be subject to indirect impacts due to noise or visual change and include: The Bowles House Museum and the Oleson House in the Adams Section under Phase 1; and the La Salla-Wilson House, the Stolmes House, Mrs. Downer's Cabins (2 properties), and the Steinbaugh-Murgallis House in the Louisville Section. No Adverse Effects would result from noise impacts and/or visual changes. – Temporary impacts due to the noise, air quality, visual, and traffic- diverting effects of construction would occur. These impacts would result in a finding of No Adverse Effect to the historic resources.	– Refer to mitigation for Transportation Systems – Refer to mitigation for Visual and Aesthetic Resources – Refer to mitigation for Air Quality – Refer to mitigation for Noise and Vibration. – Where known archaeological sites are present, ground-disturbing activities will be avoided, where possible. RTD may complete archaeological monitoring during construction activities. In the even that cultural deposits are discovered during construction, work would cease in the area of discovery and the SHPO would be notified. The designated representative would evaluate any such discovery, and in consultation with SHPO, complete appropriate mitigation measures, if necessary, before construction activities resume. – There would be no vibration impacts to the Bowles House Museum (5AM64) resulting from the project. However, RTD has committed to the following mitigation measure for this property: – RTD will conduct additional vibration analysis at the Bowles House prior to construction. The vibration measurements will be taken adjacent to the Bowles House and the vibration analysis will be re-run at that time based on those measurements.
Visual and Aesthetic Qualities	
NWR Corridor Alignment and Proposed Stations Direct Impacts Project features that present the potential for visual change include:	– Noise barriers and retaining walls will be designed with consideration for rail passengers' and residents' views. When feasible, noise barriers and retaining walls will avoid impacting open areas, reflect natural appearance in textures

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– In areas where retaining walls, bridges, or noise walls would be proposed, these structures would have the potential to block views of visual resources. – Noise barriers, though required only along three segments, would generate a high degree of visual change. Refer to Noise and Vibration for more information. – The widening of the existing rail corridor from one track to two and the provision of fencing along the entire rail corridor would constitute the largest permanent change along the proposed alignment, though it would generate a low degree of visual change. – RTD developed fencing recommendations through an extensive outreach process with local jurisdictions to provide fencing that is compatible with the surrounding land uses. RTD will continue ongoing coordination with the local jurisdictions regarding fencing, including the use of existing fencing at specific locations along the proposed alignment. – At proposed station sites the degree of visual alteration would be noticeable. However, proposed stations would be constructed with compatible architectural designs, would fit in with planned future land uses, and would be located in areas of previous development. – Overhead pedestrian walkways would be included at the following stations: Westminster/88th Avenue, Walnut Creek, Flatiron, and Gunbarrel. Additionally, station platforms, roof shelters, parking, and drop-off areas would constitute other visual changes.	and colors, and be graffiti resistant. – Stations will be landscaped consistent with RTD design criteria. Parking lot design will conform to local parking standards. – Fencing options will be compatible with surrounding land uses as is feasible. Proposed fencing recommendations are listed in Table 2-19, Northwest Rail Alignment Fencing Recommendations.
Phase 1 Direct Impacts – New structures, retaining walls, track, catenary, and fencing would be visually compatible with the industrial character of the corridor. – Provision of electrification would represent a visual change, but is	– Mitigation for Phase 1 will be the same as those measures identified for the Alignment and Stations Direct and Temporary Construction Impacts.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
considered compatible with the industrial character of the area.	
Preferred Alternative Indirect Impacts – Preferred Alternative may result in a potential increase in urban density around the proposed stations. In general, increased density surrounding NWR transit stations is anticipated to be moderate. The extent of this development would depend on the market feasibility of the sites.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Throughout construction, the visual appearance of the NWR project study area would change due to the presence of construction equipment, staging areas, machinery, vehicles, construction materials, and excavated material piles. – Temporary construction would create the largest impact when adjacent to the open space areas where disturbed vegetation may take years to reestablish.	– Staging areas will be fenced and/or screened. – Construction lighting will be shielded and directed at work areas to reduce glare and light trespass. – All landscaping will be replaced where removed for construction efforts, except in immediate trackway.
Preferred Alternative Cumulative Impacts – Since the 1950s, substantial development has occurred in the NWR project study area. Much of the undeveloped, rural lands north of the Denver metropolitan area have been developed into commercial and residential land uses. Overall, the FasTracks program would encourage higher density development within urban areas and would slightly slow the continued conversion of undeveloped lands. This would help to preserve the existing visual character of the NWR project study area.	– No mitigation required.
Parklands, Open Space and Recreational Resources	
NWR Corridor Alignment and Proposed Stations Direct Impacts	– Negotiate compensation for parkland acquisition with the owner of the public

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– Preferred Alternative would result in the acquisition of 1.68 acres of parks, open space, and recreational resources along the proposed alignment. – Additional impact to 3.58 acres at the Louisville Sports Complex, which would share parking with the Downtown Louisville Station. Parking would be constructed in an area already used for parking and would not result in an impact to any of the recreational features of the complex. – The BNSF Railway Company has discussed the potential need for additional storage track in Westminster along Little Dry Creek Trail. If this additional storage track is required by the BNSF Railway Company, the track would result in an additional impact of 0.18 acres.	lands' local representatives. – Open space acquired from the City of Boulder will follow the approved process set forth in the Charter of the City of Boulder, Article XII, Section 177, which states that transfer of open space from City of Boulder ownership must be approved by City Council and the Open Space Board of Trustees.
Phase 1 Direct Impacts – Phase 1 would result in the acquisition of 1.11 acre of parklands.	– Refer to mitigation for impacts above.
Preferred Alternative Indirect Impacts – No indirect impacts to park or recreation resources.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Construction of the Preferred Alternative would require temporary construction staging areas, requiring temporary use of 5.67 acres of park and open space land. – Construction of the Preferred Alternative would result in temporary construction impacts where existing trails cross the proposed alignment. Impacted trails would include: the South Platte River Greenway Trail, Little Dry Creek Trail, Wolff Run Trail, Big Dry Creek Trail Crossing, Walnut Creek Trail Crossing, Coal Creek Regional Trail, South Boulder Creek Trail, Boulder Creek Trail, Goose Creek Trail, Fourmile Creek Trail, and the St. Vrain Greenway Trail.	– Detour plans for the South Platte River Greenway Trail were approved by the City and County of Denver in a letter dated September 25, 2008 and proposed trail detours for Big Dry Creek and Wolf Run Trails in the City of Westminster were approved in documentation dated January 29, 2010. In addition, the City of Longmont approved a detour to the St. Vrain Greenway in documentation dated February 5, 2010, and Adams County approved detours for Little Dry Creek and Clear Creek Trails in documentation dated May 26, 2010. – Return trails to their existing or comparable state following construction. – In coordination with local jurisdictions, construction plans defining the best management practices (BMP) for the following will be developed: (1) Public safety and security for the project site, this plan should include all appropriate

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	access, signing, and public information BMPs; (2) Maintain traffic, pedestrian, and bicycle access to the project area during construction – Refer to mitigation for Visual and Aesthetic Qualities. – Refer to mitigation for Noise and Vibration.
Preferred Alternative Cumulative Impacts – It can be anticipated that additional parkland and recreation areas would be provided as part of the TOD around proposed stations.	– No mitigation required.
Air Quality	
NWR Corridor Alignment and Proposed Stations Direct Impacts Air Quality impacts were assessed for both the seven and eleven station scenarios. – Preferred Alternative would have similar emissions to the No Action Alternative. The scenario including all 11 stations would result in slightly lower VMT and emissions when compared to the seven funded station scenario. The decreased VMT for the All-Station scenario is likely to be related to the shorter distances the passenger vehicles drive to the additional four stations. – Region-wide daily emissions of VOC, CO, NO_x, and PM_{10} in 2015 and 2035 for both station scenarios are much lower than those in the baseline year 2005, attributed to the addition of newer vehicles with tighter emission controls, cleaner fuels, and more stringent emission restrictions in future years. – The Preferred Alternative would have higher emissions in 2035 than in 2015 due to the increased VMT in the region in 2035. – The analytical results indicated that the project operation would not cause a	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
CO hot spot impact in the future years. – MSAT emissions (although slightly higher) were comparable to both existing conditions and the No Action Alternative. – Both the seven station scenario and the 11 stations scenario under Preferred Alternative would result in small increase of PM_{10} emissions when compared to the No Action Alternative – The Preferred Alternative would not be expected to cause any violation of the PM_{10} NAAQS. – The anticipated traffic reduction due to FasTracks ridership (system-wide) would result in a slight decrease in future CO_2 emissions (RTD 2007), therefore reducing the impacts of global warming.	
Phase 1 Direct Impacts – Phase 1 would not cause any regional air quality impacts for criteria pollutants. – The MSAT analysis and CO hot spot analysis demonstrated comparable emissions to the No Action Alternative and no anticipated PM_{10} or CO violations of the NAAQS.	– No mitigation required
Preferred Alternative Indirect Impacts – The Preferred Alternative would have no indirect impacts.	– No mitigation required
Preferred Alternative Temporary Construction Impacts – The fugitive dust emissions (estimated as PM_{10}) associated with construction of the proposed project would be 100 pounds per day, based on the assumption that the maximum disturbed area would be 10 acres per	– For winter construction, the contractor shall install engine pre-heater devices to eliminate unnecessary idling. – The contractor shall be prohibited from tampering with equipment to increase horsepower or to defeat emissions control device effectiveness.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
day. There would also be emissions associated with diesel fueled equipment used for temporary construction activities, which would cause air quality violations.	– Construction vehicles and equipment used by the contractor shall be properly tuned and maintained. – Construction vehicles and equipment used by the contractor shall be equipped with the minimum practical engine size for the intended job requirement. – All construction equipment used by the contractor will be equipped to burn ultra low sulfur diesel fuel. – The contractor shall use water or wetting agents to manage dust. – The contractor shall use wind barriers and wind screens to minimize the spreading of dust in areas where large amounts of materials are stored. – The contractor shall use a wheel wash station and/or large-diameter cobble apron at egress/ingress areas to minimize dirt being tracked onto public streets. – The contractor shall use vacuum powered street sweepers to control dirt tracked onto streets. – The contractor shall cover all dump trucks leaving the site. – The contractor shall cover or wet temporary excavated materials. – The contractor shall use a binding agent for long-term excavated materials.
Preferred Alternative Cumulative Impacts – The Preferred Alternative would have not cumulative impacts.	– No mitigation required
Energy	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Preferred Alternative would result in 0.0005 percent more regional energy usage than the No Action Alternative in both 2015 and 2035. – An increase in energy consumption by 90,481,000 British thermal units (Btu) in 2015.	BMPs to reduce energy usage during construction could include: – Locating materials onsite or within close proximity to the project site. – Using newer, more energy efficient construction vehicles. – Programs to encourage construction workers to carpool or use public transportation for travel to and from the construction site.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– 143,392,000 Btu consumed annually in 2035. – Regional reduction of 2.4 million passenger vehicle miles traveled (VMT) per year and a total regional reduction of 0.1 million VMT per day in 2035 compared to 2015.	Design efforts to reduce energy consumption and overall VMT could include: – Creating multiple access points for parking lots, where possible. – Carefully designing "kiss-n-ride" drop-offs to maximize efficiency and minimize number of idling vehicles. – Positioning stations to be more easily acceptable by pedestrians and bicyclists. – Design park-n-Ride improvements to decrease energy usage consistent with RTD's sustainability policy.
Phase 1 Direct Impacts – The difference in technology from DMU to EMU would result in a negligible increase in regional energy use.	– Refer to mitigation for Alignment and Stations Direct Impacts above.
Preferred Alternative Indirect Impacts – Energy use associated with TOD is potentially less then the No Action Alternative because of smaller residences, decreased dependence on automobiles, and increase in transit use.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – During the 5-year construction period, approximately 990,080 million Btus would be consumed for the construction of the Preferred Alternative. – Approximately 17 percent of this (169,844 Btus) would be for the construction of Phase 1.	– Refer to mitigation for Alignment and Station Direct Impacts above.
Preferred Alternative Cumulative Impacts – The implementation of the Preferred Alternative and the No Action Alternative would result in comparable regional energy consumption. The projected modest density increases surrounding the proposed stations may result in smaller average home sizes and more efficient use of public	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
infrastructure. Both of these effects would help to reverse the past trends of energy consumption increasing faster than population. Although the Preferred Alternative would result in a negligible increase in energy over the No Action Alternative, as stated in the *Programmatic Cumulative Effects Analysis* (RTD 2007), the entire FasTracks Plan would result in an overall energy reduction of 116,233,392 Btus/year (RTD 2007).	
Noise	
NWR Corridor Alignment and Proposed Stations Direct Impacts Noise impacts were assessed for both the FasTracks-Only Station scenario (seven stations) and for the All-Station scenario (11 stations) – Severe noise impacts would range from 533 residences under the 2015 FasTracks-Only station scenario and eight institutional uses to 811 residences, one hospital, two schools, one park and four day care facilities under the All-Stations scenario in 2035 without mitigation. However, all severe impacts would be mitigated with implementation of Quiet Zones and noise barriers. – Quiet Zones proposed at rail crossings under the Preferred Alternative would significantly decrease horn noise compared to the existing conditions under the No Action Alternative. – Moderate noise impacts would range from 1,212 residences plus four institutional uses under the FasTracks-Only scenario in 2015 to 1,434 residences, plus three institutional uses for the All-Stations scenario in 2035 without mitigation. – In terms of year of operation, greater noise impact is projected in 2035 than	– Quiet Zones will be implemented prior to operations at all but 7 grade crossings from W. 64th Avenue in Adams County to SH 119 in Longmont. – RTD will assist the local jurisdictions with their applications to the railroads and the FRA. Applications for Quiet Zones must be submitted by the local jurisdictions. – Should Quiet Zones not be implemented prior to operations, alternate methods of noise mitigation, such as wayside horns and sound insulation, will be used. – Install 3,200 lineal feet of 10-foot high noise barriers.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
in 2015 due to the higher train volumes in 2035. – With regard to station scenario, greater noise impact is projected for the all-stations scenario than for the FasTracks-only scenario due to the effects of DMU speed and throttle profile effects near the additional stations. – With the recommended Quiet Zone and noise barrier mitigation measures, moderate impacts in 2035 would remain at 89 residences for the FasTracks-Only scenario and at 235 residences for the All-Stations scenario. – There would be residual moderate noise impacts at four institutional sites in the Boulder Section including one hotel (the Marriott Courtyard hotel), one school (Naropa University), and two day care facilities (the UCAR Child Care Center and the Family Learning Center) for both station scenarios in 2035 with proposed mitigation.	
Phase 1 Direct Impacts – Severe impacts range from five residential in 2015 for FasTracks-Only to 16-17 residential and one institution under the 2035 for All-Stations scenario without mitigation. – Moderate impacts range from 59 residents and one institution in 2015 for FasTracks-Only to 84-85 residences in 2035 under the All-Station scenario in 2035 without mitigation. – There would be two residual moderate noise impacts for Phase 1 in the Adams Section for both station scenarios in 2035 with proposed mitigation.	– Implementation of Quiet Zones and Noise Walls as indicated above.
Preferred Alternative Indirect Impacts – No indirect noise impacts are projected for the Preferred Alternative.	– No mitigation required

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Temporary Construction Impacts – Noise would result from utility relocation, grading, excavation, paving, installation of structures, and track work. Such impacts may occur in residential areas and at other noise-sensitive land uses located within several hundred feet of the alignment. The potential for noise impact would be greatest at locations near pile-driving operations for bridges and other structures and at locations close to any nighttime construction activities.	– Minimize nighttime construction in residential neighborhoods. – Locate stationary construction equipment as far as possible from noise-sensitive sites. – Construct noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers. – Re-route construction-related truck traffic along roadways that will cause the least disturbance to residents.
Preferred Alternative Cumulative Impacts – There would be no cumulative noise impacts for the Preferred Alternative.	– No mitigation required.
Vibration	
NWR Corridor Alignment and Proposed Stations Direct Impacts Vibration impacts were evaluated for both the FasTracks-Only scenario (seven stations) for the All-Stations scenario (11 stations). – Impacts would be the same under both the 2015 and 2035 operating scenarios. The results project vibration impacts at a total of 110 residences and 141 residences, respectively, for these two scenarios. – The greater number of impacts for the all-stations scenario reflects higher speeds between stations needed to offset the delays from added station stops. – Project vibration impacts also result at one school, one hotel and two day care facilities for both station and year scenarios.	– Relocate turnouts away from sensitive areas or use special turnout hardware. – Install track vibration isolation treatment if necessary and feasible based on Detailed Vibration Analysis. – Consider operational changes to minimize impacts.
Phase 1 Direct Impacts – Phase 1 would result in three residential vibration impacts for both station and year scenarios.	– Refer to vibration mitigations above for Direct Impacts.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Indirect Impacts – No indirect vibration impacts are projected for the Preferred Alternative.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – The Preferred Alternative would result in temporary construction impacts related to activities associated with utility relocation, grading, excavation, track work, and installation of structures and systems components. – Impacts may occur in residential areas and at other vibration-sensitive land uses located near the proposed alignment. – The potential for vibration impact would be greatest at locations near pile driving for bridges and other structures and at locations close to vibratory compactor operations.	– Minimize nighttime construction in residential neighborhoods. – Use alternative construction methods to minimize the use of impact and vibratory equipment (such as, pile drivers and compactors). – Re-route construction-related truck traffic along roadways that will cause the least disturbance to residents.
Preferred Alternative Cumulative Impacts – No cumulative vibration impacts are projected for the Preferred Alternative.	– No mitigation required.
Biological Resources: Fish, Wildlife, Vegetation, and Threatened and Endangered Species	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Preferred Alternative would impact a total of 89.7 acres of wildlife habitat as follows: • 77.3 acres in large blocks of grasslands in the Louisville, Boulder, and Longmont sections. • 12.4 acres of riparian woodland, riparian shrubland, and marsh habitat along the proposed alignment (mostly in the Boulder section). • 0.3 acres of riparian woodland habitat impacts at Downtown Louisville Station. • 2.1 acres of grasslands impacts at proposed stations. – Vegetation and habitat impacts would primarily occur from vegetation	– Bridge structures will span the largest amount of riparian habitat as possible under a constructed bridge to limit the amount of disturbance to vegetation and to allow for travel along the water's edge. – Fencing installed along the proposed alignment should use wildlife-friendly design at crossings of wildlife corridors, other stream and ditch crossings, and in all areas adjacent to open space land. In addition, other areas considered high quality wildlife habitat should provide for wildlife friendly fencing. – RTD is committed to coordination with USFWS and CDOW throughout final design and will consider additional mitigation measures, if necessary.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
clearing and earth moving. – Preferred Alternative would affect 18.7 acres of black-tailed prairie dog towns, primarily in the Boulder, Westminster, and Longmont sections. – Proposed alignment would not cause a new division of previously contiguous habitat. – Preferred Alternative is not expected to adversely affect the movement of wildlife along wildlife corridors at various streams and ditches. Security fences required by the Regional Transportation District (RTD) have been designed to allow movement through these areas. – Noise barriers would be located in primarily developed areas where noise sensitive receptors exist (residential areas, etc.). Therefore, wildlife movement through these areas is limited and would not block or impact significant wildlife corridors. – Preferred Alternative could affect nesting raptors and other migratory birds. One red-tailed hawk nest active in 2004 and 2008 is located within the 300 feet of the proposed alignment, and 10 additional nests that were active in 2008 are located near the proposed alignment and could be affected by construction noise or human activity. – Project related construction could introduce new noxious weeds into the NWR project study area or increase the abundance of existing noxious weeds.	
Phase 1 Direct Impacts – Phase 1 would primarily affect industrial habitat. It would affect 0.70 acre of riparian woodland and riparian shrubland in the Adams Section at Clear Creek and along Little Dry Creek.	– Refer to Preferred Alternative mitigation above.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– Impacts to 5.0 acres of grasslands would occur. – Construction impacts on aquatic resources are estimated to be 0.1 acre. Pier construction of bridge over the South Platte River in the Denver Section would occur above the riparian corridor, spanning the river, thus reducing the impact. No impacts to wetlands are anticipated. – The new bridge at the South Platte River would be elevated above the river and riparian area and would have no adverse effects on the wildlife corridor – Two bridges in the Adams Section one at Clear Creek and the other at Little Dry Creek would impact 0.2 acre of aquatic resources, but would have no adverse effects on the wildlife corridors. – South Westminster/88th Avenue Station would not directly impact biological resources. – No prairie dog towns or raptor nests would be affected in the Denver and Adams Sections.	
Preferred Alternative Indirect Impacts – The majority of the impacts would be within 0.25 mile of the proposed station platforms. However, this more efficient land use scenario and the more effective provision of urban services could allow more undeveloped land to be preserved within the region.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Removal or physical disturbance of existing vegetation on 99.5 acres of habitat. The majority (61.1 acres) would occur in the grasslands. – Wildlife disturbance and displacement, temporary habitat fragmentation, and effects on wildlife movement due to increased noise and activity associated with construction.	**Vegetation and Habitat** – Restoration of disturbed riparian habitat will include planting of native trees and shrubs, as well as seeding and re-grading. Native grasses, forbs, and shrubs will also be seeded in riparian areas. – Grading plans will minimize removal of riparian vegetation where possible. – During construction, vehicle operation will be limited to the designated construction area, and the limits of the construction area will be fenced

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– Temporary effects on aquatic habitats could also occur from erosion and sedimentation at stream crossings.	where adjacent to sensitive habitats including riparian areas, marshes, and upland trees and shrubs. – Silt fencing, erosion logs, temporary berms, and other BMPs will be used to prevent degradation of habitats adjacent to the construction area by transport of eroded sediment. – Areas of temporary disturbance within the right-of-way will be seeded with an appropriate mixture of native grasses and forbs. Shrubs will be planted where appropriate. **Prairie Dog Colonies** – RTD has issued guidance on prairie dog mitigation for the FasTracks projects. Corridor projects will be designed and constructed to avoid and minimize impacts to prairie dog colonies. Relocation of prairie dogs will be coordinated with CDOW and conducted in compliance with the CDOW Permit to Capture and Relocate Prairie Dogs. If a relocation site cannot be located for towns greater than 2 acres, the prairie dogs will be captured and donated to raptor rehabilitation facilities or turned over to USFWS for the black-footed ferret reintroduction program. At no time will RTD authorize earth-moving activities that result in burying live prairie dogs. If needed, humane techniques will be used for killing prairie dogs. – Prairie dog mitigation will be coordinated with applicable local jurisdictions including the City of Boulder, Boulder County, the City and County of Broomfield, and CDOT. **Migratory Birds (including Raptors)** – In compliance with the MBTA, construction activities in grassland, riparian, marsh, and stream habitats, and those that occur on bridges that would otherwise result in the take of migratory birds, eggs, young, and/or active nests will be avoided. – Although the provisions of MBTA are applicable year-round, most migratory bird nesting activity in eastern Colorado occurs during the period of April 1 to August 31. Raptors can be expected to nest in woodland from February 1 to July 15.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	– The USFWS recommends that a qualified biologist conduct a field survey of the affected habitats and structures to determine the presence or absence of nesting migratory birds. – Surveys will be conducted during the nesting season prior to construction. Where possible, nesting may be prevented until construction is complete, by removal of vegetation. The results of field surveys for nesting birds, along with information regarding the qualifications of the biologist(s) performing the surveys, will be maintained on file for potential review by the USFWS, until such time as construction on the proposed project has been completed. – The USFWS Colorado Field Office will be contacted immediately for further guidance if a field survey identifies the existence of one or more active bird nests that cannot be avoided by the planned construction activities. – Raptor nest surveys will be conducted annually during an appropriate season (generally May 1 to June 1) to determine presence of active raptor nests. If an active nest is located, seasonal buffers will be established and coordinated with the CDOW to prevent disturbance of nesting raptors during construction. – Raptor and other nests in the construction footprint will be removed when they are inactive, outside of the nesting season. **Noxious Weeds** An Integrated Noxious Weed Management Plan will be developed during final design. This plan will be implemented during construction and will include identification of noxious weeds in the area, weed management goals and objectives, and preventive and control measures. Preventive measures include the following: – Contractor's vehicles will be inspected before they are used for construction to ensure that they are free of soil and debris capable of transporting noxious weed seeds or roots. – Noxious weeds observed in and near the construction area at the start of

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	construction would be treated with herbicides or physically removed to prevent seeds blowing into disturbed areas during construction. – Potential areas of topsoil salvage would be assessed for presence and abundance of noxious weeds prior to salvage. Topsoil from heavily infested areas would either be treated by spraying, taken off-site, or buried during construction. – Areas of temporary disturbance will be reclaimed as soon as construction is finished and seeded using a permanent seed mixture. If areas are completed and permanent seeding cannot occur due to the time of year, mulch and mulch tackifier would be used for temporary erosion control until seeding can occur. – Only certified weed-free mulch and bales will be used in the project area. Weed control would use the principles of integrated pest management, to treat target weed species efficiently and effectively by using a combination of two or more management techniques (biological, chemical, mechanical, and/or cultural). Weed control methods would be selected based on the management goal for the species, the nature of the existing environment, and methods recommended by Colorado State University, county weed boards, and other weed experts. The presence of important wildlife habitat or threatened and endangered species would be considered when choosing control methods. ` **Aquatic Habitat** – BMPs will be used to control erosion and sedimentation during construction and to protect water quality in streams. BMPs may include berms, brush barriers, check dams, erosion control blankets, filter strips, sandbag barriers, sediment basins, sheet mulching, silt fences, straw-bale barriers, surface roughening, and/or diversion channels. A spill prevention and emergency response plan will be prepared and used during construction for storage, handling and use of chemicals, fuels and similar products. – Refer to mitigation for Water Resources and Water Quality **Special Status Species** Burrowing owl (state-listed threatened) CDOW recommendations (CDOW,

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	2007b) for surveys and protection of nesting burrowing owls will be followed: – Surveys will be conducted prior to construction to determine presence of burrowing owls in prairie dog towns, and the locations of occupied nests. Surveys will be conducted for any construction activities in suitable habitat from March 15 to October 31 in prairie dog towns. – Construction will be avoided within 150 feet of burrows used by burrowing owls from March 15 to October 31. – Federally Listed Species. Consultation was conducted with the USFWS under Section 7 of the Endangered Species Act. A Biological Assessment was prepared, and the USFWS will issue a Biological Opinion with a determination of effect. Based on presence/absence surveys conducted in 2009, the Biological Assessment indicates that the project may affect but is not likely to adversely affect federally listed species. The USFWS concurred with this finding in December 2009. If requested by the USFWS, additional surveys will be conducted prior to construction. If individuals or populations of federally listed species are found or if other information indicates that a federally listed species has become present in the construction corridor, consultation will be reinitiated with the USFWS. Any conservation measures identified in the Biological Opinion will also be implemented.
Preferred Alternative Cumulative Impacts – Vacant land that now serves as generally marginal wildlife habitat would continue to be developed as the population increases by the year 2035. However, the TOD anticipated to be stimulated by the Preferred Alternative would slightly modify this trend because some percentage of the new development would occur at higher densities. This would have a modest	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
positive effect on wildlife as some vacant land would not be developed during the foreseeable future.	
Mineral Resources, Geology, and Soils	
Preferred Alternative Direct, Indirect and Temporary Construction Impacts – Geotechnical challenges, such as those that could lead to increased instability, soil erosion, slumping and caving of excavated or altered slopes, and shallow groundwater. – If unmitigated, the destructive effects of these factors may increase over time and damage structure foundations. – Seismic risk in the project study area is consistent with the moderate seismic risk present in the Denver metropolitan area. – No mineral extraction opportunities would be precluded with the implementation of the Preferred Alternative.	– Engineering slope cuts for stability; shoring of slope cuts and shallow excavations; retaining walls; and dewatering systems where appropriate. – Engineering techniques such as drainage systems to direct surface water and runoff; slope design; covering slope during construction; use of engineered fill; and prompt and appropriate revegetation. – Mitigation of expansive bedrock, soil, and surficial materials with deep foundations into bedrock below perennial water table; specialized piers and footings; over-excavation with moisture treatment and compaction of backfill; engineered or imported fill; subsurface drainage systems; and surface water diversions. – Mitigation of collapsible soils with shoring of excavations; retaining walls; drainage systems; excavation and engineered or imported fill; compaction; pre-construction flooding and/or loading; and use of geogrids or geotextiles. – Mitigation of corrosive soils with coated and resistant steel and concrete; and drainage systems. – Mitigation of shallow groundwater with engineered fills and dewatering systems. – Identification of shallow subsurface voids. – Engineering techniques such as grouting to fill shallow voids. – Appropriate engineering of foundation and structure. – Engineering and design to conform with anticipated probable maximum seismic event.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Phase 1 Impacts – Potential impacts to mineral resources in Phase 1 would be the same as those described above under Direct, Indirect and Temporary Construction Impacts above.	– Mitigation for the Phase 1 will be the same as those measures identified for the Preferred Alternative Direct, Indirect and Temporary Construction impacts above.
Preferred Alternative Cumulative Impacts – No cumulative impacts.	– No mitigation required.
Water Resources/Water Quality	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Potential decrease in water quality would be primarily due to the construction of an additional commuter rail track and improvements to the existing track, and the construction of 11 proposed stations. Amount of impervious area for the proposed stations would increase due to asphalt paving to cap the site (estimated at 69 acres), while the amount of impervious surfaces of the tracks would slightly increase due to new structures (estimated at 1 acre). Driscoll modeling indicates that there would be no negative water quality impacts as a result of urban runoff from the new parking facilities.	– Discharge into nearby storm sewer in accordance with local discharge permits. – Water detention ponds at all proposed stations. – Temporary BMPs such as silt fences, erosion log barriers, and temporary check dams during construction. – Spill, Prevention, Control, and Countermeasure Plan, if required. – Compliance with RTD Municipal Separate Storm Sewer System (MS4) requirements, as well as Adams County, Boulder County, City of Boulder, City and County of Broomfield, City and County of Denver, City of Longmont, City of Louisville, City of Westminster, and Colorado Department of Transportation (CDOT) MS4 requirements as appropriate. – During project construction within CDOT right of way, the CDOT Water Quality Consent Decree, which was issued to CDOT by Colorado Department of Public Health and Environment (effective, January 2009) will be followed as appropriate. – Permanent BMPs such as water quality detention basins and rip rap. – Non-Structural BMPs such as parking lot sweeping, use of vegetative buffers, spill containment measures, and minimizing disturbed areas by project

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	construction phasing. – Temporary and permanent BMP maintenance. – Onsite detention basins at each station in accordance with local requirements. This may benefit some areas that currently have no stormwater controls. – Permanent BMPS including, if necessary, flow attenuation devices and/or detention basins and rip rap. – Clean Water Act Section 402 NPDES Permits, including a stormwater construction permit, in accordance with all local and state regulations and dewatering permits. – Stormwater BMPs. – Project-specific temporary and permanent water quality plans. – Project-specific stormwater management plans. – Construction of onsite detention basins for water quality at all stations in accordance with municipal and state regulations and parking areas designed to minimize directly connected impervious surfaces. – Operations monitoring and supply wells will be protected or replaced in the same or similar location depending on the site conditions. – Non-operational monitoring and supply wells will be abandoned in accordance with state requirements.
Phase 1 Direct Impacts – Phase 1 would add 7.65 acres of new impervious surface. Runoff from the rail structures would be collected and brought to the stormwater system through under-drains and discharged to the local storm drainage system. – The South Westminster/71st Avenue Station would add approximately 14 acres of impervious surfaces. The potential for ground water to be encountered.	– Mitigation will be the same as those measures above.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Indirect Impacts – It is assumed that through traditional land development and local stormwater regulations, increased runoff would be detained in local and regional detention and retention ponds.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Potential for temporary riparian vegetation and water quality impacts during construction due to an increase in erosion and subsequent sedimentation of nearby surface waters. – It is estimated that a total of 580 acres would be temporarily disturbed during the construction of the Preferred Alternative.	Mitigation will be the same as those measures for Alignment and Stations Direct Impacts, with the addition of the following: – Temporary BMPs for construction, including reestablishment of native vegetation. – Dewatered water will be discharged to the storm sewer in accordance with discharge permits.
Preferred Alternative Cumulative Impacts – Construction of the Preferred Alternative would be consistent with existing land uses, but the amount of impervious surfaces would increase. As the population increases between 2005 and 2035, the amount of impervious area would increase by approximately 3,300 acres, assuming an average density of 10 people per acre and 40 percent impervious surfaces (Federal Highway Administration 2007). – .Water quality is not anticipated to degrade below existing conditions and may improve as water quality control measures are updated. – Development density is expected to increase around proposed stations, reducing the amount of urban sprawl and preserving more natural pervious surfaces that would be a qualitative benefit to water quality.	– No mitigation required.
Wetlands and Other Waters	
The USACE Section 404 permitting process requires the consideration of all jurisdictional (J) wetlands and other water features impacted by the Preferred	– All mitigations outlined in the USACE permit will be followed.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Alternative, including temporary construction impacts. As a result, the USACE considers a total of 4.91 J acres of wetlands and other water features to be impacted by the Preferred Alternative. Phase 1 of the Preferred Alternative is considered by the USACE to impact 0.31 J acre of wetlands and other water features. These numbers are further categorized below into two groups: (1) direct, permanent and (2) temporary construction. In addition, they are grouped by alignment, station and Phase 1, as is done for the other resource areas. NWR Corridor Alignment and Proposed Stations Direct Impacts **Wetlands** – Direct permanent impact to 6.03 acres of wetlands from the construction of the proposed alignment. The Boulder Section contains the greatest acreage of wetlands impacted (4.45 acres). The greatest impact would occur from the platform construction (considered as part of the alignment impacts), of the proposed Gunbarrel Station (0.58 acre). – The unavoidable impacts to wetlands impacted at the Gunbarrel Station are considered jurisdictional by the USACE. – A wetland functional assessment was conducted using the FACWet method. Wetlands were assessed both individually and in groups. – A total of 11 wetlands were assessed individually and either fell into the Functioning or Functionally impaired categories. The individually assessed wetland with the highest functional capacity index is Lower Church Lake. – All of the four groups assessed had generally low functional scores for hydrologic and wildlife habitat. This is mostly a result of the presence of contaminated water, managed/manipulated flows, and/or the presence of exotic plants. – Of the total direct, permanent impact from the construction of the alignment	– Wetland replacement will be completed per USACE requirements. – Wetland 1:1 replacement for non-jurisdictional wetlands per RTD requirements. Credits will be purchased or on-site mitigation conducted for non-jurisdictional impacts. – Appropriate permits will be acquired. Phase 1 Section 404 Permit was issued by USACE on 1 April 2010. – There will be no equipment staging, storage of materials, use of chemicals (such as soil stabilizers, dust inhibitors, and fertilizers), or equipment refueling within 50 feet of wetlands or other water features. – Any new or modified bridges will be designed to minimize direct discharge of stormwater runoff into wetlands.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
(6.03 acres), 1.79 J acres are PEM wetlands and 1.51 J acres are PEM/PSS wetlands, for a total of 3.30 J acres of wetlands. – An additional 0.7 non-jurisdictional (NJ) acre of permanent impact to wetlands would occur from development of all stations. **Other Water Features** – The Preferred Alternative alignment would result in 1.17 acres (0.72 J and 0.45 NJ) of direct, permanent impact to other water features. The most impacted acreage would occur to natural other water features within the Adams Section. – An additional 0.02 NJ acre of direct, permanent impact to other water features would occur from the construction of the Downtown Louisville and East Boulder stations. No impacted acreage from station construction is considered jurisdictional. **Riparian Buffers** – The alignment would result in a total of 1.86 acres of direct, permanent impact to mature, woody riparian buffers. The greatest amount of impact would occur to woody riparian buffers within the Boulder Section. – No impact to mature, woody riparian buffers would occur from station construction.	
Phase 1 Direct Impacts – Phase 1 would result in direct permanent impact to .0.06 J acre of impact to wetlands; 0.07 J acre of impact to other water features; and 0.51 acre of impact to riparian buffers. – Wetlands between DUS and Pecos Street were included in the February Nationwide Permit approved for the Gold Line Final EIS (FTA 2009) (Appendix C).	– Mitigation will be the same as those measures for Alignment and Stations Direct and Temporary Construction Impacts.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– The BNSF Railway Company is considering an additional storage track near the South Westminster/71st Avenue Station. If this option were to be implemented, it would create an additional direct, permanent impact to other water features of <0.01 acre. The impacted other water feature is not considered jurisdictional by the USACE.	
Preferred Alternative Indirect Impacts – Indirect permanent impacts to wetlands and other water features would include constriction of stream flow from bridge construction, erosion resulting in sedimentation, and noxious weed invasion.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Construction of the Preferred Alternative would result in temporary impacts to 0.93 acres (0.76 J and 0.17 NJ) of waters of the United States – Construction of Phase 1 of the Preferred Alternative would impact 0.24 acre (0.07J and 0.17 NJ) of waters of the United States.	– Prior to construction, orange temporary fence and sediment control measures will be placed to protect existing wetlands that are located outside the planned area of disturbance. – Wetland areas designated as areas of temporary disturbance that will be used for construction access will be covered with geotextile, straw, and soil prior to use. – Temporarily impacted wetlands will be restored to their preconstruction condition. – Construction equipment moving between watersheds will be washed prior to commencing work within a new area to prevent the spread of aquatic invasive species. – BMPs will be implemented during all phases of construction to reduce impacts from sedimentation and erosion, including the use of berms, brush barriers, check dams, erosion control blankets, filter strips, sandbag barriers, sediment basins, silt fences, straw-bale barriers, surface roughening, and/or diversion channels.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	– When practicable, construction in waterways will be performed during low-flow or dry periods. – Flowing water will be diverted around active construction areas. – No fill material will be stored in wetlands or other water features. – No unpermitted discharges will be allowed. – There will be no equipment staging, storage of materials, use of chemicals (such as soil stabilizers, dust inhibitors, and fertilizers), or equipment refueling within 50 feet of wetlands or other water features. – Any new or modified bridges will be designed to minimize direct discharge of stormwater runoff into wetlands. – City of Boulder wetlands mitigations will be completed per City of Boulder requirements.
Preferred Alternative Cumulative Impacts – Since 1950, the amount of wetlands located in both the NWR project study area and the larger Denver metropolitan area has decreased due to more than doubling of the population. Historically, Colorado's wetlands only accounted for 3 percent of the surface area of the state. Due to a lack of regulations prior to the early 1970s, up to 50 percent of those wetlands have been lost, which is proportionately greater than other habitat type losses in Colorado (RTD, 2007). Due to improved regulations protecting wetlands, the loss of wetlands will be markedly less than experienced historically. Implementing the Preferred Alternative could encourage moderately denser growth, thus slightly reducing the potential for wetlands on some undeveloped land to be impacted in the future.	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Floodplains/Drainage/Hydrology	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Minimal effects on future flood elevations due to the construction of new bridges and the expansion of existing crossings on the 18 different 100-year floodplain crossings. But in two places the 100-year floodplain either remains the same or lowers in elevation. – Floodplain elevations would increase at Coal Creek and South Boulder Creek bridge crossings. In both cases, the proposed bridges would be adequate to pass the 100-year flow and the changes are less than the FEMA criteria allowing no more than a 1.0 foot elevation rise in the 100-year water surface elevation. – The Downtown Longmont Station (75% of total area) would be located within the 100-year floodplain, including parking lots and commuter rail platforms. – The City of Longmont is currently evaluating options for capturing and conveying flows from the 100-year storm event area that would minimize 100-year floodplain impacts at the Downtown Longmont Station.	– Onsite detention in accordance with UDFCD and local jurisdictions. – Obtain required floodplain modification permits.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Phase 1 Direct Impacts – Phase 1 would cross the South Platte River on a new bridge. Requires construction of two bridge piers in the South Platte 100-year floodplain, which is estimated to result in a rise of the 100-year flood elevation of 0.19 foot, which meets the FEMA criteria of a less than a 1-foot rise in the 100-year flood elevation. – Phase 1 would also cross the Clear Creek on a new bridge built just upstream of the existing bridge. The new bridge would result in an overtopping of the 100-year floodplain by 0.47 feet. – The South Westminster/71st Avenue Station (3% of total area) would be located in the floodplain. This station would be designed to accommodate the 100-year floodplain flows and adhere to all FEMA regulations.	– Onsite detention in accordance with Urban Drainage and Flood Control District (UDFCD) and local jurisdictions. – Obtain required floodplain modification permits.
– Preferred Alternative Indirect Impacts – Planned increase in urban density due to TOD would result in additional impervious surfaces. All planned developments would be required to fulfill state and local government storm drainage requirements that limit storm runoff to historic undeveloped levels.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Temporary construction impacts within the 100-year floodplain resulting in increased erosion and sedimentation due to land disturbance activities would be minimal due to the proper implementation of BMPs and erosion control techniques and devices.	– UDFCD and local jurisdictional requirements. – Temporary BMPs such as silt fence, erosion logs, check dams, sediment traps and basins, as well as storm sewer inlet protection and rip rap, will be implemented to reduce the amount of erosion and sedimentation during the construction process and prevent sediment from reaching state waters
Preferred Alternative Cumulative Impacts – The amount of impervious surfaces and runoff would continue to increase with continued urban expansion in the NWR project study area. Projected	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
development would substantially increase impervious surfaces in existing undeveloped areas by adding buildings, sidewalks, and streets to support an expanding economy as well as population. Continued population growth between 2005 and 2035 would result in approximately 3,300 acres of impervious surfaces in the NWR project study area. The Preferred Alternative would result in an additional 92 acres of impervious surfaces, or less than 3 percent of the estimated new impervious surfaces in 2035. Impacts associated with additional impervious surfaces would be managed to predevelopment conditions using jurisdictional detention requirements, which have proven to be effective in minimizing the effects of urban runoff (RTD, 2007b).	
Hazardous Materials	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Assessment and management of hazardous materials during construction of the proposed alignment outside the proposed station footprints would be the responsibility of BNSF Railway Company – Greatest potential to encounter hazardous materials would be during construction and would be closely correlated to land use; specifically with properties that have a history of commercial and/or industrial uses. There are approximately 27 sites ranked with a moderate to high risk ranking located within the proposed station footprints.	– Prepare a Materials Management Plan to address the potential to encounter contaminated soil and groundwater. – Conduct an individual site-specific Phase I Environmental Site Assessment (ESA) of properties prior to acquisition. – Complete site-specific Phase II ESA with subsurface investigation (soil and groundwater) for sites that may have been contaminated or affect final design, as documented by the Phase I ESA, where appropriate. – Determine engineering controls to minimize quantity of contaminated materials. – Determine long-term maintenance of potentially contaminated properties. – Complete an asbestos survey and a lead-based paint survey on the buildings and structures proposed for demolition; complete abatement as needed. – Follow Environmental, Health and Safety CDOT Standard Specifications for

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	Road and Bridge Construction. – Implement construction BMPs in accordance with a Stormwater Pollution Prevention Plan. BMPs may include secondary containment areas for refueling construction equipment, berms or ponds to control runoff, and a monitoring program to test stormwater for contaminants prior to discharge from the construction site. – Prepare and implement a Health and Safety Plan. – Compliance with Occupational Safety and Health Administration requirements for construction workers who may be exposed to hazardous materials.
Phase 1 Direct Impacts – Phase 1 would result in potentially impacting 12 hazardous sites generally associated with private commercial or industrial businesses. – Construction-related activities that may encounter hazardous materials include: • Removal or replacement of contaminated track ballast or railroad ties; • Excavation and drilling during construction of bridge abutments and piers; and • Excavation during construction of the proposed alignment • In addition, three potential hazardous materials sites at the South Westminster/71st Avenue Station may be impacted.	– Mitigation for Phase 1 will be the same as those measures identified for the Alignment and Stations Direct and Temporary Construction Impacts above.
Preferred Alternative Indirect Impacts – No indirect impacts.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Impacts would be the same as those identified under Direct Impacts.	– Mitigation for temporary construction impacts will be the same as those measures identified for direct impacts above.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Cumulative Impacts – No cumulative impacts.	– No mitigation required.
Public Safety and Security	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Crime at transit stations or on board vehicles is expected to reflect the crime activity of the surrounding communities. – Increased train frequency at at-grade railroad crossings could increase emergency response times. The higher frequency of trains could also impact safety at railroad crossings. However, safety at most crossings would improve when crossings are outfitted with the minimum crossing protection measures required by RTD standards.	– No mitigation required beyond the adherence to RTD's station design standards for safety and security. – RTD will convene a Fire and Life Safety Committee that will assist in preparing in an emergency plan and coordinate response to emergency situations.
Phase 1 Direct Impacts – Phase 1 would result in no new public at-grade crossings, therefore avoiding any impairment to emergency services. – Crime rates at the South Westminster/71st Avenue Station would be expected to remain low, consistent with crimes reported at existing park-n-Ride stations in the area.	– Mitigation for Phase 1 will be the same as those measures identified for the direct and temporary construction impacts above.
Preferred Alternative Indirect Impacts – Transit stations may induce additional development in the surrounding areas that would generate higher traffic volumes in those areas and increase the potential for accidents at at-grade railroad crossings. However crossing protection measures required by RTD standards would improve safety at most crossings.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts	– RTD will prepare a Construction Management Plan that specifies public

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– Construction-related hazards are a potential concern. – Police, fire, and emergency services may be adversely affected by increased response times due to construction activities.	communications and construction means and methods to reduce or mitigate construction traffic and preserve access to homes, businesses, and community facilities. – RTD will follow standard operating procedures to minimize traffic disturbances. – Traffic detour plans will be provided to address the two week closure of local streets during at-grade crossing construction.
Preferred Alternative Cumulative Impacts – No cumulative impacts to public safety and security.	– No mitigation required.
Utilities	
NWR Corridor Alignment and Proposed Stations Direct Impacts All impacts of the Preferred Alternative would occur during construction: – 235 potential utility relocations and 28 potential utility adjustments for construction of the proposed alignment. – 19 potential utility relocations and 58 potential utility adjustments for construction of the proposed stations.	– Relocation of electric transmission towers: schedule construction during period of low use (October to April); and modify design to avoid/minimize conflict. – Adjustment or relocation of high pressure gas line(s): schedule construction during period of lower use (May to September); modify design to avoid/minimize conflict; and protect in place. – Adjustment or relocation of buried fiber optic: early coordination with utility owners; modify design to avoid/minimize conflict; protect in place; and obtain variance to minimum depth requirement. – Adjustment or relocation of water lines and sanitary sewers: modify design to avoid conflict; schedule disruption of service for low use period; and minimize disruption of service to water lines. – New roadway or additional/reduced cover on buried utilities: add encasement or protective cover over utilities (protect in place). – Relocation of overhead telephone and electric distribution lines: early coordination with utility owners.
Phase 1 Direct Impacts	– Mitigation for Phase 1 will be the same as those measures identified for the

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
All impacts of the Preferred Alternative would occur during construction: – 58 potential utility relocations. – 19 potential utility adjustments.	Alignment and Stations Direct Impacts above.
Preferred Alternative Indirect Impacts – Increase in population related to TOD would require more utilities near stations. – Additional storm sewers to accommodate increase in impervious surface areas.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – All construction impacts to utilities are direct impacts.	– Mitigation for temporary construction will be the same as those measures identified for the Alignment and Stations Direct Impacts above.
Preferred Alternative Cumulative Impacts – Proposed development of the areas adjacent to the proposed stations would require the extension, augmentation, or modification of utilities. – Overall, the Preferred Alternative would not result in significant long-term secondary or cumulative adverse impacts on utilities.	– No mitigation required.
Transportation Systems	
Transportation Impacts	– All mitigation measures will be implemented as noted in 2015 or by 2035
NWR Corridor Preferred Alternative Direct Impacts – The Preferred Alternative would provide new high-capacity commuter rail service to areas in the NWR Corridor generally along United States Highway 36 (US 36) and State Highway (SH) 119. – The Preferred Alternative would provide a reliable transit option to congested roadway travel and offer improved travel times. Estimated a.m. peak hour transit travel time in 2035 for the Preferred Alternative from the Downtown Longmont Station at 1st Avenue/Terry Street to Denver Union Station (DUS) is 61 minutes with FasTracks-only stations and 68 minutes with all stations. The projected auto travel time from 1st Avenue/Terry Street in Downtown Longmont to DUS is 79	

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
minutes along Interstate 25 (I-25) in general travel lanes. – The Preferred Alternative would provide service to 8,400 riders under the FasTracks-only scenario and 12,100 riders under the all stations scenario during an average weekday in 2035. – The assumed bus operations would be the same as for the No Action Alternative except that service on the BOLT would be reduced so as not to compete with the new NWR Corridor rail line, and the S route would be eliminated. In addition, existing bus routes would be routed to provide service to the proposed commuter rail stations. – The Preferred Alternative would allow for shared use of tracks for freight rail operations. There would be negligible effects on freight rail operations. – The Preferred Alternative would not permanently impact existing pedestrian and bicycle facilities and would not preclude the development of planned pedestrian and bicycle facilities in the vicinity of the proposed alignment and stations. Some trails may be temporarily impacted due to construction. Trails would be rerouted when possible, and detours would be coordinated with local jurisdictions. – The Preferred Alternative would provide approximately 4,899 additional parking spaces at stations by 2015 as indicated in Table ES-8 above and add another 435 spaces by 2035 (at Downtown Longmont).	
– Station Area Traffic Impacts	South Westminster/71st Avenue – The station access intersection to Federal Boulevard will be signalized (2015) – The southbound right turn lane will be converted into a shared through/right lane at the Federal Boulevard/70th Avenue intersection (by 2035). – At the Federal Boulevard/71st Avenue intersection, the left turn from eastbound 71st Avenue to northbound Federal Boulevard would be prohibited (by 2035).

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	Westminster Mall/88th Avenue – A westbound left turn lane will be added at the Harlan Street/Mall Access intersection (2015).
	Broomfield/116th Avenue – The Teller Street/120th Avenue intersection will be signalized (2015).
	Downtown Louisville – No project specific mitigation is required for the Downtown Louisville Station if the proposed improvements along SH 42 are constructed prior to the construction of the station. – If the SH 42 improvements are not constructed prior to the construction of the station, then the following mitigations will be made: – Harper Street/SH 42: The eastbound left turn would be prohibited (2015). – Griffith Street/SH 42: The eastbound and westbound left turns, as well as the through movements would be prohibited (2015). – Short Street/SH 42: Northbound and southbound left turn lanes will be striped onto the existing pavement at Short Street. The east leg of the intersection will be constructed and the intersection is proposed to be signalized (2015). – South Street/SH 42: The eastbound left turn would be prohibited (2015).
	East Boulder – The West Access/Arapahoe Avenue intersection will have left turns prohibited from minor streets (2015), and the East Access/Arapahoe Avenue intersection will be signalized (2015). – A northbound right turn lane would be added to the intersection of Westview Drive/Arapahoe Avenue (2015).
	Boulder Transit Village – The 30th Street/Bluff Street intersection will be signalized (2015).

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	Downtown Longmont – The Main Street/Boston Avenue intersection would be signalized (2015). – An eastbound left turn lane will be added on Boston Avenue at the Pratt Parkway/Boston Avenue intersection in 2015, and by 2035 that intersection will be signalized.
– Roadway Mitigations Proposed in the vicinity of at-grade railroad crossings	West 72nd Avenue and Bradburn Boulevard – Add a left turn lane with 150 feet of storage to the southbound approach of Bradburn Boulevard at 72nd Avenue. The approach would consist of one left turn lane and one shared left/right turn lane. – Widen 72nd Avenue east of Bradburn Boulevard to six lanes by adding one westbound right turn lane and converting the two-way left turn lane (TWLTL) to a westbound through lane. The widened segment of 72nd Avenue would consist of three westbound through lanes, a westbound right turn lane and two eastbound through lanes east of Bradburn Boulevard. – Widen 72nd Avenue between Bradburn Boulevard and Raleigh Street to six lanes, adding one westbound through lane and one eastbound left turn lane. The TWLTL would be converted into a westbound left turn lane. The widened segment of 72nd Avenue would consist of two westbound through lanes, one westbound left turn lane, two eastbound through lanes and one eastbound left turn lane. – Change the westbound left turn phase of the 72nd Avenue/Raleigh Street intersection from permissive only, to protected/permissive. – Interconnect all signals, including the four on 72nd Avenue and one on Bradburn Boulevard, into one coordinated signal system. Optimize the signal timing to reduce overall corridor delay and queue lengths.
	South Boulder Road

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	– Railroad preemption controls (recommend further study)
	Niwot Road and 2nd Avenue – Construct an additional through lane approximately 500 feet in length along northbound Diagonal Highway approaching Niwot Road. – Construct an additional lane along northbound Diagonal Highway between Niwot Road and 2nd Avenue (approximately 1,000 feet). The additional lane would become a right turn lane at 2nd Avenue. – Re-stripe westbound Niwot Road between the railroad crossing and northbound Diagonal Highway to provide a though lane and a shared through/right turn lane. – Interconnect all four signals to operate at one coordinated system and optimize the signal system for cycle length and offsets.
	Mineral Road (SH 52) In the DRCOG 2035 Metro Vision Regional Transportation Plan, CDOT has identified an interchange construction project at the Mineral Road (SH 52) and Diagonal Highway (SH 119) intersection. The proposed interchange includes a grade-separation of SH 52 and SH 119. However, funding for the interchange has not been fully identified. In the absence of the interchange project moving forward, potential mitigation measures for the interim at-grade condition were studied. – Eastbound approach on Mineral Road (SH 52): Construct a second left turn lane with 300 feet of storage, and a second through lane. The widened approach would consist of two left turn lanes, two through lanes and one right turn lane. These improvements would require the widening of pavement for this approach. The second through lane would extend across Diagonal Highway (SH 119) and the rail crossing and would become a right turn lane at the intersection of Mineral Road/71st Street.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	– Westbound approach on Mineral Road (SH 52): Construct a second left turn lane, a second through lane and a right turn lane. The widened approach would consist of two left turn lanes, two through lanes and a right turn lane. – Northbound approach on Diagonal Highway (SH 119): Construct two additional through lanes. The widened approach would consist of two left turn lanes, four through lanes, and one right turn lane. The four through lanes would extend through the Mineral Road intersection. The additional lanes would end a maximum of 1,000 feet north of the intersection, with only two lanes continuing north along Diagonal Highway. – Southbound approach on Diagonal Highway (SH 119): Construct one additional left turn lane with 300 feet of storage and two additional through lanes. The widened approach would consist of two left turn lanes, four through lanes and one right turn lane. The four through lanes would extend through the Mineral Road intersection. The additional lanes would end a maximum of 1,000 feet south of the intersection, with only two lanes continuing south along Diagonal Highway. – Set all left turn signal phases to be protected only. – Set all right turn signal phases to be permissive/overlapping. – The traffic signal should be coordinated with the Mineral Road rail crossing. – The extensive intersection improvements proved insufficient in eliminating traffic queues between the intersection of Mineral Road/Diagonal Highway and the railroad crossing. These extensive intersection improvements proved insufficient in eliminating queue spillbacks between the intersection of SH 52/SH 119 and the railroad crossing. It is recommended that RTD and CDOT consider possibilities for joint participation in implementing CDOT's proposed interchange project.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative			
Impacts	**Proposed Mitigation**		
Improvements to grade crossings required for safety and/or Quiet Zones.	Street	Existing Rail Crossing Treatment	Mitigation (All 2015)
	West 64th Avenue	At-Grade – dual gates	At-Grade – dual gates with raised median
	Lowell Boulevard	At-Grade – dual gates	At-Grade – dual gates with raised median
	West 72nd Avenue	At-Grade – dual gates	At-Grade – three gate system with raised median
	Bradburn Boulevard	At-Grade – dual gates	At-Grade – quad gates
	West 76th Avenue	At-Grade – dual gates	At-Grade – quad gates
	West 80th Avenue	At-Grade – dual gates	At-Grade – quad gates
	West 88th Avenue	At-Grade – dual gates with raised median	Same as existing
	Pierce Street	At-Grade – dual gates with raised median	At grade – quad gates
	Old Wadsworth Boulevard	At-Grade – dual gates	At-Grade – dual gates with raised median
	West 112th Avenue	At-Grade – dual gates	At-Grade – dual gates with raised median
	West 120th Avenue	At-Grade – dual gates	At-Grade – quad gates
	Nickel Street	At-Grade – dual gates with raised median	Same as existing
	Brainard Drive	At-Grade – dual gates	At-Grade – dual gates

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative			
Impacts	**Proposed Mitigation**		
			with raised median
	Carbon Road	Closed	Same as existing
	Dillon Road	At-Grade – dual gates with raised median	Same as existing
	Lock Street	Closed	Same as existing
	Pine Street	At-Grade – dual gates	At-Grade – quad gates
	Griffith Street	At-Grade – dual gates	At-Grade – quad gates
	South Boulder Road	At-Grade – dual gates with raised median	Same as existing
	Baseline Road	At-Grade – dual gates	At-Grade – dual gates with raised median
	Private Road (MP 22.20)	At-Grade – passive	At-Grade – dual gates
	63rd Street	At-Grade – dual gates with raised median	At-Grade – quad gates
	55th Street	At-Grade – dual gates with raised median	Same as existing
	Private Road (MP 26.96)	At-Grade – passive	At-Grade – dual gates
	Pearl Street	At-Grade – dual gates with raised median	Same as existing
	Valmont Road	At-Grade – dual gates with raised median	Same as existing
	North 47th Street	At-Grade – dual gates with raised median	Same as existing

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative			
Impacts	**Proposed Mitigation**		
	Independence Road	At-Grade – dual gates	At-Grade – dual gates with raised median
	Jay Road	At-Grade – dual gates with raised median	Same as existing
	North 55th Street	At-Grade – dual gates	At-Grade – quad gates
	North 63rd Street	At-Grade – dual gates with raised median	Same as existing
	Mineral Road/SH 52	At-Grade – dual gates	At-Grade – dual gates with raised median[2]
	Monarch Road	At-Grade – dual gates	At-Grade – dual gates with raised median
	Niwot Road	At-Grade -- dual gates with raised median	Same as existing
	2nd Avenue	At-Grade – dual gates	At-Grade – dual gates with raised median
	83rd Street	At-Grade – dual gates	At-Grade – quad gates
	Ogallala Road	At-Grade – dual gates	At-Grade – quad gates
	Private Road (MP 40.65)	At-Grade – passive	At-Grade – dual gates
	95th Street/Hover Road	At-Grade – dual gates with raised median	Same as existing

[2] The Mineral Road (SH 52)/SH 119 intersection is identified as the location of a future interchange in the 2035 MVRTP; the treatment shown here would be applied under the at-grade condition.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative			
Impacts	**Proposed Mitigation**		
	Sunset Street	At-Grade – dual gates	At-Grade – dual gates with raised median
	Ken Pratt Boulevard/SH 119**	At-Grade – dual gates with raised median**	Same as existing
	Terry Street	At-Grade – passive	Closure
	Coffman Street	At-Grade – passive	Closure
Preferred Alternative Indirect Impacts – Preferred Alternative would encourage TODs and slightly reduce future VMT.	– No mitigation required.		
Preferred Alternative Temporary Construction Impacts – Increased construction traffic would occur with the Preferred Alternative.	– Construction Mitigation Plans (CMPs). – Methods of handling traffic to be identified that could limit times of construction traffic on major routes.		

Source: NWR Corridor Project Team, 2009.

1. PURPOSE AND NEED

1.1 INTRODUCTION

This chapter documents the Purpose and Need for the proposed commuter rail transit improvement in the Northwest Rail (NWR) Corridor. It includes a description of the project study area, a history of the project and past planning studies, and a detailed description of the Purpose and Need for the project.

In November 2004, voters in the Denver area Regional Transportation District (RTD) approved the FasTracks initiative through a sales tax increase, to be used to expand public transit services in the metropolitan Denver area over a 12-year period. The *FasTracks Plan* (RTD 2004) is a comprehensive program to construct and operate new rail lines and improve elements of bus rapid transit (BRT), bus service, and park-n-Rides throughout the region. In December 2004, the Denver Regional Council of Governments (DRCOG) incorporated the *FasTracks Plan* into the fiscally constrained *2035 Metro Vision Regional Transportation Plan* (*2035 MVRTP*) (DRCOG 2007).

As part of FasTracks, RTD has prepared the NWR Corridor Environmental Evaluation (EE) to identify and evaluate the impacts of implementing a fixed-guideway, commuter rail transit service between Denver, Boulder, and Longmont, Colorado, along the existing BNSF Railway Company alignment (a distance of approximately 41 miles). The project will be phased; the first phase, from DUS to the South Westminster/71st Avenue Station (approximately up to Bradburn Boulevard) would use Electric Multiple Unit (EMU) technology. Phase 2 would use Diesel Multiple Unit (DMU) technology from DUS to Longmont and would share the tracks used by the EMU vehicles in the Phase 1 segment between DUS and the South Westminster/71st Avenue Station. Findings from the NWR Corridor Draft EE were used to update the Final EE. The United States Army Corps of Engineers (USACE) is the lead federal agency for this project, rather than the Federal Transit Administration (FTA), because this project will not be seeking federal funds. However, the project will impact waters of the United States (US), consequently requiring a Nationwide Permit for Phase 1 of the project (from DUS to the South Westminster/71st Avenue Station [approximately to Bradburn Boulevard]) and an Individual Permit for the remainder of the project, per Section 404 of the Clean Water Act. The USACE issued a Section 404 Nationwide Permit for Phase 1 on 1 April 2010.

RTD developed this document, following NEPA processes and procedures, for use by the USACE. The USACE will utilize information contained in this document to determine compliance with NEPA, and the Section 404 (b)(1) guidelines for subsequent Section 404 permit applications submitted by RTD. See Appendix A, Section 404 (b)(1) Showing, for more details on Section 404 (b)(1) guidelines.

This project builds on previous planning and environmental studies that have been conducted for the corridor. Early studies evaluated whether to implement commuter rail transit in the NWR Corridor, and the most recent studies have focused on how to implement commuter rail transit such that its benefits are maximized and its impacts are avoided and/or minimized. Recognizing that the previous studies reached conclusions about implementing

rail transit in the corridor, this study will use those conclusions as the starting point for further evaluation. The EE carries forward the outcomes of those previous studies as assumptions and updates, and builds upon the data collected.

In addition to the previous studies, public input has also played a role in decision making. For example, the number of stations evaluated has increased due to input from key local stakeholders. Also, further research on vehicle technology was conducted as a result of public concern about the initial rail technology choice for the NWR Corridor. See Chapter 2, Alternatives Considered, for additional details.

1.2 PROJECT STUDY AREA

The project study area (Figure 1-1) includes portions of several communities in the northwest Denver metropolitan area from Denver Union Station (DUS) to Longmont, including the City and County of Denver, the City of Westminster, the City and County of Broomfield, the City of Louisville, the City of Lafayette, the City of Boulder, the City of Longmont, and portions of unincorporated Adams, Boulder, and Jefferson Counties.

The EE includes two different study areas that are discussed separately in this evaluation:

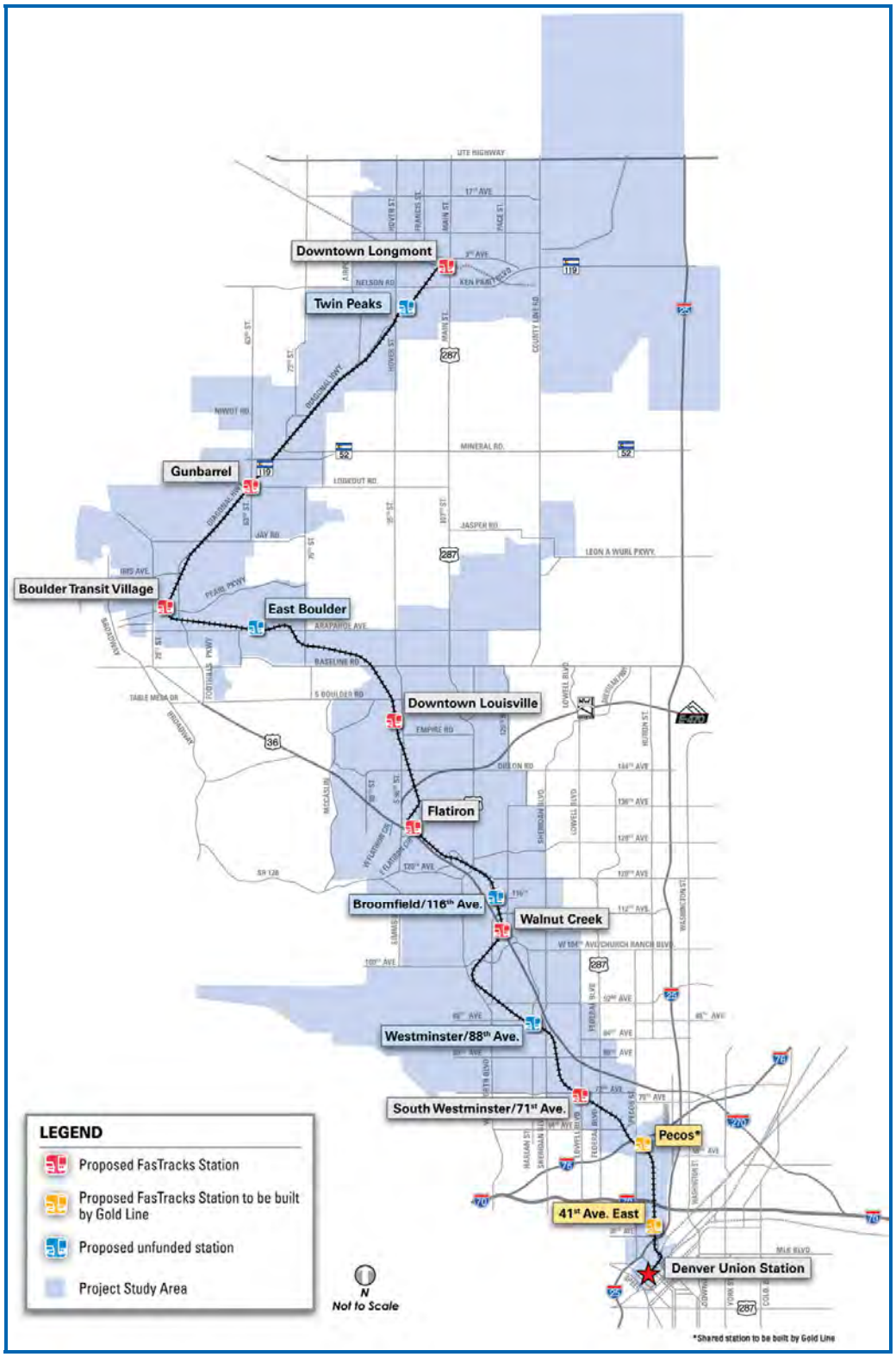
- **Project Study Area** – Overall area within a specific boundary in which the potential of a project's indirect impacts will be assessed. This area is typically equal to the area described in the affected environment section for each environmental resource.
- **Resource Analysis Area** – An area generally defined by direct impacts to various environmental resources, such as physical acquisition of property and impacts to wetlands. The direct impact area is determined by comparing the construction limits of the project to the physical location of the environmental resources. The construction limits have been defined through engineering design and include permanent and temporary construction features, such as construction access and staging areas.

1.2.1 Project Study Area Boundaries

The project study area is based on regional traffic modeling for the year 2035 (Figure 1-1). While impacts (such as noise and vibration) for many resources are localized to areas near the existing BNSF Railway Company alignment, others may not be as apparent and may extend beyond the alignment to the overall project study area or region. For example, water resources are analyzed in the project study area by watersheds, whereas air quality is a regional consideration.

The NWR Corridor Project Team determined that using transportation analysis zones (TAZs) with high and medium levels of traffic attracted to the station locations to identify the project study area was a conservative and appropriate boundary for analyzing the impacts of this transit project. TAZs are defined as geographic areas determined by DRCOG and are used in transportation modeling. The project study area thus includes resources potentially impacted as a result of the project.

FIGURE 1-1. NORTHWEST RAIL CORRIDOR PROJECT STUDY AREA



Source: NWR Corridor Project Team, 2009.

1.2.2 Project Study Area Sections

To determine how transit could best serve the project study area and to present the impacts from implementation of the NWR Corridor Project, TAZs were grouped into seven sections to summarize the travel needs of each area. These sections were generally defined by municipal jurisdiction, major geographic barriers, and character of land use, and resulted in the following sections:

- **Denver Section**: DUS to 52nd Avenue
- **Adams Section**: 52nd Avenue to Sheridan Boulevard
- **Westminster Section**: Sheridan Boulevard to 112th Avenue
- **Broomfield Section**: 112th Avenue to Broomfield County Line
- **Louisville Section**: Broomfield County Line to 95th Street/Baseline Road
- **Boulder Section**: 95th Street/Baseline Road to State Highway (SH) 52
- **Longmont Section**: SH 52 to end of project study area

It is important to note that although these sections are titled by jurisdiction name, they are not strictly based on jurisdictional boundaries. As noted above they are based on a combination of factors. For example, there are portions of unincorporated Boulder County in the Longmont Section. Figure 1-2 depicts these sections.

1.3 EXISTING AND PROJECTED POPULATION AND EMPLOYMENT

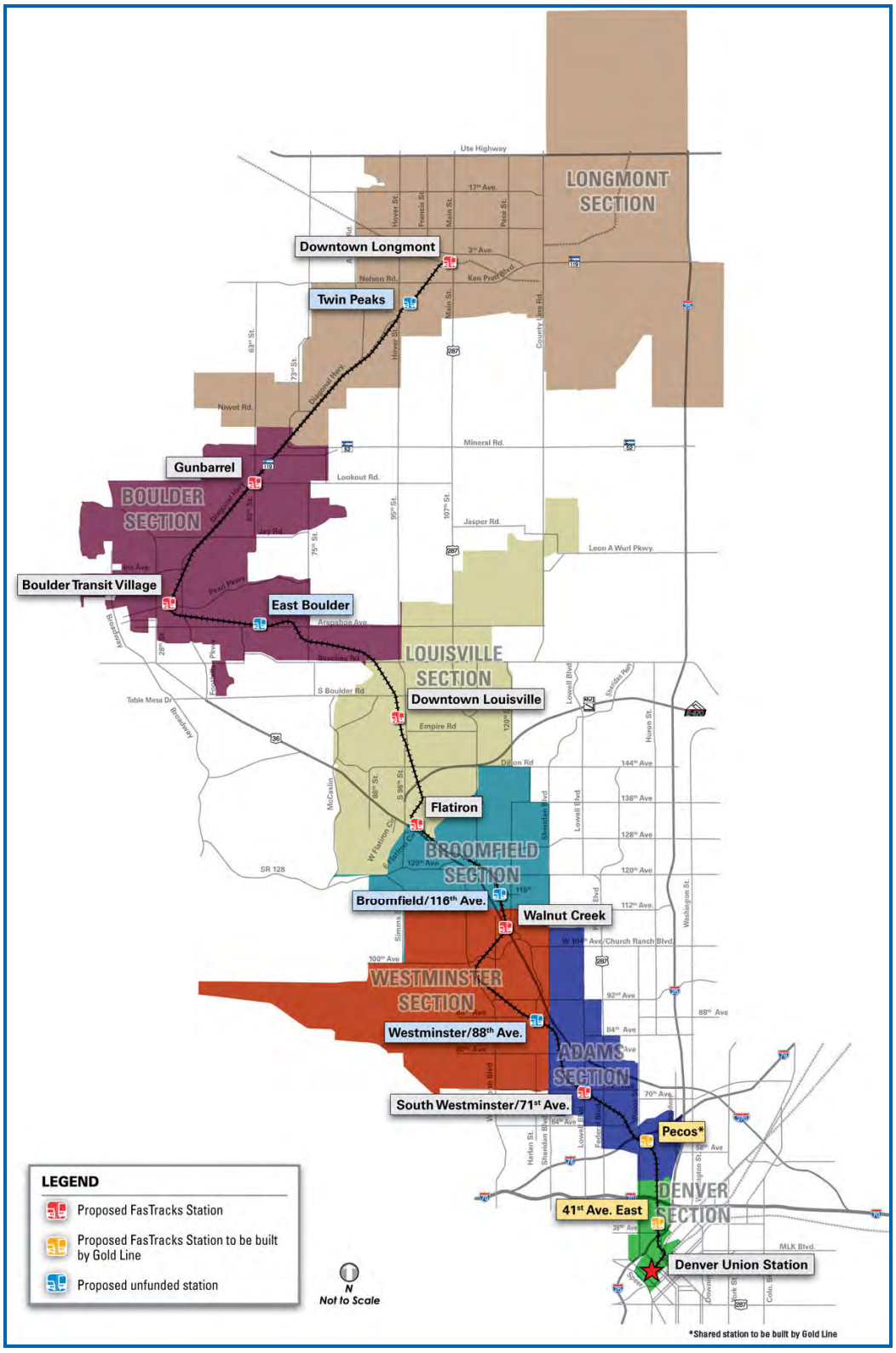
According to the DRCOG report, *2035 MVRTP*, by the year 2035 the population of the Denver region will reach 4.2 million people (an increase of 56 percent from the current level of 2.7 million[1]), and 900,000 new jobs will be created (an increase of 56 percent from 1.6 million to 2.5 million). In addition, between 2005 and 2035 the following is predicted:

- Population in the project study area is forecast to increase by 43 percent.
- Employment in the project study area is projected to increase by 58 percent.

Figure 1-3 shows the existing (2005) and projected (2035) population and employment by project study area section. As depicted in the figure, the land use in most of the sections is primarily residential. The areas with the highest concentration of employment—and likely destinations for transit riders—are Boulder, Broomfield, and Denver.

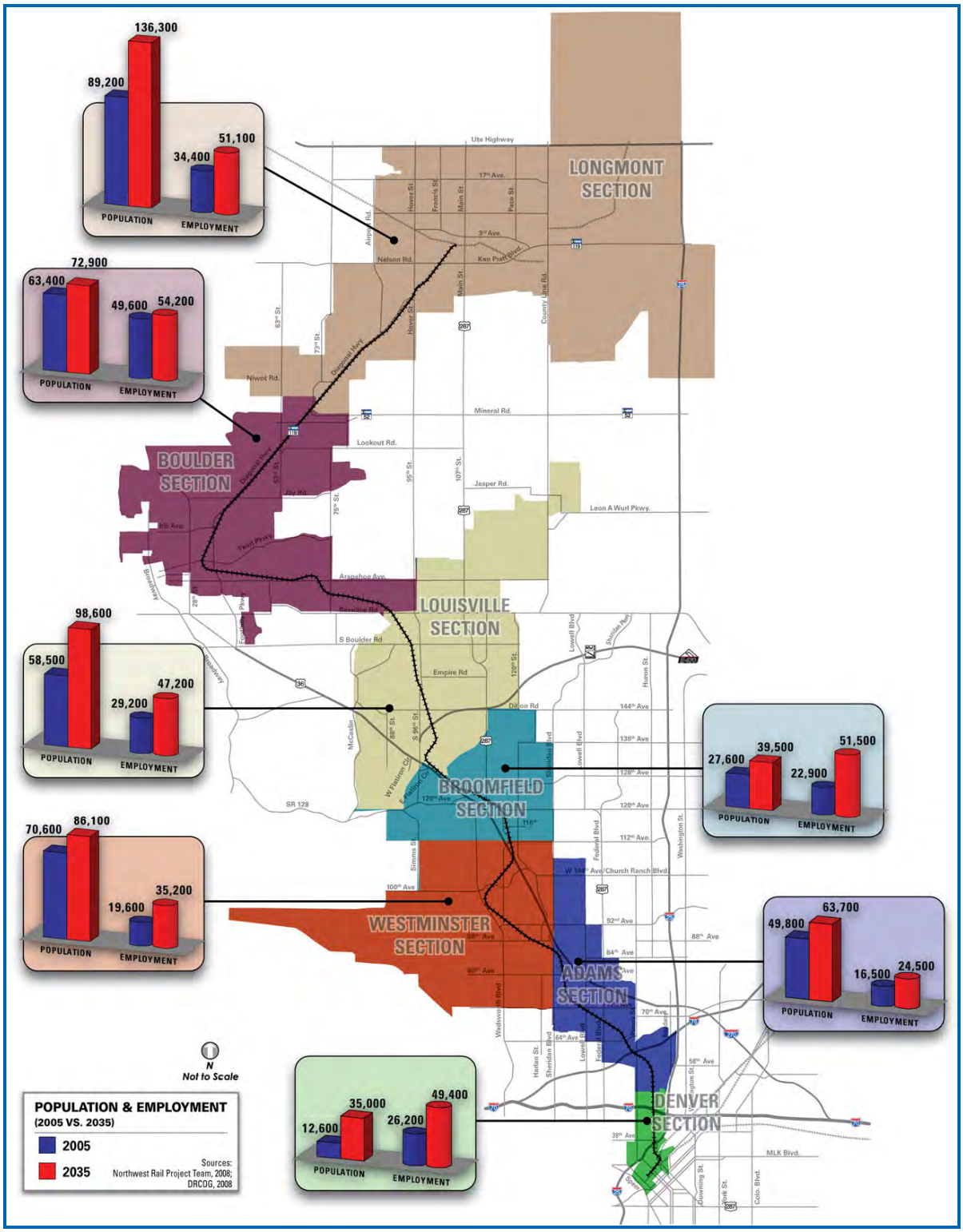
[1] Current estimates are based on 2005 data.

FIGURE 1-2. PROJECT STUDY AREA SECTIONS



Source: NWR Corridor Project Team, 2009.

FIGURE 1-3. EXISTING AND PROJECTED POPULATION AND EMPLOYMENT



Source: NWR Corridor Project Team, 2009.

The figure shows the project study area sections with large population increases expected between 2005 and 2035. These include:

- Longmont Section (+47,100 or +53 percent)
- Louisville Section (+40,100 or +69 percent)
- Denver Section (+22,400 or +178 percent)

Project study area sections expecting large employment increases include:

- Longmont Section (+16,700 or +49 percent)
- Louisville Section (+18,000 or +62 percent)
- Broomfield Section (+28,600 or +125 percent)
- Westminster Section (+15,600 or +80 percent)
- Denver Section (+23,200 or +89 percent)

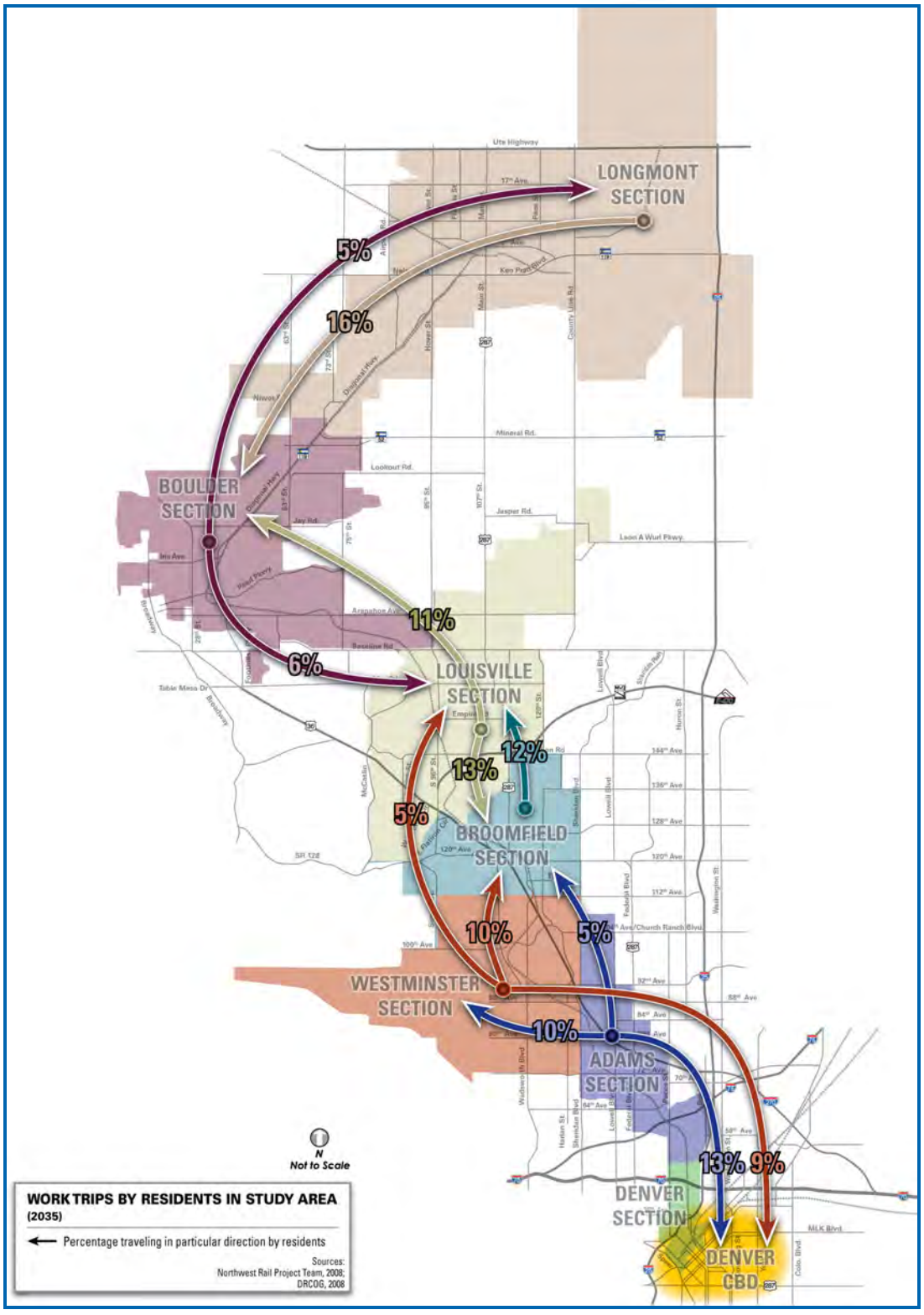
1.4 TRAVEL MARKETS

Population and associated employment can determine the number of trips and can demonstrate and influence the demand on the transportation network that serves those trips. To determine how transit could best serve the project study area, TAZs were grouped into the seven sections (as defined earlier) to delineate the different travel needs of areas.

An analysis of all home-based work (HBW) trips (across all modes, both automobile and transit) within the project study area showed that 51 percent of all work trips by project study area residents stay within the project study area. This is a relatively high percentage, especially considering the long, linear nature of the corridor but is probably due to an improvement in the jobs-housing balance that has recently occurred in the project study area and that is expected to continue into the future. Thus, many people who live in the project study area can also work in the project study area.

When looking at all HBW trips, the travel patterns within the project study area have become more complex as both housing and employment have developed in the middle of the NWR Corridor. The project study area connects two highway corridors, United States Highway 36 (US 36) and SH 119, intersecting at Boulder, and that connection is reflected in the distinctive nature of the travel patterns for Boulder and Longmont compared to the rest of the sections in the project study area. Figure 1-4 highlights the predominant travel patterns in 2035 within the project study area by identifying the travel patterns that represent at least five percent of the HBW trips in that section. The percentages in the figure represent the percentage of residents in that section going to the destination section that is highlighted. For example, future forecasts show that 16 percent of all Longmont residents work in the Boulder Section.

FIGURE 1-4. PREDOMINANT WORK TRIP TRAVEL PATTERNS IN NORTHWEST RAIL CORRIDOR PROJECT STUDY AREA IN 2035



As indicated in the figure, predominant travel patterns (those that serve at least five percent of residents) include those from Adams to Denver (including the Central Business District [CBD]), Westminster to Broomfield, Westminster to Denver (including the CBD), Broomfield to Louisville, Louisville to Broomfield, Louisville to Boulder, and Longmont to Boulder. It should be noted that the trips between Boulder and Denver are not shown on the graphic. While Boulder-Denver is one of RTD's strongest transit markets, the overall travel market between Boulder and Denver did not meet the threshold of serving at least five percent of Boulder's residents. With appropriate station locations and supporting development and appropriate transit connections, many of the markets identified in the figure could be served by transit.

1.5 CURRENT AND PLANNED TRANSPORTATION SYSTEM

The DRCOG is the metropolitan planning organization responsible for the *2035 MVRTP*. The DRCOG Board of Directors adopted the *2035 MVRTP* in December 2007. This long-range transportation plan focuses on improving multi-modal transportation facilities, establishing inter-modal connections, and providing transportation programs and services.

The overall vision of the plan is to implement a “balanced multi-modal transportation system that will include rapid transit, a regional bus system, a regional roadway system, local streets, bicycle and pedestrian facilities, and associated system and travel demand management services.” (DRCOG 2007). This system will provide reliable mobility choices to all of its users. Users will find the transportation system easy to access, safe and secure, and it will permit efficient state and nationwide connections for people and freight. Several policies identified in the *2035 MVRTP* are consistent with the needs identified in the NWR Corridor Project, and the project is included in the *2035 MVRTP* (DRCOG 2007). Highlights of the key transportation-related policies from the *2035 MVRTP* include:

- Providing increased transit service and facilities that stimulate travel by means other than single occupant vehicles (SOVs), encouraging transit-oriented developments, and providing mobility options.
- Improving the interconnections of the transportation system within modes, between different modes, and between the metropolitan area and the rest of the state and the nation.
- Assuring the preservation and maintenance of existing facilities.

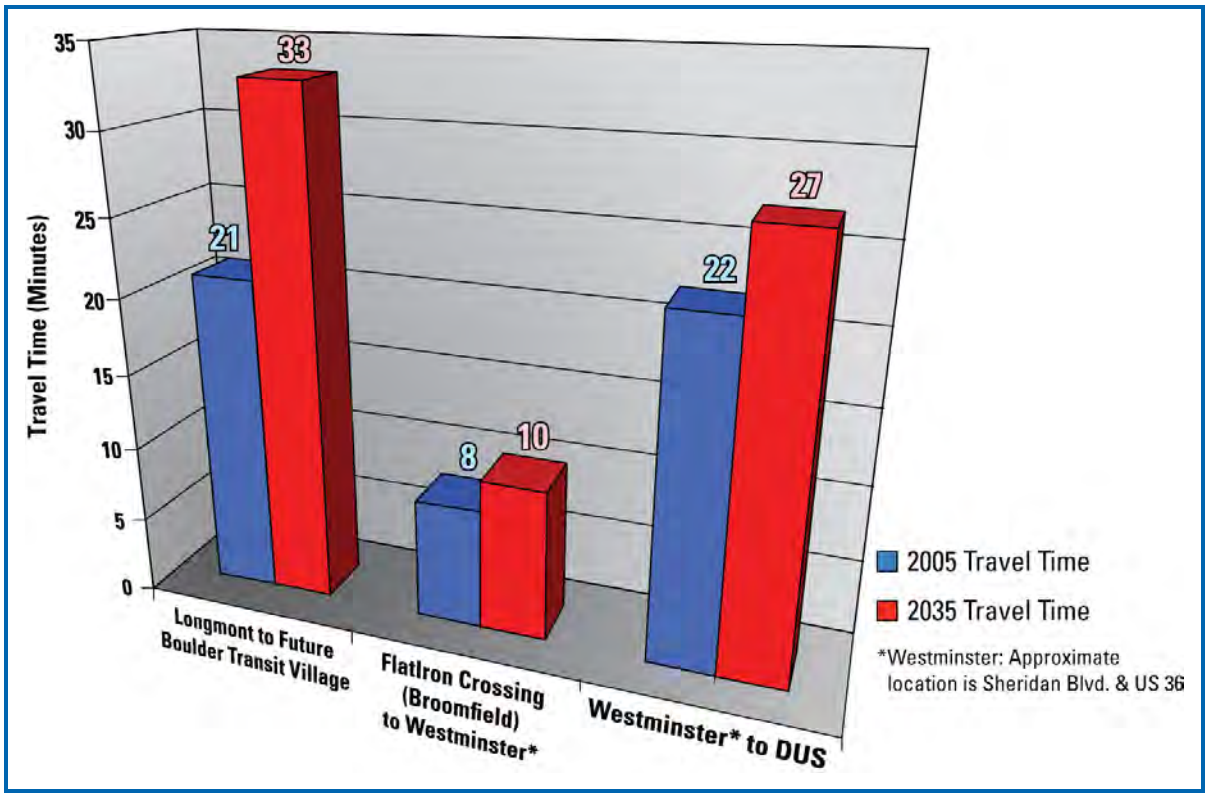
1.6 TRANSPORTATION SYSTEM PERFORMANCE

The roadway improvements currently planned for the regional transportation system are not expected to keep pace with projected demand. The *2035 MVRTP* (DRCOG 2007) indicates that between 2005 and 2035:

- Regional personal trips will increase by 59 percent.
- Regional vehicle miles traveled (VMT) will increase by 72 percent.
- Regional roadway lane miles with more than three hours per day of severe congestion will increase by 203 percent.
- Regional vehicle hours of delay will increase by 353 percent.

Within the NWR Corridor, congestion along routes such as Interstate 25, US 36, and SH 119 will make it more difficult to access the activity centers in the corridor and downtown Denver area — which along with the Denver Tech Center is the major employment center in the region. As illustrated in Figure 1-5, this is further reflected in the increased automobile travel times forecast between the year 2005 and the year 2035 between various activity centers along corridor routes. Future congestion in the region and in the NWR Corridor will require roadway improvements and/or additional mode choices, such as rail transit.

FIGURE 1-5. PEAK (A.M.) AUTOMOBILE TRAVEL TIMES (2005 AND 2035)



Source: DRCOG, 2007; NWR Corridor Project Team, 2009.

This travel market information for the NWR Corridor was used in conjunction with the planned transportation system improvements for the region to configure the range of conceptual alternatives considered in the NWR Corridor EE.

1.7 PURPOSE AND NEED FOR THE ACTION

The Purpose and Need statement is the cornerstone of the EE document, because it identifies what the problem is and why the project is important. The USACE, the agency with authority over this project, specifically requires that all the alternatives considered meet the project Purpose and Need.

The Purpose and Need for the NWR Corridor EE was developed and reviewed by the public, the project lead agency, and other involved agencies. A description of the Purpose and Need statement for the NWR Corridor is presented below.

1.7.1 Purpose

The Purpose of the NWR Corridor Project is to implement fixed guideway, commuter rail, mass transit service between Denver, Boulder, and Longmont.

1.7.2 Need

A commuter rail transit improvement in the project study area would help meet a number of specific needs:

- **Transportation Need #1**: Improve mobility.
- **Transportation Need #2**: Provide consistent and reliable transit travel times.
- **Transportation Need #3**: Enhance regional connectivity.
- **Transportation Need #4**: Provide an affordable transit investment.
- **Transportation Need #5**: Reinforce local and regional transportation and land use plans.

1.7.2.1 Transportation Need #1: Improve Mobility

Recent growth in population and employment has resulted in increased travel demand in the region and in the project study area. Population and employment are expected to continue to grow, which will result in additional travel demand and congestion on project study area roadways. At the same time, available funding for roadway improvements will fall short of meeting needs; thus, mobility improvements are needed to provide alternatives to congested SOV travel for project study area travelers, residents, and employees.

Existing data and projected population and employment estimates indicate that the Denver metropolitan regional population will reach more than 4.2 million by 2035 (an increase of 56 percent from the 2005 level of 2.7 million), with 900,000 new jobs created by 2035 (an increase of 56 percent from 1.6 million to 2.5 million) by 2035 (DRCOG 2007). As presented in Section 1.3, Existing and Projected Population and Employment, and Section 1.6, Transportation System Performance, between now and 2035 the following is expected to occur:

- Population in the project study area is forecast to increase by 43 percent.
- Employment in the project study area is forecast to increase by 58 percent.
- Regional person trips will increase by 59 percent.
- Regional VMT will increase by 72 percent.
- Regional roadway lane miles with more than three hours per day of severe congestion will increase by 203 percent.
- Regional vehicle hours of delay will increase by 353 percent.

For the project study area, the *2035 MVRTP* (DRCOG 2007) identifies interchange improvements and highway operational improvements on US 36 and SH 119. However, those improvements do not add capacity (additional general-purpose lanes). Programmed highway improvements located within the NWR Corridor are assumed for the No Action

Alternative in the NWR Corridor Project and are listed in more detail in Chapter 2, Alternatives Considered.

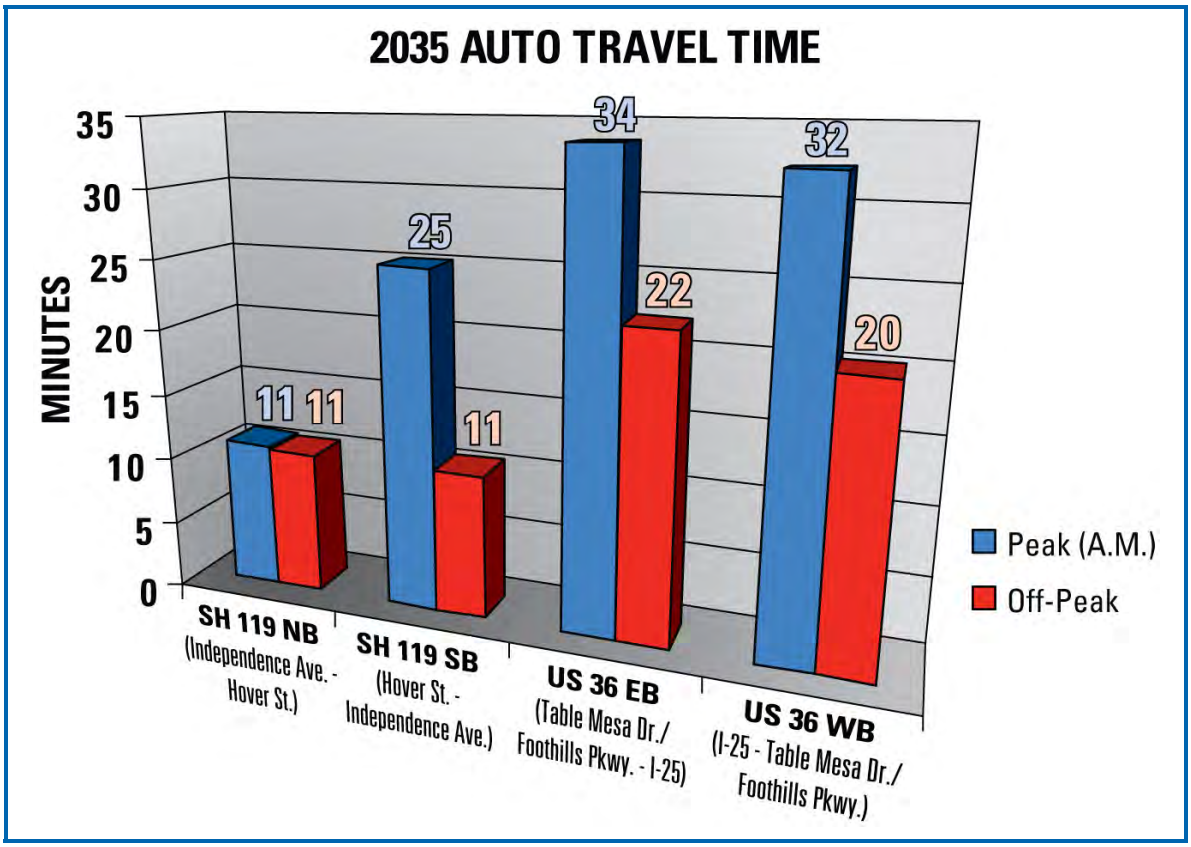
Additionally, a formal agreement between the City of Boulder, Boulder County, and the City of Longmont stipulates that no major capacity improvements shall be made to SH 119, which parallels the BNSF Railway Company alignment between Boulder and Longmont.

In response to the projected congestion and lack of available highway funding or planned capacity improvements, reliable alternative modes of travel that provide travel time savings for the local population are needed.

1.7.2.2 Transportation Need #2: Provide Consistent and Reliable Transit Travel Times

The congestion resulting from existing and anticipated population and employment growth in the project study area and the region will cause travelers to experience inconsistent and unreliable travel times, both from day-to-day and throughout the day (peak versus off-peak). This time-of-day variation is evident in Figure 1-6, which shows peak (a.m.) and off-peak SOV travel times projected for 2035 on SH 119 and US 36. Travelers will also experience unexpected delays due to accidents or inclement weather. An option such as rail transit would provide more consistent, reliable, safe, and congestion-free travel on its own dedicated and protected right-of-way.

FIGURE 1-6. 2035 AUTOMOBILE TRAVEL TIMES [PEAK (A.M.) AND OFF-PEAK]



Source: DRCOG, 2007; NWR Corridor Project Team, 2009.

According to the Colorado Department of Transportation, in 2003 there were approximately 2.5 crashes per day on US 36 and SH 119 combined within the project study area (CDOT 2003). On a passenger mile basis, that equates to approximately 72 accidents per 100 million passenger miles. Those accidents invariably cause delays on those roadways. Congestion and delay on roadways also occur in inclement weather when adverse conditions (e.g., rain, snow, ice, and wind) cause travelers to reduce their speed. The combination of accidents and weather yields a roadway system that is often unreliable and inconsistent for users.

Comparatively speaking, rail transit is less impacted by accidents and weather than roadways. The accident rate for rail transit is much lower than for roadways. According to the Volpe National Transportation Systems Center, in 2005 there were 77 commuter rail accidents[2] in the United States (Adduci pers. comm. 2008). On a passenger mile basis, that equates to 0.8 accident per 100 million passenger miles. Additionally, inclement weather affects rail transit less than roadways as train operators do not generally have to slow down to operate in inclement weather. Only the most severe weather would impact rail transit.

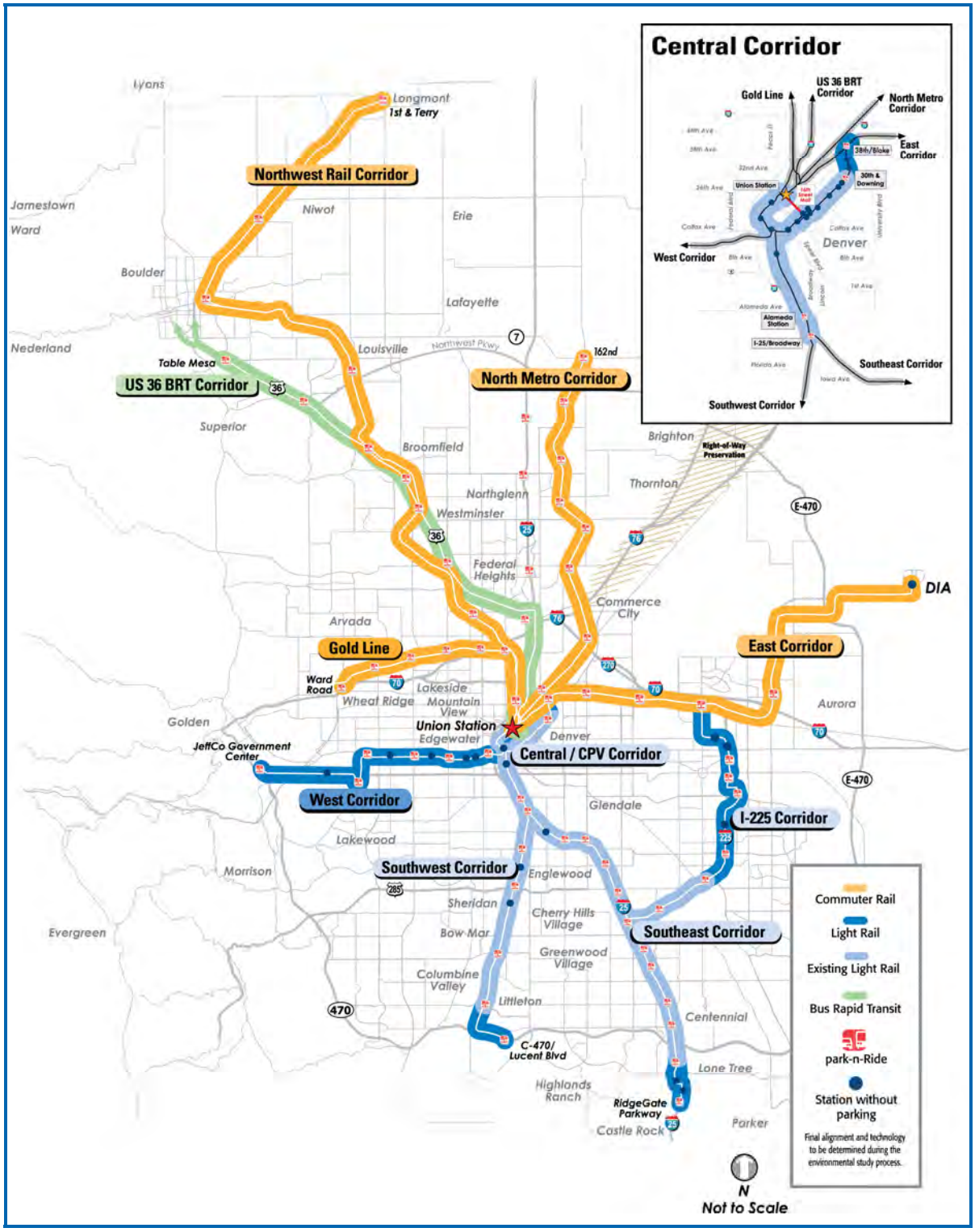
Further, roadway congestion is at its worst during peak travel times. Inclement weather or accidents that take place during peak hours have a significant impact on comparatively larger numbers of transportation system users. Rail transit does not have the same congestion issues during peak travel times, and therefore is not subject to the unpredictable and inconsistent nature of accidents and inclement weather during times when demand for travel is at its highest.

1.7.2.3 Transportation Need #3: Enhance Regional Connectivity

The Denver metropolitan region currently has gaps in multi-modal regional transit connectivity. FasTracks is primarily a plan to fill in major gaps with fixed guideway transit (rail) and bus rapid transit. Residents and employees in parts of the project study area currently have limited transit access to other activity centers within the project study area and many other parts of the region. Existing access is provided mainly through local and regional bus service, which relies on the increasingly congested roadway network. The NWR Corridor Project would allow residents and employees in the project study area to connect with major regional activity centers and other transit corridors through connections to all other rail service in the region at DUS. As one critical component of the system, the NWR Corridor would link with seven other RTD rail corridors at DUS as shown in Figure 1-7. Additionally, the NWR Corridor would provide a direct platform connection and transfer opportunities with the Gold Line Corridor, at the Pecos Station and/or 41st Avenue Station.

[2] Defined as collisions plus derailments.

FIGURE 1-7. FASTRACKS PROGRAM



Source: RTD, 2009.

1.7.2.4 Transportation Need #4: Provide an Affordable Transit Investment

Transportation improvements in the project study area must be planned and designed not only to meet mobility needs and minimize environmental impacts, but also to meet the financial constraints of the *FasTracks Plan* (RTD 2004).

The FasTracks financial plan included costs and financing for each of the FasTracks corridors and projects. The plan also reflected the adopted implementation schedule for each corridor. Each year, RTD evaluates the FasTracks financial plan to reflect actual program progress, expenditures, and receipts. Recent increases in the costs of materials have caused RTD to review and revise the FasTracks financial plan.

In 2004, the *FasTracks Plan* allocated $565.1 million (in year of expenditure dollars) for the NWR Corridor capital costs out of the overall $4.7 billion system-wide budget. The RTD 2009 Annual Program Evaluation forecasts the NWR Corridor Project capital costs at $641.1 million (in 2008 dollars). Any transit improvements must be affordable within the FasTracks budget. In addition, the associated operating costs must be realistic and reasonable for RTD to assume the service.

RTD is currently working to establish the most cost-effective solution to address the current FasTracks budget and revenue constraints. RTD, in working with the stakeholders, is currently evaluating alternative project delivery methods and potential alternative financial sources to ensure project completion within these constraints. Given the overall escalation in materials and construction costs, the Preferred Alternative, when compared against the other alternatives, still provides the most cost effective solution.

1.7.2.5 Transportation Need #5: Reinforce Local and Regional Transportation and Land Use Plans

The NWR Corridor is part of the 122-mile system of new rail transit facilities proposed within the regional FasTracks Program. To assess potential local community acceptance of the NWR Corridor Project, regional and local plans were reviewed. Given the expected increase in population and congestion over the next several decades, jurisdictions in the project study area have clearly taken a proactive approach to planning for commuter rail and other alternative transportation modes. Local plans for communities along the proposed rail alignments were found to be in support of commuter rail serving their jurisdiction. Table 1-1 includes a brief summary of the regional and local community support.

TABLE 1-1. LOCAL AND REGIONAL PLANS AND COMMUNITY SUPPORT

Agency/Jurisdiction	Plan	Support for NWR Corridor
RTD	*FasTracks Plan,* 2004	NWR Corridor Project is a component of the voter-approved *FasTracks Plan*.
DRCOG	*2035 Metro Vision Regional Transportation Plan*, 2007	Plan mentions support for the voter approved FasTracks system. Plan specifically mentions commuter rail improvements between DUS and Longmont.
Denver	*Blueprint Denver*, 2002	Plan identifies mobility as a goal and includes providing diverse mobility options, a regional transportation system, and public transit as objectives to meet that goal.
Adams County	*Adams County Comprehensive Plan*, 2004	Plan provides general support for improvements to public transportation.
	Adams County Transportation Plan, 1996	Plan provides support for transportation services that are more responsive to conditions found in the suburban communities.
	Adams County Transit Oriented Development and Rail Station Area Planning Guidelines, January 2007	Adams County has been anticipating the arrival of improved transit through the RTD FasTracks program for over a decade. As a result, the Board of County Commissioners adopted these planning guidelines.
	Adams County Clear Creek Valley Transit Oriented Development Plan, October 2009	The purpose of this report was to determine the feasibility of developing TOD around two planned FasTracks stations in Adams County at Pecos Street and Federal Boulevard (part of the Gold Line project).
Westminster	*Westminster Comprehensive Land Use Plan*, 2004	Plan provides support for commuter rail along the BNSF Railway Company track.
Broomfield	*Original Broomfield Neighborhood Plan*, 2008	Plan encourages transit improvements funded by FasTracks and proposes a commuter rail station to serve both sides of the BNSF Railway Company track in the vicinity of West 116th Avenue and the railroad.
	City of Broomfield Comprehensive Plan, 2005	Plan supports commuter rail and the FasTracks Program. Plan supports a transit station and encourages TOD at West 116th Avenue.
	City of Broomfield Strategic Plan, 1998	Plan supports commuter rail and use of existing BNSF Railway Company track.
Superior/Louisville	*The Highway 42 Revitalization Area Comprehensive Plan*, 2003	Plan provides support for commuter rail along the BNSF Railway Company track.
	Downtown Louisville Framework Plan, 1999	Plan provides support for commuter rail along the BNSF Railway Company track.

TABLE 1-1. LOCAL AND REGIONAL PLANS AND COMMUNITY SUPPORT

Agency/Jurisdiction	Plan	Support for NWR Corridor
Boulder	*Boulder Transit Village Area Plan*, 2007	Plan identifies a commuter rail station at the terminus of Bluff Street, just south of Valmont Street on the BNSF Railway Company track alignment. Plan goals include maximizing the community benefit of the future commuter rail service. Plan creates the FasTracks Local Optimization (FLO) work Program, an effort to ensure that the City fully responds to the passage of FasTracks and the coming regional transportation investments, including the commuter rail.
	City of Boulder Transportation Master Plan, 2003	Plan supports the Locally Preferred Alternative package identified in the US 36 Major Investment Study including commuter rail along the BNSF Railway Company track.
	Boulder County Comprehensive Plan, 1978	Plan provides support for commuter rail.
Gunbarrel	*Gunbarrel Community Center Plan*, 2004	Plan provides support for commuter rail.
Longmont	*Longmont Multi-Modal Transportation Plan*, 2005	Plan mentions support for the FasTracks Program and supports commuter rail and proposed stations identified in the FasTracks Program.
	Longmont/RTD Station and Transit Oriented Development (TOD) Analysis, 2005	Plan developed specific TOD concepts for downtown Longmont RTD commuter rail stations and specifically identified the 1st Street and Terry Station downtown.

Source: NWR Corridor Project Team, 2009.

Notes:

DRCOG = Denver Regional Council of Governments
DUS = Denver Union Station
FLO = FasTracks Local Optimization Plan
NWR = Northwest Rail
RTD = Regional Transportation District
TOD = transit oriented development
US 36 = United States Highway 36

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2. ALTERNATIVES CONSIDERED

2.1 PREVIOUS PLANNING STUDIES

Previous studies recommended the implementation of rail transit in the Northwest Rail (NWR) Corridor. The NWR Corridor Environmental Evaluation (EE) uses those conclusions as the starting point for further evaluation, carries forward the outcomes of those previous rail studies as assumptions, and updates and builds upon the data collected (consistent with FHWA/FTA guidance, *Linking the Transportation Planning and NEPA Processes [FTA and FHWA 2005]*).

Studies covering the portion of the NWR Corridor from Denver to Boulder include the *United States 36 (US 36) Major Investment Study (MIS)* (RTD 2001) and the *US 36 Draft Environmental Impact Statement (DEIS)/Basic Engineering (BE)* (URS 2007) which examined roadway and transit improvements in the US 36 Corridor. The early stages of the US 36 DEIS/BE were a joint effort between the Colorado Department of Transportation (CDOT) and the Regional Transportation District (RTD) that analyzed rail and highway improvements. In 2006, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) decided that the rail and highway elements of the project had independent utility and should proceed as separate studies (see more detailed discussion in Section 2.1.3, US 36 DEIS and Basic Engineering). The resulting US 36 DEIS/BE concluded in 2007 and only included highway improvements and Bus Rapid Transit elements along US 36. Unless otherwise noted, all references to the US 36 DEIS/BE refer to the effort prior to the severing of the rail and highway elements.

For the portion of the corridor from Boulder to Longmont, RTD conducted two separate planning studies, the *Longmont Diagonal Rail Feasibility Study* (RTD 2005) and the *Longmont Diagonal Rail Environmental Evaluation (Longmont EE)* (RTD 2006).

The studies that have analyzed transit improvements for portions of the NWR Corridor since 2000 are summarized in Table 2-1. More detailed descriptions are provided in the sections below. The different study area boundaries for each of these previous studies are shown in Figure 2-1.

TABLE 2-1. PREVIOUS TRANSPORTATION STUDIES

Date Completed	Title (Agency)	Summary
2001	*US 36 Major Investment Study* (RTD)	Recommended commuter rail service in US 36 Corridor along the BNSF Railway Company alignment and highway improvements along US 36.
2004	*FasTracks Plan* (RTD)	Regional rail and bus expansion initiative adopted in December 2004 that included commuter rail, specifically DMU, along the BNSF Railway Company alignment.
2005	*Longmont Diagonal Rail Feasibility Study* (RTD)	Determined that a commuter rail transit extension from Boulder to Longmont was feasible.
2006	*Longmont Diagonal Rail Environmental Evaluation* (RTD)	Environmental Evaluation of commuter rail transit improvements along the BNSF Railway Company alignment from Boulder to Longmont.
2007	*US 36 DEIS/BE (URS)**	DEIS and BE for transit and roadway improvements in US 36 Corridor between Denver and Boulder. Recommended commuter rail along the BNSF Railway Company alignment and highway improvements along US 36. The US 36 Final EIS was published on October 30, 2009 and a ROD was signed by FHWA and FTA in December 2009.
2009	*Commuter Rail Maintenance Facility Supplemental Environmental Assessment to FasTracks Commuter Rail Corridors* (RTD)	Supplemental Environmental Assessment (SEA) for a commuter rail maintenance facility and lead track from DUS to Pecos Street. This document is a supplement to the Gold Line Final EIS that is described below. Recommended a track alignment from DUS to Pecos Street along the BNSF Railway Company alignment and a commuter rail maintenance facility at Fox North site (north of 48th Avenue and Fox Street in the City and County of Denver).
2009	*Gold Line Final EIS* (RTD)	Final EIS and BE for transit improvements primarily along the Union Pacific Railroad Company and BNSF Railway Company alignments from DUS to Ward Road in Wheat Ridge, Colorado. The Gold Line ROD was signed by FTA on November, 2, 2009.

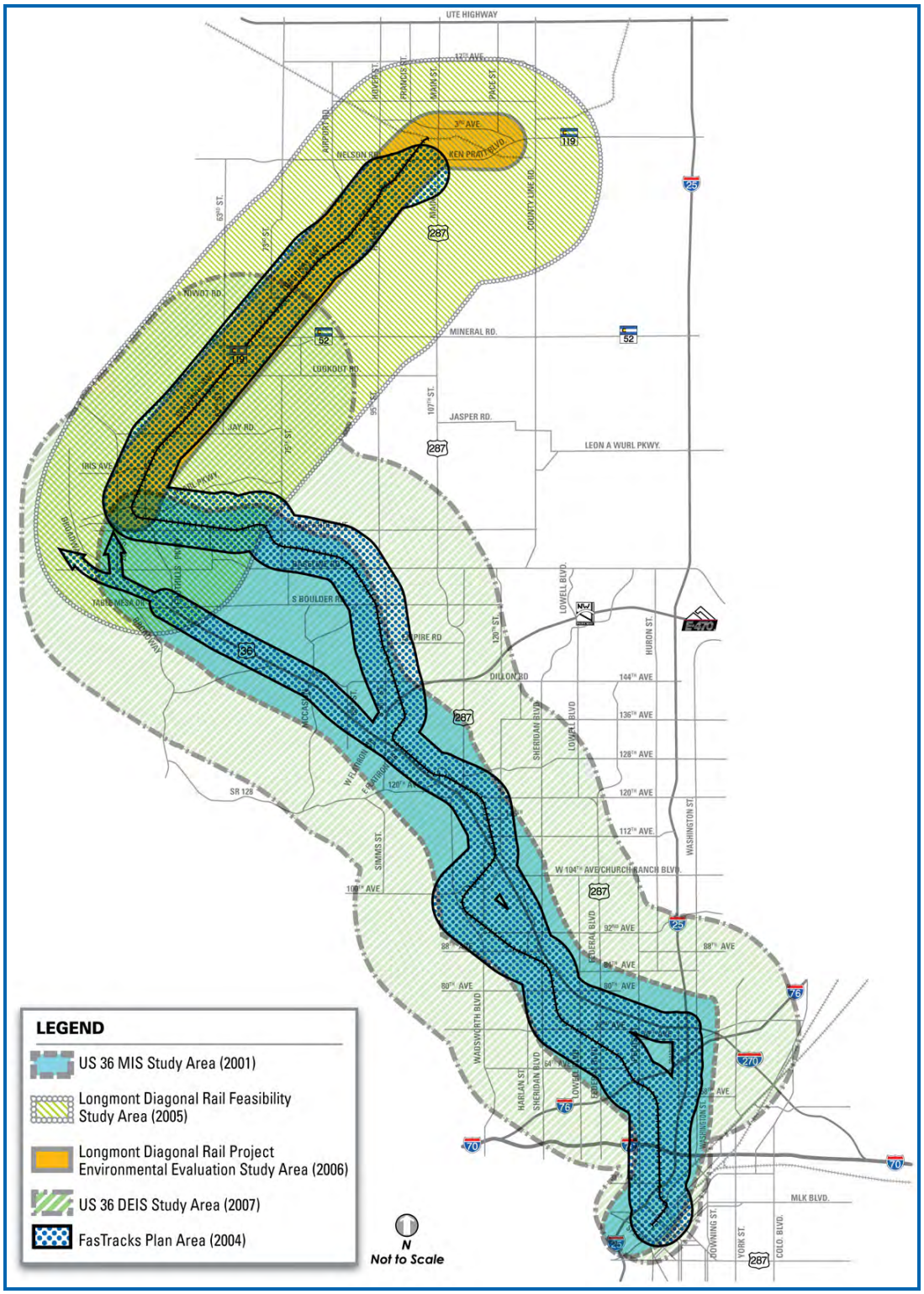
Source: NWR Corridor Project Team, 2009.

Notes:

*The early stages of US 36 DEIS/BE were a joint effort between CDOT and RTD that analyzed rail and highway improvements. In 2006, FHWA and FTA decided that the rail and highway elements of the project had independent utility and should proceed separately. The resulting US 36 DEIS/BE concluded in 2007 and only included highway improvements.

BE = Basic Engineering
CDOT = Colorado Department of Transportation
CRMF SEA = Commuter Rail Maintenance Facility Supplemental Environmental Assessment
DEIS = Draft Environmental Impact Statement
DMU = diesel multiple unit
DUS = Denver Union Station
Final EIS = Final Environmental Impact Statement
FHWA = Federal Highway Administration
DMU = Federal Transit Administration
ROD = Record of Decision
RTD = Regional Transportation District
US 36 = United States Highway 36

FIGURE 2-1. STUDY AREA BOUNDARIES FOR PREVIOUS TRANSPORTATION STUDIES IN THE NORTHWEST RAIL CORRIDOR



Source: NWR Corridor Project Team, 2009.

2.1.1 US 36 Major Investment Study

The *US 36 MIS* (RTD 2001), completed in June 2001, concluded with the approval of a Locally Preferred Alternative (LPA) by the cities and counties in the US 36 Corridor. The LPA was a multi-modal package of improvements including: highway widening, high-occupancy vehicle (HOV) lanes, bus rapid transit (BRT), commuter rail service along the BNSF Railway Company alignment, and alternative transportation improvements, such as bicycle facilities.

2.1.1.1 Major Investment Study Rail Vehicle Technology

The *US 36 MIS* (RTD 2001) initially considered four packages that included variations of bus/BRT/HOV and/or passenger rail as transportation improvements in the US 36 Corridor between Denver and Boulder. Four different passenger rail technologies were evaluated in detail including:

- Locomotive-hauled coach (LHC)
- Federal Railroad Administration (FRA)-compliant diesel multiple unit (DMU) (has the structural improvements that permit it to operate within freight rail right-of-way [ROW])
- Non-compliant DMU (not permitted to operate within freight rail ROWs)
- Light rail transit (LRT)

Figure 2-2 depicts the technologies initially considered in the *US 36 MIS* (RTD 2001).

FIGURE 2-2. US 36 MAJOR INVESTMENT STUDY TECHNOLOGY CONSIDERATIONS

Technology		
		
Locomotive-Hauled Coach (LHC)	**Diesel Multiple Unit (DMU)**	**Light Rail Transit (LRT)**

Source: URS, 2007.

Other more advanced technologies such as magnetic levitation were also considered, but were eliminated from consideration early in the evaluation process because they were not proven technologies or were especially complex to construct, rendering the technology unfeasible due to affordability and schedule concerns.

2.1.1.2 Major Investment Study Locally Preferred Alternative

The LPA that resulted from the *US 36 MIS* (RTD 2001) evaluation included the following regional rail components:

- Twenty-eight miles of regional rail service on one new track and one existing track shared with the BNSF Railway Company.

- Five stations consisting of Denver Union Station (DUS), Westminster, Broomfield (96th Street), Louisville, and Boulder (30th Street and Pearl Street).
- Assumed 20 minute peak and 40 to 60 minute off-peak headways (a.m. peak 6:30 – 9:00 a.m., p.m. peak 4:00 – 6:30 p.m. [Manuel Padron & Associates 2001]).
- Forty-six minute travel time between Denver and Boulder.
- LHC technology (or FRA-compliant DMU technology if available at time of implementation).
- Bus feeder service to rail stations.

The LPA recommended LHC as the preferred rail technology as it was the most cost-effective rail technology available at the time. LRT was ruled out because of its inability to operate on shared track with freight due to FRA safety restrictions and cost. To meet FRA safety restrictions, LRT would require temporal and/or physical separation from the freight operations. Temporal separation would require that freight operations be suspended while LRT is in operation and vice-versa. Physical separation would require additional ROW acquisition outside of the BNSF Railway Company ROW and the construction of two new tracks to satisfy the double track requirement.

LRT and non-compliant DMU operating in the US 36 ROW or on arterials were also eliminated for the following reasons:

- Duplicates existing regional bus service and does not provide new transit service to an area not previously served.
- Requires Colorado Department of Transportation (CDOT) and/or other ROW for rail.
- Does not build upon existing infrastructure in the corridor.
- Limited opportunities for expansion to the North Front Range.
- Substantial impacts to roadways and properties.
- Higher cost per seated passenger than LHC.
- LRT has lower maximum speeds than LHC or DMU.
- Street running operations in Boulder and Denver will not provide competitive regional travel times.

2.1.1.3 Major Investment Study Rail Station Development

Station locations were also considered in the *US 36 MIS* (RTD 2001). The *US 36 MIS* initially identified two scenarios for rail operation in the US 36 Corridor with station locations, as presented in Table 2-2.

- **Scenario 1**: Inter-urban Rail Service was envisioned as DMU vehicles operating on exclusive tracks in the BNSF Railway Company ROW. This scenario included nine proposed station locations as listed in Table 2-2.
- **Scenario 2**: Regional Rail was described as LHC vehicles operating on shared track with freight vehicles in the BNSF Railway Company ROW. This scenario proposed five station locations as listed in Table 2-2.

TABLE 2-2. US 36 MAJOR INVESTMENT STUDY RAIL INITIAL SCENARIOS

Scenario 1 Inter-Urban Rail (DMU) Nine Station Locations	Scenario 2 Regional Rail (LHC) Five Station Locations
DUS	DUS
West 38th Avenue	
72nd Avenue and Lowell Boulevard	
Westminster	Westminster
Church Ranch	
Broomfield	Flatiron (96th Street)
Interlocken Loop/Storage Tek Drive	
Louisville	Louisville
Boulder (30th Street and Pearl Street)	Boulder (30th Street and Pearl Street)

Source: RTD, 2001.
Notes:
DMU = diesel multiple unit
DUS = Denver Union Station
LHC = locomotive-hauled coach

Scenario 2, Regional Rail, with its five proposed stations and LHC or DMU technology (if DMU available at the time of implementation), was selected as a component of the *US 36 MIS* LPA.

2.1.2 FasTracks Plan

The *FasTracks Plan* (RTD 2004) was approved by district voters in 2004. FasTracks is RTD's 12-year comprehensive plan to build and operate high-speed rail lines and expand and improve bus service and park-n-Rides throughout the region. FasTracks includes:

- 122 miles of new light rail and commuter rail
- 18 miles of BRT service
- 57 new transit stations
- 21,213 additional parking spaces at transit park-n-Rides
- Enhanced bus service and FastConnects[1] throughout the region

The goal of the *FasTracks Plan* (RTD 2004) is to implement a regional system of transit infrastructure to provide new and enhance existing connections throughout the Denver metropolitan region. The NWR Corridor Project is assumed in the plan and is to be constructed and operating by 2015.

[1] FastConnects is a program of bus service enhancements intended primarily to improve bus service for suburb-to-suburb travel, including efforts such as minimizing wait times at designated transfer centers (park-n-Rides, train stations, shopping/employment centers) by coordinating the arrivals of multiple train/bus lines.

2.1.2.1 FasTracks Vehicle Technology

The *FasTracks Plan* (RTD 2004) identified DMU commuter rail in the BNSF Railway Company ROW as the vehicle technology and alignment for the NWR Corridor, based on recommendations from preliminary analysis that had been conducted in the early US 36 DEIS/BE planning process that began in late 2003.

2.1.2.2 FasTracks Station Development

FasTracks identified seven stations for the NWR Corridor, building on the results from the *US 36 MIS*:

- 71st Avenue/Lowell Boulevard (Westminster)
- US 36 and Church Ranch Boulevard
- FlatIron/96th Street
- Louisville
- 30th Street/Pearl Street (Boulder)
- IBM at Diagonal Highway (Niwot)
- Twin Peaks Mall at Diagonal Highway (Longmont)

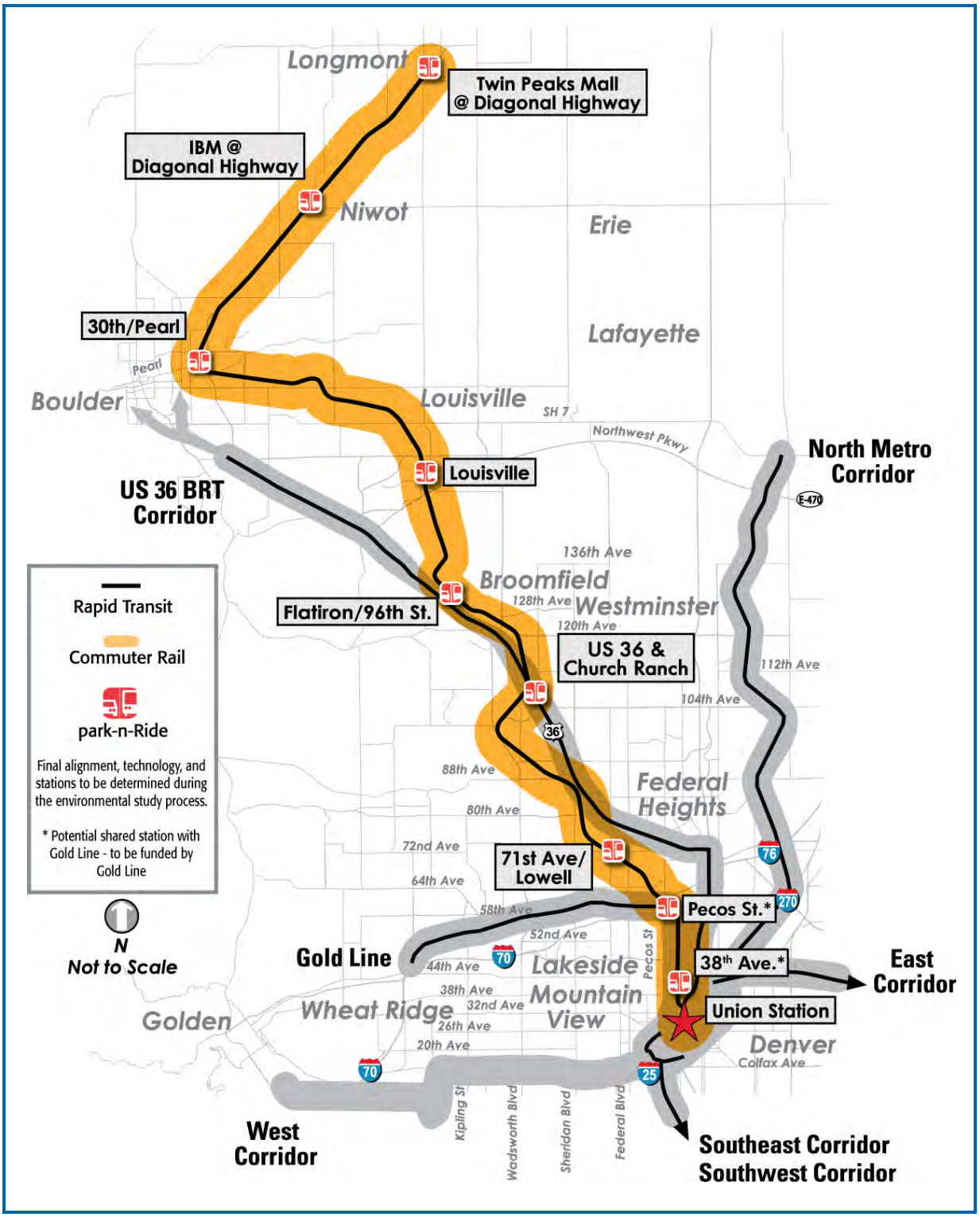
See Figure 2-3 for a general depiction of station locations identified in FasTracks.

2.1.3 US 36 EIS and Basic Engineering

Initiated in 2003, the US 36 DEIS/BE process began with the intent to further evaluate multi-modal alternatives in the US 36 Corridor between downtown Denver and Boulder, by building off the work completed in the *US 36 MIS* (RTD 2001). In the early stages of the process, FTA and the FHWA served as the joint lead agencies for the US 36 DEIS/BE. The primary alternatives evaluated in the initial stages of the DEIS/BE process included the highway improvements on US 36 and rail improvements in the BNSF Railway Company alignment recommended in the *US 36 MIS* (RTD 2001) and other reasonable alternatives proposed during the scoping for the project. These included commuter rail transit along US 36, LRT in the BNSF Railway Company alignment and along US 36, and advanced technologies such as magnetic levitation.

Prior to the completion of the US 36 DEIS/BE, the RTD district voters approved a sales tax increase to fund the FasTracks Program in 2004 which included rail transit and BRT in the US 36 Corridor. In the spring of 2006, with this new funding source approved in the FasTracks election, FTA and FHWA agreed that the highway and rail elements of the US 36 DEIS/BE had independent utility and logical termini, and therefore should be evaluated in separate National Environmental Policy Act (NEPA) studies. This decision required that the rail elements under evaluation in the US 36 DEIS/BE be removed from the build packages and instead be included in the No Action package. In the *US 36 Draft EIS/BE* (URS 2007), the resulting build packages were revised to include only highway-oriented improvements. The EIS, including the highway element, led by CDOT, was completed in October 2009. FHWA and FTA signed a Record of Decision (ROD) in December 2009 (see Section 2.1.3.3, US 36 Current Status, for more details). The rail elements identified in the US 36 EIS/BE planning process subsequently became part of the NWR Corridor Project and the subject of this evaluation.

FIGURE 2-3. 2004 FASTRACKS NORTHWEST RAIL CORRIDOR MAP



Source: CDOT and RTD, 2005.

2.1.3.1 US 36 DEIS and Basic Engineering Rail Alignment and Vehicle Technology

Similar to the *US 36 MIS* (RTD 2001), it was determined in the early stages of the US 36 DEIS/BE planning process that any type of commuter rail transit within the US 36 ROW would be prohibitively expensive and complex to construct. The US 36 ROW alignment would result in greater ROW acquisition costs, more impacts, and increased design and construction challenges than a commuter rail application in the BNSF Railway Company ROW alignment.

Additionally, due to the higher costs, impacts, and design and construction challenges, use of the US 36 ROW for any or all of the commuter rail would provide only minor travel time savings over the BNSF Railway Company ROW alignment. Therefore, a commuter rail alignment in the US 36 ROW for all or a portion of the corridor was not carried forward in the US 36 DEIS/BE.

During the early stages of the US 36 DEIS/BE planning process, various types of rail technology were considered. Similar to the *US 36 MIS* (RTD 2001), advanced technologies (such as magnetic levitation) were eliminated because they are not proven technologies and would be complex to construct, rendering the technology infeasible due to affordability and schedule concerns. LRT was considered, but commuter rail was recommended over LRT for several reasons. First, commuter rail has virtually the same ridership as LRT but at approximately one-third to half of the cost. Second, LRT would have greater impacts because it would require three tracks (two tracks for LRT and one exclusively for freight) instead of one. LRT would also have a wider construction footprint and it would have more direct impacts to adjacent uses. Finally, the overhead catenary (cable) used to power LRT would create a visual intrusion not present with DMU commuter rail technology. Therefore, LRT was not carried forward as a rail technology in the US 36 DEIS/BE. In summary, DMU was initially selected as the technology choice for the commuter rail line in the early US 36 DEIS planning process because of consistency with the original *FasTracks Plan*, fewer potential environmental impacts, and lower cost.

2.1.3.2 US 36 DEIS and Basic Engineering Station Development

The early US 36 DEIS/BE planning process identified both BRT and commuter rail station locations, some of which were to jointly serve BRT and commuter rail. The results of the station planning evaluation presented in the early stages of the US 36 DEIS/BE process identified the station locations depicted in Figure 2-4. Note that FasTracks, which was adopted in 2004, initially identified five commuter rail stations along US 36 between Denver and Boulder. Work completed during the public and agency involvement component early in the US 36 DEIS/BE planning process identified three additional stations – Sheridan Boulevard/88th Avenue (88th Avenue and Harlan Street) in the vicinity of the Westminster Mall, 116th Avenue in the City and County of Broomfield, and East Boulder (63rd Street and Arapahoe Road). These stations would not be funded under FasTracks, but are included in the evaluation within this EE, in the event that funding sources outside of FasTracks become available. See Table 2-3 for a summary of stations identified for the US 36 corridor during the *FasTracks Plan* and the initial US 36 DEIS/BE process.

TABLE 2-3. US 36 CORRIDOR STATION SUMMARY TABLE

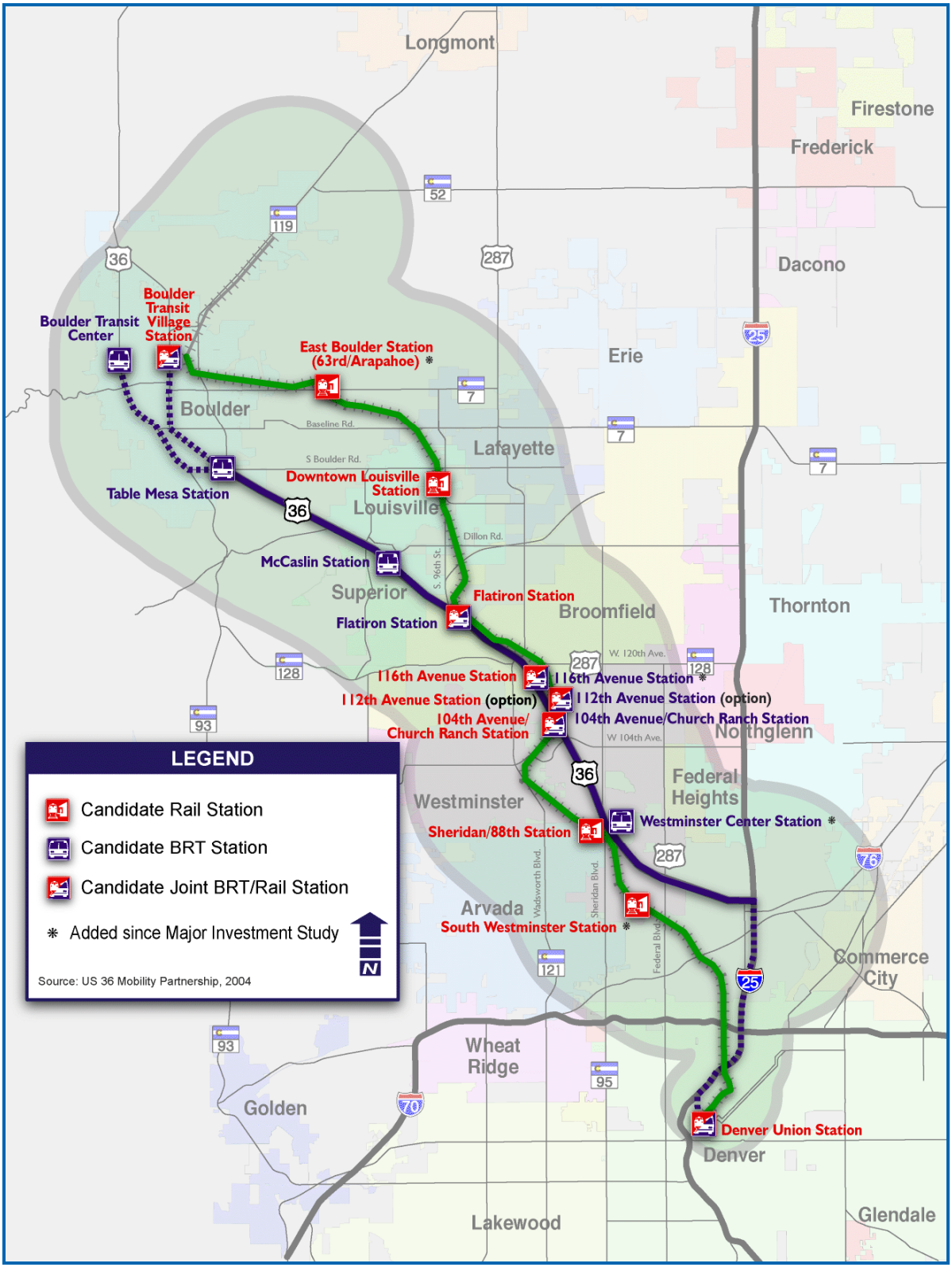
Station Locations	Station Identification Process
71st Avenue/Lowell Boulevard (South Westminster)	*FasTracks Plan* (2004) and Initial US 36 DEIS/BE Process
Sheridan Boulvard/88th Avenue (88th and Harlan Street)	Initial US 36 DEIS/BE Process
104th/Church Ranch Boulevard	*FasTracks Plan* (2004) and Initial US 36 DEIS/BE Process
116th Avenue	Initial US 36 DEIS/BE Process)
Flatiron/96th Street	*FasTracks Plan* (2004) and Initial US 36 DEIS/BE Process
Downtown Louisville	*FasTracks Plan* (2004) and Initial US 36 DEIS/BE Process
East Boulder (63rd Street and Arapahoe Road)	Initial US 36 DEIS/BE Process
30th Street/Pearl Street (Boulder Transit Village)	*FasTracks Plan* (2004) and Initial US 36 DEIS/BE Process

Source: NWR Corridor Project Team, 2009.

Note: Cells highlighted in blue represent the stations that were not identified in the *FasTracks Plan* (2004) but were added during the early US 36 DEIS/BE planning process.

To facilitate the early US 36 DEIS/BE planning process, station planning committees comprised of technical staff, elected officials, and other stakeholders were established within each jurisdiction to assist with station location evaluation and design. The station planning process built on previous work of the *US 36 MIS* (RTD 2001), which resulted in preliminary recommendations for station locations, and the RTD FasTracks Program, which slightly modified the recommendations from the *US 36 MIS*. These previous studies and plans were used to initially identify candidate station locations. Then the US 36 DEIS/BE Project Team used current modeling projections, community plans, discussions with local jurisdictions, public input, and assessment of impacts to appropriately evaluate candidate station locations and develop conceptual station designs.

FIGURE 2-4. US 36 DEIS CANDIDATE STATION LOCATIONS



The following five categories of evaluation considerations were used in developing and evaluating candidate stations:

- **Operational criteria:** addressed daily boardings and recommended station spacing.
- **Site planning criteria:** included factors such as land availability, existing infrastructure, walking distance between station facilities, and compatibility with local plans. The planned environment included compatibility with local plans and support for Transit Oriented Development (TOD).
- **Access criteria:** addressed local bus connections, roadway access, and bicycle and pedestrian access.
- **Environmental criteria:** included the planned, socioeconomic, and natural environments. The socioeconomic environment included planned population, employment density, and required business relocations. The natural environmental evaluation included identifying natural and human resource impacts.
- **Project Purpose and Need.**

While all of these criteria were used in evaluating each candidate station location, the brief discussions presented below highlight the discriminating criteria, where applicable.

71st Avenue/Lowell Boulevard (South Westminster Station)

The identification of a candidate location for the 71st Avenue/Lowell Boulevard Station was based on the City of Westminster's preliminary redevelopment plans for the area. The City of Westminster called for a transit station at approximately 70th Avenue and Irving Street, with roadway extensions into the station site. This location was reviewed by the US 36 DEIS/BE Project Team and was confirmed as a candidate station location because it would meet the Purpose and Need of the project, and did not have any known unmitigable environmental impacts. Through the station planning process, the US 36 DEIS/BE Project Team refined the station concept plan to be carried forward for further evaluation early in the US 36 DEIS/BE process.

Sheridan Boulevard/88th Avenue Station (88th Avenue/Harlan Street)

The rationale for adding a station in the vicinity of Sheridan Boulevard/88th Avenue included community interest in having a rail station in this area and the potential to add a significant number of transit riders to the system due to its location as a regional access point. Two sites were considered as potential locations for a Sheridan Boulevard/88th Avenue Station. Option A would be located at approximately 88th Avenue and Harlan Street. Option B would be located further west at the intersection of the BNSF Railway Company line and Pierce Street. The candidate stations were selected because they were located adjacent to tangent rail track, provided convenient access, and would be in close proximity to the Westminster Mall, which is a major activity center. A comparison of the two candidate station locations did not reveal major discriminators.

Through the station planning committee process, City of Westminster representatives indicated that they would not support Option B due to impacts to the city's maintenance facility on the south side of the rail tracks. For this reason, and because Option A was more consistent with evolving redevelopment plans for the Westminster Mall area and did not have any known unmitigable environmental impacts, the US 36 DEIS/BE Project Team recommended that Option A be carried forward for further evaluation early in the US 36 DEIS/BE process.

104th Avenue/Church Ranch Station and 116th Avenue Station (or 112th Avenue Station)
The initial identification of candidate station locations at 104th Avenue/Church Ranch and 116th Avenue was based on previous plans and studies as well as other factors. The candidate 104th Avenue/Church Ranch Station would be located at the site of an existing RTD park-n-Ride and would provide the ability for passengers to transfer between BRT (as well as other local and express bus routes) and rail modes. Likewise, the candidate 116th Avenue Station would be located at the site of a planned RTD park-n-Ride and would provide the ability for passengers to transfer between BRT (as well as other local and express bus routes) and rail modes.

A preliminary evaluation of the candidate 104th Avenue/Church Ranch Station and 116th Avenue Station revealed that they were comparable. However, the station locations would be in such close proximity to each other that they would possibly duplicate functions and lead to inefficient transit operations. Therefore, the US 36 DEIS/BE Project Team considered combining both joint BRT/rail station functions at one central location to provide more efficient rail operations, vehicle access, and bus feeder service while serving the same ridership capture areas. A candidate station location at 112th Avenue (in lieu of both the 104th Avenue/Church Ranch Station and the 116th Avenue Station) was added to the station evaluation process. The results of this evaluation are described below:

- **Cost-effectiveness:** One station at 112th Avenue would cost less to operate than stations at both 104th Avenue/Church Ranch and 116th Avenue. However, once the infrastructure costs associated with the 112th Avenue Station were factored in, the overall costs increased significantly. While there would be a slight increase in ridership at this location, it would not be enough to justify the additional costs.
- **Community Support:** Both jurisdictions had or were developing mixed-use redevelopment plans for the candidate 104th Avenue/Church Ranch Station and 116th Avenue Station areas. Therefore, both locations were strongly supported by the City of Westminster and the City and County of Broomfield. On the other hand, the candidate 112th Avenue Station ranked poorly in relation to TOD opportunities and did not receive a high level of community support.

For these reasons, the 112th Avenue Station was not carried forward for further consideration. The US 36 DEIS/BE Project Team recommended carrying forward both the 104th Avenue/Church Ranch Station and the 116th Avenue Station for further evaluation early in the US 36 DEIS/BE process. At the time of this evaluation, these candidate sites did not have any known unmitigable environmental impacts.

Flatiron Station (96th Street)
Like Broomfield/116th Avenue and 104th Avenue/Church Ranch, the candidate Flatiron Station location was identified because it would be located at the site of an existing RTD park-n-Ride and would provide the ability for passengers to transfer between BRT (as well as other local and express bus routes) and rail modes. This location was reviewed by the US 36 DEIS/BE Project Team and was confirmed as a candidate station location because it would meet the Purpose and Need of the project and did not have any known unmitigable environmental impacts. Through the station planning process, the Project Team refined the station concept plan to be carried forward for further evaluation early in the US 36 DEIS/BE process.

Downtown Louisville Station

The identification of a candidate station location for the Downtown Louisville Station was based on previous work conducted by the City of Louisville and documented in the *Highway 42 Revitalization Area Comprehensive Plan* (City of Louisville 2003). This plan included a detailed transit station site selection process which concluded with the selection of a station site in the vicinity of the BNSF Railway Company line and South Street. This location was reviewed by the US 36 DEIS/BE Project Team and was confirmed as a potential station location because it would meet the Purpose and Need of the project and did not have any known unmitigable environmental impacts. In addition to consistency with local adopted plans, the candidate station location would meet track engineering requirements, avoid impacts to historic properties, and utilize underdeveloped land. Through the station planning process, the Project Team refined the station concept plan to be carried forward for further evaluation early in the US 36 DEIS/BE process.

East Boulder Station (63rd Street and Arapahoe Road)

The rationale for adding a station in east Boulder was to provide access for the communities of east Boulder County, as well as meet the expected parking demand by City of Boulder commuters, as the Boulder Transit Village Station would have limited parking.

Two sites were considered as potential locations for the East Boulder Station. Option A (east) would be located on the north side of Arapahoe Road at the intersection of Arapahoe Road and Old Tale Road. Option B (west) would also be located on the north side of Arapahoe Road, approximately two blocks east of 63rd Street. The candidate station locations were identified because they were located along tangent rail track and they were either vacant and/or underutilized land. The major discriminators between Option A and Option B included:

- **Land Availability:** Option B was located on vacant land. However, according to City of Boulder staff, residential development plans could be submitted to the city in the near to mid-term future. Option A did not have vacant land available. The site is currently used for a warehouse facility and outdoor storage.
- **Parking:** Option B would accommodate 430 parking spaces located within 500 feet of the station platform, while Option A would accommodate up to three times as much parking.
- **Environmental Impacts:** Option B would be located entirely within the 100-year floodplain, while Option A was outside the 100-year floodplain.

Due to pending development plans for the Option B site, as well as the environmental constraint of being located within a 100-year floodplain, the US 36 DEIS/BE Project Team did not fully develop a concept plan for the Option B site and recommended that Option A be carried forward for further design refinement and evaluation early in the US 36 DEIS/BE process. At the time of this evaluation, the candidate site did not have any known unmitigable environmental impacts.

30th Street and Pearl Street (Boulder Transit Village Station)

The identification of a candidate station location for the Boulder Transit Village Station was based on previous work conducted by the City of Boulder and documented in the *Boulder Transit Village Site Selection Report* (City of Boulder 2001). This location was reviewed by the US 36 DEIS/BE Project Team and confirmed as a potential station location that would

meet the Purpose and Need of the project. However, subsequent analysis by the Project Team resulted in the relocation of the proposed site due to track engineering constraints and public and agency input. Through the station planning process, the Project Team modified and refined the station concept plan to be carried forward for further evaluation early in the US 36 DEIS/BE process. At the time of this evaluation, the candidate site did not have any known unmitigable environmental impacts.

2.1.3.3 US 36 Current Status

The US 36 Final EIS was published in October 2009 and public hearings were held in November 2009. At the hearings, the Preferred Alternative package was presented and public comments were collected. A 45-day public review and comment period occurred between October 30, 2009 and December 14, 2009.

The FHWA and the FTA signed a ROD in December 2009, completing the planning process for the US 36 Corridor. Due to funding limitations, the Preferred Alternative was separated into three phases. The first phase would be constructed with the funding available in the *2035 Regional Transportation Plan*. Later phases would be constructed over time as funding is available.

A copy of the US 36 Final EIS and ROD are available on the project web site at http://www.us36eis.com/.

Phase I BRT improvements on US 36 include the following elements:

- **Foothills Parkway/Table Mesa Drive:** park-n-Ride improvements (complete), pedestrian structure, and slip ramp
- **McCaslin Boulevard:** park-n-Ride improvements, pedestrian structure, and slip ramps (all complete)
- **96th Street:** park-n-Ride improvements, pedestrian structure, and slip ramps (all complete)
- **116th Avenue:** park-n-Ride improvements (complete), pedestrian structure (under construction), and slip ramps
- **Church Ranch Boulevard/104th Avenue:** park-n-Ride, pedestrian structure (both complete), and slip ramps
- **Sheridan Boulevard:** park-n-Ride improvements, pedestrian structure, and slip ramps (all complete)

2.1.3.4 NWR EE Station Re-Evaluation

Subsequent to the initial candidate station location evaluation and selection process early in the US 36 DEIS/BE study, the NWR Corridor Project Team conducted a re-evaluation of station locations to confirm that the candidate stations recommended to be carried forward in the NWR Corridor EE were, in fact, the least environmentally damaging practicable alternative (LEDPA). The LEDPA as defined in 40 CFR Part 230.10(a), is “the alternative with the least impacts to the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental consequences.” As described in Section 2.1.3.2, US 36 DEIS and Basic Engineering Station Development, more than one site option was considered for the following candidate stations: Sheridan Boulevard/88th Avenue Station,

104th Avenue/Church Ranch Station and 116th Avenue Station (or 112th Avenue Station), and East Boulder Station. The following is a summary of the environmental re-evaluation:

- **Sheridan Boulevard/88th Avenue Station:** Option A would impact 0.05 acre of jurisdictional (J) wetlands and Option B would impact 0.20 J acre of wetlands. Option A had fewer impacts to wetlands and was the option carried forward for further consideration in the NWR Corridor EE.
- **104th Avenue/Church Ranch Station and 116th Avenue Station (or 112th Avenue Station):** The 112th Avenue Station would have less impact to wetlands (0.03 acre) than the 104th Avenue/Church Ranch Station, but more impacts than the 116th Avenue Station (no impacts). The 104th Avenue/Church Ranch Station would impact approximately 0.13 non-jurisdictional (NJ) acre of wetlands. The 116th Avenue Station would have no impact to wetlands. However, as described above, the 112th Avenue Station is not practicable due to exorbitant cost. Therefore, the 104th Avenue/Church Ranch Station and the 116th Avenue Station were carried forward for further consideration in the NWR Corridor EE.
- **East Boulder Station:** While a conceptual site plan had not been developed for Option B during the initial stages of the US 36 DEIS/BE process, the assumed footprint of the station would be located in an area with extensive wetlands and would likely impact more than 0.50 J acre of wetlands. Option A had fewer impacts to wetlands (0.16 J acre and 0.02 NJ acre of wetlands) and was the option carried forward for further consideration in the NWR Corridor EE.

Therefore, a reassessment of each station option reaffirmed that the recommended candidate stations carried forward were the LEDPA options.

Based on the findings from the preliminary analysis early in the US 36 DEIS/BE process and the subsequent NWR Corridor Project Team re-evaluation of the stations, the following stations were carried forward for further consideration in the NWR Corridor EE:

- South Westminster Station (now called South Westminster/71st Avenue Station)
- Sheridan Boulevard/88th Avenue Station (now called Westminster/88th Avenue Station)
- 104th Avenue/Church Ranch Station (now called Walnut Creek Station)
- 116th Avenue Station (now called Broomfield/116th Avenue Station)
- Flatiron Station
- Downtown Louisville Station
- East Boulder Station
- Boulder Transit Village Station

2.1.4 Longmont Diagonal Rail Feasibility Study

The *Longmont Diagonal Rail Feasibility Study* (RTD 2005) was completed in 2005 and evaluated the feasibility of a rail transit extension from Boulder to Longmont. During initial planning stages of the FasTracks Program, rail transit in the NWR Corridor was identified along the BNSF Railway Company alignment from Denver to Longmont via Boulder. However, the environmental and engineering analysis completed for the early stages of the US 36 DEIS/BE planning process did not include the portion of the rail corridor from Boulder

to Longmont. The *Longmont Diagonal Rail Feasibility Study* was intended to evaluate the cost and ridership projections of extending the rail transit from Boulder to Longmont. This study began where the US 36 DEIS/BE rail component physically terminated at the Boulder Transit Village and considered rail transit from there to an end-of-line station in Longmont. This study concluded that it was feasible to extend the rail to Longmont and provided enough data for RTD to include the Boulder to Longmont portion of the NWR Corridor in the final FasTracks Program that went to voters in November 2004.

Details on vehicle technology and station identification recommendations for the Boulder to Longmont portion of the NWR Corridor are described under the *Longmont Diagonal Rail Environmental Evaluation (Longmont EE)* (RTD 2006) discussion below.

2.1.5 Longmont Diagonal Rail Environmental Evaluation

The *Longmont EE* (RTD 2006) was completed in September 2006 as part of the FasTracks Program and evaluated commuter rail transit connecting Boulder and Longmont. One of the purposes of the *Longmont EE* was to provide the level of environmental and engineering analysis on this portion of the NWR Corridor commensurate with the Denver-to-Boulder portion of the US 36 DEIS/BE. The *Longmont EE* information could then be added to the US 36 DEIS/BE information and used as a foundation for the NWR Corridor EE.

2.1.5.1 Longmont Diagonal Rail Environmental Evaluation Alignment and Vehicle Technology

The *Longmont EE* (RTD 2006) started with the assumption that it was "feasible to implement commuter rail" from where the rail line terminates in Boulder northeast to Longmont based on the findings of the *Longmont Diagonal Rail Feasibility Study* (RTD 2005). The *Longmont EE* stipulated that the technology selected for the Longmont extension commuter rail would be the same as that utilized for the US 36 Corridor (as had been identified in the early stages of the US 36 DEIS/BE planning process). It also assumed the BNSF Railway Company ROW as the alignment for the rail extension.

2.1.5.2 Longmont Diagonal Rail Environmental Evaluation Station Development

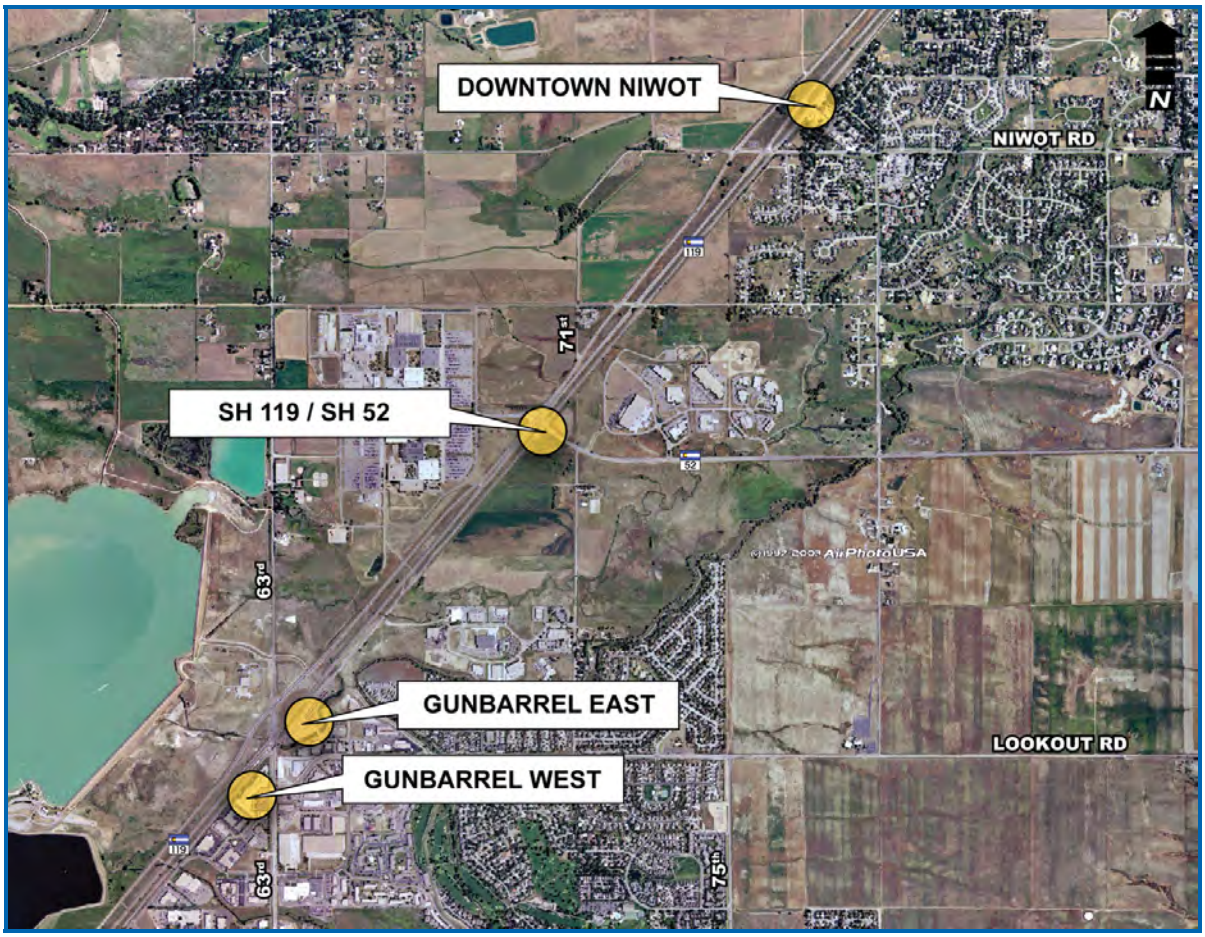
Longmont Intermediate Station Options

The following intermediate stations for the Boulder-to-Longmont section of the corridor were evaluated in the *Longmont EE* (RTD 2006):

- Gunbarrel West
- Gunbarrel East
- State Highway (SH) 119/SH 52
- Downtown Niwot

See Figure 2-5 for a depiction of the intermediate station locations.

FIGURE 2-5. LONGMONT DIAGONAL RAIL ENVIRONMENTAL EVALUATION CANDIDATE INTERMEDIATE STATIONS



Source: RTD, 2006.

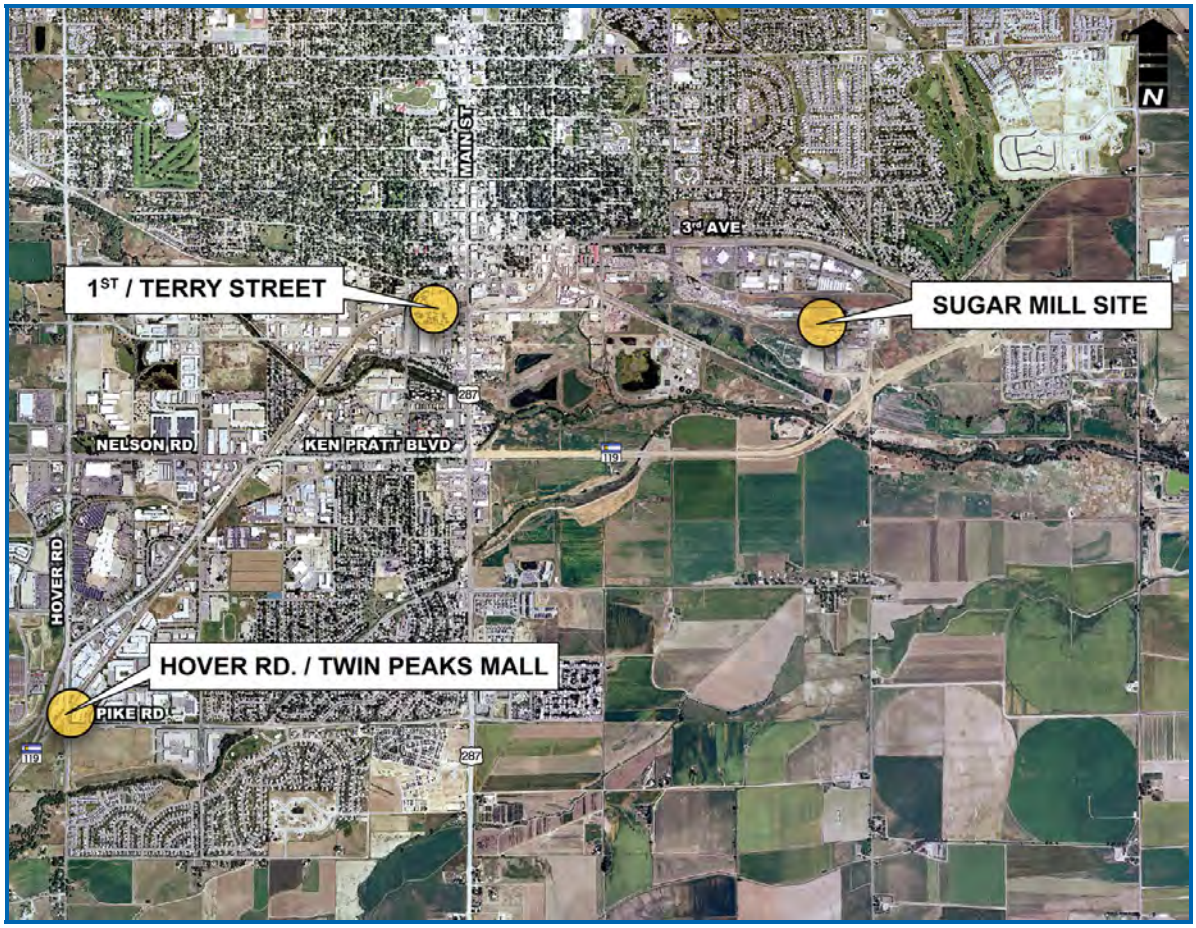
The *Longmont EE* (RTD 2006) recommended that the four intermediate station locations be narrowed to two possible locations to be carried forward for further evaluation. The recommended intermediate station locations were the Gunbarrel East and Gunbarrel West sites. This selection was based on criteria such as operations, site configuration, traffic/access, environmental issues, and economic development. These two sites had fewer environmental impacts that the Downtown Niwot and SH 119/SH 52 sites.

Longmont End-of-Line Stations

Three end-of-line station locations were considered in the *Longmont EE* (RTD 2006). Those locations included Hover Road/SH 119 (Twin Peaks Mall), 1st Avenue/Terry Street, and the Sugar Mill. The *FasTracks Plan* (RTD 2004) anticipated the Longmont end-of-line station at Hover Road and SH 119, near the Twin Peaks Mall. However, the *Longmont EE* found several constraints related to that site, including existing high traffic volumes and congestion along with poor pedestrian connections to the neighboring low-density residential and commercial developments. The *Longmont EE* recommended locating the end-of-line station at 1st Avenue/Terry Street near downtown Longmont due to its proximity to higher density residential, office, and retail developments and the potential for corresponding TOD in the

vicinity of this site. Costs to extend out to 1st Avenue and Terry Street were deemed comparable to the costs of accommodating traffic issues at Twin Peaks Mall. For example, a station in the vicinity of the mall would require significant roadway reconstruction because of ROW limitations compared to an at-grade station downtown. The Sugar Mill, located southeast of downtown, was also identified as a potential end-of-line station location. However, the *Longmont EE* indicated that an extension to the Sugar Mill was unlikely in the short-term due to FasTracks budget constraints and wetland impacts. Therefore, the 1st Avenue/Terry Street option was selected as the end-of-line station. See Figure 2-6 for the *Longmont EE* end-of-line candidate station locations.

FIGURE 2-6. LONGMONT ENVIRONMENTAL EVALUATION END-OF-LINE CANDIDATE STATIONS



Source: RTD, 2006.

Intermediate Station Locations

- Gunbarrel East or Gunbarrel West (two options for the same general location)

End-of- Line Station Location

- 1st Avenue/Terry Street

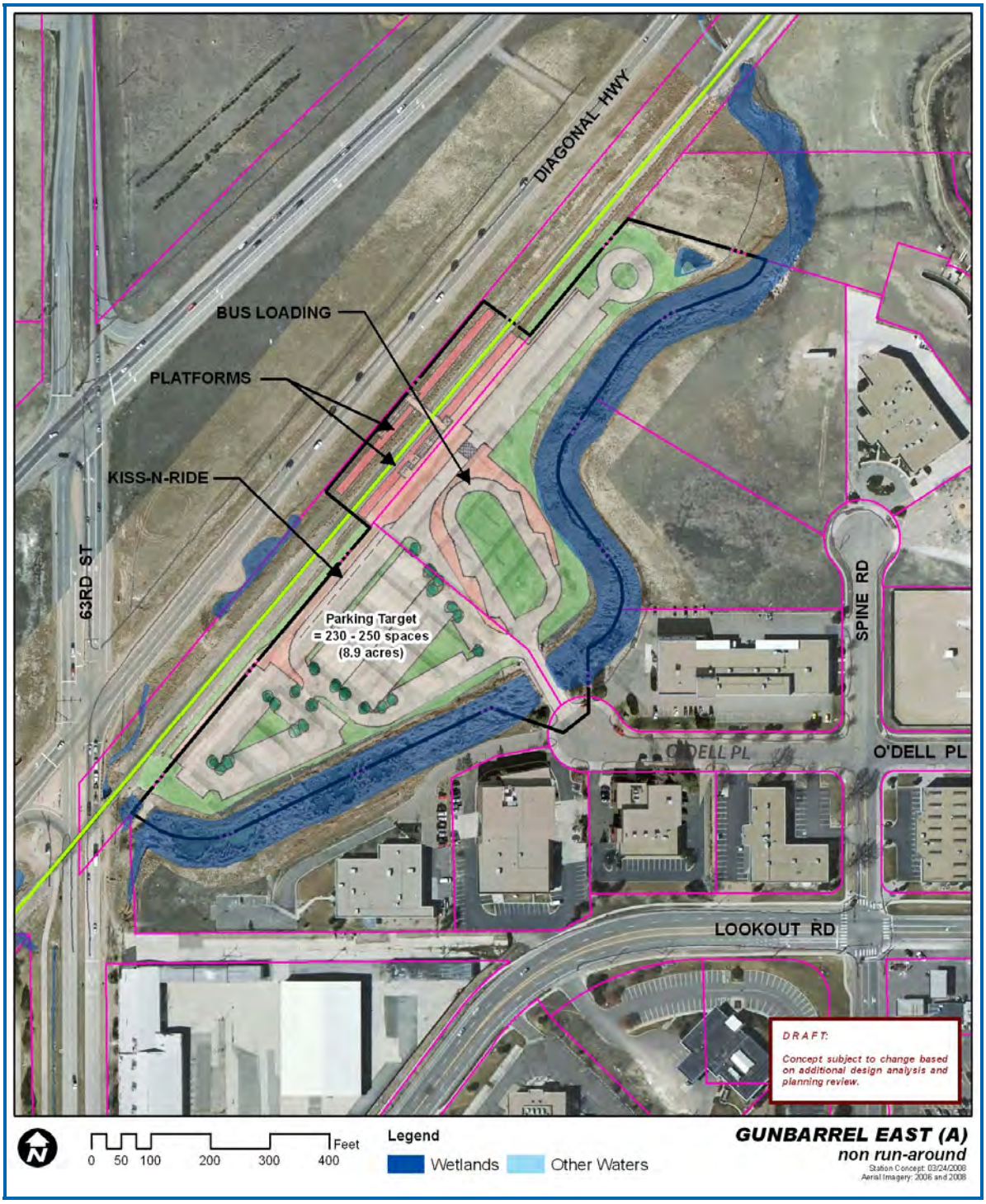
2.1.6 NWR EE Gunbarrel Station Location Re-Evaluation

As noted above, two station options for the intermediate station location in Gunbarrel were carried forward for further evaluation. The two options carried forward included the Gunbarrel East option and the Gunbarrel West option. In the initial stages of the NWR Corridor EE, these two station options were subjected to a re-evaluation that resulted in the selection of one option for the intermediate station in Gunbarrel. The evaluation process involved ranking the two station options based on criteria in the following categories:

- Operational Criteria (including site planning and access needs)
- Community Criteria (including compatibility with local plans and surrounding uses)
- Environmental Criteria (including potential impacts to the natural environment such as wetlands)
- Financial Criteria (including acquisition and relocation costs)

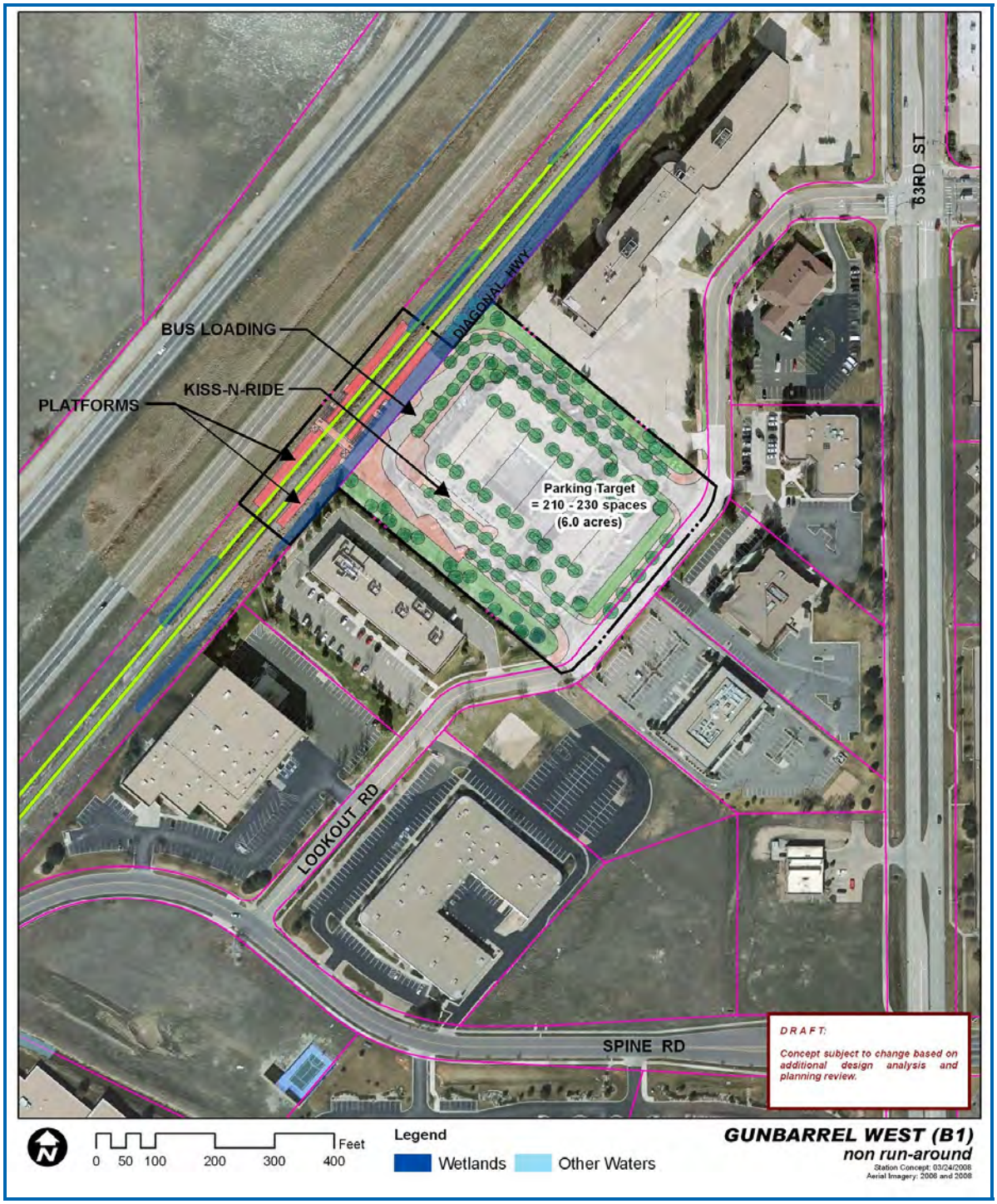
Figures 2-7 and 2-8 depict the two station options. Based on the results of the evaluation, the Gunbarrel West option was carried forward as the “Gunbarrel Station” and the Gunbarrel East option was set aside. During aerial photography and site reconnaissance, the project team determined that the Gunbarrel East location would have greater impacts to potentially higher quality wetlands than the Gunbarrel West site. In addition, the Gunbarrel East option would have substantially higher property acquisition and relocation costs, greater site access constraints and greater impacts to the adjacent residential neighborhood land uses.

FIGURE 2-7. GUNBARREL EAST STATION OPTION



Source: NWR Corridor Project Team, 2009.

FIGURE 2-8. GUNBARREL WEST STATION OPTION



Source: NWR Corridor Project Team, 2009.

2.1.7 Elements of Previous Planning Studies Retained

The following is a summary of the project elements from the *US 36 MIS* (RTD 2001), *FasTracks Plan* (RTD 2004), early stages of the US 36 DEIS/BE planning process, *Longmont Diagonal Rail Feasibility Study* (RTD 2005), and *Longmont EE* (RTD 2006) that were carried forward for consideration in the NWR Corridor EE. Two other projects that occurred concurrently with the NWR Corridor Project are the Gold Line Final EIS and CRMF SEA projects. These are discussed in more detail below in Section 2.4.2.7, Projects Linked to the NWR Corridor Project.

2.1.7.1 Alignment

- Commuter rail within BNSF Railway Company ROW from DUS to Downtown Longmont

2.1.7.2 Technology

- DMU commuter rail technology

2.1.7.3 Stations

- South Westminster (now called South Westminster/71st Avenue Station)
- Sheridan Boulevard/88th Avenue (now called Westminster/88th Avenue Station)
- 104th Avenue/Church Ranch Station (now called Walnut Creek Station)
- 116th Avenue (now called Broomfield/116th Avenue Station)
- Flatiron Station
- Downtown Louisville Station
- East Boulder Station
- Boulder Transit Village Station
- Gunbarrel Station
- 1st Avenue/Terry Street (now called Downtown Longmont Station)

2.2 RANGE OF ALTERNATIVES

The range of alternatives considered in this NWR Corridor EE was developed based on the previous study recommendations described above pertaining to alignment, vehicle technology, and station location. However, the intent of the NWR Corridor EE is to review a broad range of alternatives proposed to meet the project Purpose and Need. Therefore, some options that were eliminated in previous studies were revisited. For example, both the consideration of Twin Peaks Mall as an end-of-line station in Longmont and highway corridor alignments for commuter rail are re-evaluated in the NWR Corridor EE to confirm that the conditions for those decisions have not changed since the previous studies were conducted and remain feasible options for the NWR Corridor Project.

Three general categories of alternatives are proposed in the NWR Corridor EE: No Action Alternative, commuter rail alternatives within the existing BNSF Railway Company ROW, and commuter rail alternatives outside of the BNSF Railway Company ROW. While the

FasTracks Plan (RTD 2004) and the previous planning and environmental studies for the corridor all recommend the BNSF Railway Company ROW as the preferred alignment for the NWR Corridor, alternatives outside of the BNSF Railway Company ROW were also considered herein so that a reasonable range of alternatives could be compared and evaluated.

2.2.1 Alternative A – No Action Alternative

The No Action Alternative represents the Denver metropolitan region and the project study area in a 2035 horizon-year scenario. The No Action Alternative includes the existing and committed transportation improvements in DRCOG's fiscally constrained *2035 Metro Vision Regional Transportation Plan* (*2035 MVRTP*) (DRCOG 2007a). It also includes the entire FasTracks Plan, except for the NWR Corridor Project. Under the No Action Alternative, no new rail transit projects would be constructed within the project study area for the NWR Corridor. The No Action Alternative provides a basis for comparison to the build alternatives.

2.2.1.1 Bus Operations

In the No Action Alternative, service changes or enhancements likely to occur in the next one to five years were included, as well as committed service enhancements that will occur between 2005 and 2035. The No Action Alternative assumes no additional transit facilities in the project study area for the NWR Corridor. Existing park-n-Rides in the project study area exist in their same locations and configurations as today with the exception of the US 36/Wadsworth (Broomfield) park-n-Ride, which is scheduled for improvements in 2009. Table 2-4 summarizes the bus operation modifications for the No Action Alternative including: more frequent service on existing routes B and H between Denver and Boulder, a re-routed skyRide route for service from Boulder to Denver International Airport, and new Activity Center Connector routes to activity centers in the corridor.

TABLE 2-4. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE BUS OPERATING PLAN

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from Existing
Local Routes		
6 – East 6th Ave/North Pecos	30/30	Same as existing.
8 – North Broadway/Huron	30/30	Improved off-peak service.
31 – North Federal	30/30	Same as existing.
51 – Sheridan Crosstown	15/30	Improved peak service.
72 – 72nd Avenue Crosstown	30/30	Same as existing.
76 – Wadsworth Crosstown	15/30	Improved peak service.
80 – 80th Avenue Crosstown	30/30	Same as existing.
92 – 92nd Avenue Crosstown	15/30	Improved peak service.
100 – Kipling Crosstown	30/30	Improved off-peak service.

TABLE 2-4. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE BUS OPERATING PLAN

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from Existing
104 – 104th Avenue Crosstown	30/30	Improved off-peak service.
112 – West 112th Avenue	30/30	Improved off-peak service.
120 – 120th Avenue Crosstown	30/30	Improved off-peak service.
128 – Broomfield/Wagon Road	30/60	Same as existing.
Boulder Local Routes		
BOUND – 30th Street	10/10	Same as existing.
DASH – To Lafayette	15/30	Same as existing.
HOP – CU/Pearl Loop	10/10	Same as existing.
JUMP – Arapahoe (Short)	30/30	Same as existing.
JUMP – Arapahoe (Long)	30/30	Same as existing.
JUMP – Arapahoe (Extra-Long)	30/30	Same as existing.
LYNX – Broomfield / Louisville	30/60	Same as existing.
SKIP – Broadway Loop	7/10	Same as existing.
STAMPEDE – CU Loop	15/10	Same as existing.
203 – Baseline	30/30	Same as existing.
204 – Table Mesa / Yarmouth	15/30	Same as existing.
205 – Gunbarrel / Boulder Mall	15/30	Same as existing.
206 – Pearl / Eisenhower	30/30	Same as existing.
208 – Iris / Valmont	30/30	Same as existing.
209 – CU / Thunderbird	15/20	Same as existing.
225 – Boulder-Lafayette via Baseline	30/40	Same as existing.
228 – Louisville/Broomfield (Interlocken)	30/30	Same as existing.
230 – Lafayette-Louisville-Interlocken	15/30	New Route.
Longmont Local Routes		
323 – Skyline Crosstown	30/30	Same as existing.
324 – Main Street Crosstown	30/30	Same as existing.
326 – Northside Loop Clockwise	30/30	Same as existing.
327 – Northside Loop Counterclockwise	30/30	Same as existing.
Activity Center Connector Routes		
ACC-I - Denver-Boulder via Interlocken	15/0	New Route.

TABLE 2-4. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE BUS OPERATING PLAN

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from Existing
ACC-CP - Denver-Boulder via ConocoPhillips	15/0	New Route.
Limited Routes		
Not Applicable		
Express Routes		
31x – North Federal Express	50/0	Same as existing.
86x – Westminster Express	10/0	Same as existing.
Regional Routes		
B – Boulder/Denver	15/15	Improved peak and off-peak service
BX – Boulder/Denver Express	10/30	Improved off-peak service.
BF – Broomfield/Denver	15/0	Same as existing.
BOLT – Boulder/Longmont	15/30	Same as existing.
DD – Boulder/Colorado Boulevard	40/0	Same as existing.
DM – Boulder/Anschutz-Fitzsimons	30/0	Same as existing.
H – 28th Street/Superior - Civic Center (all stop)	15/30	New Route.
HX – 28th Street/Superior - Civic Center (express)	10/0	Improved peak service; stop at FlatIron Crossing removed.
J – Longmont/East Boulder/CU	30/0	Same as existing.
L – Longmont/Denver (via US 36)	30/60	Improved off-peak service.
S – Denver/East Boulder	40/0	Same as existing.
T – Boulder/Greenwood Plaza	50/0	Same as existing.
skyRide Routes		
AB – Boulder/DIA	30/60	Improved peak service; re-routed to operate between Boulder and DIA via NW Pkwy/E-470
Call-n-Rides		
Broomfield	Reservation	Same as existing.
Interlocken / Westmoor	Reservation	Same as existing.
Louisville	Reservation	Same as existing.
Superior	Reservation	Same as existing.

TABLE 2-4. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE BUS OPERATING PLAN

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from Existing

Source: RTD, 2009; Northwest Rail Corridor Project Team, 2009.

Notes:

Includes May 2009 Service Changes

CU = University of Colorado at Boulder

DIA = Denver International Airport

US 36 = United States Highway 36

2.2.1.2 Highway Improvements

The No Action Alternative roadway network throughout the region (including the project study area for the NWR Corridor) is assumed to be based on the current roadway network plus the roadway improvement projects included in the Denver Regional Council of Governments' (DRCOG's) *2035 Metro Vision Regional Transportation Plan (2035 MVRTP)* (DRCOG 2009). Table 2-5 lists the funded highway improvements identified in the *2035 MVRTP* that are located within the project study area for the NWR Corridor.

TABLE 2-5. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE HIGHWAY IMPROVEMENTS

Project Location/Name	Project Description
SH 119 (Longmont Diagonal): Foothills Parkway to Hover Road Operational Improvements	Highway operational improvements
SH 119: SH 52 New Interchange	New interchange
US 36 Foothills Parkway to I-25	Add managed BRT/HOV lane
US 36: McCaslin Boulevard Interchange Reconstruction	Interchange reconstruction
US 36: Sheridan Boulevard Interchange Reconstruction	Interchange reconstruction
US 36: Wadsworth Parkway Interchange Reconstruction	Interchange reconstruction
US 36 Bikeway	Bikeway

Source: DRCOG, 2009.

BRT = bus rapid transit

HOV = high-occupancy vehicle

I-25 = Interstate 25

RTP = Regional Transportation Plan

SH = State Highway

US 36 = United States Highway 36

More information on the US 36 EIS/BE process is provided in Section 2.1.3, US 36 EIS and Basic Engineering. The US 36 Final EIS was distributed to the public on October 30, 2009 and a ROD was signed by FHWA and FTA in December 2009.

2.2.2 Improvements for Build Alternatives

2.2.2.1 Rail Improvements

The NWR Corridor Project would be constructed under the build alternatives. The rail service initiated would serve the City and County of Denver, the City of Westminster, the City and County of Broomfield, the City of Louisville, the City of Lafayette, the City of Boulder, the City of Longmont, and portions of unincorporated Adams, Boulder, and Jefferson Counties.

2.2.2.2 Bus Operations Improvements

The assumed bus operations would be the same as those identified in Table 2-4 for the No Action Alternative except that the BOLT service would be reduced and rerouted to serve the Boulder Transit Village Station, and the S route would be eliminated. Table 2-6 summarizes the anticipated bus route changes for the NWR build alternatives.

TABLE 2-6. PREFERRED ALTERNATIVE BUS OPERATIONS PLAN

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from No Action Alternative
Local Routes		
STAMPEDE – CU Loop	**15/10**	**Same as No Action Alternative**
203 – Baseline	**30/30**	**Same as No Action Alternative**
204 – Table Mesa/Yarmouth	**15/30**	**Same as No Action Alternative**
205 – Gunbarrel/Boulder Mall	**15/30**	**Same as No Action Alternative**
206 – Pearl/Eisenhower	**30/30**	**Same as No Action Alternative**
208 – Iris/Valmont	**30/30**	**Same as No Action Alternative**
209 – CU/Thunderbird	**15/20**	**Same as No Action Alternative**
225 – Boulder-Lafayette via Baseline	**30/40**	**Same as No Action Alternative**
228 – Louisville/Broomfield (Interlocken)	**30/30**	**Same as No Action Alternative**
230 – Lafayette-Louisville-Interlocken	**15/30**	**Same as No Action Alternative**
Longmont Local Routes		
323 – Skyline Crosstown	**30/30**	**Same as No Action Alternative**
324 – Main Street Crosstown	**30/30**	**Same as No Action Alternative**
326 – Northside Loop Clockwise	**30/30**	**Same as No Action Alternative**
327 – Northside Loop Counterclockwise	**30/30**	**Same as No Action Alternative**
Limited Routes		
Not Applicable		
Activity Center Connector Routes		
ACC-I – Denver-Boulder via Interlocken	**15/0**	**Same as No Action Alternative**
ACC-CP – Denver-Boulder via Conoco-Phillips	**15/0**	**Same as No Action Alternative**
Regional Routes		
BOLT – Boulder/Longmont	**30/60**	**Reduced peak and off-peak service; rerouted to serve Boulder Transit Village Station**
S – Denver/East Boulder	**NA**	**Eliminated**

Source: RTD, 2009; NWR Corridor Project Team, 2009.

Notes:
Includes May 2009 Service Changes

2.2.2.3 Highway Improvements

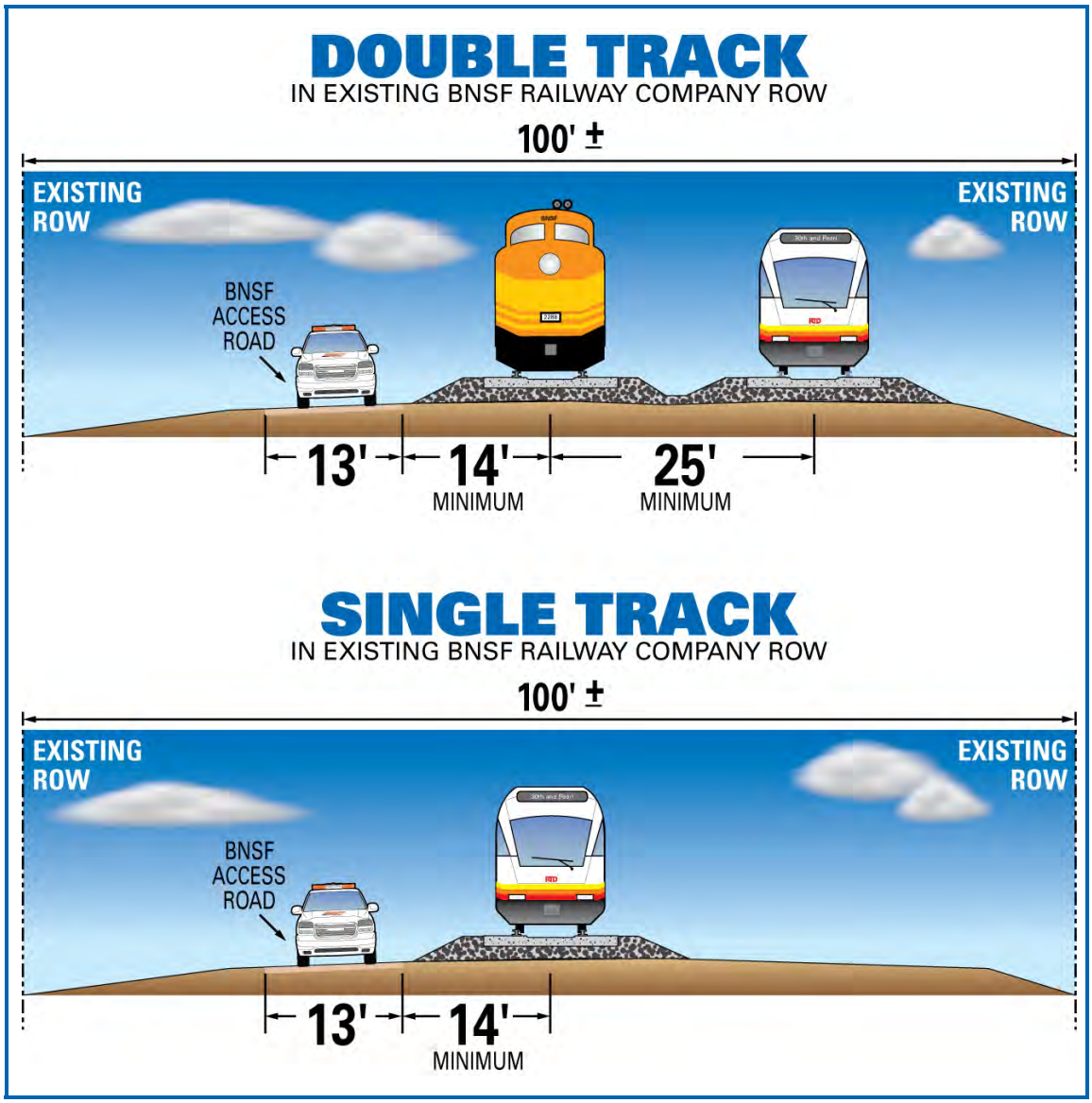
The highway improvements assumed under the build alternatives would be identical to those identified for the No Action Alternative in Table 2-5.

2.2.3 Build Alternatives – Within BNSF Railway Company Right-of-Way

The following alternatives (B through D) would be built within the BNSF Railway Company ROW.

Figure 2-9 depicts the typical cross-sections of the rail alternatives that would be located within the BNSF Railway Company ROW.

FIGURE 2-9. TYPICAL SECTIONS INSIDE THE BNSF RAILWAY COMPANY RIGHT-OF-WAY



Source: NWR Corridor Project Team, 2009.
Note: The access road is accommodated where possible to avoid environmental impacts.

2.2.3.1 Alternative B – Double Track from Denver to Longmont

Mode: DMU Commuter Rail

Termini: DUS to downtown Longmont

Alignment: This alternative would provide commuter rail from Denver (DUS) to downtown Longmont using the existing BNSF Railway Company alignment. The NWR Corridor is approximately 41 miles long. Under this alternative, the existing BNSF Railway Company track would be rehabilitated/replaced, and one new track adjacent to the existing BNSF Railway Company track would be constructed between DUS and downtown Longmont. Both tracks would be utilized by freight and commuter rail vehicles. BNSF Railway Company access roads would also be placed on either the east and/or west side of the tracks in various locations throughout the corridor where feasible. See Figure 2-10 for a depiction of this alternative.

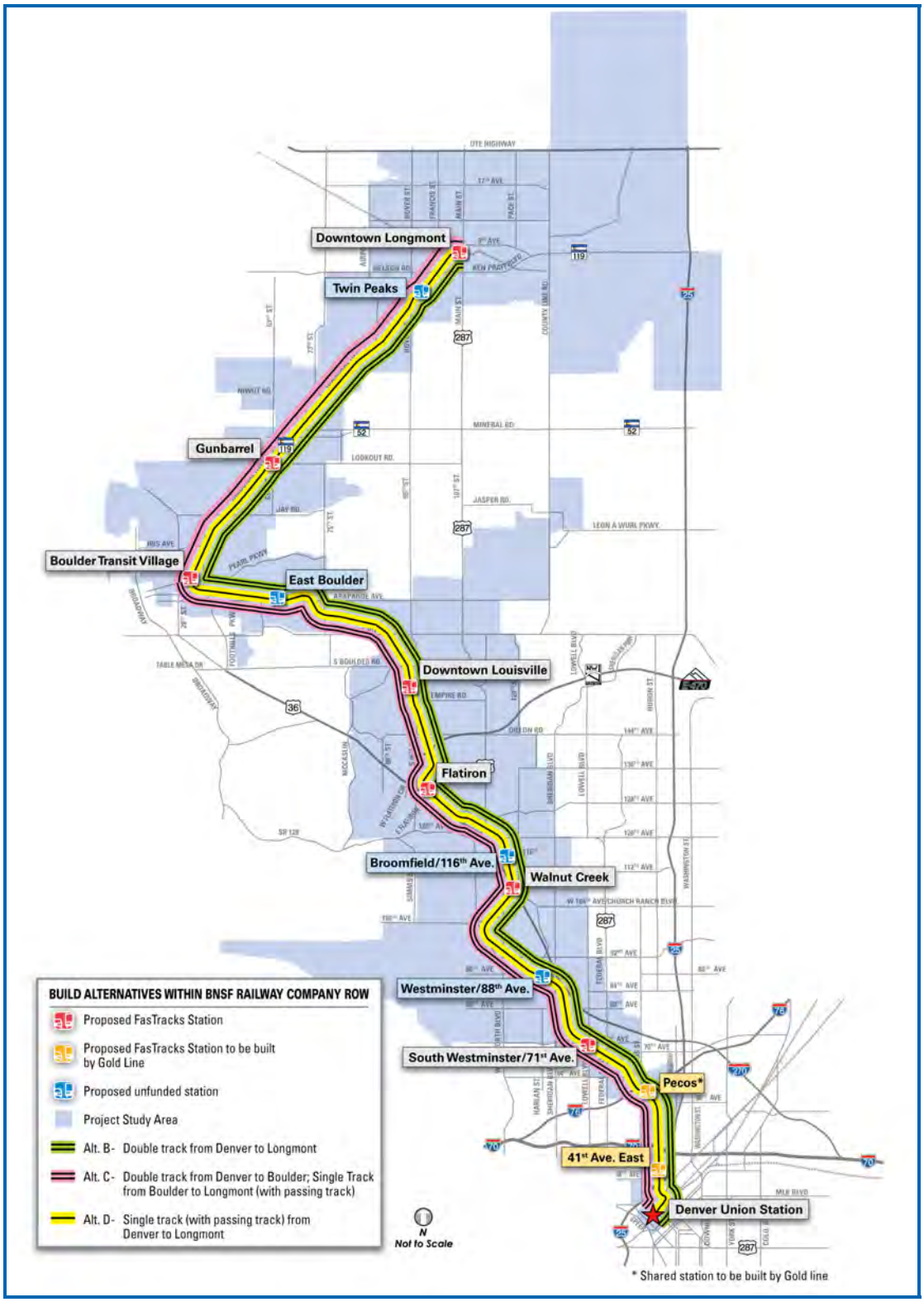
Stations: Alternative B would include proposed station locations at:

- South Westminster/71st Avenue
- Westminster/88th Avenue (formerly named Sheridan/88th Avenue in the early stages of the US 36 DEIS/BE process)
- Walnut Creek (formerly named 104th Avenue/Church Ranch in early stages of the US 36 DEIS/BE process)
- Broomfield/116th Avenue (formerly named 116th Avenue in early stages of the US 36 DEIS/BE process)
- Flatiron
- Downtown Louisville
- East Boulder
- Boulder Transit Village
- Gunbarrel
- Downtown Longmont

Three of the 10 stations[2] (Westminster/88th Avenue, Broomfield/116th Avenue, and East Boulder) would not be funded by FasTracks, but RTD has agreed to conduct the environmental clearance in the event that funding sources outside of FasTracks become available. The remaining seven stations were identified as part of the FasTracks Program and would be funded under FasTracks.

[2] An 11th station (Twin Peaks) was added later in the process and is described in Section 2.3.3.3. The Twin Peaks station is an unfunded station.

FIGURE 2-10. ALTERNATIVES WITHIN THE BNSF RAILWAY COMPANY RIGHT-OF-WAY



Source: NWR Corridor Project Team, 2009.

Operation: Anticipated 2035 headways for this alternative are presented in Table 2-7. A total of 58 trains per day would run between 3:30 in the morning (a.m.) and 1:30 a.m. in opening year 2015. For year 2035, a total of 104 trains would operate between 3:30 a.m. and 1:30 a.m.

TABLE 2-7. NORTHWEST RAIL CORRIDOR ASSUMED HEADWAYS

Rail Section	Peak 2015	Off-Peak 2015	Peak 2035	Off-Peak 2035
Denver to Boulder	30 minutes	60 minutes	15 minutes	30 minutes
Boulder to Longmont	30 minutes	60 minutes	30 minutes	30 minutes

Source: RTD, 2008.

Notes:

Peak hours are defined as weekday mornings from 6:00 a.m. to 9:30 a.m. and weekday evenings from 2:30 p.m. to 7:30 p.m. All other times of day would be considered off-peak.

2.2.3.2 Alternative C – Double Track from Denver to Boulder; Single Track (with Passing Track) from Boulder to Longmont

This alternative would be similar in mode, termini, length, and the proposed station locations as Alternative B, but instead would provide a double track (one rehabilitated existing freight track and one new track) from Denver (DUS) to Boulder Transit Village and a single track (rehabilitated existing freight track—including passing track at the Gunbarrel and Downtown Longmont stations) from Boulder Transit Village to downtown Longmont. Similar to Alternative B, both freight and commuter rail vehicles would share the double and single tracks. The proposed operations would be the same as described for Alternative B. See Figures 2-9 and 2-10 for a depiction of this alternative.

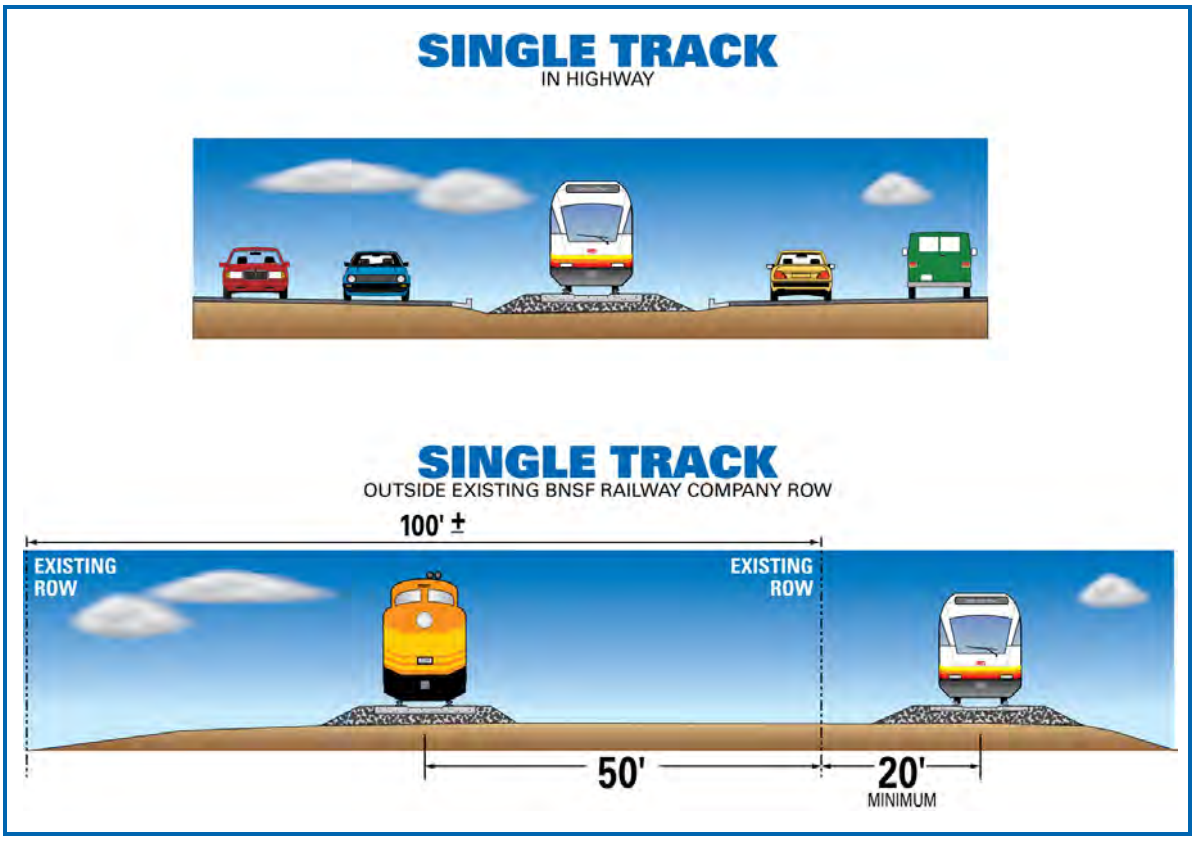
2.2.3.3 Alternative D – Single Track (with Passing Track) from Denver to Longmont

This alternative would be similar in mode, termini, length, and proposed station locations as Alternatives B and C, but would only replace/rehabilitate the existing BNSF Railway Company track between Denver (DUS) and downtown Longmont. This single track, including passing track at each station, would be utilized by both freight and commuter rail vehicles traveling in both directions and have similar operations to Alternative B. See Figures 2-9 and 2-10 for a depiction of this alternative.

2.2.4 Build Alternatives – Outside BNSF Railway Company Right-of-Way

All of the build alternatives outside of the BNSF Railway Company ROW (alternatives E through H) would require the construction of one new rail track with passing track at stations and/or other locations (as deemed necessary). Figure 2-11 depicts the typical cross-sections for the rail alternatives that would be located outside BNSF Railway Company ROW. All alternatives located outside of the BNSF Railway Company ROW that were evaluated were eliminated during Level 1 screening due to cost, practicability and environmental impacts.

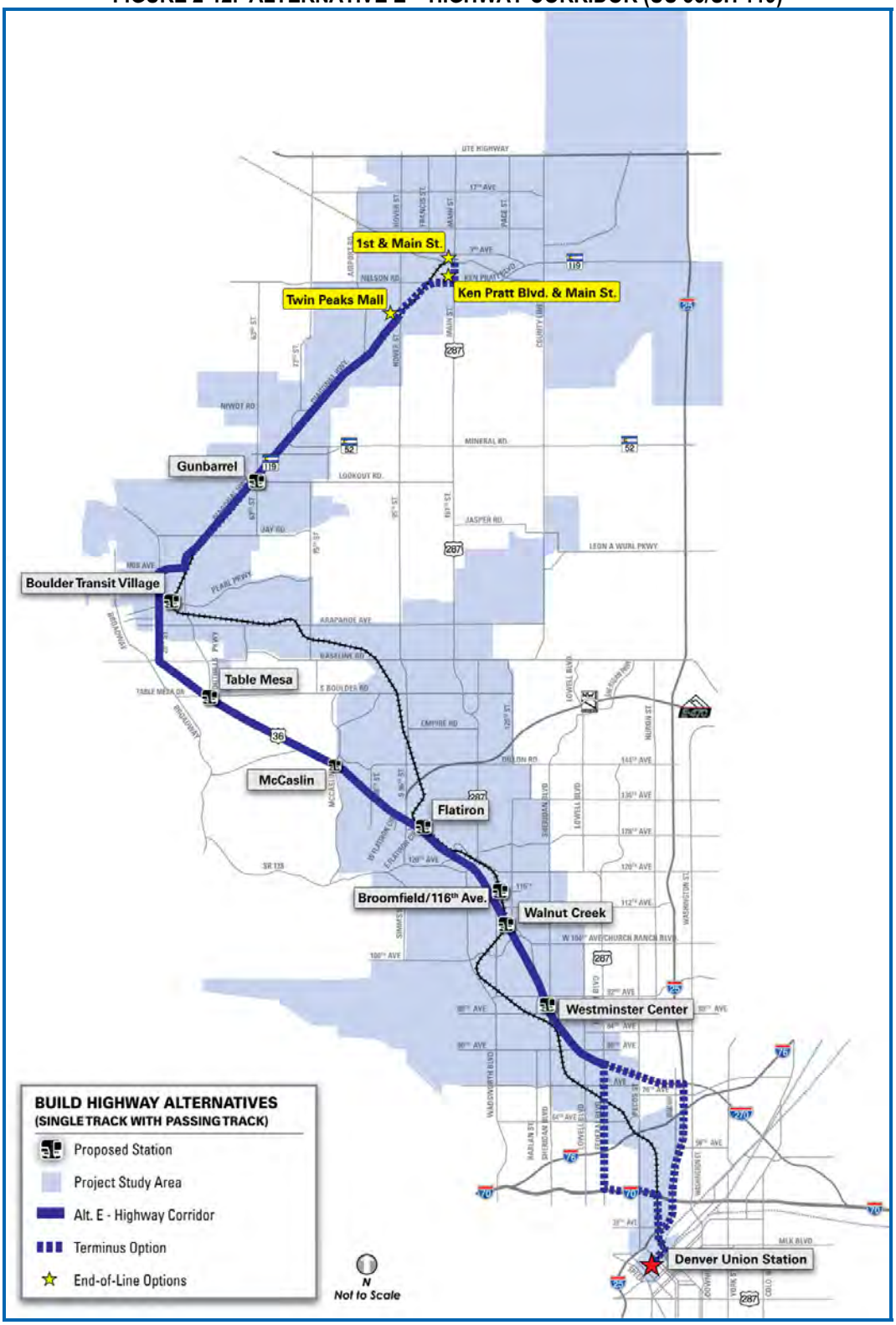
FIGURE 2-11. TYPICAL SECTIONS OUTSIDE THE BNSF RAILWAY COMPANY RIGHT-OF-WAY



Source: NWR Corridor Project Team, 2009.

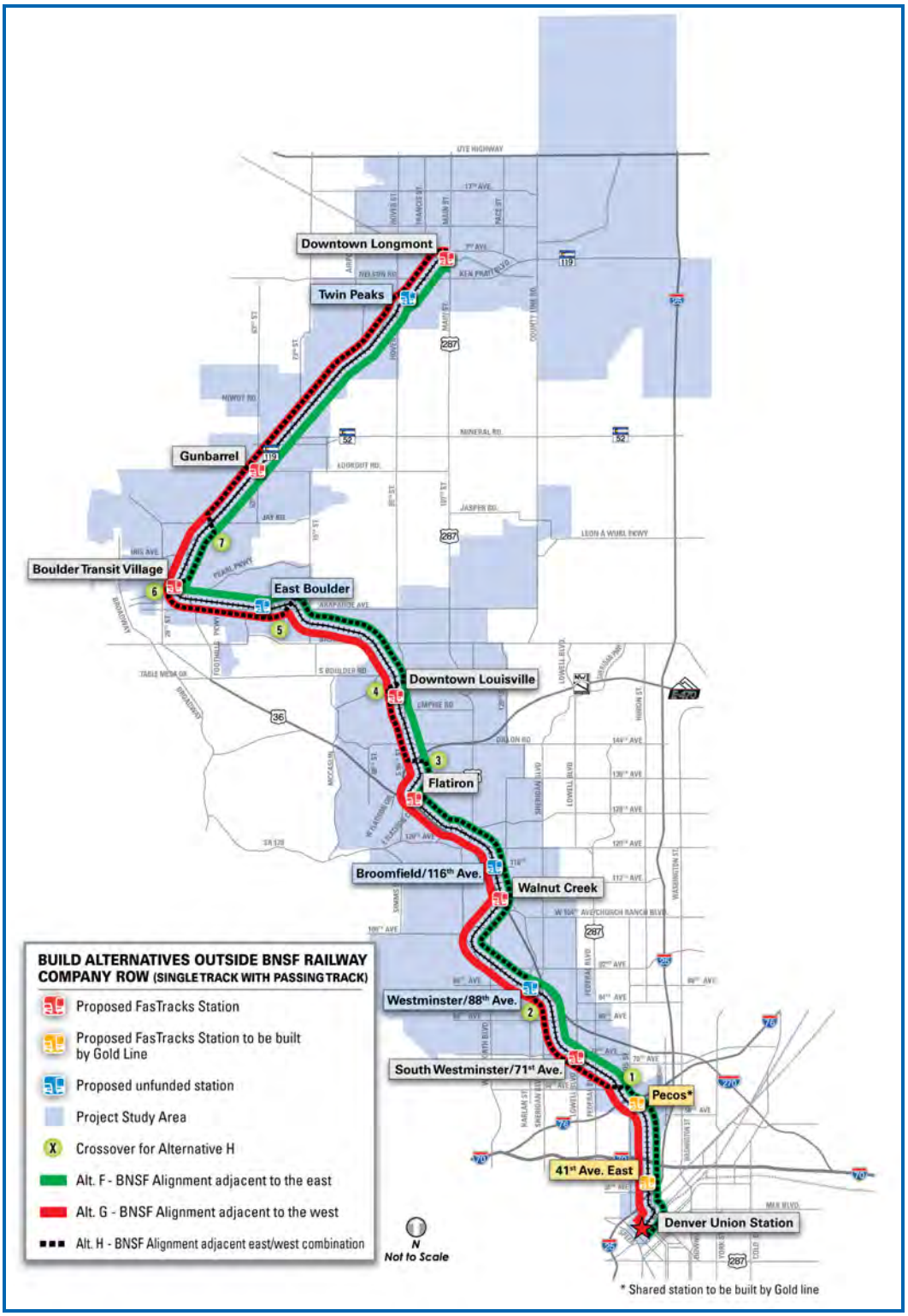
The location for all build alternatives outside the BNSF Railway Company ROW is depicted in Figure 2-12 (Alternative E) and Figure 2-13 (alternatives F through H).

FIGURE 2-12. ALTERNATIVE E – HIGHWAY CORRIDOR (US 36/SH 119)



Source: NWR Corridor Project Team, 2009.

FIGURE 2-13. ALTERNATIVES OUTSIDE AND ADJACENT TO THE BNSF RAILWAY COMPANY RIGHT-OF-WAY



Source: NWR Corridor Project Team, 2009.

2.2.4.1 Alternative E – Highway Corridor

Mode: DMU commuter rail

Termini: Varies depending upon option(s) selected as described below.

Alignment: This alternative would primarily be located adjacent to or within the existing highway corridor system. This alternative would travel along portions of US 36 and SH 119 ROWs for the majority of the alignment with design options identified for the northern and southern termini. See Figure 2-12 for a depiction of this alternative. Descriptions of the northern and southern termini for this alternative are described in the text below.

Stations: The proposed stations for this alternative would be located at:

- Westminster Center*
- Walnut Creek (formerly named 104th Avenue/Church Ranch during the initial stages of the US 36 DEIS planning process*)
- Broomfield/116th Avenue (formerly named 116th Avenue during the initial US 36 DEIS/BE process*)
- Flatiron*
- McCaslin Boulevard*
- Table Mesa Drive*
- Boulder Transit Village
- Gunbarrel
- Downtown Longmont

*Note: These stations were identified as BRT stations during the initial US 36 DEIS/BE process and were selected because they are at existing park-n-Rides and they allow for easier access off of and onto US 36.

Operation: The operation of this alternative would be the same as described for Alternative B. The distance between stations for this alternative are depicted in Figure 2-12.

Northern Terminus Options

- **Option N-1:** Use SH 119 to Hover Road. Establish end-of-line at Twin Peaks Mall.
- **Option N-2:** Use SH 119 to Ken Pratt Boulevard. Take Ken Pratt Boulevard to Main Street and establish end-of-line at Ken Pratt Boulevard and Main Street.
- **Option N-3:** Establish end-of-line at 1st Avenue and Main Street by accessing 1st Avenue via Ken Pratt Boulevard to Main Street.

Southern Terminus Options

- **Option S-1:** Use US 36 to Federal Boulevard to Interstate 70 (I-70) and connect to the Union Pacific (UP) alignment south of I-70 to DUS.
- **Option S-2:** Use US 36 to I-25 and connect to UP alignment to DUS.

2.2.4.2 Alternative F – BNSF Railway Company Alignment Adjacent to the East

This alignment would be similar in mode, termini, stations, and operations to Alternative B except it would provide a single new track east and immediately adjacent to the BNSF

Railway Company ROW for NWR Corridor operation. See Figure 2-13 for a depiction of this alternative.

2.2.4.3 Alternative G – BNSF Railway Company Alignment Adjacent to the West

This alignment would be similar in mode, termini, stations, and operations to Alternative F except it would provide a single new track west and outside of the BNSF Railway Company ROW for NWR Corridor operation instead of east. See Figure 2-13 for a depiction of this alternative.

2.2.4.4 Alternative H – BNSF Railway Company Alignment Adjacent East/West Combination

Alternative H would be a combination of Alternatives F and G in that it would provide a single new track both to the east or west and outside of the BNSF Railway Company ROW for the NWR Corridor operation. Alternative H was identified to avoid potential impacts to sensitive resources. Alternative H identifies an alignment that would avoid or minimize impacts to resources by switching over the freight tracks to the other side of BNSF Railway Company ROW at various points along the corridor. Up to seven potential cross-over points were identified for Alternative H and are described below. Cross-over points would require constructing bridges to provide for grade separated crossings. For this alternative, either five or seven cross-over bridges would be required. See Figure 2-13 for a depiction of this alternative and Table 2-8 for a detailed description of the cross-overs.

TABLE 2-8. PROPOSED CROSS-OVER LOCATIONS

Cross-over Number	Detailed Description	Rationale for Cross-over
1	East to west at 64th Street to Sheridan Boulevard.	Avoid potential wetlands to the north
2	Back to east at Sheridan Boulevard to Northwest Parkway.	Avoid dense residential development and obtain easier access to proposed station location
3 and 4 (must use both or none)	Cross-over to west of BNSF Railway Company ROW at Northwest Parkway until Griffith Road. Return to the east side of the railway. Takes out Front Street in downtown Louisville.	Avoid office/industrial development on the north
	Stays on the east side of BNSF Railway Company ROW, but leaves railroad adjacent area to cross country at approximately SH 42 to avoid downtown Louisville and ties back into rail line at Griffith Road.	Avoid impacts to downtown Louisville
5	Cross-over to west at curve south of East Boulder Station vicinity at power plant.	Avoid impacts to open water and power plant
6	Cross-over to east at curve at Boulder Transit Station vicinity.	Avoid dense, low-income residential development
7	Cross-over to west just south of Jay Road and on to SH 119.	To access the median of SH 119

Source: NWR Corridor Project Team, 2008.

Notes:

ROW = right-of-way

SH = State Highway

2.2.4.5 Summary of Alternatives

Table 2-9 lists the range of conceptual alternatives considered.

TABLE 2-9. COMPLETE RANGE OF CONCEPTUAL ALTERNATIVES

No Action Alternative
Alternative A – No Action Alternative
Within BNSF Railway Company Right-of-Way
Alternative B – Double Track from Denver to Longmont
Alternative C – Double Track from Denver to Boulder; Single Track (with Passing Track) from Boulder to Longmont
Alternative D – Single Track (with Passing Track) from Denver to Longmont
Outside BNSF Railway Company Right-Of-Way (Single Track with Passing Track)
Alternative E – Highway Corridor (US 36/SH 119)
Alternative F – BNSF Railway Company Alignment Adjacent to the East
Alternative G – BNSF Railway Company Alignment Adjacent to the West
Alternative H – BNSF Railway Company Alignment Adjacent East/West Combination

Source: NWR Corridor Project Team, 2008.

2.3 SCREENING PROCESS

A summary of the screening process and results are presented in this section.

2.3.1 Evaluation Framework

The framework for evaluating and screening the seven conceptual build alternatives for the NWR Corridor EE involves three levels of evaluation and analysis:

- **Level 1 – Conceptual Alternative Screening** examined a broad range of alternatives. This screening focused on meeting the Purpose and Need statement, avoiding known unmitigable environmental impacts, and practicability. An alternative is practicable if it is capable of being implemented after taking into consideration cost, existing technology and logistics in light of overall project purposes. The result of this screening was the identification of a Preferred Alternative. See Table 2-10 for details on the criteria evaluated during Level 1 screening.
- **Level 2 – Preferred Alternative Refinement** focused on design modifications that would meet the Purpose and Need of the project, and a re-evaluation of vehicle technologies, development of station architectural styles, and identification of corridor fencing materials. Following the identification of a Preferred Alternative in the Level 1 – Conceptual Alternative Screening, the NWR Corridor Project Team conducted a number of refinements to avoid and/or minimize impacts to environmental resources and to select a preferred vehicle technology. The criteria evaluated during Level 2 screening is described in detail in Section 2.3.3, Level 2 – Preferred Alternative Refinement.
- **Level 3 – Detailed Alternative Analysis** subjected the Preferred Alternative to an evaluation to reconfirm that it would meet the Purpose and Need of the project, and a

detailed examination of capital costs, ridership, travel time, environmental impacts, and public support. The Preferred Alternative was also compared with a No Action Alternative (comprised of existing and committed transportation improvements in the corridor). The evaluation of environmental impacts is detailed in Chapter 3 of this report and includes an assessment of the following resources:

- Social Impacts
- Environmental Justice
- Land Use and Zoning
- Farmlands
- Economic Considerations
- Land Acquisition
- Cultural/Historic Resources
- Visual and Aesthetic Resources
- Park Land/Open Space
- Air Quality and Energy
- Noise and Vibration
- Biological Resources
- Minerals
- Water Sources
- Wetlands and Other Waters of the U.S.
- Water Quality/Floodplains
- Hazardous Materials
- Public Safety and Security
- Utilities
- Transportation

This level of analysis was both qualitative and quantitative and focused on the identification of the LEDPA. The identification of the LEDPA is important to meet the requirements of the USACE, the lead federal agency involved in the project as well as the overall intent of NEPA. The NWR Corridor EE document summarizes this evaluation and presents the results of the Level 3 – Detailed Alternative Analysis.

2.3.2 Level 1 – Conceptual Alternative Screening

The Level 1 – Conceptual Alternative Screening for the NWR Corridor Project evaluated the seven conceptual build alternatives with a set of evaluation criteria that are based on the project's Purpose and Need statement, avoiding known unmitigable environmental impacts and establishing practicability. An alternative is practicable if the project is capable of being implemented after taking into consideration cost, existing technology, and logistics in light of overall project purposes. This section documents the alternatives, evaluation criteria, and results of the Level 1 – Conceptual Alternative Screening.

2.3.2.1 Level 1 – Conceptual Alternative Screening Criteria

The goal of the Level 1 screening was to eliminate alternatives that are clearly unacceptable because they:

- Do not meet the Purpose and Need for the project.
- Are not practicable due to cost, existing technology and logistics
- Do not avoid known environmental impacts.

Table 2-10 summarizes the criteria and the rationale used to establish and apply them.

TABLE 2-10. LEVEL 1 – CONCEPTUAL ALTERNATIVE SCREENING CRITERIA

Screening Category	Criterion Description	Method of Analysis	Resources	Rationale/Basis for Screening Criteria
Purpose and Need				
Need #1 - Improve Mobility	Must enhance mobility by providing additional transportation choices.	Conduct a high-level assessment to determine if alternative will improve mobility.	Purpose and Need statement	To advance, an alternative must provide convenient, multi-modal transportation options employing a new modal alternative.
Need #2 - Provide Consistent and Reliable Transit Travel Times	Must minimize potential travel delay due to congestion, weather, or accidents.	Conduct a high-level assessment to determine if alternative will provide consistent and reliable transit travel times.	Purpose and Need statement	To advance, an alternative must minimize the chance and frequency for travel delay(s).
Need #3 - Enhance Regional Connectivity	Must enhance regional connectivity by providing new access to the regional transit system.	Conduct a high-level assessment to determine if alternative enhances regional connectivity.	Purpose and Need statement	To advance, an alternative must serve new travel markets and/or provide additional access points and new service options.
Need #4 – Provide an Affordable Transit Investment (also one of three elements of Practicability – cost)	Must provide a cost-effective transportation solution that can be implemented within FasTracks budget.	Conduct a high-level assessment to determine if alternative will be affordable within the FasTracks budget.	Purpose and Need statement	To advance, an alternative must provide a long-term transportation solution that maximizes local and/or private funding sources.
Need #5 - Reinforce Local and Regional Transportation and Land Use Plans	Must be consistent with local and regional plans.	Review available transportation and land use plans in the project study area for the NWR Corridor. Determine if alternative is consistent with plans.	*US 36 MIS* (RTD 2001), *US 36 DEIS/BE* (URS 2007), *Longmont Diagonal Rail Feasibility Study* (RTD 2005), *Longmont Diagonal Rail Environmental Evaluation* (RTD 2006), and *FasTracks Plan* (RTD 2004)	To advance, an alternative must generally comply with local and regional plans including local jurisdictional, FasTracks, and *2035 MVRTP* (DRCOG 2007) plans.

TABLE 2-10. LEVEL 1 – CONCEPTUAL ALTERNATIVE SCREENING CRITERIA

Screening Category	Criterion Description	Method of Analysis	Resources	Rationale/Basis for Screening Criteria
Practicability (Logistics)				
Logistics #1	Must be logistically feasible – provide consistency with previous transportation studies.	An example of an alternative that might not be socially feasible is one that would not be consistent with recommendations from previous transportation planning efforts. Review available past transportation plans and studies conducted in the project study area for the NWR Corridor. Determine if alternative is consistent with plans.	*US 36 MIS* (RTD 2001), *US 36 DEIS/BE* (URS 2007), *Longmont Diagonal Rail Feasibility Study* (RTD 2005), *Longmont Diagonal Rail Environmental Evaluation* (RTD 2006), and *FasTracks Plan* (RTD 2004)	To advance, an alternative must generally support the results and recommendations of previous transportation plans.
Logistics #2	Must be logistically feasible – minimize ROW and relocation impacts.	An example of an alternative that might not be socially feasible is one that would require extensive relocation of numerous families or businesses within one or more neighborhoods. Review potential number of ROW acquisitions. Determine if alternative would result in extensive ROW acquisition and relocation.	Overlays on corridor aerials	To advance, an alternative must minimize the number of property acquisitions.

TABLE 2-10. LEVEL 1 – CONCEPTUAL ALTERNATIVE SCREENING CRITERIA

Screening Category	Criterion Description	Method of Analysis	Resources	Rationale/Basis for Screening Criteria
Practicability (Existing Technology)				
Existing technology	Must be technically feasible to construct using existing (proven) technology	Confirm that the alignment and associated technology are feasible. Conduct a high-level assessment of topography, soils, and planned infrastructure in the project study area for the NWR Corridor. Review other potential constructability or implementation issues.	Observation of corridor and background on technology options and physical setting	To advance, an alternative must be a proven technology and not require construction techniques that are too complex.
Environmental Consequences				
Unmitigable Environmental Impacts	Must avoid unmitigable impacts to the natural and human environment.	Conduct a high-level assessment of environmental resource impacts that could cause substantial adverse affects on human and aquatic ecosystems.	*US 36 MIS* (RTD 2001), *US 36 DEIS/BE* (URS 2007), *Longmont Diagonal Rail Feasibility Study* (RTD 2005), *Longmont Diagonal Rail Environmental Evaluation* (RTD 2006), United States Census (U.S. Census Bureau 2002), and GIS datasets (RTD 2008)	To advance, an alternative must avoid or minimize impacts to the natural and social environment.

Source: NWR Corridor Project Team, 2008.

Notes:

BE	=	Basic Engineering
DEIS	=	Draft Environmental Impact Statement
GIS	=	geographic information system
MIS	=	Major Investment Study
2035 MVRTP	=	*2035 Metro Vision Regional Transportation Plan*
NWR	=	Northwest Rail
ROW	=	right-of-way
RTD	=	Regional Transportation District
RTP	=	Regional Transportation Plan
US 36	=	United States Highway 36

2.3.2.2 Level 1 – Conceptual Alternative Screening Results

The NWR Corridor commuter rail alternatives were evaluated within the screening criteria categories identified. A series of yes or no questions was developed to evaluate alternatives during this analysis.

The NWR Corridor Project Team recommended that each alternative be either carried forward or set aside as a result of Level 1 – Conceptual Alternative Screening. The results are summarized in Table 2-11.

Based on the results of the Level 1 – Conceptual Alternative Screening, Alternative B – Double Track from Denver to Longmont, was identified as the Preferred Alternative to be carried forward for detailed evaluation in the NWR Corridor EE. As shown in Table 2-11 and described below, the LEDPA was not eliminated from consideration. Although Alternative A – No Action does not meet the project Purpose and Need, this alternative was retained as a baseline and carried forward for comparison to the Preferred Alternative.

The following is a brief description of the conceptual alternatives that were not carried forward because they failed to meet the project's Purpose and Need and/or were not practicable:

- Alternative C – Double Track from Denver to Boulder; Single Track (with passing track) from Boulder to Longmont was eliminated from further evaluation.
  - It would not meet Purpose and Need - Need #2, provide consistent and reliable transit travel times due to:
    - Operational issues that would create substantial delays and potentially eliminate daytime service options (10 am to 2 pm) due to sharing a single track with freight rail service.
    - The provision of passing tracks/sidings could not resolve these operational issues. In order for passing tracks/sidings to be effective, some would need to be designed to be a mile long (to match passing freight train lengths to avoid delays) which would not be cost effective and in some instances not practicable.
    - Accidents at grade-crossings or train derailments along the single track would potentially cause lengthy delays in service when they occur.
- Alternative D – Single Track (with Siding) from Denver to Longmont was eliminated for similar reasons presented above for Alternative C.
- Alternatives E, F, G and H (Highway Corridor (US 36/SH 119), BNSF Railway Company Alignment Adjacent to the East, BNSF Railway Company Alignment Adjacent to the West, and BNSF Railway Company Alignment Adjacent to the East/West Combination, respectively) were eliminated because:
  - They would not meet the project Purpose and Need – Need #4, provide an affordable transit investment, and because they are not practicable. All of these alternatives are located outside of the BNSF Railway Company ROW and would result in greater property and environmental impacts and require additional ROW costs that are not within the FasTracks budget.

- Additionally, Alternative E – Highway Corridor (US 36/SH 119) is not practicable because the steep grades required are not technically feasible for commuter rail vehicles, whether they are DMU, EMU, or LHC. DMU and LHC vehicles can only run on a maximum 2.5 percent grade and EMU can run on a grade up to four percent for 2,500 feet. The five percent grade for the highway near Table Mesa Drive exceeds the maximum grade for DMU, EMU, and LHC vehicles.

2.3.2.3 Summary of Level 1 – Conceptual Alternative Screening

Alternative A, No Action Alternative, will be carried forward as a baseline for comparison to the Preferred Alternative. Alternatives C, D, E, F, G, and H were eliminated because they failed to meet the project Purpose and Need and/or were not practicable. Therefore, Alternative B was identified as the Preferred Alternative and was carried forward for further evaluation.

TABLE 2-11. LEVEL 1 – CONCEPTUAL ALTERNATIVE SCREENING RESULTS

Alternative	Meets Purpose and Need	Practicability: : Cost, Existing Technology, and Logistics	Avoids Known Unmitigable Environmental Impacts	Recommendation
Alternative A – No Action Alternative				Retain as Baseline
Alternative B – Double Track From Denver to Longmont	Yes.	Yes.	Yes.	Pass
Alternative C – Double Track from Denver to Boulder; Single Track (with Passing Track) from Boulder to Longmont	No. Need #2, provide consistent and reliable transit travel times, and other needs not met.	No. This alternative could eliminate the potential for operations between 10 am and 2pm daily and would require mile-long passing tracks, which would not be practicable.	Yes.	Fail
Alternative D – Single Track (with Passing Track) from Denver to Longmont	No. Need #2, provide consistent and reliable transit travel times, and other needs not met.	No. This alternative could eliminate the potential for operations between 10 am and 2pm daily and would require mile-long passing tracks, which would not be practicable.	Yes.	Fail
Alternative E – Highway Corridor	No. Need #4, provide an affordable transit investment, not met.	No. This alternative would require extensive additional ROW and relocation and it exceeds maximum grade limitations	No. Additional environmental (parklands, wetlands, and T&E) resources impacted.	Fail
Alternative F – BNSF Railway Company Alignment Adjacent to the East	No. Need #4, provide an affordable transit investment, not met.	No. This alternative would not be practicable due to cost.	No. Additional environmental (parklands, wetlands, and T&E) resources impacted.	Fail
Alternative G – BNSF Railway Company Alignment Adjacent to the West	No. Need #4, provide an affordable transit investment, not met.	No. This alternative would not be practicable due to cost.	No. Additional environmental (parklands, wetlands, and T&E) resources impacted.	Fail

TABLE 2-11. LEVEL 1 – CONCEPTUAL ALTERNATIVE SCREENING RESULTS

Alternative	Meets Purpose and Need	Practicability: : Cost, Existing Technology, and Logistics	Avoids Known Unmitigable Environmental Impacts	Recommendation
Alternative H – BNSF Railway Company Alignment Adjacent East/West Combination	No. Need #4, provide an affordable transit investment, not met.	No. This alternative would not be practicable due to cost.	No. Additional environmental (parklands, wetlands, and T&E) resources impacted.	Fail

Source: NWR Corridor Project Team, 2008.
Notes:
ROW = right-of-way
T&E = threatened and endangered

2.3.3 Level 2 – Preferred Alternative Refinement

Following the Level 1 – Conceptual Alternative Screening, the NWR Corridor Project Team conducted a number of refinements to the Preferred Alternative. These refinements, as described below, included the avoidance and/or minimization of impacts to wetlands, evaluation and reexamination of a preferred vehicle technology, the addition of a station location in Longmont, selection of station architectural styles, and the selection of alignment fencing materials. The vehicle technology reexamination took place to address ongoing concerns expressed by stakeholders about the potential impacts of electric versus diesel commuter rail vehicles.

2.3.3.1 Avoidance and/or Minimization of Resource Impacts

Through the NWR Corridor EE process, the footprint of the Preferred Alternative was modified to avoid and/or minimize impacts to wetlands and drainages. Four major components of this minimization included: (1) reducing station platform size, (2) eliminating passing tracks at stations, (3) modifying station concept plans, and (4) modifying the rail track alignment to avoid wetlands and drainage along the entire length of the NWR Corridor. Below is a description of each of these minimization measures.

Reducing Station Platform Size

In order to minimize impacts to wetlands and other resources, the length of all station platforms was reduced from 800 feet, which would accommodate an eight-car train, to 400 feet, which would accommodate a four-car train. The width of the platform was also narrowed as much as feasible to minimize resource impacts while accommodating safe access for transit patrons.

Eliminating Passing Tracks at Stations

Passing tracks at stations were originally considered in order to meet Americans with Disabilities Act guidelines on level boarding while separating passenger rail and freight traffic at stations. Initially, a design that completely separated the passenger rail traffic from the freight rail by adding passing tracks at each platform was considered to accommodate level boarding of the passenger trains. In the original design, at each station, one 1,500-foot long siding track would be located on each side of the mainline tracks, thereby significantly increasing the size of the station footprints and potential impacts. In order to minimize impacts to several resource areas, including wetlands, and to address requirements of the BNSF Railway Company, the decision was made to redesign the station platforms without passing tracks. Instead, RTD would provide high blocks, ramps, or other accommodations at each station platform to meet the Americans with Disabilities Act requirements for level boarding while not prohibiting freight movement.

Modifying Station Concept Plans

Each of the station concept plans that had been previously developed was refined to meet the specific needs of the NWR Corridor Project and to further avoid or minimize impacts to wetlands[3]. Prior to the wetland minimization exercise, four of the 11 proposed stations would

[3] Acreages referenced in the following discussion are based on all wetland impacts associated with the station concept including track, platform, and parking.

have wetland impacts. Those stations include Westminster/88th Avenue, Walnut Creek, East Boulder, and Gunbarrel.

- The Westminster/88th Avenue Station conceptual plan was modified to avoid all wetland impacts. Approximately 0.05 J acre of wetlands located at the southern edge of the parking lot north of 88th Avenue, in a currently landscaped area, would have been impacted with the original design. In order to avoid impacting these wetlands, the NWR Corridor Project Team was able to adjust the conceptual site plan by relocating the pedestrian bridge over 88th Avenue and reducing the station footprint.
- The Walnut Creek Station concept plan could not be modified to further reduce wetland impacts. The Walnut Creek Station platform would impact approximately 0.13 NJ acre of wetlands adjacent to Lower Church Lake. Because this station would function as a joint BRT/rail station, RTD and the City of Westminster sought to minimize the walking distance between the rail and BRT platforms on US 36. The rail platform was thus sited on tangent track as close to the BRT platform (i.e., north), as feasible. The tracks begin to curve just north of the current platform location. The platform could not be shifted any further to the north because of track engineering constraints.
- The East Boulder Station concept plan could not be modified to further reduce wetland impacts. The East Boulder Station would impact approximately 0.16 J acre wetlands and 0.02 NJ acre of wetlands. The 0.16 J acre of wetlands is due to the placement of the station platform. The rail platform was sited at its planned location due to track engineering constraints. Locating the rail platform to the east of its planned location would be infeasible because the rail track begins to curve, and therefore cannot accommodate a tangent rail platform. Locating the rail platform to the west of its planned location would also not be feasible due to a vertical curve in the rail track and its proximity to the Arapahoe Road/63rd Street intersection.
- The Gunbarrel Station concept plan could not be further modified to reduce wetland impacts. The Gunbarrel Station platform would impact approximately 0.58 acre (categorized under alignment impacts) of wetlands. The wetlands in this location parallel the tracks in both directions; therefore, moving the platform to the north or south would not minimize wetland impacts. Additionally, the wetlands are located between the existing BNSF Railway Company track and the edge of an existing parking lot to the east. The new track would be placed on the west side of the existing track; therefore, narrowing the track centers or placing the new track on the east side of the existing track would not reduce the wetland impacts.

Note that the 0.16 J acre of wetland impacts at the East Boulder Station, 0.13 NJ acre of wetland impacts at Walnut Creek Station and 0.58 acre of wetland impacts at the Gunbarrel Station discussed above are associated with the platforms for the stations. Because the platforms physically overlap with the rail alignment the wetlands impacts associated with the platforms are included in the “alignment” category of impacts in Section 3.10.3, Wetlands and Other Waters of the United States as opposed to the “station” category of impacts. Therefore, while the impacts are attributed to the platforms (and thus station concept plans) in this discussion, if the platforms were not present, there would still be some, if not all of the wetlands impacts associated with the alignment.

Modifying the Rail Track Alignment

The initial proposed track design met all BNSF Railway Company design standards and placed the second track adjacent to the existing track where possible to meet preferred operational and design criteria. In other words, the track alignment was designed such that the new track was proposed to remain consistently on either the east or west sides of the existing track as much as possible. In general, this resulted in a track alignment with the new track proposed on the east side of the existing track between Denver and Boulder and on the west side between Boulder and Longmont. In order to minimize wetland and drainage impacts along the length of the corridor, several modifications were made to this initial design of the rail tracks. As shown in Table 2-12, avoidance and minimization measures included shifting the proposed new track to other side of the existing BNSF Railway Company track, minimizing track centers, adding walls to minimize the track footprint, or bridging the tracks over sensitive resource areas. In total, impacts to wetlands and drainage where avoidance or minimization was possible were reduced by 0.92 acre, resulting in a total of 4.15 J acres (3.36 J acres of wetlands and 0.79 J acre of other waters) in the refined rail track design for the 41-mile NWR corridor.

2.3.3.2 Vehicle Technology Evaluation

Following the Level 1 – Conceptual Alternative Screening, a separate commuter rail vehicle technology evaluation was conducted to identify whether the commuter rail vehicles would be electric or diesel propelled. In previous studies, it was determined that commuter rail was the assumed transit service type and that it would be DMU as indicated in the *FasTracks Plan* (RTD, 2004). However, due to requests and concerns raised by the public, RTD agreed to revisit the consideration of technology type for the NWR Corridor Project. EMU and DMU commuter rail technologies were subsequently evaluated and compared to see which one was the more appropriate and viable option for the project. DMU was ultimately selected by the RTD Board as the preferred vehicle type for the project. Below is a brief description of the history of the additional analysis conducted.

- In 2005, the initial stages of the US 36 DEIS/BE process included a review of technology options for the rail component of the corridor and diesel-powered commuter rail was recommended as part of the build packages.
- In 2006, RTD began a public involvement process to explain the differences between DMU and EMU for commuter rail to community stakeholders.
- In 2007, RTD selected commuter rail as the rail transit type for the NWR Corridor and other FasTracks projects because the BNSF Railway Company and UP Railroad decided not to allow light rail transit to operate within their ROWs.
- In 2007, RTD continued a DMU/EMU commuter rail comparison and conducted an initial cost-benefit analysis of the two technologies to address public concerns on several of the FasTracks corridors.
- Simultaneously, as part of the ongoing negotiations with the BNSF Railway Company, the BNSF Railway Company informed RTD in July 2007 about the railroad's additional requirements for implementing EMU in the NWR Corridor rather

DMU Commuter Rail

than DMU. These requirements would substantially increase cost and delay construction.

- In October 2007 the RTD Board unanimously adopted the Responsible Rail Amendment. This amendment commits RTD to work to ensure it purchases fuel efficient, environmentally responsible and sustainable commuter rail vehicles.
- In 2007, the RTD Board selected DMU as the commuter rail technology for the NWR Corridor.

During the technology comparison analysis DMU and EMU technologies were evaluated against the following criteria:

- Cost-effectiveness
- Minimization of environmental impacts
- Noise and vibration impacts
- Air quality impacts (regional and local)
- Visual impacts
- Community input

EMU Commuter Rail

The results of the analysis are presented in the following sections.

Cost-effectiveness

Capital cost estimates increased from $565 million in 2004 to a 2009 estimate of $706.9 million (year-of-expenditure dollars). The estimated cost of implementing the NWR Corridor Project has gone up substantially due to the following factors:

- Major increases in construction materials costs
- Accommodating railroad design requirements

Note that these cost estimates were developed in September of 2007 reflecting the best information available at that time. These cost estimates have been updated and are presented in Section 2.4.2.5, Capital and Operating Costs.

Additionally, BNSF Railway Company notified RTD in July 2007 that RTD would need to meet specific design requirements if it wanted to implement EMU in the NWR Corridor alignment, and identified the following issues:

- Requirement of 26-foot high catenary for safety clearance for freight rail maintenance equipment. Most bridges in the corridor are only 23 feet above rail to meet typical non-electrified freight clearance requirements, and

Implementing EMU would require reconstruction of at least nine bridges in the corridor, causing cost increases (an additional $405 to $565 million) and substantial schedule delays.

TABLE 2-12. PREFERRED ALTERNATIVE REFINEMENT: ALIGNMENT AVOIDANCE AND/OR MINIMIZATION OF IMPACTS TO WETLANDS

Location	Track Location		Resource	Impact	Avoided or Minimized	Action	Number of Acres Impacted	
	Original Track Plan	Revised Track Plan					Original Track Plan (acres)	Revised Track Plan (acres)
South of Federal Boulevard to Little Dry Creek Crossing	East	West	Wetlands	Wetlands through park, impacts within railroad ROW	Avoided	Moved proposed new track to west side of existing track to avoid Little Dry Creek.	0.0748	0.0000
Lowell Boulevard to 72nd Avenue	East	West	Wetlands	Wetlands within railroad ROW	Avoided	Moved proposed new track to west side of existing track to avoid impacts.	0.1648	0.0000
Bradburn Boulevard to 76th Avenue	East	West	Wetlands	Wetland on east side	Minimized	Moved proposed track to west side to minimize impacts to wetlands. Wetlands located on both sides of tracks. Wetlands on west side still impacted with the new track placed on the west side but to lesser amount than if new track was to be placed on east side.	0.0232	0.005
South of 80th Avenue	East	West	Wetlands	Wetlands on west side within railroad ROW	Minimized	Cannot avoid impacts. Moving proposed track to east side of tracks would result in greater wetlands impact on both sides of 72nd Avenue. Minimized impacts by adding a wall. Impacts remain where wetlands are too close to tracks for a wall to be effective.	0.0086	0.0044
88th Avenue – Allen Ditch	East	East	Wetlands	Wetlands on east	Avoided	Wall added to avoid impacts.	0.0086	0.0000
South of 116th Avenue Station	East	East	Wetlands	Wetlands within railroad ROW	Avoided	Wall added to avoid impacts.	0.3752	0.0000
Coal Creek	East	East	Wetlands	At Coal Creek	Minimized	Cannot avoid impacts. Would not be practicable to route proposed new track around creek due to technical feasibility and cost of extraordinary magnitude. Minimized impacts by bridge over Coal Creek.	0.0197	0.0083
75th Street – New Dry Creek Ditch	East	East	Wetlands	East side impacts at creek	Minimized	Cannot avoid impacts. Would not be practicable to route proposed new track around creek due to technical feasibility and cost of extraordinary magnitude. Moving proposed new track to west side would incur greater wetland impacts. Minimized impacts by adding a wall.	0.0672	0.0024
Near East Boulder Station	East	West	Wetlands	Wetlands on west side at platform	Minimized	Cannot avoid impacts. Wetlands on both sides of tracks. Minimized impacts by locating the proposed track on the west side.	0.3343	0.1566
Around 55th Street to Boulder Creek	East	East	Wetlands	Wetlands within railroad ROW on west side	Avoided	Proposed new track on east side to avoid impacts.	0.0142	0.0000
						Total	**1.0906**	**0.1767**

Source: NWR Corridor Project Team, 2007.
Notes:
ROW = right-of-way

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A summary of the cost comparison between DMU and EMU is provided in Table 2-13.

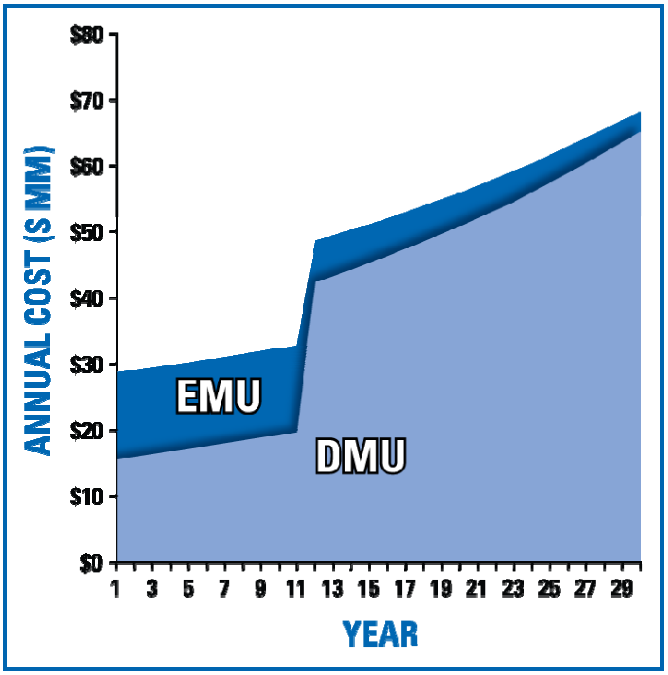
TABLE 2-13. COST COMPARISON OF VEHICLE TECHNOLOGIES

Cost Category	DMU	EMU
Average annual O&M costs (2006 dollars)	$21 million	$19 million
Differential capital costs (2006 dollars)	$69 million	$140 million
Annual average O&M and debt service costs[1]	$32.3 million	$41.5 million
Total debt service for incremental capital costs[2]	$336.3 million	$676.3 million

Source: NWR Corridor Project Team, 2007.
Notes:
[1] Debt service cost estimate does not include the impacts of the BNSF Railway Company requirements for the higher catenary or the requirement for special maintenance equipment.
[2] Debt service includes principal and interest payments. Incremental capital costs include fleet procurement cost, civil construction cost differential, electrification cost, signaling cost differential, and maintenance facility cost differential.
DMU = diesel multiple unit
EMU = electric multiple unit
O&M = operation and maintenance

The cost comparison revealed that the average annual operating and maintenance costs for EMU are lower than the costs to operate and maintain DMU vehicles. However, the capital costs for EMU are higher than for DMU. Based on this cost assessment, it was determined that over a 30-year life-cycle of the project, the initial capital costs to implement EMU would be substantially higher than the 30-year operational cost comparison savings for EMU technology. In other words, over the life-cycle for the project the cost for EMU is greater than the cost for DMU even when operating costs are considered. Figure 2-14 depicts the life-cycle and capital costs projections for project.

FIGURE 2-14. DMU AND EMU LIFE-CYCLE COST COMPARISON



Source: CDOT and RTD, 2005.

Environmental Impacts

Environmental impacts were also considered in the comparison of DMU and EMU technologies for the NWR Corridor Project. A summary of an environmental impacts comparison is provided in Table 2-14.

TABLE 2-14. SUMMARY OF ENVIRONMENTAL IMPACTS FOR THE NORTHWEST RAIL CORRIDOR

Criteria	DMU	EMU
Vehicle noise[1]	More impacts than EMU; no severe impacts	Fewer impacts than DMU; no severe impacts
Vibration	More impacts than EMU; no severe impacts	Fewer impacts than DMU; no severe impacts
Air quality	Minimal transit vehicle emissions along corridor	No transit vehicle emissions along corridor, but emissions at power source (dependent upon energy supplier)
	Reduces corridor and regional emissions due to reduction in automobile vehicle miles of travel	Reduces corridor and regional emissions due to reduction in automobile vehicle miles of travel
Visual impacts	Fewer impacts than EMU	More impacts than DMU due to overhead catenary

Source: NWR Corridor Project Team, 2007.
Notes:
[1]Noise analysis in compliance with the Federal Railroad Administration requirements was conducted on the Preferred Alternative and is presented in Section 3.8, Noise and Vibration.
DMU = diesel multiple unit
EMU = electric multiple unit

There are some environmental trade-offs between DMU and EMU, but overall, the environmental impacts are not a key differentiator between these technologies. Both DMU and EMU would have a positive impact on air quality due to lower vehicle miles traveled. Noise and vibration impacts would be somewhat lower for EMU, but visual impacts would be lower for DMU.

Community Input

The NWR Corridor Project Team solicited feedback from the community during the technology comparison evaluation. Three technology workshops were held in September 2007 in the NWR Corridor with over 200 attendees in total. A summary of technology comments from these workshops is provided below.

Of those who expressed a preference for a technology type, the majority indicated a preference for EMU. Some expressed a preference for DMU, and some did not express a preference for either technology. Those that did not express a preference identified issues surrounding the technology types that were of concern, such as cost, noise and vibration, and visual impacts.

Additionally, the NWR Corridor Project Team shared the technology comparison analysis with the NWR Governments Team (GT) (consisting of local elected officials and staff from the local jurisdictions) to solicit feedback. The NWR GT did not object to advancing the DMU technology selection.

Other Evaluation Factors

In addition to the factors mentioned above, there were additional considerations in the technology evaluation. Table 2-15 outlines other factors considered in the DMU and EMU technology comparison.

TABLE 2-15. OTHER EVALUATION FACTORS FOR VEHICLE TECHNOLOGY COMPARISON

Criteria	DMU	EMU
Constructability	Simpler to construct than EMU	BNSF Railway Company requirements for 26-foot catenary requires replacement of nine bridges with significant schedule impacts and additional cost
Consistency with *FasTracks Plan* technology	Yes	No
Expandability	More cost-effective for future service expansions to North Front Range	Less cost-effective for future service expansions to North Front Range
Alternative fuel options	Allows migration to future energy sources – hybrids, fuel cell, biofuels, and electric	Dependent on energy generation
Maintenance-of-Way	Less expensive/less complex	More expensive/more complex

Source: NWR Corridor Project Team, 2007.
Notes:
DMU = diesel multiple unit
EMU = electric multiple unit

NWR Corridor Project Team Recommendation and RTD Board Decision

Based on the DMU/EMU evaluation in October 2007, the NWR Corridor Project Team submitted the recommendation for DMU to the RTD Board. At this meeting, the RTD Board voted to select DMU for the NWR Corridor based on the following determinations:

- More cost-effective for future service expansion to North Front Range.
- Consistency with the original *FasTracks Plan* (RTD 2004).
- No visual impact or additional costs from catenary system.
- Most cost-effective over 30-year planning horizon.
- Ability to use alternate fuel in the future.

Additionally, in October 2007 the RTD Board unanimously adopted the Responsible Rail Amendment. This amendment commits RTD to work to ensure it purchases fuel efficient, environmentally responsible and sustainable commuter rail vehicles.

2.3.3.3 Addition of Twin Peaks Station in Longmont

Following the Level 1 – Conceptual Alternatives Screening, the City of Longmont requested the addition of a walk-up station in the southwest area of the city. This station would not be funded by FasTracks and would only be constructed if additional funding could be identified, as is the case for the other unfunded stations in the NWR Corridor Project. The station would be located along SH 119 between Hover Road and Sunset Street and would be within walking distance of the existing Twin Peaks Mall. Given the city's plans for redevelopment of the mall area as a mixed-use center, a Twin Peaks Station would serve residents,

employees, and visitors to this proposed activity center, as well as commuters within southwest Longmont. There would be no wetland impacts associated with this station.

2.3.3.4 Evaluation and Selection of Station Architectural Styles

RTD implemented a station design process to standardize the architectural style for all FasTracks commuter rail projects. The process involved the following seven steps as shown in Table 2-16.

TABLE 2-16. RTD METHODOLOGY FOR DEFINING PROGRAM-WIDE ARCHITECTURAL STYLE

Step	Description
1. Classify station elements into categories	Define which design elements should be: • System-wide • Corridor-specific • Station-unique
2. Characterize each station area by land use and character	Establish corridor design influences such as unique natural features, historic, land use, iconic architecture, etc.
3. Define commuter station typologies	Defined as four typologies: • Neighborhood • Main Street • Town Center • Neighborhood/Commuter
4. Define station styles	An architectural style was developed for each typology: • Neighborhood Craftsman • Main Street Historic • Town Center Contemporary • Industrial Loft Modern
5. Determine the approach to blending styles and character of the corridors	A process for combining Steps 3 and 4
6. Define architectural types	Four conceptual architectural styles were developed (See Table 2-17, Northwest Rail Corridor Station Typologies Style)
7. Compile cost information	Compile cost information for the elements and materials to establish a baseline budget for each station type

Source: NWR Corridor Project Team, 2009.

As described in Chapter 5, Public Comment and Agency Coordination, this process was presented to the NWR GT. The results of these meetings are presented in Table 2-17, which shows the station architectural typologies.

TABLE 2-17. NORTHWEST RAIL CORRIDOR STATION TYPOLOGIES STYLE

Typology	Schematic Design
Neighborhood Craftsman	
Main Street Historic	
Town Center Contemporary	
Industrial Loft Modern	

Source: NWR Corridor Project Team, 2009.
Note:
*Station to be funded by others.

2.3.3.5 Evaluation and Selection of Alignment Fencing Materials

Because trespassers in commuter rail alignments have been found to be the number one cause of fatalities, RTD's Safety and Security protocols require that the alignment be fenced. The presence and aesthetic effect of alignment fencing was a concern of local agencies

during the NWR Corridor EE process. For this reason, RTD developed an approach to engage local governments and agencies in the selection of the proposed fencing materials. This process was conducted with the understanding that in some cases the premium for materials more costly than the chain link fence (RTD design standard) would be paid for by the local entity. The purpose of the process was to review adjacent land use types (rural/open, agricultural, industrial/commercial, and residential) along the corridor, identify key design issues (train speed and related safety issues, security issues, environmental concerns, and aesthetic concerns) and receive stakeholder feedback on the selected fencing types recommended for the project design, while considering safety and security.

The process involved the following steps:

- **Step 1:** Select representatives for the NWR Fencing Subcommittee.
- **Step 2:** Establish the fencing process and preliminary recommendations for land use types.
- **Step 3:** Review recommendations for fencing types.
- **Step 4:** Present recommendations to the NWR Fencing Subcommittee.
- **Step 5:** Revise recommendations based on NWR Fencing Subcommittee feedback.

As a result of these meetings, the fencing design and materials shown in Table 2-18 were recommended for the alignment. A conceptual depiction of the high-tensile fencing types is provided in Figure 2-15. Additionally, RTD will consider utilizing existing fence along the alignment in lieu of additional NWR-provided fence in areas where desired and where RTD criteria can be met. RTD criteria includes a requirement that the fence be owned and maintained by a governmental agency or other permanent entity or organization that has authority to enter into an agreement with RTD and where the existing fence meets specific design standards. In these specific locations, RTD will continue to work with the local jurisdictions and adjacent property owners throughout final design.

TABLE 2-18. DESCRIPTION OF RECOMMENDED FENCE TYPES

Fence Type	Typical Application	Fence Design Characteristics
Chain Link	Industrial/Commercial: Typical in industrial or commercial areas where pedestrian activity is present and density and intensity of land use is relatively high	• Design: metal post with steel wire • Minimum height: 6 feet • Minimum ground clearance: none
High-Tensile Wire Type I	Rural/Open Space: Typical use in agricultural, open space, large-lot residential, or rural areas where population density is low, wildlife activity is present, and/or an adjacent roadway or trail is present	• Design: wood post with 4 stands of smooth wire • Maximum height: 40 inches • Minimum ground clearance: 16 inches between ground and bottom wire
High-Tensile Wire Type II	Industrial/Commercial: Typical in industrial or commercial areas where pedestrian activity is present and density and intensity of land use is relatively high	• Design: wood post with denser smooth wire strand design than Type I • Minimum height: 6 feet • Minimum ground clearance: none
High-Tensile Wire Type III[1]	Roadway Adjacent: Typical use in areas where a roadway is parallel to and within proximity of the rail line and/or the roadway grade is higher than the RR grade and additional protection is required to keep vehicles from entering	• Design: Concrete jersey barrier + wood post and smooth strand design fence on top

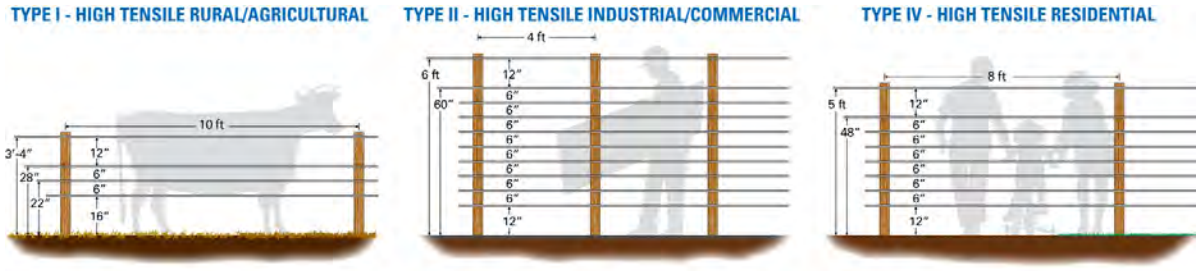
TABLE 2-18. DESCRIPTION OF RECOMMENDED FENCE TYPES

Fence Type	Typical Application	Fence Design Characteristics
	the rail ROW.	
High-Tensile Wire Type IV	Residential: Typical use in suburban/residential areas with moderate- and high-density land uses in proximity of rail line	• Design: wood post with denser smooth wire strand design than Type I • Minimum height: 5 to 6 feet • Minimum ground clearance: none

Source: NWR Corridor Project Team, 2009.

Notes: [1] No Type III fence was identified for use in the NWR at this preliminary stage. This is subject to change during final design.

FIGURE 2-15. NWR CONCEPTUAL HIGH-TENSILE FENCING TYPES



Source: URS, 2009.

Note: These figures are conceptual in nature and for illustrative purposes only. Specific dimensions and details on materials will be identified during final design. No Type III fence was identified for use in the NWR at this preliminary stage. This is subject to change during final design.

The fencing recommendations and geographic limits of each fencing type are listed in Table 2-19 and shown on Figure 2-16.

TABLE 2-19. NORTHWEST RAIL ALIGNMENT FENCING RECOMMENDATIONS

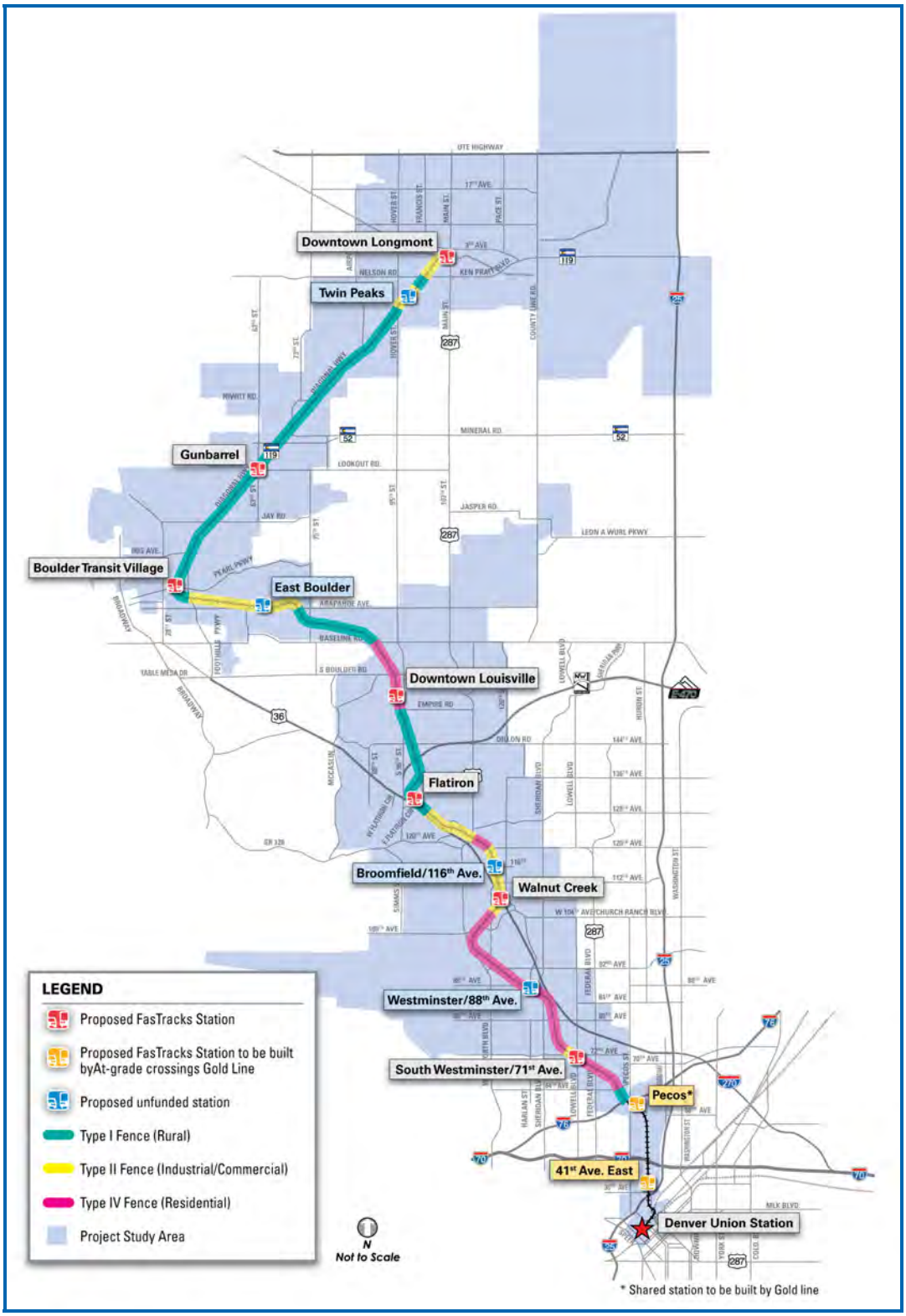
Section and Segment	Fence Type
Adams Section	
Pecos Street – I-76[1]	• Chain Link
I-76 – 64th Avenue	• High-Tensile Wire Type I
64th Avenue – Lowell Boulevard	• High-Tensile Wire Type IV
Lowell Boulevard – Bradburn Boulevard	• High-Tensile Wire Type II
Bradburn Boulevard – Sheridan Boulevard	• High-Tensile Wire Type IV
Westminster Section	
Sheridan Boulevard – Pierce Street	• High-Tensile Wire Type IV
Pierce Street – Church Ranch Boulevard	• High-Tensile Wire Type IV • High-Tensile Wire Type I in vicinity of Big Dry Creek
Church Ranch Boulevard – Walnut Creek	• High-Tensile Wire Type IV
Walnut Creek – US 36	• High-Tensile Wire Type II on south side of rail alignment • High-Tensile Wire Type I on north side of rail alignment and in vicinity of Walnut Creek

TABLE 2-19. NORTHWEST RAIL ALIGNMENT FENCING RECOMMENDATIONS

Section and Segment	Fence Type
Broomfield Section	
US 36 – West 120th Avenue	• High-Tensile Wire Type II (or High-Tensile Wire Type IV if additional development occurs before implementation of NWR) • High-Tensile Wire Type I in vicinity of Airport Creek
West 120th Avenue– Nickel Street	• High-Tensile Wire Type II on southwest side of rail alignment • High-Tensile Wire Type IV on northeast side of rail alignment and in vicinity of housing
Nickel Street – Brainard Drive	• High-Tensile Wire Type II on southwest side of rail alignment and northeast side of rail alignment between Nickel Street and Hunter Douglas property • High-Tensile Wire Type I between Hunter Douglas property and Brainard Drive
Brainard Drive – Northwest Parkway	• High-Tensile Wire Type I (or High-Tensile Wire Type II or IV on west side of rail alignment if additional development occurs before implementation of the NWR Corridor)
Louisville Section	
Northwest Parkway – Dillon Road	• High-Tensile Wire Type I
Dillon Road – Lock Street (Louisville City Park)	• High-Tensile Wire Type I on west side of rail alignment • High-Tensile Wire Type I (modified with denser strand design) on east side of rail alignment
Lock Street – South Boulder Road	• High-Tensile Wire Type IV (modified to permit wildlife crossing)
South Boulder Road – Baseline Road	• High-Tensile Wire Type IV (modified to permit wildlife crossing)
Boulder Section	
Baseline Road – Arapahoe Road	• High-Tensile Wire Type I
Arapahoe Road – Boulder Creek	• High-Tensile Wire Type II • High-Tensile Wire Type I in vicinity of Boulder Creek, South Boulder Creek, and Dry Creek No. 2 Ditch
Boulder Creek – Foothills Parkway	• High-Tensile Wire Type II • High-Tensile Wire Type I in vicinity of Goose Creek and Wonderland Creek
Foothills Parkway – 55th Street	• High-Tensile Wire Type I
55th Street – 63rd Street	• High-Tensile Wire Type I
63rd Street – SH 52	• High-Tensile Wire Type I
Longmont Section	
SH 52 – Niwot Road	• High-Tensile Wire Type I
Niwot Road – Hover Road	• High-Tensile Wire Type I
Hover Road – Sunset	• High-Tensile Wire Type II
Sunset – Nelson	• High-Tensile Wire Type I
Nelson – Downtown Longmont	• High-Tensile Wire Type II

Source: NWR Corridor Project Team, 2009.
Notes: [1] Proposed fence type for the shared alignment between DUS and Pecos is chain link.
I-76 = Interstate 76
NWR = Northwest Rail
SH = State Highway

FIGURE 2-16. GEOGRAPHIC LIMITS OF FENCING TYPES

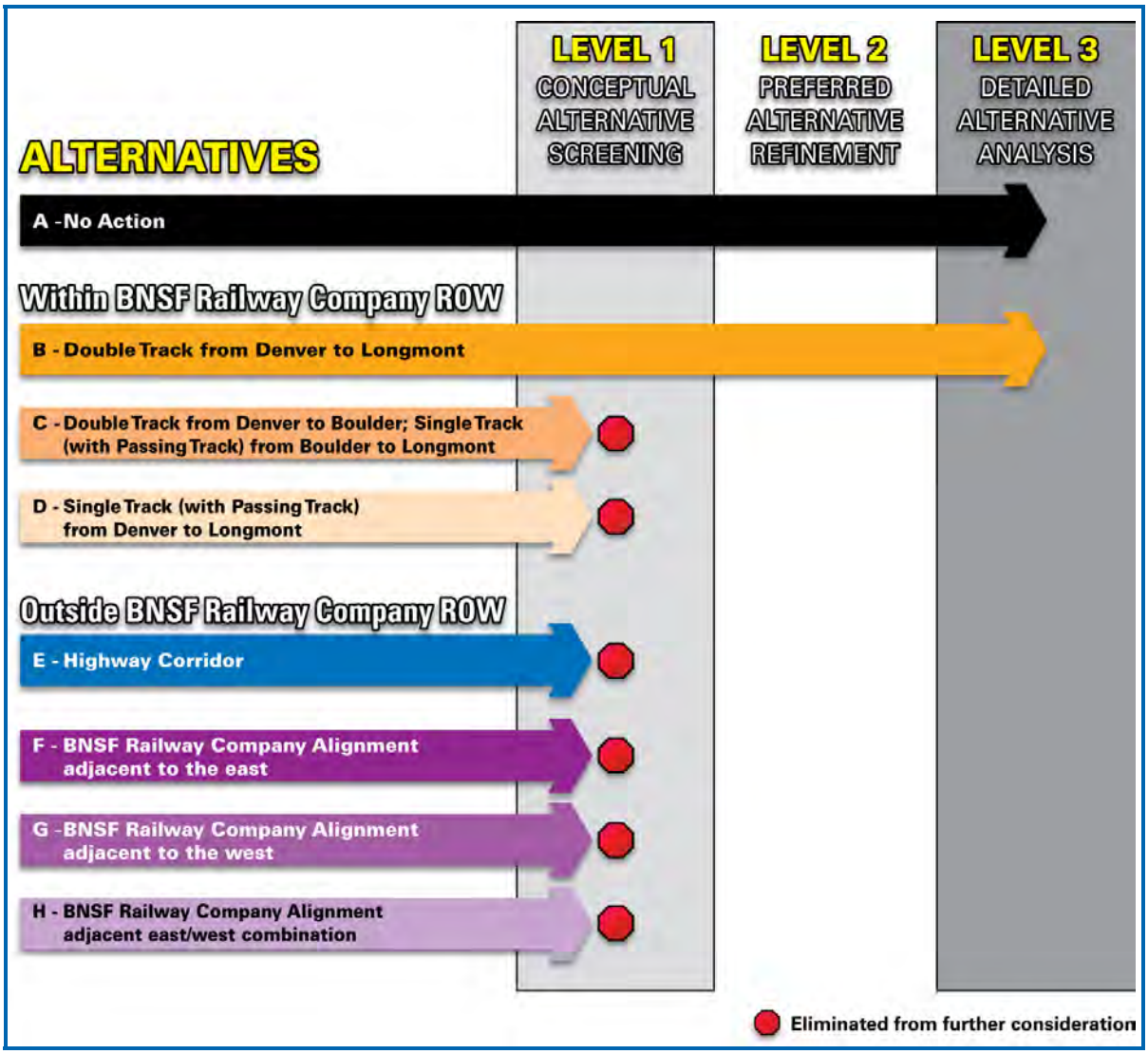


Source: NWR Corridor Project Team, 2008; DRCOG 2007-08; CDOT 2006; ESRI SDC, 2004.

2.3.4 Conclusion

As a result of the Level 1 – Conceptual Alternative Screening and Level 2 – Preferred Alternative Refinement, Alternative B – Double Track from Denver to Longmont was selected as the Preferred Alternative. Alternative A – No Action and the Preferred Alternative, with DMU vehicle technology, were carried forward to undergo detailed evaluation in the NWR Corridor EE. Figure 2-17 depicts a summary of the screening process.

FIGURE 2-17. ALTERNATIVES SCREENING PROCESS



Source: NWR Corridor Project Team, 2008.

2.4 DESCRIPTION OF NO ACTION AND PREFERRED ALTERNATIVES

The following is a brief description of the No Action Alternative and the Preferred Alternative.

2.4.1 No Action Alternative

The No Action Alternative represents the Denver metropolitan region and the project study area in a 2035 horizon-year scenario. The No Action Alternative includes the existing and committed transportation improvements in DRCOG's fiscally constrained *2035 Metro Vision Regional Transportation Plan* (*2035 MVRTP*) (DRCOG 2007a). It also includes the entire FasTracks Plan, except for the NWR Corridor Project. Under the No Action Alternative, no new rail transit projects would be constructed within the project study area for the NWR Corridor. The No Action Alternative provides a basis for comparison to the build alternatives.

2.4.2 Preferred Alternative

Elements of the Preferred Alternative include the rail alignment, station locations, and operational characteristics as described below and depicted in Figure 2-18.

2.4.2.1 Alignment

The NWR Corridor Project will be phased; the first phase, from DUS to the South Westminster/71st Avenue Station (approximately up to Bradburn Boulevard) would use EMU technology. Phase 2 would use DMU technology from DUS to Longmont and would share the tracks used by the EMU vehicles in the Phase 1 segment between DUS and the South Westminster/71st Avenue Station. Ultimately, the Preferred Alternative would begin at DUS in downtown Denver and extend northwest along the BNSF Railway Company alignment to Boulder and then northeast to Downtown Longmont. The NWR Corridor is approximately 41 miles in length. The first 3.5 miles of the alignment between DUS and Pecos Street would be shared with the Gold Line Project. The remaining 37.5 miles of track would be dedicated to the NWR Corridor Project, but shared with existing freight operations.

Between the South Westminster/71st Avenue Station and Longmont, the existing BNSF Railway Company track would be rehabilitated/replaced, and one new track, adjacent to the existing BNSF Railway Company track, would be constructed. Both tracks would be utilized by freight and commuter rail vehicles. For Phase 1, RTD would operate on tracks exclusively dedicated to commuter rail transit from DUS to the South Westminster/71st Avenue Station. Phase 1 includes a new grade separation where 64th Avenue would cross over the rail corridor. Future phases constructed beyond the South Westminster/71st Avenue Station would share track and ROW with freight operations and would require an operating easement from the BNSF Railway Company. RTD is currently negotiating the necessary agreements with the BNSF Railway Company.

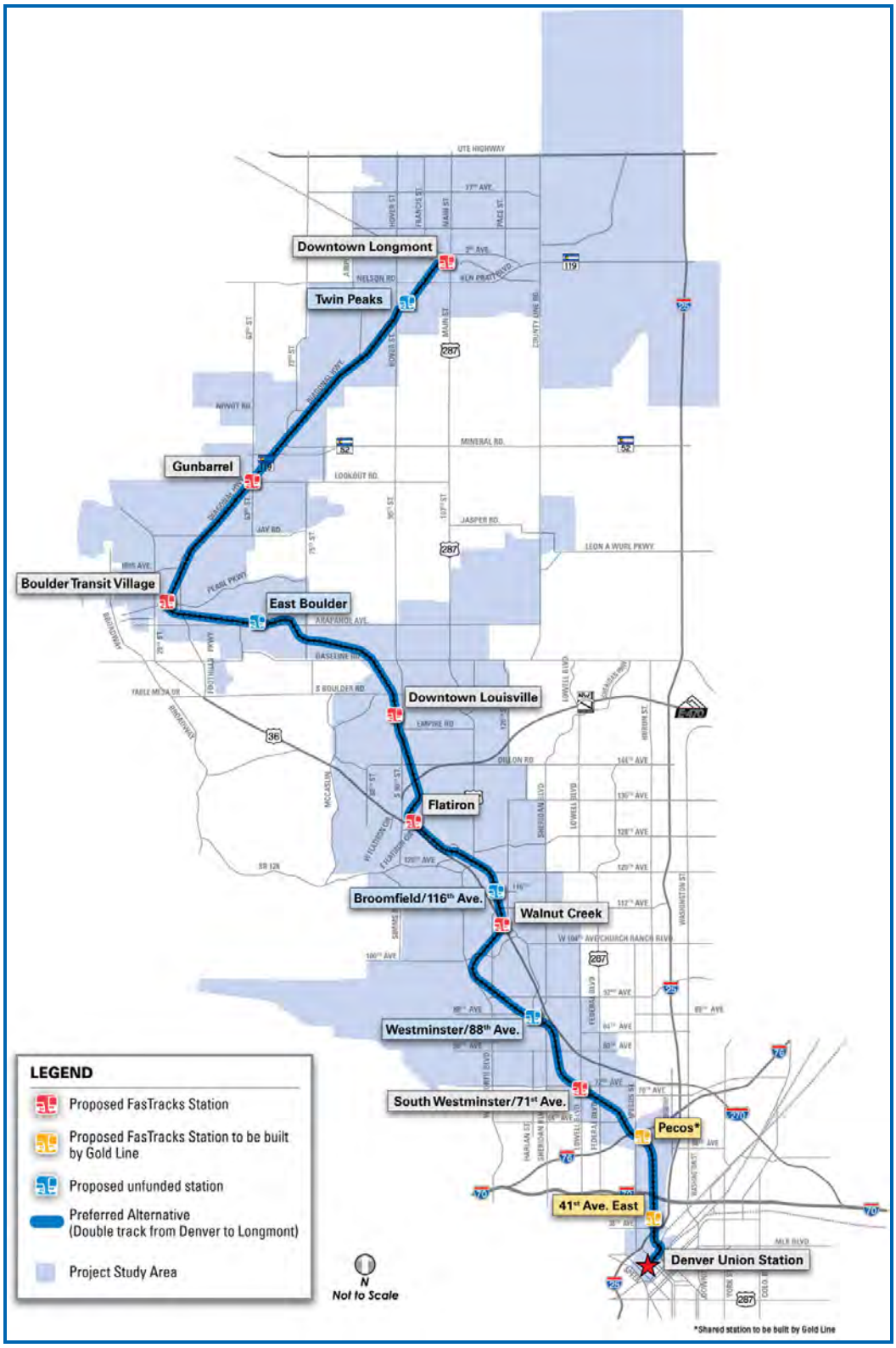
2.4.2.2 Stations

There are 11 stations proposed as part of the Preferred Alternative, located at:

- South Westminster/71st Avenue
- Westminster/88th Avenue
- Walnut Creek
- Broomfield/116th Avenue
- Flatiron
- Downtown Louisville
- East Boulder
- Boulder Transit Village
- Gunbarrel
- Twin Peaks
- Downtown Longmont

Four of the 11 stations (Westminster/88th Avenue, Broomfield/116th Avenue, East Boulder, and Twin Peaks) would not be funded by FasTracks and would require additional funding sources in order to be constructed. The environmental impacts (including aquatic) related to the four unfunded stations are included as part of the evaluation in this EE.

FIGURE 2-18. PREFERRED ALTERNATIVE

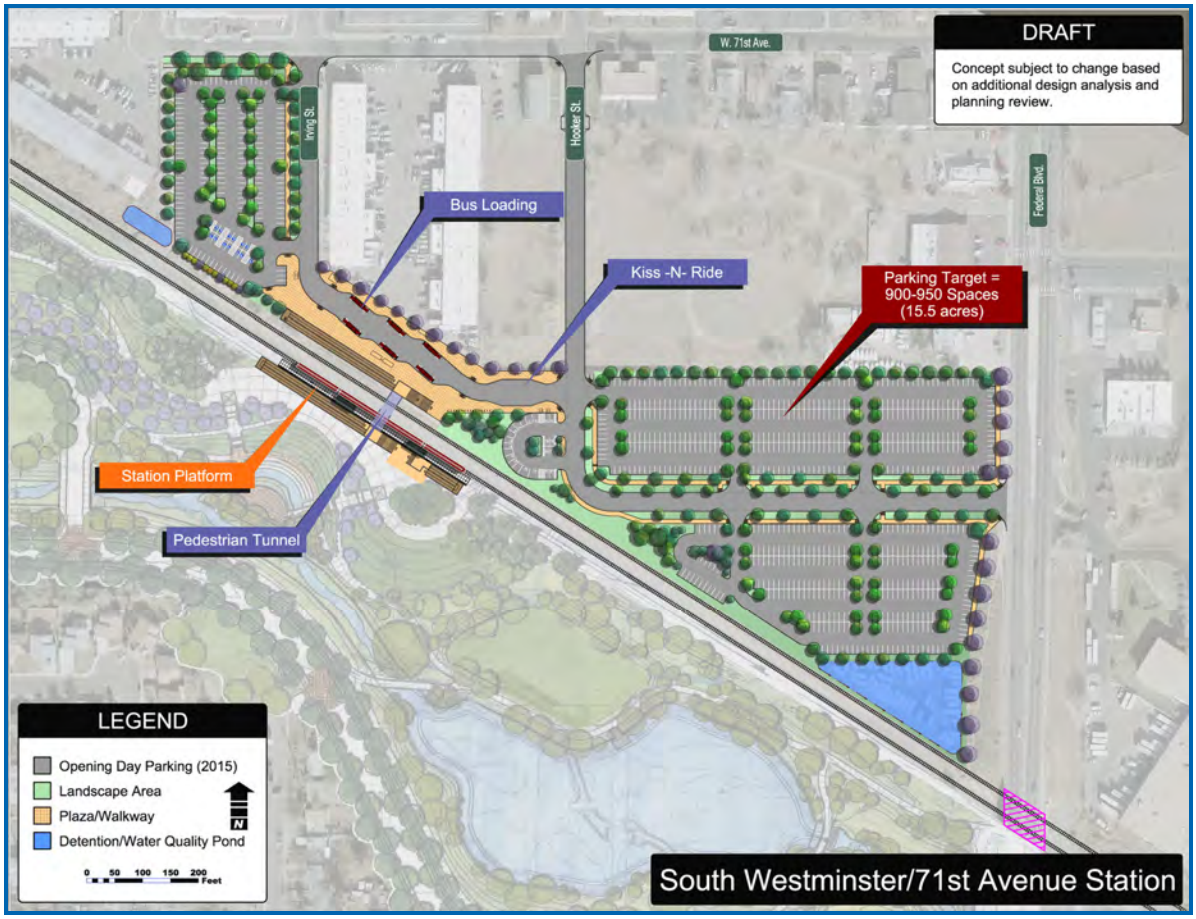


Source: NWR Corridor Project Team, 2009.

Per RTD, Board of Directors policy established in 1994 and reconfirmed in 2003, new rapid transit stations are typically named for the nearest street intersections, major cross street, or the name of the geographic location of the area. The policy recognizes the need for flexibility in station naming and the Board's prerogative to select alternate names. Station names in this EE document that are not in conformance with this policy will be considered preliminary until final naming is approved by the Board.

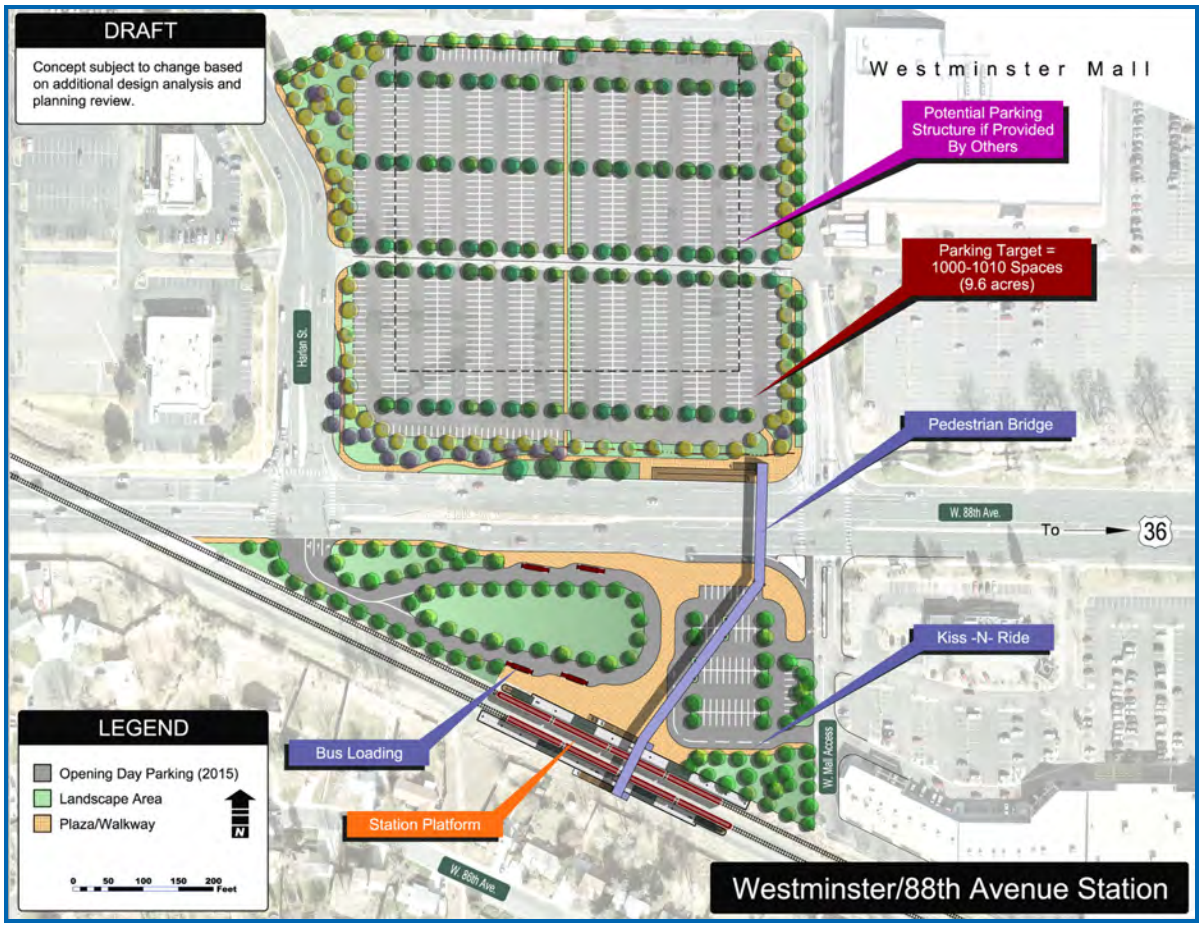
Concept plans for the 11 stations are shown in Figures 2-19 through 2-30.

FIGURE 2-19. SOUTH WESTMINSTER/71ST AVENUE STATION CONCEPT PLAN



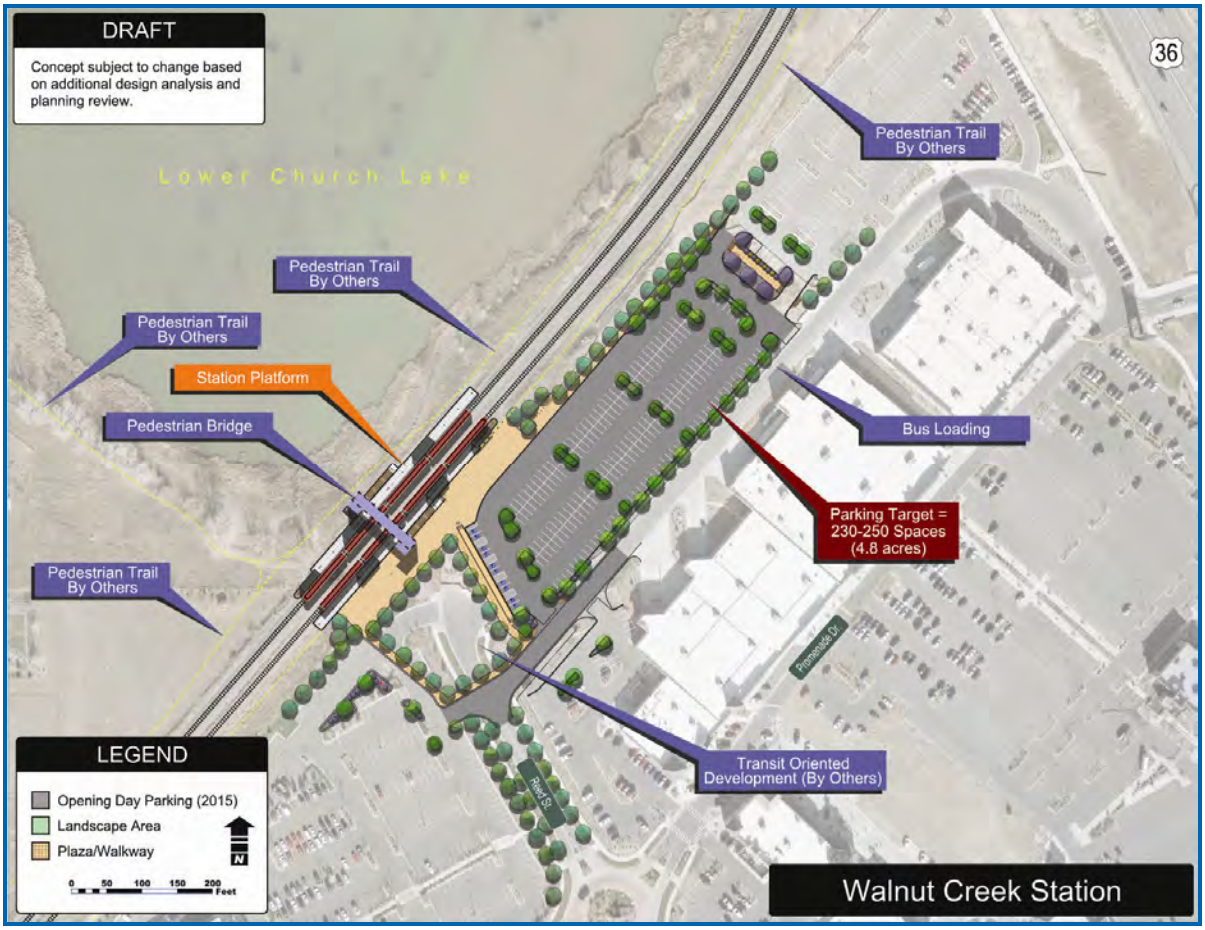
Source: NWR Corridor Project Team, 2009.

FIGURE 2-20. WESTMINSTER/88TH AVENUE STATION CONCEPT PLAN



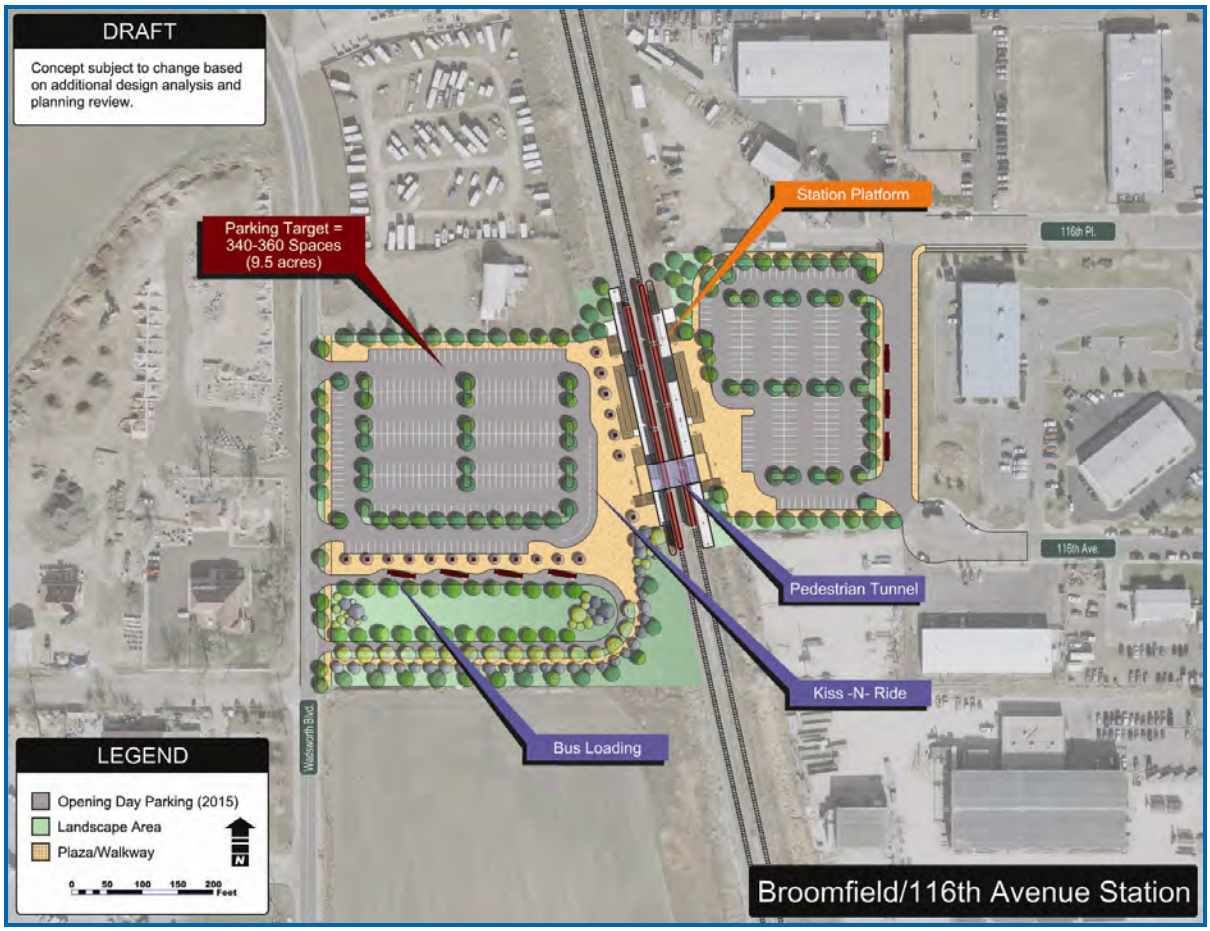
Source: NWR Corridor Project Team, 2009.

FIGURE 2-21. WALNUT CREEK STATION CONCEPT PLAN



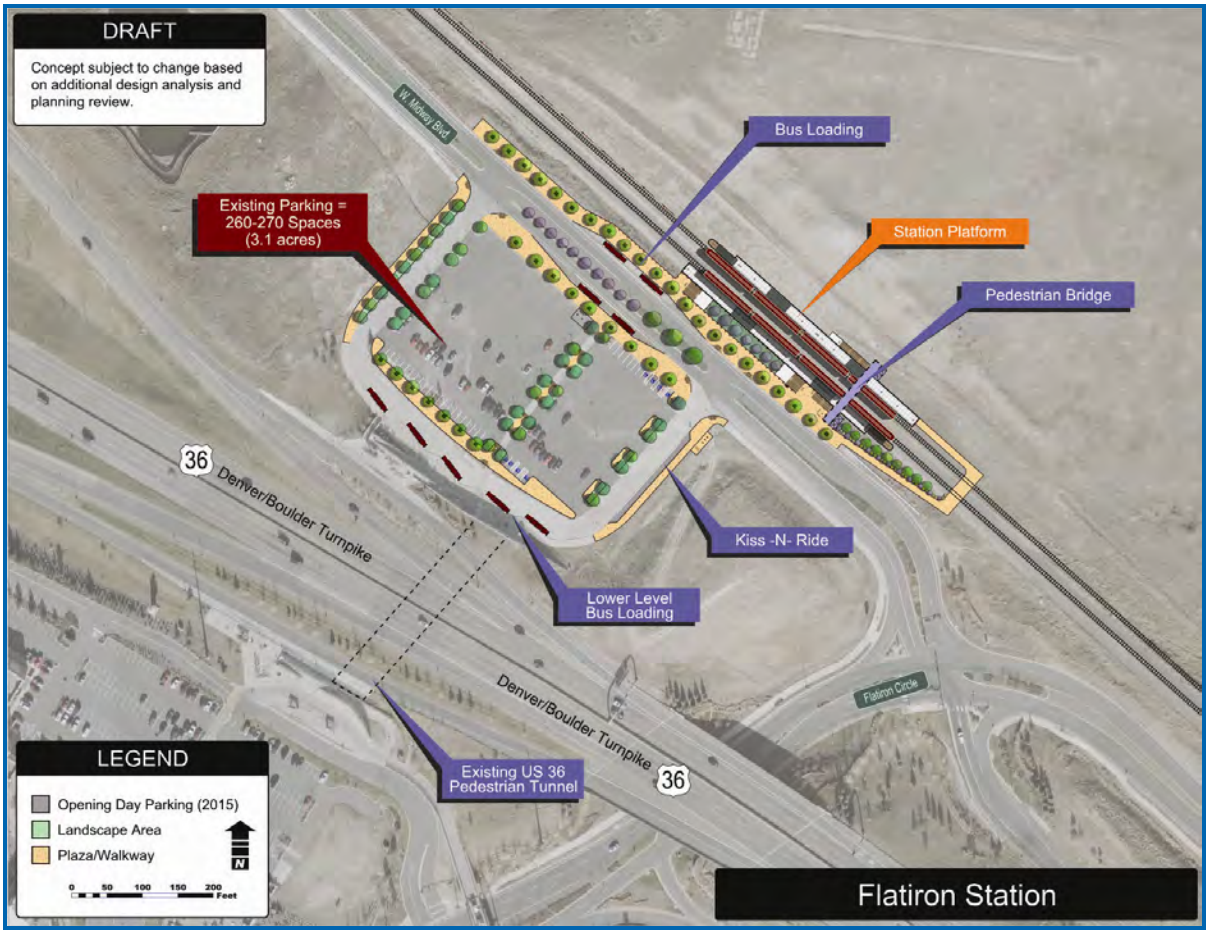
Source: NWR Corridor Project Team, 2009.

FIGURE 2-22. BROOMFIELD/116TH AVENUE STATION CONCEPT PLAN



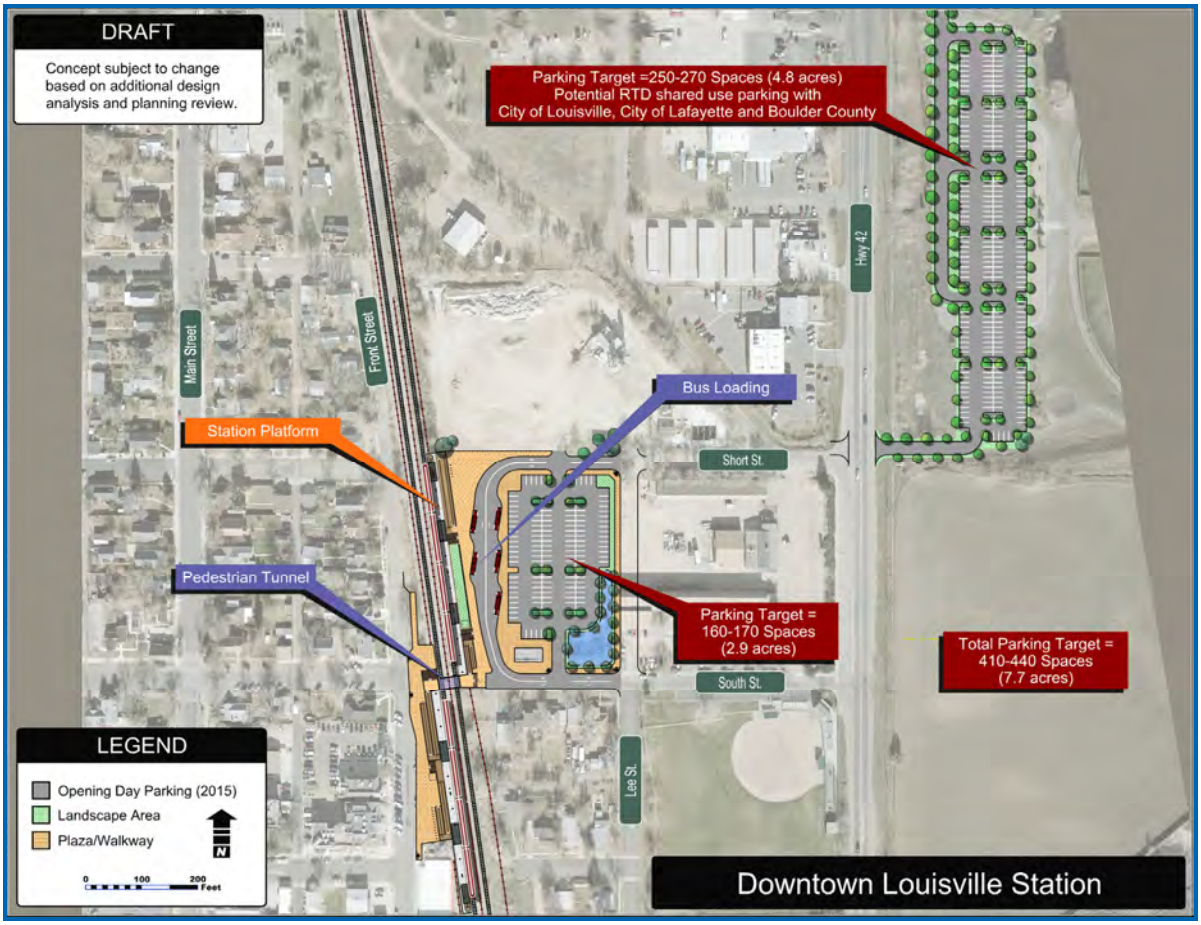
Source: NWR Corridor Project Team, 2009.

FIGURE 2-23. FLATIRON STATION CONCEPT PLAN



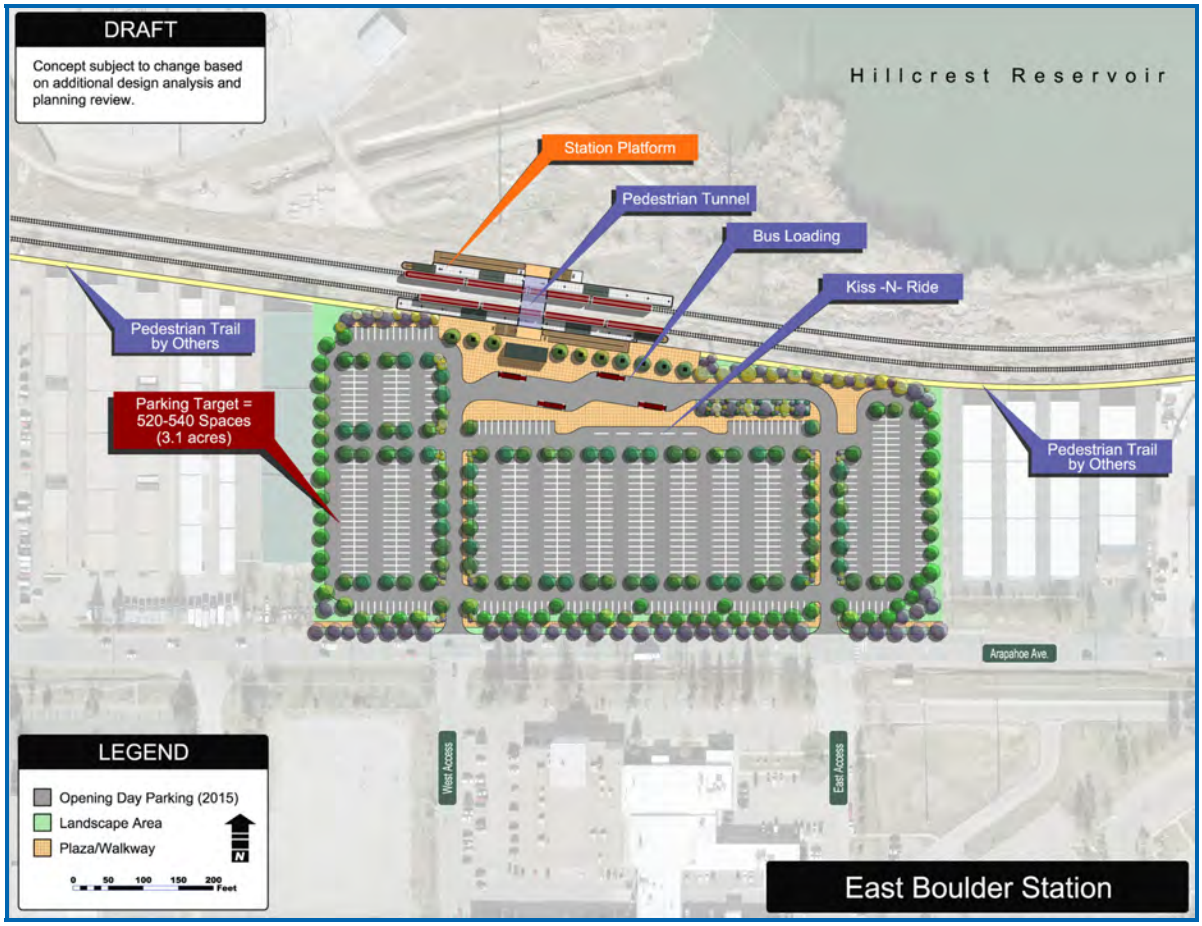
Source: NWR Corridor Project Team, 2009.

FIGURE 2-24. DOWNTOWN LOUISVILLE STATION CONCEPT PLAN



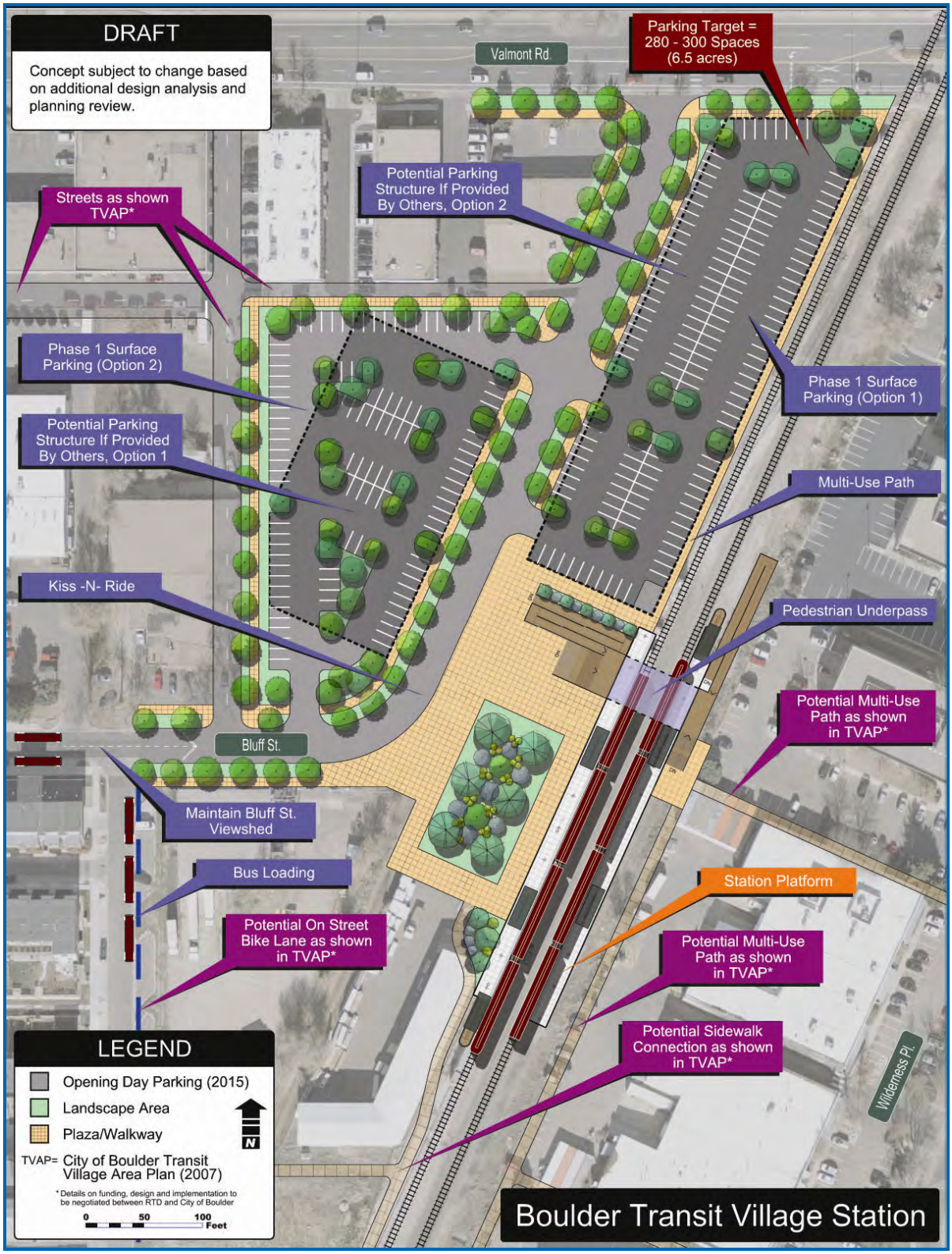
Note: The use of parking at Miners Field is dependent on an agreement between Louisville, Lafayette, and Boulder County.
Source: NWR Corridor Project Team, 2009.

FIGURE 2-25. EAST BOULDER STATION CONCEPT PLAN



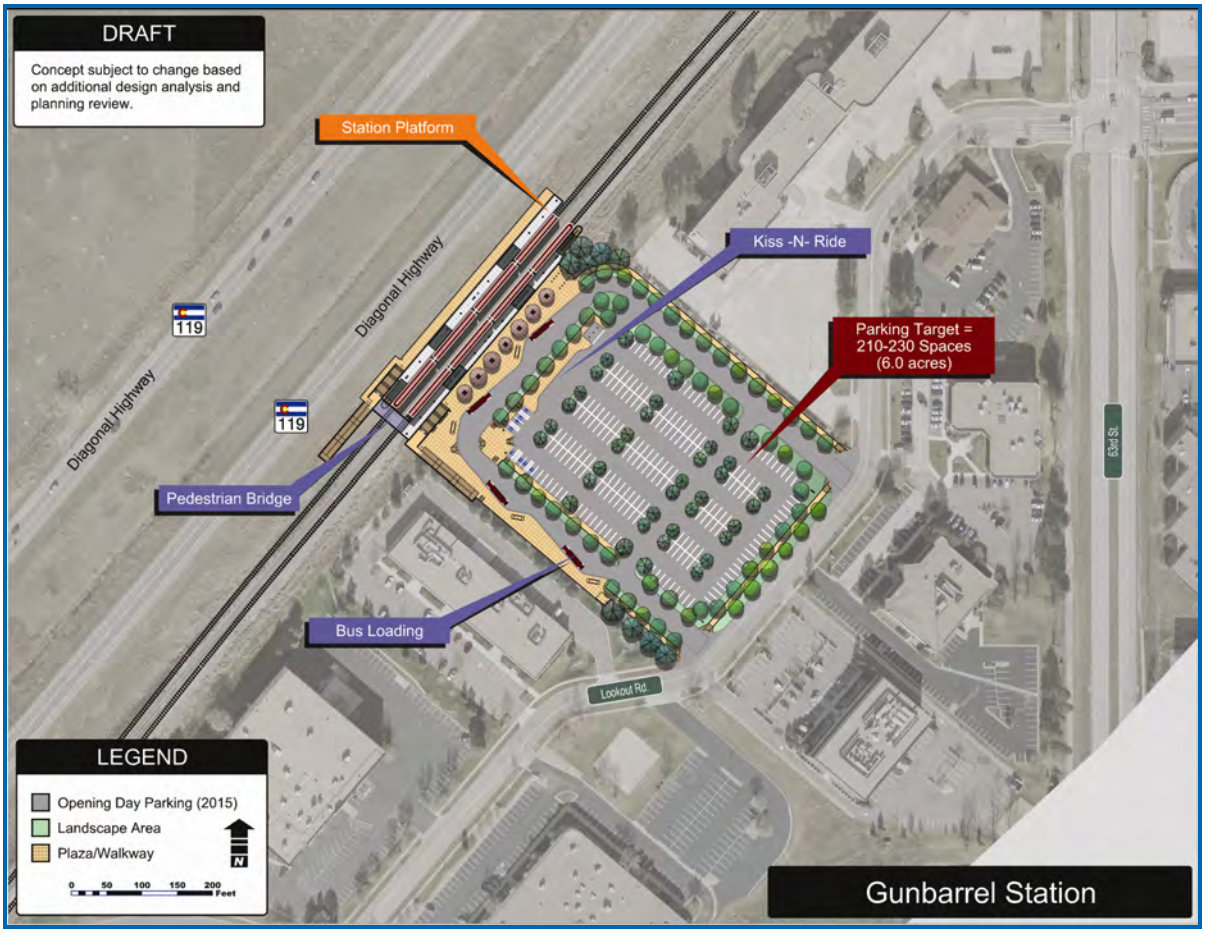
Source: NWR Corridor Project Team, 2009.

FIGURE 2-26. BOULDER TRANSIT VILLAGE STATION CONCEPT PLAN



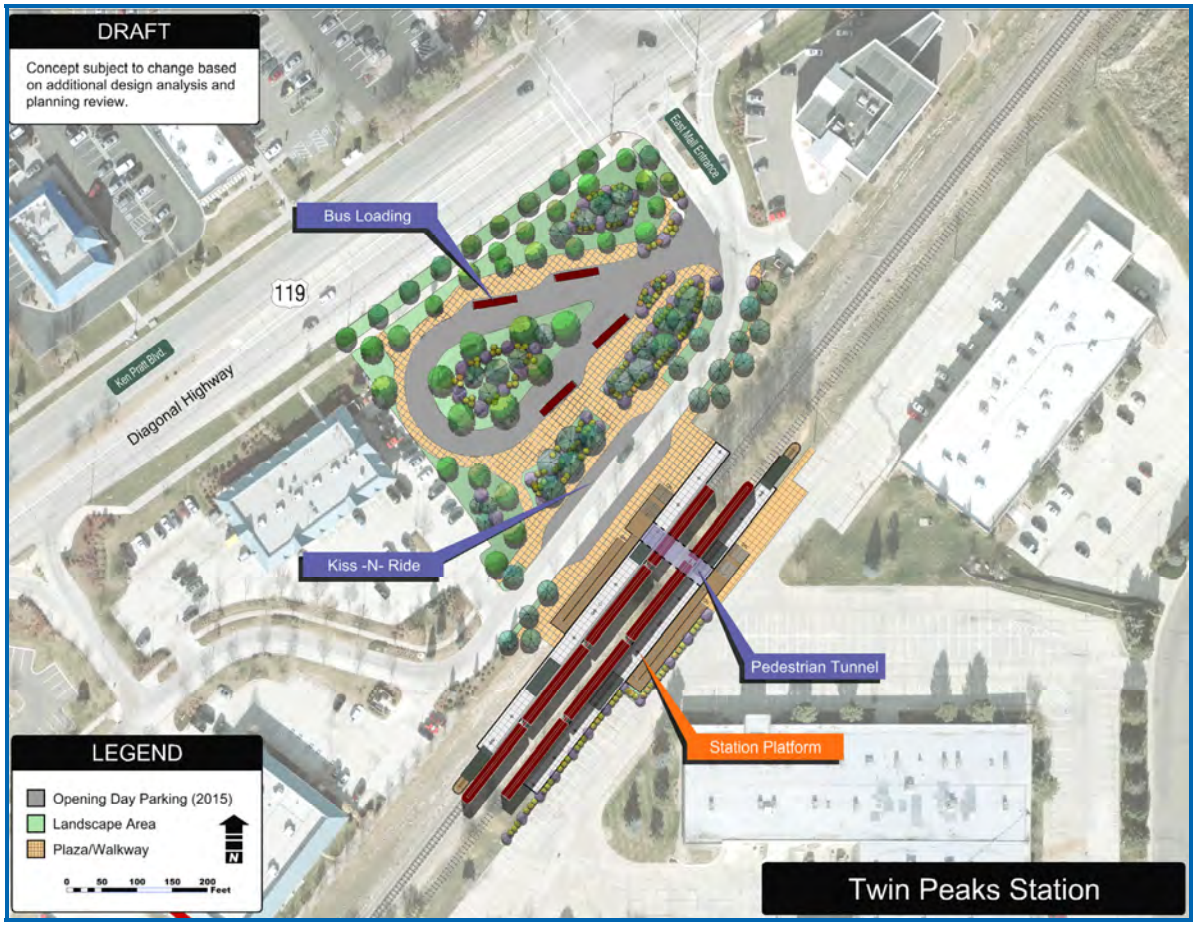
Source: NWR Corridor Project Team, 2009.

FIGURE 2-27. GUNBARREL STATION CONCEPT PLAN



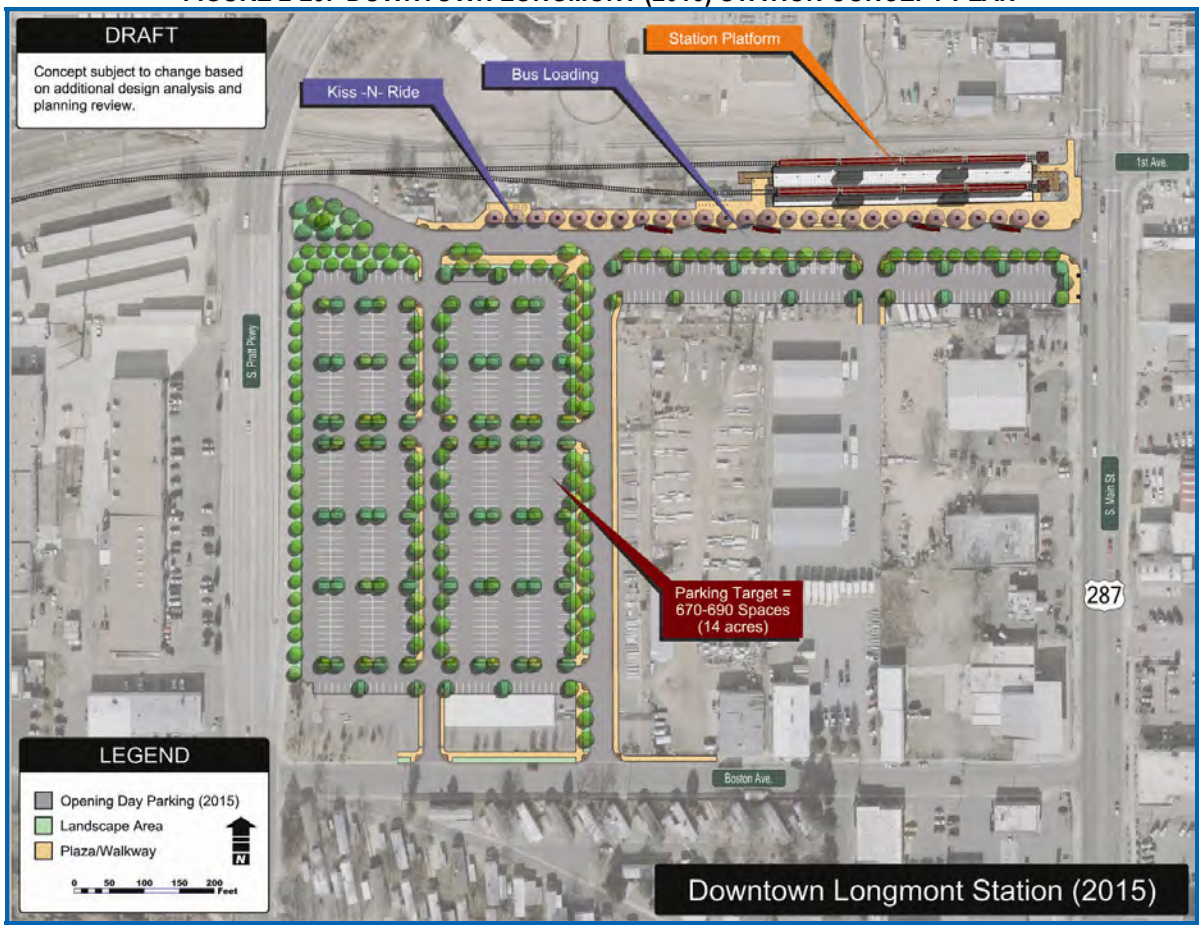
Source: NWR Corridor Project Team, 2009.

FIGURE 2-28. TWIN PEAKS STATION CONCEPT PLAN



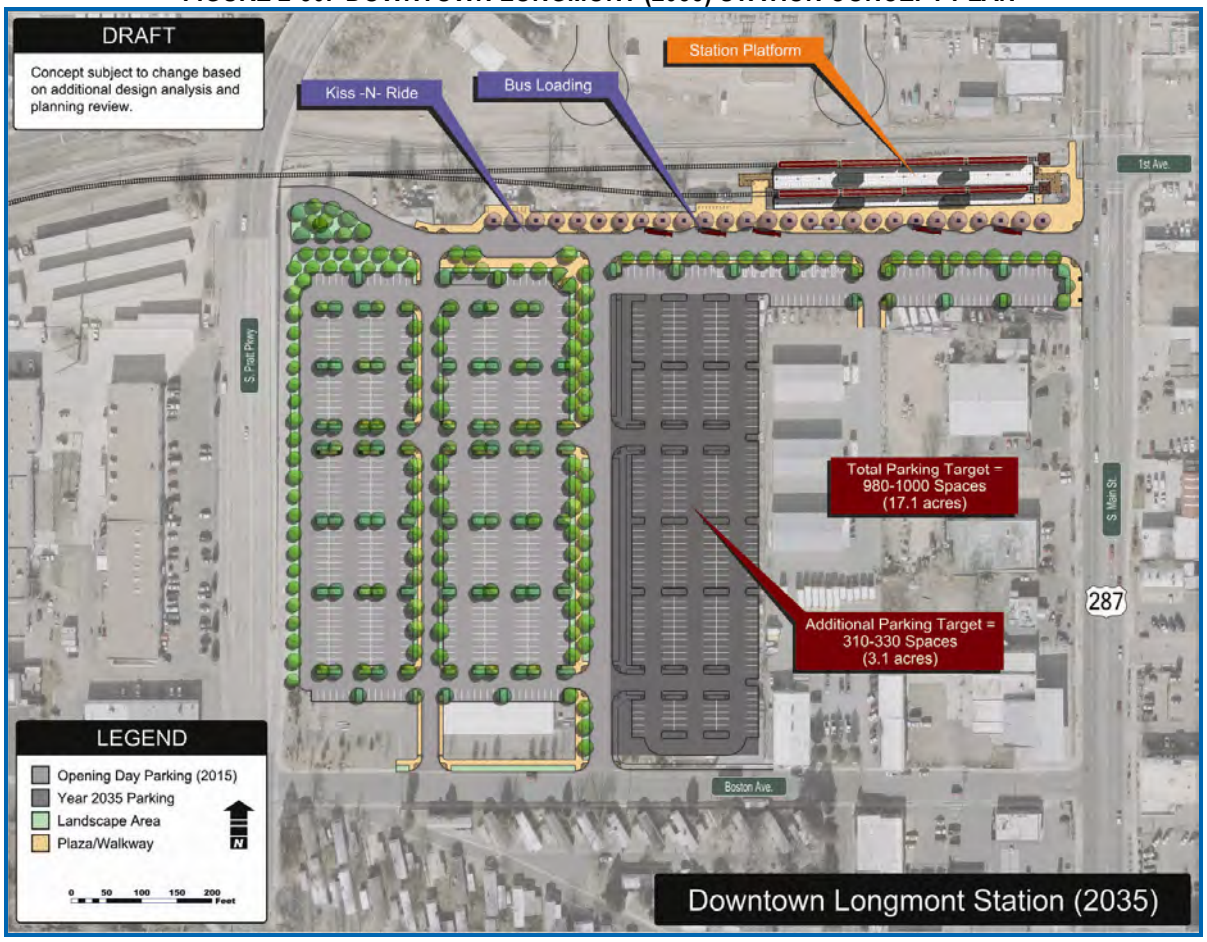
Source: NWR Corridor Project Team, 2009.

FIGURE 2-29. DOWNTOWN LONGMONT (2015) STATION CONCEPT PLAN



Source: NWR Corridor Project Team, 2009.

FIGURE 2-30. DOWNTOWN LONGMONT (2035) STATION CONCEPT PLAN



Source: NWR Corridor Project Team, 2009.

2.4.2.3 Shared-Access Track and Commuter Rail Maintenance Facility

The Preferred Alternative would assume the provision of commuter rail transit from DUS in the City and County of Denver to downtown Longmont. Track from the DUS terminal to what is known as the DUS "throat" near Coors Field at Park Avenue was considered a part of the DUS Project. As a result, impacts for this segment of track (DUS to the throat) are presented in the DUS Final Environmental Impact Statement (Final EIS) document. The study area for the NWR EE initiates at the DUS “throat” and extends to the north. The first 3.5 miles of the alignment between the DUS throat and Pecos Street would be shared with the Gold Line Project. The remaining 37.5 miles of track would be dedicated to the NWR Corridor.

The NWR Corridor cannot function without a supporting Commuter Rail Maintenance Facility (CRMF). Therefore, the Preferred Alternative assumes the provision of a CRMF located on the Fox North Site, north of downtown Denver. The CRMF would include facilities to repair, maintain, clean, fuel, and store both DMU and electric multiple unit (EMU) commuter rail trains for the FasTracks commuter rail program. The impacts associated with the CRMF were initially presented in a Supplemental Environmental Assessment (SEA), a supplement to the Gold Line DEIS, which was distributed to the public in April 2009. Both the Gold Line and CRMF projects are discussed in more detail below in Section 2.4.2.7, Projects Linked to

the NWR Corridor Project. The CRMF impacts are incorporated here by reference. See Figure 2-31 for a depiction of the location of the CRMF.

2.4.2.4 Operations

By 2035 the Preferred Alternative would provide 15-minute service in the morning and evening peak periods from Boulder to Denver and 30-minute service between Longmont and Boulder. Service would be provided at 30-minute headways at most other times throughout the corridor. Peak periods are defined as weekday mornings from 6:00 a.m. to 9:30 a.m. and weekday evenings from 2:30 p.m. to 7:30 p.m.

The operations plan will be optimized as the design progresses such that the project minimizes operational costs while maximizing ridership. The change to the operational plan that is most likely will be the reduction of train frequencies. The reduction of train frequencies would reduce traffic, parking, and noise impacts. Therefore, the train frequencies assumed in this document, represent "worst case" from an environmental impact perspective.

2.4.2.5 Capital and Operating Costs

The capital and operating costs of the Preferred Alternative are included in Tables 2-20 and 2-21.

TABLE 2-20. CAPITAL COSTS

Preferred Alternative Element	Capital Cost* (2008 Dollars)
NWR Corridor Project with proposed FasTracks stations	$641.1 million
Shared Alignment Gold Line/NWR Corridor (DUS to Pecos Street)	$261.5 million[1]
Four Unfunded Stations	$100.3 million[2]
Total	**$1.0 billion**

Source: NWR Corridor Project Team, 2009.

Notes:

* These estimates represent the 2015 planning horizon.

1. The cost for the Shared Alignment segment, although illustrated in this estimate, will be funded as a FasTracks program-wide expense since the section from DUS to the Pecos Station will be shared jointly by the Gold Line, and the section from DUS to the Maintenance Facility will be used by the East and North Metro corridors.

2. Proposed unfunded station costs estimate the following capital cost per station:

– Westminster/88th Avenue Station: $52.9 million
– Broomfield/116th Avenue Station: $13.3 million
– East Boulder Station: $22.8 million
–Twin Peaks Station: $11.3 million

TABLE 2-21. OPERATING COSTS

Preferred Alternative Element	Annual Operations and Maintenance Cost* (2008 Dollars)
NWR Corridor Project with proposed FasTracks stations	$17.9 million
Shared Alignment Gold Line/NWR Corridor (DUS to Pecos Street)	
Four Unfunded Stations	$2.8 million
Total	**$20.7 million**

Source: NWR Corridor Project Team, 2009.

Notes:

* These estimates represent the 2035 planning horizon.

1. The cost for the Shared Alignment segment, although illustrated in this estimate, will be funded as a FasTracks program-wide expense since the section from DUS to the Pecos Station will be shared jointly by the Gold Line, and the section from DUS to the Maintenance Facility will be used by the East and North Metro corridors.

2.4.2.6 Phased Implementation

This project may be constructed in phases. Phase 1 would include construction from DUS to the South Westminster/71st Avenue Station (approximately Bradburn Boulevard). Phase 1 would be constructed as a component of RTD's Eagle P3 project. The Eagle P3 is a Public Private Partnership that will conduct final design and build RTD's East Corridor, Gold Line and this portion of NWR. For Phase 1, RTD would operate on tracks exclusively dedicated to commuter rail transit from DUS to the South Westminster/71st Avenue Station. Future phases constructed beyond the South Westminster/71st Avenue Station would share track and ROW with freight operations and would require an operating easement from the BNSF Railway Company. RTD is currently negotiating the necessary agreements with the BNSF Railway Company. Because the Eagle P3 project includes EMU technology for the Gold Line and East Corridor projects, the Phase 1 Alignment would be electrified from DUS to the South Westminster/71st Avenue Station.

Future phases constructed north of the South Westminster/71st Avenue Station would be DMU. DMU technology would eventually operate seamlessly (sharing the track with the Phase 1 EMU) from DUS to downtown Longmont. See Figure 2-31 for a depiction of the Phase 1 study area.

2.4.2.7 Projects Linked to the NWR Corridor Project

Two projects that were conducted concurrently and are linked with the NWR Corridor Project are the Gold Line EIS and the Commuter Rail Maintenance Facility Supplemental Environmental Assessment (CRMF SEA). These proposed projects are to provide commuter rail from DUS in downtown Denver to Ward Road in Wheat Ridge, Colorado for Gold Line, and a CRMF to serve the FasTracks commuter rail system.

Shared Facilities

The CRMF (just north of 48th Avenue in Denver) and the track alignment (from DUS to the CRMF) are shared by all of the FasTracks commuter rail corridors for service at the CRMF and for passenger service for the NWR and Gold Line corridors. North of the CRMF to Pecos Street, the alignment is shared by the NWR and the Gold Line for a continuation of passenger service on those corridors. West of Pecos Street to Ward Road, the Gold Line Project would operate primarily within the existing BNSF Railway Company and Union Pacific Railroad Company ROW.

CRMF SEA

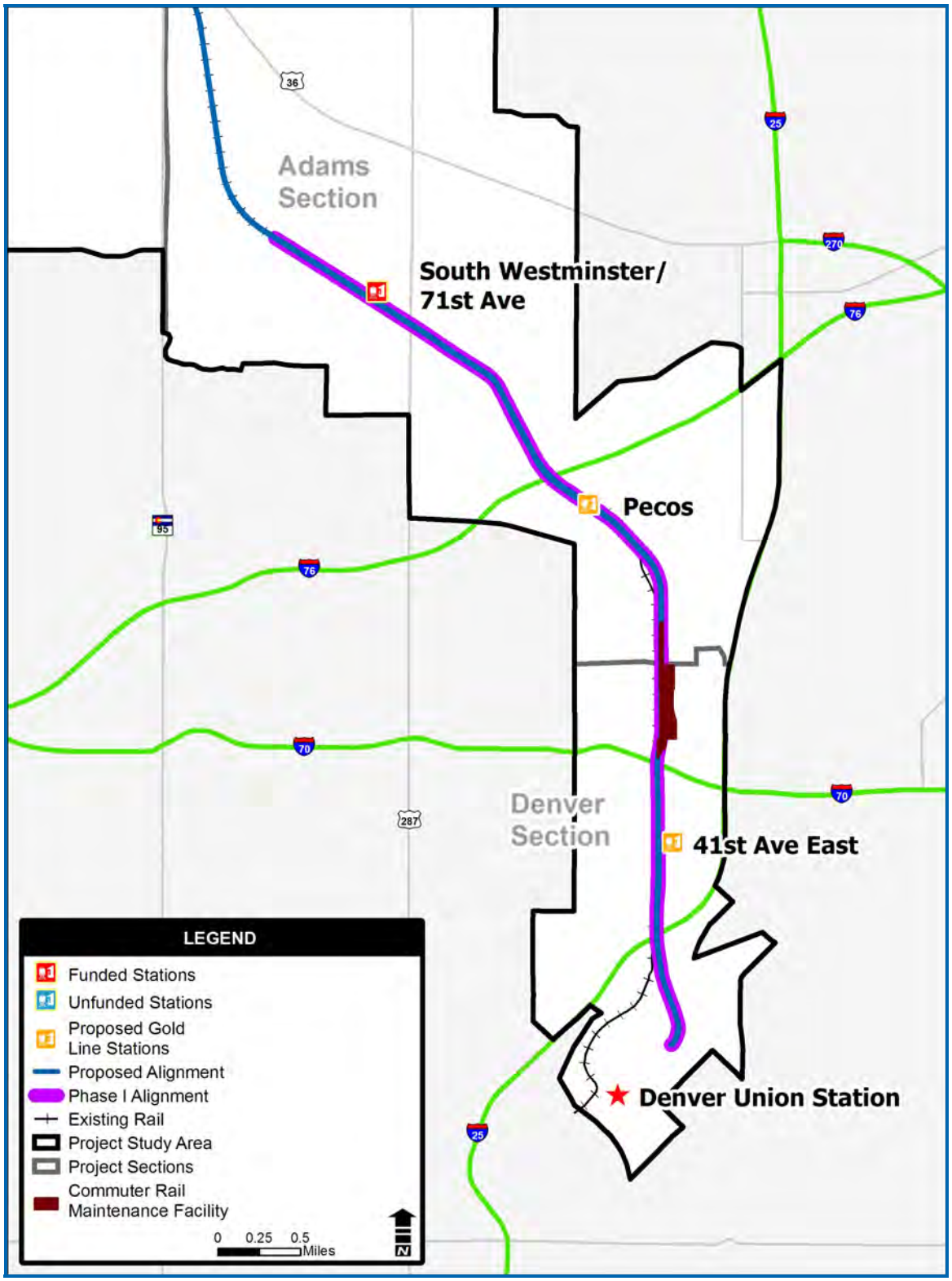
As mentioned above, the CRMF is shared by all four of the FasTracks commuter rail corridors. None of these corridors could function without a maintenance facility. For this reason, the CRMF is considered to be part of the Preferred Alternative for all four of the commuter rail corridors. The CRMF SEA was distributed to the public for comment in April 2009. The impacts documented in the CRMF SEA are incorporated into this NWR EE document by reference.

Gold Line Final EIS and ROD

The Gold Line Final EIS was released for public circulation in August 2009. The Final EIS documents the project activities that have occurred from the close of the Gold Line DEIS public comment period (September 1, 2008) until the completion of the Final EIS and

Preliminary Engineering. Part of the finalization process for the Gold Line Final EIS was incorporating updates and comments related to the CRMF as part of the Gold Line Preferred Alternative. Responses to comments on the Gold Line DEIS and the CRMF SEA are included in the Gold Line Final EIS document. Impacts documented in the Gold Line Final EIS for the alignment from DUS to Pecos Street are incorporated in this NWR EE by reference. Subsequently, the Gold Line Project Team responded to comments on the Final EIS and a ROD was issued by the FTA on November 2, 2009, marking the end of the project's planning process.

FIGURE 2-31. PHASE 1 STUDY AREA



Source: NWR Corridor Project Team, 2009.

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4. TRANSPORTATION SYSTEMS

4.1 SUMMARY OF RESULTS

This section evaluates the No Action Alternative and the Preferred Alternative with FasTracks-only stations or all stations (FasTracks-funded + Unfunded) and compares how these alternatives would affect the future transit, roadway, rail freight, bicycle, and pedestrian facilities and/or operations in the Northwest Rail (NWR) Corridor Project study area.

As noted in Chapter 2, Alternatives Considered, the No Action Alternative does not meet the purpose and need for the NWR Corridor Project, while the Preferred Alternative does meet the purpose and need. The following summarizes the primary mobility improvements and benefits of the Preferred Alternative that address the purpose and need:

- The Preferred Alternative would provide new high-capacity commuter rail service to areas in the NWR Corridor generally along United States Highway 36 (US 36) and State Highway (SH) 119. Such service would enhance regional connectivity and reinforce regional transit plans.
- The Preferred Alternative would provide a reliable transit option to congested roadway travel and offer improved travel times. Estimated transit travel time in the a.m. peak hour in 2035 for the Preferred Alternative from the Downtown Longmont Station at 1st Avenue/Terry Street to Denver Union Station (DUS) is 61 minutes with FasTracks-only stations and 68 minutes with all stations. The projected auto travel time from 1st Avenue/Terry Street in Downtown Longmont to DUS is 79 minutes along Interstate 25 (I-25) in general travel lanes.
- The Preferred Alternative would provide service to 8,400 riders under the FasTracks-only scenario and 12,100 riders under the all stations scenario during an average weekday in 2035.
- The Preferred Alternative would allow for shared use of tracks for freight rail operations. There would be minimal or negligible effects on freight rail operations.
- The Preferred Alternative would not permanently impact existing pedestrian and bicycle facilities and would not preclude the development of planned pedestrian and bicycle facilities in the vicinity of the proposed alignment and stations. Some existing trails (e.g., Big Dry Creek Trail, Coal Creek Trail, and Goose Creek Trail) may be temporarily impacted during construction.

Mitigation will be required at several locations due to traffic impacts from increased parking at station areas; specific details are provided in Section 4.7.3, Station Area Impacts.

Mitigation will also be required at certain grade crossing locations to support safety improvements, Quiet Zone improvements, and to mitigate traffic delay introduced by the NWR service; specific details are provided in Section 4.7.5, Rail Crossing Mitigation.

4.2 PURPOSE

Since the implementation of a rail transit alternative is a major capital investment, it is important to identify how the Preferred Alternative performs compared to the No Action Alternative within the project study area for the NWR Corridor. All alternatives located outside of the BNSF Railway Company ROW that were evaluated were eliminated during Level 1 screening because they did not meet the project's Purpose and Need and were not practicable, due to the requirement for additional property acquisition that would result in impacts to a large number of private properties and impacts to sensitive environmental resources.

4.3 EXISTING TRANSIT SERVICE

The following section describes the existing transit service in the project study area for the NWR Corridor.

4.3.1 Existing Service and Operations

The Regional Transportation District (RTD) provides transit service in the project study area for the NWR Corridor with a combination of Regional, Express, and Local bus routes. A total of 45 transit routes traverse the project study area: 33 Local routes, two Express routes, nine Regional routes, one skyRide route, and five call-n-Rides. Regional and Express services are primarily focused along the US 36 Corridor with some select routes along I-76, US 287, SH 119 and Colorado Boulevard. Local routes serve the project study area north-south along Pecos Street, Federal Boulevard, Sheridan Boulevard, and Wadsworth Parkway among others. East-west bus routes operate along 88th Avenue, 92nd Avenue, 104th Avenue, and 120th Avenue providing transit service to select roadway segments within the project study area and connections to park-n-Ride facilities. Two Local route systems focused on Boulder and Longmont also serve the project study area. Five call-n-Ride service areas also provide curb-to-curb, demand responsive service for portions of Broomfield, Interlocken/ Westmoor, Louisville, Superior and Longmont.

4.3.2 Existing Facilities

A total of 11 park-n-Rides are currently located in the project study area for the NWR Corridor. These facilities serve as transit connection points for park-n-Ride access and transfer points between bus routes. A summary of NWR Corridor park-n-Ride characteristics is provided in Table 4-1.

TABLE 4-1. EXISTING NORTHWEST RAIL CORRIDOR PARK-N-RIDES SERVING BUS ROUTES

park-n-Ride	Existing Parking Spaces	Bus Routes Serving park-n-Ride
70th Avenue and Broadway	308	Local: 8, 72; Express: 31X; Regional: DD, T
Westminster Center	1,310	Local: 31, 51, 92, 100, 104; Express: 86X; Regional: B, DD, DM, L, S, T; skyRide: AB
US 36 and Church Ranch	396	Local: 104; Regional: B, DD
Broomfield[1]	905	Local: 76, 112, 120, 128, 228, LYNX; Regional B, DD, DM, S, T; skyRide: AB; Broomfield call-n-Ride; Interlocken/Westmoor call-n-Ride
US 36 and E Flatiron Circle	264	Local: LYNX; Regional: B, DD, HX; Interlocken/Westmoor call-n-Ride
US 36 and McCaslin	466	Regional: B, DD, DM, HX, S, T; skyRide: AB; Louisville call-n-Ride; Superior call-n-Ride
Lafayette	136	Local: 76, 225, DASH, JUMP; Regional: L
Table Mesa	824	Local: 206, DASH; Regional: B, DD, DM, HX, S, T; skyRide: AB
Niwot/SH 119	28	Regional: BOLT, J
Longmont	101	Local: 324; Regional: L; Longmont call-n-Ride
Roosevelt Park	97	Regional: BOLT, J, L; Longmont call-n-Ride
Total	**4,835**	

Source: RTD, 2009.

Note:

[1]The new Broomfield park-n-Ride opening in 2010 at the 1ST Bank Center will be shared parking in a 1,500-space structure. It is anticipated that 940 spaces will be available to RTD patrons, of which 200 will be available at all times, and 740 will be shared with other users and available on a first-come, first-served basis.

RTD = Regional Transportation District
US 36 = United States Highway 36
SH 119 = State Highway 119

4.4 FUTURE TRANSIT SERVICE AND OPERATIONS

The following section describes the proposed changes to the transit system in the project study area for the NWR Corridor under the No Action Alternative and Preferred Alternative.

4.4.1 No Action Alternative

The No Action Alternative represents a 2035 horizon year scenario for the region and the NWR Corridor with no new major transit investment in the corridor. It provides a baseline from which all other alternatives are compared. For the transit system, the No Action Alternative includes separate assumptions for transit service and facilities outside the NWR Corridor versus transit service and facilities inside the corridor. Outside the corridor, the transit system is consistent with services and facilities presented in the Denver Regional Council of Governments (DRCOG) *2035 Metro Vision Regional Transportation Plan (2035 MVRTP)* (DRCOG 2007), including improvements contained in the RTD FasTracks Program. Inside the corridor, the transit system is represented by existing and committed improvements, which include only improved bus services and supporting facilities that are

programmed and funded or planned as part of the DRCOG *2008-2013 Transportation Improvement Plan (TIP)* (DRCOG 2008) and the *2035 MVRTP* (DRCOG 2007).

The No Action Alternative includes the 11 existing park-n-Rides in the NWR Corridor with the relocation of the Broomfield park-n-Ride. The bus service for the No Action Alternative is described in Table 4-2 and illustrated in Figure 4-1. Peak period frequencies represent the time periods from approximately 6:00 a.m. to 9:00 a.m. (morning) and from 3:00 p.m. to 7:00 p.m. (afternoon). Off-peak periods represent the mid-day and all other times. Improvements over existing services in Table 4-2 represent improvements related to other FasTracks corridors. Park-n-Rides for the No Action Alternative are presented in Table 4-3.

TABLE 4-2. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE (2035) BUS OPERATING PLAN

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from Existing
Local Routes		
6 – East 6th Avenue/North Pecos	30/30	Same as existing.
8 – North Broadway/Huron	30/30	Improved off-peak service.
31 – North Federal	30/30	Same as existing.
51 – Sheridan Crosstown	15/30	Improved peak service.
72 – 72nd Avenue Crosstown	30/30	Same as existing.
76 – Wadsworth Crosstown	15/30	Improved peak service.
80 – 80th Avenue Crosstown	30/30	Same as existing.
92 – 92nd Avenue Crosstown	15/30	Improved peak service.
100 – Kipling Crosstown	30/30	Improved off-peak service.
104 – 104th Avenue Crosstown	30/30	Improved off-peak service.
112 – West 112th Avenue	30/30	Improved off-peak service.
120 – 120th Avenue Crosstown	30/30	Improved off-peak service.
128 – Broomfield/Wagon Road	30/60	Same as existing.
Boulder Local Routes		
BOUND – 30th Street	10/10	Same as existing.
DASH – To Lafayette	15/30	Same as existing.
HOP – CU/Pearl Loop	10/10	Same as existing.
JUMP – Arapahoe (Short)	30/30	Same as existing.
JUMP – Arapahoe (Long)	30/30	Same as existing.
JUMP – Arapahoe (Extra-Long)	30/30	Same as existing.
LYNX – Broomfield/Louisville	30/60	Same as existing.
SKIP – Broadway Loop	7/10	Same as existing.
STAMPEDE – CU Loop	15/10	Same as existing.
203 – Baseline	30/30	Same as existing.
204 – Table Mesa/Yarmouth	15/30	Same as existing.
205 – Gunbarrel/Boulder Mall	15/30	Same as existing.

TABLE 4-2. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE (2035) BUS OPERATING PLAN

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from Existing
206 – Pearl/Eisenhower	30/30	Same as existing.
208 – Iris/Valmont	30/30	Same as existing.
209 – CU/Thunderbird	15/20	Same as existing.
225 – Boulder-Lafayette via Baseline	30/40	Same as existing.
228 – Louisville/Broomfield (Interlocken)	30/30	Same as existing.
230 – Lafayette-Louisville-Interlocken	15/30	New Route.
Longmont Local Routes		
323 – Skyline Crosstown	30/30	Same as existing.
324 – Main Street Crosstown	30/30	Same as existing.
326 – Northside Loop Clockwise	30/30	Same as existing.
327 – Northside Loop Counterclockwise	30/30	Same as existing.
Activity Center Connector Routes		
ACC-I - Denver-Boulder via Interlocken	15/0	New Route.
ACC-CP - Denver-Boulder via ConocoPhillips	15/0	New Route.
Limited Routes		
Not Applicable		
Express Routes		
31x – North Federal Express	50/0	Same as existing.
86x – Westminster Express	10/0	Same as existing.
Regional Routes		
B – Boulder/Denver	15/15	Improved peak and off-peak service
BX – Boulder/Denver Express	10/30	Improved off-peak service.
BF – Broomfield/Denver	15/0	Same as existing.
BOLT – Boulder/Longmont	15/30	Same as existing.
DD – Boulder/Colorado Boulevard	40/0	Same as existing.
DM – Boulder/Anschutz-Fitzsimons	30/0	Same as existing.
H – 28th Street/Superior - Civic Center (all stop)	15/30	New Route.
HX – 28th Street/Superior - Civic Center (express)	10/0	Improved peak service; stop at FlatIron Crossing removed.
J – Longmont/East Boulder/CU	30/0	Same as existing.
L – Longmont/Denver (via US 36)	30/60	Improved off-peak service.
S – Denver/East Boulder	40/0	Same as existing.
T – Boulder/Greenwood Plaza	50/0	Same as existing.
skyRide Routes		
AB – Boulder/DIA	30/60	Improved peak service; re-routed to operate between Boulder and DIA via Northwest Parkway/E-470.

TABLE 4-2. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE (2035) BUS OPERATING PLAN

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from Existing
Call-n-Rides		
Broomfield	Reservation	Same as existing.
Interlocken/ Westmoor	Reservation	Same as existing.
Louisville	Reservation	Same as existing.
Superior	Reservation	Same as existing.
Longmont	Reservation	Same as existing.

Source: RTD, 2009; NWR Corridor Project Team, 2009.

Notes:
Includes May 2009 Service Changes
DIA = Denver International Airport
US 36 = United States Highway 36

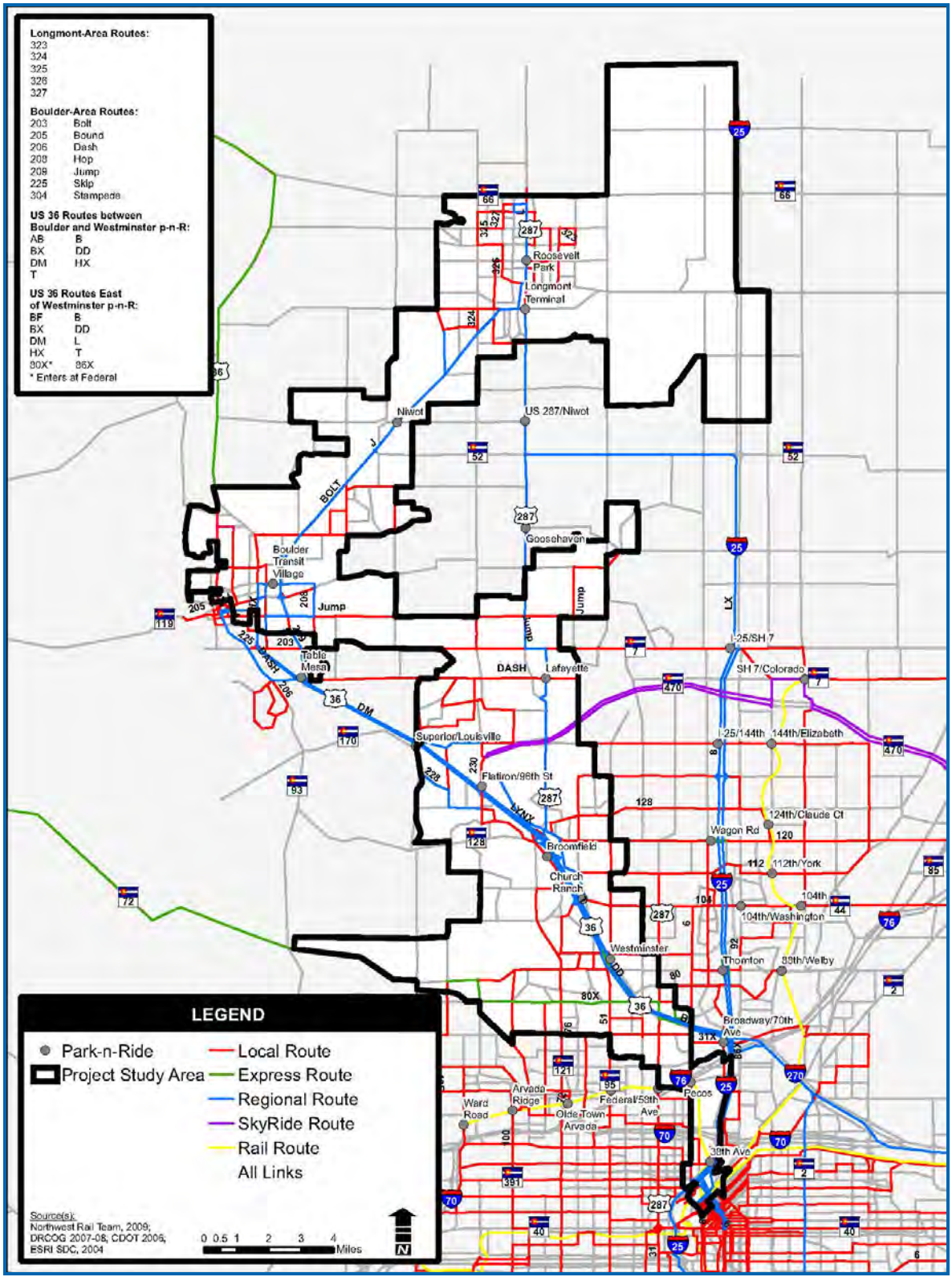
TABLE 4-3. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE 2015 AND 2035 PARKING

park-n-Ride	Parking Spaces		
	Opening Day (2015)	Spaces Added by 2035	2035 Total
70th Avenue and Broadway	308	0	308
Westminster Center	1,310	149	1,459
US 36 and Church Ranch	396	0	396
Broomfield[1]	940	0	940
US 36 and E Flatiron Circle	264	0	264
US 36 and McCaslin	466	0	466
Lafayette	136	0	136
Table Mesa	824	0	824
Niwot/SH 119	28	0	28
Longmont	101	0	101
Roosevelt Park	97	0	97
Total	**4,970**	**149**	**5,119**

Source: NWR Corridor Project Team, 2009; US 36 Corridor Project Team, 2009.

Note:
[1]The new Broomfield park-n-Ride opening in 2010 at the 1ST Bank Center will be shared parking in a 1,500-space structure. It is anticipated that 940 spaces will be available to RTD patrons, of which 200 will be available at all times, and 740 will be shared with other users and available on a first-come, first-served basis.
RTD = Regional Transportation District
US 36 = United States Highway 36
SH 119 = State Highway 119

FIGURE 4-1. NO ACTION ALTERNATIVE TRANSIT NETWORK



Source: RTD, 2009.

4.4.2 Preferred Alternative

The Preferred Alternative consists of approximately 41 miles of double track commuter rail facilities and service extending from DUS to the vicinity of 1st Avenue and Terry Street in downtown Longmont. Two sets of stations are being advanced for the Preferred Alternative: a set of funded (FasTracks-only) stations and a set of all stations (funded and unfunded). See Chapter 2, Alternatives Considered, for a more detailed description of the stations and alignment.

4.4.2.1 Station Locations

The following commuter rail station locations have been advanced as part of the Preferred Alternative:

- South Westminster/ 71st Avenue
- Walnut Creek
- Flatiron
- Downtown Louisville
- Boulder Transit Village
- Gunbarrel
- Downtown Longmont

The following commuter rail stations locations are also being described in this Environmental Evaluation, but are not funded by FasTracks. These stations have been included for consideration throughout the planning process.

- Westminster/ 88th Avenue
- Broomfield/ 116th Avenue
- East Boulder
- Twin Peaks

4.4.2.2 Rail Operations Plan

Table 4-4 presents the proposed 2035 rail operations plan for the Preferred Alternative that was used for analysis of transportation and other impacts. The rail operations plan consists of hours of operation, service frequency, and headways (minutes between trains) and would be the same regardless of the stations actually built.

The NWR Corridor commuter rail line would operate between 3:30 a.m. and 1:30 a.m. The two-car trains would operate 365 days a year on either a weekday or a weekend/holiday schedule. These service timeframes include weekday early morning and late evening, weekday peak periods, weekday mid-day, weekday night, and weekends or holidays.

It is likely that the opening year operating plan will be less intense than that proposed for 2035. In 2015, the Preferred Alternative would provide less frequent 30-minute peak period service and 60-minute off-peak period service throughout the corridor (Denver to Longmont).

TABLE 4-4. NORTHWEST RAIL CORRIDOR OPERATIONS PLAN (2035)

Hours of Operation	Service Frequency	Headway
Weekday Early Morning Service (3:30 a.m. to 6:00 a.m.) Weekday Late Evening Service (7:30 p.m. to 9:30 p.m.)	Two trains per hour between DUS and Longmont	30 minutes
Weekday Morning Peak Period Service (6:00 a.m. to 9:30 a.m.) Weekday Evening Peak Period Service (2:30 p.m. to 7:30 p.m.)	Two trains per hour between DUS and BTV; two trains per hour between DUS and Longmont	15 minutes DUS to BTV; 30 minutes BTV to Longmont
Weekday Mid-Day Service (9:30 a.m. to 2:30 p.m.)	Two trains per hour between DUS and Longmont	30 minutes
Weekday Night Service (9:30 p.m. to 1:30 a.m.)	One train per hour between DUS and Longmont	60 minutes
Saturday Service (all times)	One train per hour between DUS and Longmont	60 minutes
Sunday or Holiday Service (all times)	One train per hour between DUS and Longmont	60 minutes

Source: RTD, 2009.
BTV = Boulder Transit Village
DUS = Denver Union Station

4.4.2.3 Bus Operations Plan

The bus network for the Preferred Alternative was developed to coordinate with and complement commuter rail service. Both of the Preferred Alternative stations scenarios (i.e., with FasTracks-only stations and all stations) have the same bus network assumptions. The primary difference between the No Action Alternative and Preferred Alternative bus networks is changes to the BOLT route and elimination of the Route S. The BOLT route provides bus service between Boulder and Longmont along SH 119. To avoid competing with rail, future service on the BOLT route was reduced and the route was realigned to also serve the Boulder Transit Village. In addition, some existing bus routes would be routed to provide service to the proposed commuter rail stations. Table 4-5 presents the bus operations plan for the Preferred Alternative and indicates the changes from the No Action Alternative.

Table 4-6 provides a summary of bus route connections at each commuter rail station. Figure 4-2 illustrates the bus network for the Preferred Alternative in the project study area for the NWR Corridor.

TABLE 4-5. PREFERRED ALTERNATIVE BUS OPERATIONS PLAN (2035)

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from No Action Alternative
Local Routes		
6 – East 6th Avenue/North Pecos	30/30	Same as No Action Alternative
8 – North Broadway/Huron	30/30	Same as No Action Alternative
31 – North Federal	30/30	Same as No Action Alternative
51 – Sheridan Crosstown	15/30	Same as No Action Alternative
72 – 72nd Avenue Crosstown	30/30	Same as No Action Alternative

TABLE 4-5. PREFERRED ALTERNATIVE BUS OPERATIONS PLAN (2035)

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from No Action Alternative
76 – Wadsworth Crosstown	15/30	Same as No Action Alternative
80 – 80th Avenue Crosstown	30/30	Same as No Action Alternative
92 – 92nd Avenue Crosstown	15/30	Same as No Action Alternative
100 – Kipling Crosstown	30/30	Same as No Action Alternative
104 – 104th Avenue Crosstown	30/30	Same as No Action Alternative
112 – West 112th Avenue	30/30	Same as No Action Alternative
120 – 120th Avenue Crosstown	30/30	Same as No Action Alternative
128 – Broomfield/Wagon Road	30/60	Same as No Action Alternative
Boulder Local Routes		
BOUND – 30th Street	10/10	Same as No Action Alternative
DASH – To Lafayette	15/30	Same as No Action Alternative
HOP – CU/Pearl Loop	10/10	Same as No Action Alternative
JUMP – Arapahoe (Short)	30/30	Same as No Action Alternative
JUMP – Arapahoe (Long)	30/30	Same as No Action Alternative
JUMP – Arapahoe (Extra-Long)	30/30	Same as No Action Alternative
LYNX – Broomfield/Louisville	30/60	Same as No Action Alternative
SKIP – Broadway Loop	7/10	Same as No Action Alternative
STAMPEDE – CU Loop	15/10	Same as No Action Alternative
203 – Baseline	30/30	Same as No Action Alternative
204 – Table Mesa/Yarmouth	15/30	Same as No Action Alternative
205 – Gunbarrel/Boulder Mall	15/30	Same as No Action Alternative
206 – Pearl/Eisenhower	30/30	Same as No Action Alternative
208 – Iris/Valmont	30/30	Same as No Action Alternative
209 – CU/Thunderbird	15/20	Same as No Action Alternative
225 – Boulder-Lafayette via Baseline	30/40	Same as No Action Alternative
228 – Louisville/Broomfield (Interlocken)	30/30	Same as No Action Alternative
230 – Lafayette-Louisville-Interlocken	15/30	Same as No Action Alternative
Longmont Local Routes		
323 – Skyline Crosstown	30/30	Same as No Action Alternative
324 – Main Street Crosstown	30/30	Same as No Action Alternative
326 – Northside Loop Clockwise	30/30	Same as No Action Alternative
327 – Northside Loop Counterclockwise	30/30	Same as No Action Alternative
Limited Routes		
Not Applicable		
Activity Center Connector Routes		
ACC-I – Denver-Boulder via Interlocken	15/0	Same as No Action Alternative
ACC-CP – Denver-Boulder via Conoco-Phillips	15/0	Same as No Action Alternative

TABLE 4-5. PREFERRED ALTERNATIVE BUS OPERATIONS PLAN (2035)

Route	Service Frequency Peak/Off-Peak (minutes)	Changes from No Action Alternative
Express Routes		
31x – North Federal Express	50/0	Same as No Action Alternative
86x – Westminster Express	10/0	Same as No Action Alternative
Regional Routes		
B – Boulder/Denver	15/15	Same as No Action Alternative
BX – Boulder/Denver Express	10/30	Same as No Action Alternative
BF – Broomfield/Denver	15/0	Same as No Action Alternative
BOLT – Boulder/Longmont	30/60	Reduced peak and off-peak service; rerouted to serve Boulder Transit Village Station
DD – Boulder/Colorado Boulevard	40/0	Same as No Action Alternative
DM – Boulder/Anschutz-Fitzsimons	30/0	Same as No Action Alternative
H – 28th Street/Superior - Civic Center (all stop)	15/30	Same as No Action Alternative
HX – 28th Street/Superior - Civic Center (express)	10/0	Same as No Action Alternative
J – Longmont/East Boulder/CU	30/0	Same as No Action Alternative
L – Longmont/Denver (via US 36)	30/60	Same as No Action Alternative
S – Denver/East Boulder	NA	Eliminated
T – Boulder/Greenwood Plaza	50/0	Same as No Action Alternative
skyRide Routes		
AB – Boulder/DIA	30/60	Same as No Action Alternative
Call-n-Rides		
Broomfield	Reservation	Same as No Action Alternative
Interlocken/Westmoor	Reservation	Same as No Action Alternative
Louisville	Reservation	Same as No Action Alternative
Superior	Reservation	Same as No Action Alternative
Longmont	Reservation	Same as No Action Alternative

Source: RTD, 2009; NWR Corridor Project Team, 2009.

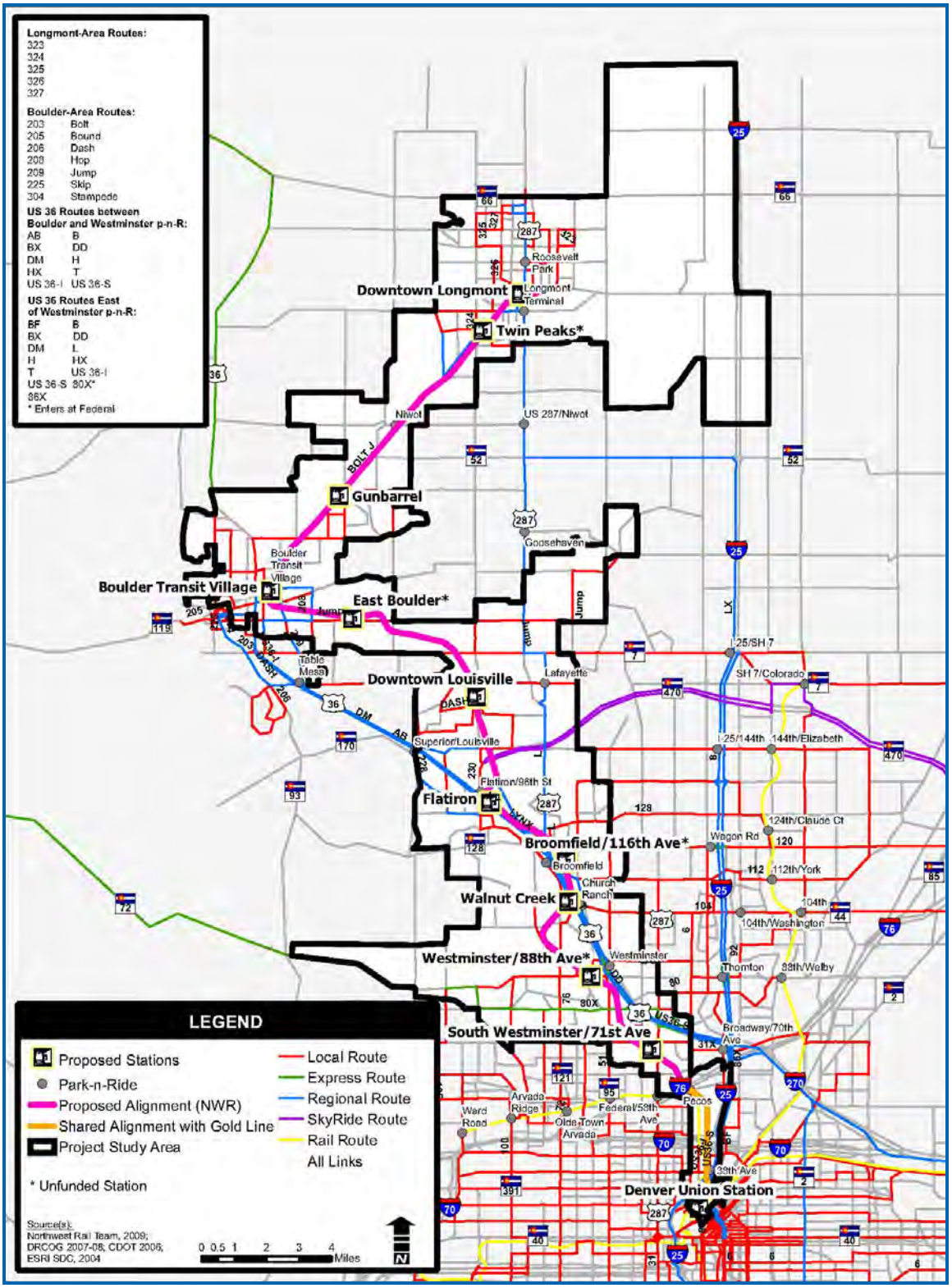
Notes:
Includes May 2009 Service Changes
DIA = Denver International Airport
CU = University of Colorado
NA = not available

TABLE 4-6. PREFERRED ALTERNATIVE (2035) STATION BUS CONNECTIONS

Station	Bus Route Connections
South Westminster/ 71st Avenue	Local: 31, 72
Westminster/ 88th Avenue*	Local: 31, 51, 92, 100, 104
Walnut Creek	Local: 104; Regional: B, BF, DD, H
Broomfield/ 116th Avenue*	Local: 76, 112, 120, 128, 228, 230; Regional: B, BF, DD, DM, H, T; Activity Center: ACC-I, ACC-CP; skyRide: AB
FlatIron	Local: 230, LYNX; Regional: B, DD, H
Downtown Louisville	Local: 228, 230, DASH, LYNX
East Boulder*	Local: JUMP
Boulder Transit Village[1]	Local: 206, 208, Bound, HOP; Regional: H, HX; Activity Center: ACC-I, ACC-CP
Gunbarrel	Local: 205; Regional: BOLT, J
Twin Peaks*	Local: 323, 324; Regional: BOLT, J
Downtown Longmont	Local: 323, 324, 326, 327; Regional: BOLT, J

Sources: RTD, 2009; NWR Corridor Project Team, 2009.
Notes:
*Unfunded station
[1]The Boulder Transit Village Station will be adjacent to a bus station; those bus routes serving either station are noted here.

FIGURE 4-2. PREFERRED ALTERNATIVE (2035) TRANSIT NETWORK



Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), as modified by the NWR Corridor Project Team, 2009.

4.5 TRANSIT IMPACTS

The following section describes the impacts to the transit system under the No Action Alternative and Preferred Alternative including ridership, station boardings and mode of access, travel time, and Vehicle Miles Traveled (VMT).

4.5.1 Ridership Demand for Alternatives

Average weekday rail ridership for the Preferred Alternative in 2035 is projected to be 8,400 riders per day with the FasTracks-only stations and 12,100 with all stations. The rail ridership of the Preferred Alternative is only one measure of the alternative's impact. System-wide linked transit trips generated by each alternative can provide a comparison of the overall transit ridership impact on the entire system.

System-wide linked transit trips forecast for the alternatives on an average weekday for the No Action Alternative are 429,700 linked transit trips, while the Preferred Alternative is expected to have 433,300 to 433,600 linked transit trips (depending on the number of stations provided). System-wide transit ridership comparisons show that the Preferred Alternatives generates approximately 4,000 more transit-linked trips than the No Action Alternative. This difference in the number of average weekday transit trips system-wide between the No Action Alternative and the Preferred Alternative equates to the number of trips by new daily transit riders. New transit riders would not normally use transit for their trip without the transit improvements associated with an alternative.

4.5.2 Station Boardings for Commuter Rail

Daily station boardings indicate the relative attractiveness of a transit station. Table 4-7 presents projected 2035 average daily boardings for all stations in the NWR Corridor. The table shows that the DUS location represents 35 to 36 percent of the total boardings in the corridor. This is because most trips have a destination at DUS for access to downtown Denver or for transfer to other regional transit connections. Most boardings at DUS represent return trips to the NWR Corridor at the end of the workday.

TABLE 4-7. NORTHWEST RAIL CORRIDOR PROJECTED DAILY BOARDINGS AT COMMUTER RAIL STATIONS (2035)

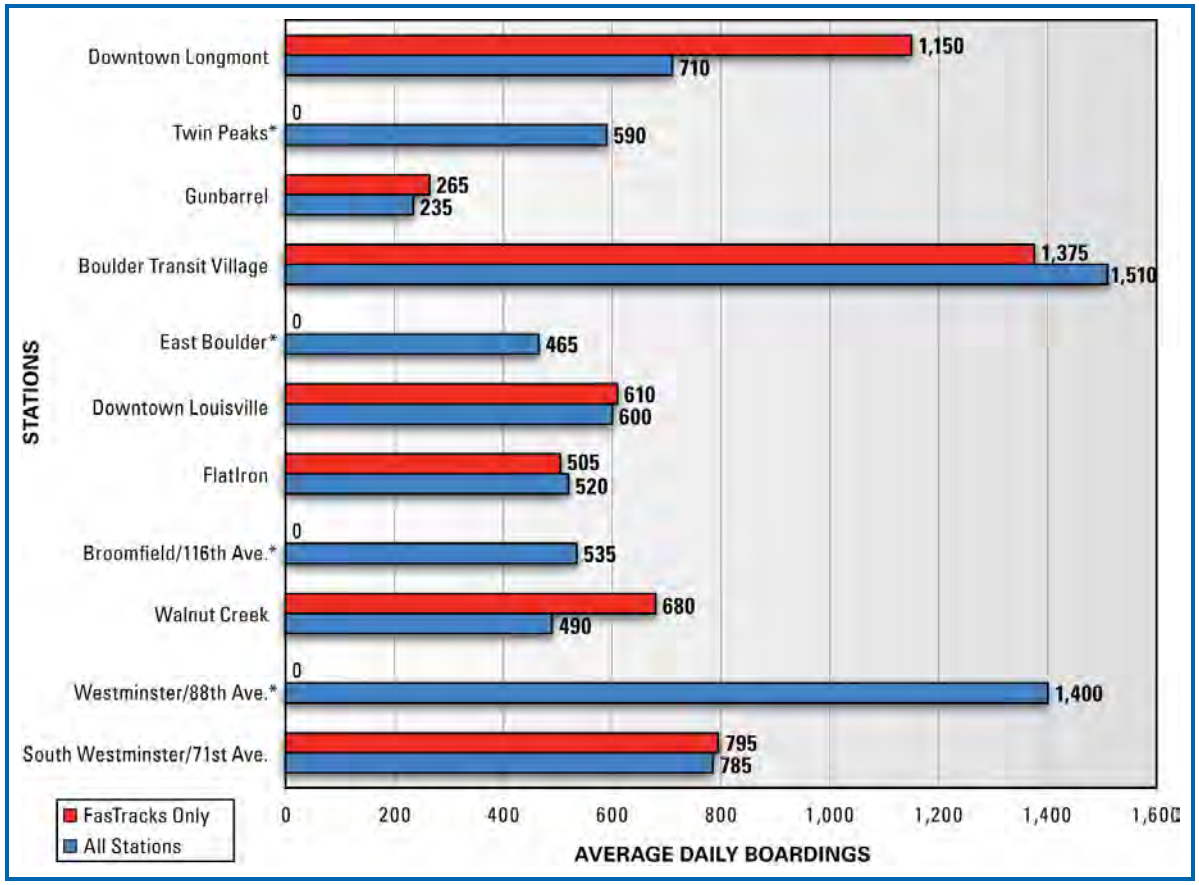
Station	Average Daily Boardings (FasTracks Stations Only)	Percent of Total	Average Daily Boardings (All Stations)	Percent of Total
Denver Union Station	2,975	36%	4,190	35%
South Westminster/ 71st Avenue	795	10%	785	7%
Westminster/ 88th Avenue*	NA	NA	1,400	12%
Walnut Creek	680	8%	490	4%
Broomfield/ 116th Avenue*	NA	NA	535	4%
FlatIron	505	6%	520	4%
Downtown Louisville	610	7%	600	5%
East Boulder*	NA	NA	465	4%
Boulder Transit Village	1,375	16%	1,510	13%
Gunbarrel	265	3%	235	2%
Twin Peaks*	NA	NA	590	5%
Downtown Longmont	1,150	14%	710	6%
TOTAL	**8,355**	**100%**	**12,030**	**100%**

Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), as modified by the NWR Corridor Project Team, 2009.

Note: *Unfunded station
NA = not available

Other than DUS, the South Westminster/ 71st Avenue, Westminster/ 88th Avenue (unfunded), Boulder Transit Village, and Downtown Longmont stations are forecast to generate the highest ridership activity in the NWR Corridor. The Downtown Longmont Station is an end-of-line station with a larger capture area than other stations, and can attract ridership from communities such as Longmont and areas throughout the north Front Range. The South Westminster/ 71st Avenue Station area serves a significant amount of residential population in Westminster and Arvada, is directly accessible via two major arterial streets, and is served by two local bus routes. The Boulder Transit Village Station provides access to a significant portion of Boulder and is served by numerous Boulder bus routes. Figure 4-3 graphically illustrates average daily station boardings for all locations except DUS.

FIGURE 4-3. NORTHWEST RAIL CORRIDOR PROJECTED DAILY STATION BOARDINGS (2035)



Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), as modified by the NWR Corridor Project Team, 2009.
Note: *Unfunded station

The projected station boardings presented above represent average weekday conditions. However, they do not account for ridership that could be generated from special events, or additional ridership from outside the DRCOG Denver metropolitan travel demand modeling area (e.g., trips originating from the North Front Range metropolitan area, such as Loveland and Fort Collins). The DRCOG model includes all portions of Weld County south of SH 66 which travels along the northern edge of the City of Longmont. The cities of Platteville, Firestone, Dacono and Fort Lupton are included in the DRCOG model network.

The Broomfield/ 116th Avenue Station (unfunded) is adjacent to the 1ST Bank Center (formerly the Broomfield Event Center), the largest major event venue in the project study area for the NWR Corridor. The 1ST Bank Center opened in November 2006 and hosts approximately 32 hockey games and 24 basketball games per year, as well as other performances. Annual visitation was estimated to be 375,000 persons for 122 events in the *Feasibility Study for the Broomfield Event Center* (Convention, Sports & Leisure 2005). The remodeled 1ST Bank Center can hold up to 6,500 people and accommodate live music, family shows, sporting events and community forums.

The Preferred Alternative offers additional travel options to this event venue. Transit access would be provided within walking distance, in addition to the available parking. Due to the

magnitude of event activity, the Broomfield Station (unfunded) has the potential to generate substantial special event ridership on select days.

4.5.3 Commuter Rail Station Mode of Access

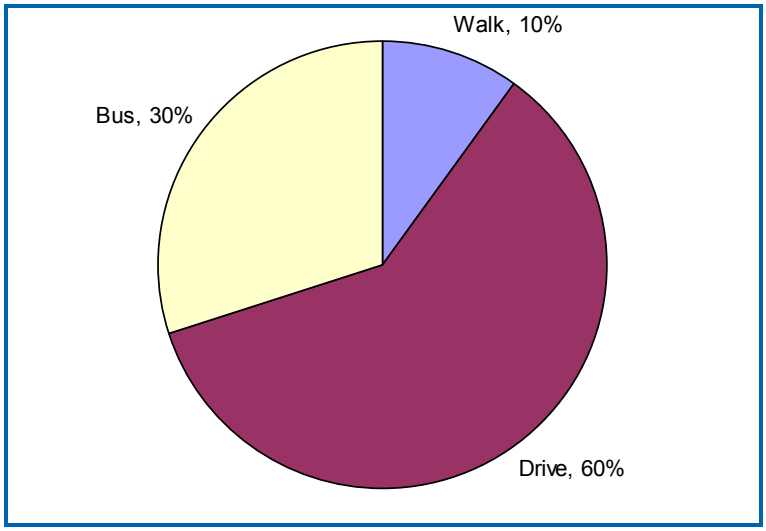
The mode of access to each of the Preferred Alternative stations was estimated from the DRCOG 2035 Regional Travel Demand Model (DRCOG 2005). The modes of access to a station include walk, drive, and bus. All stations assume parking facilities are provided. Table 4-8 displays estimated mode of access by station, and Figure 4-4 shows the corridor total.

TABLE 4-8. MODE OF ACCESS FOR EACH STATION: PREFERRED ALTERNATIVE (2035)

Station	Walk	Drive	Bus	Total
South Westminster/ 71st Avenue	15%	65%	20%	100%
Westminster/ 88th Avenue*	<5%	50%	50%	100%
Walnut Creek	5%	75%	20%	100%
Broomfield/ 116th Avenue*	10%	55%	35%	100%
FlatIron	50%	45%	5%	100%
Downtown Louisville	5%	65%	30%	100%
East Boulder*	5%	35%	60%	100%
Boulder Transit Village	20%	55%	25%	100%
Gunbarrel	<5%	35%	65%	100%
Twin Peaks*	<5%	70%	30%	100%
Downtown Longmont	<5%	80%	20%	100%

Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), as modified by the NWR Corridor Project Team, 2009.
Note: *Unfunded Station

FIGURE 4-4. TOTAL MODE OF ACCESS FOR THE PREFERRED ALTERNATIVE (2035)



Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), as modified by the NWR Corridor Project Team, 2009.

Access mode varies by station based on the proximity and density of residential or employment uses in the station areas. Additionally, roadway connectivity has an important influence on drive access. The number and frequency of buses serving a station, as well as trail or other pedestrian connections, also influence the access by alternate modes.

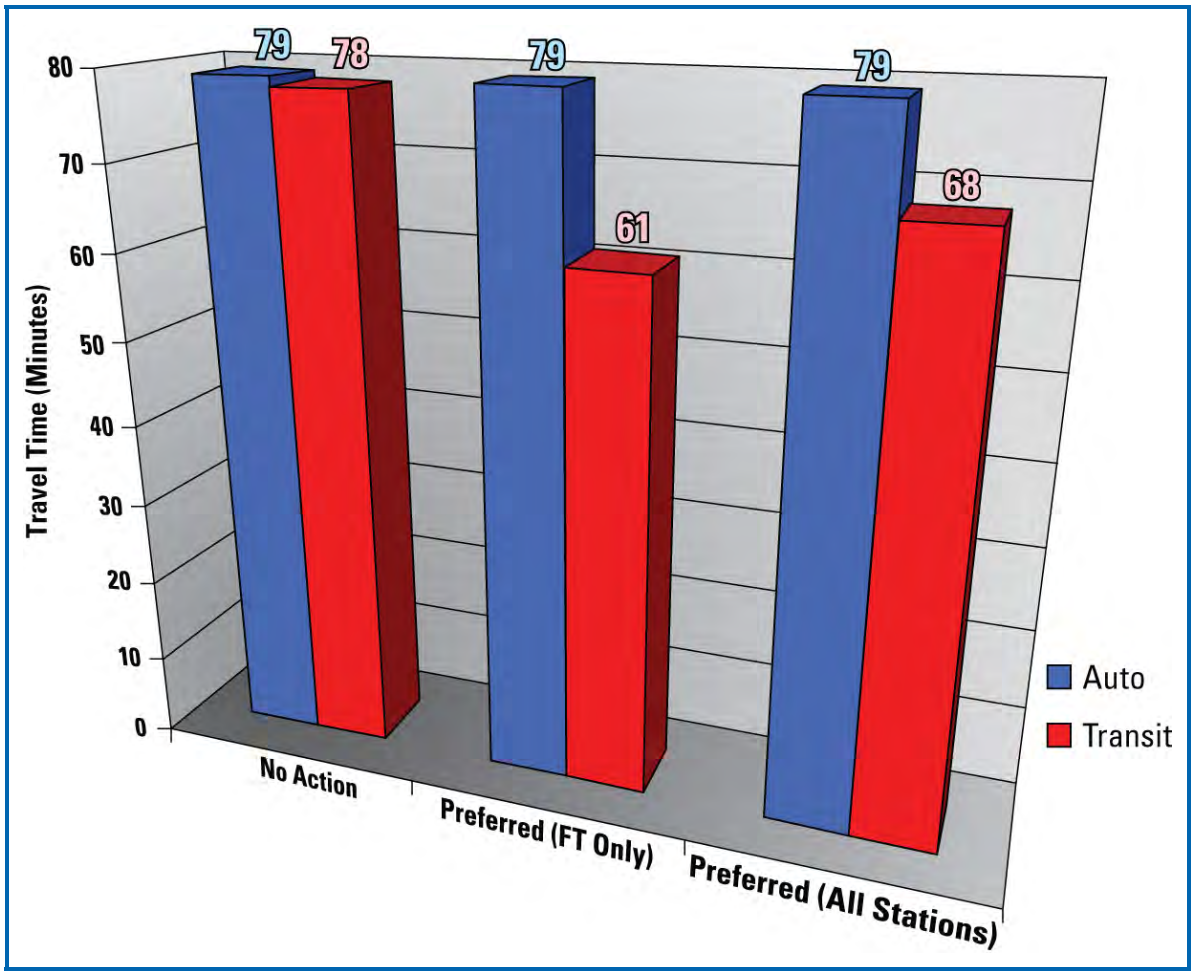
The end-of-line station at Downtown Longmont has the highest percentage of drive access (80 percent), with Twin Peaks, Downtown Louisville, Walnut Creek, and South Westminster/ 71st Avenue stations also reflecting higher drive percentages than other stations. Bus access is highest at Gunbarrel and East Boulder stations due to the number of routes serving these locations. The stations with the highest percentage of walk access include Flatiron, Boulder Transit Village, and South Westminster/ 71st Avenue with 50, 20, and 15 percent of total riders at those locations, respectively.

Overall as a corridor, the residential suburban character is illustrated by the high percentage of drive access (60 percent). The bus and walk connectivity to commuter rail stations is estimated to represent 30 and 10 percent of overall access, respectively.

4.5.4 Travel Time

Figure 4-5 compares auto and transit travel times between 1st Avenue/ Terry Street in downtown Longmont and DUS in 2035. Auto travel time under each scenario assumes travel along I-25 within general purpose lanes since this is the shortest travel time between downtown Longmont and DUS. Transit times for the No Action Alternative assumes Express bus service traveling on I-25 bus/managed lanes into DUS. The Preferred Alternative assumes travel time along the proposed commuter rail alignment (with both FasTracks-only stations and all stations scenarios). The Preferred Alternative exhibits a 14 to 23 percent improvement (depending on the number of stations) in travel time over auto, and a 13 to 22 percent improvement over bus transit times under the No Action Alternative.

FIGURE 4-5. A.M. PEAK HOUR TRAVEL TIME COMPARISON DOWNTOWN LONGMONT TO DENVER UNION STATION (2035)



Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), as modified by the NWR Corridor Project Team, 2009.
Notes:
Auto times use I-25 to access Denver Union Station from Longmont.
No Action Alternative transit travel time is on the LX bus route from Longmont to DUS via SH 52 and I-25.
Preferred Alternative transit travel times are on the NWR Corridor commuter rail line.

4.5.5 Vehicle Miles Traveled

VMT is a measure of travel demand. Table 4-9 shows the impact to VMT under the FasTracks Only alternative (average weekday in 2035) in the Denver metropolitan region and the project study area for the NWR Corridor. As shown in this table, differences in VMT between the alternatives are expected to be minor. In the regional analysis, the Preferred Alternative shows a reduction over the No Action Alternative of approximately 5,000 VMT, indicating a slight reduction in overall vehicular travel throughout the region. Both regionally and in the project study area, all differences would be less than two percent which is well within normal variation for different model runs. The data in the table presents a larger VMT reduction in the study corridor compared the region as a whole. This is likely a result the forecasting tools used to estimate total VMT. A relative difference of less that two percent

would be considered within the accepted range of variability within the model, meaning the changes in VMT are negligible.

The negligible changes in VMT demonstrate that vehicular demand is relatively unaffected by the construction of Northwest Rail corridor on a daily basis. Localized changes in VMT around station areas would be expected during the peak commuting hours as Northwest Rail patrons access rail stations, but as the data shows, daily VMT levels are forecast to remain stable.

TABLE 4-9. VEHICLE MILES TRAVELED COMPARISON (AVERAGE WEEKDAY 2035)

Measurement	No Action Alternative	Preferred Alternative (FasTracks-Only)
Regional VMT	128,002,350	127,997,642
Difference in Regional VMT from the No Action Alternative	NA	–4,708
Northwest Rail Corridor Study Area VMT	13,603,250	13,578,262
Difference in Northwest Rail Corridor Study Area VMT from the No Action Alternative	NA	–24,986

Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), as modified by the NWR Corridor Project Team, 2009.

Notes:
NA = not applicable
VMT = vehicle miles traveled

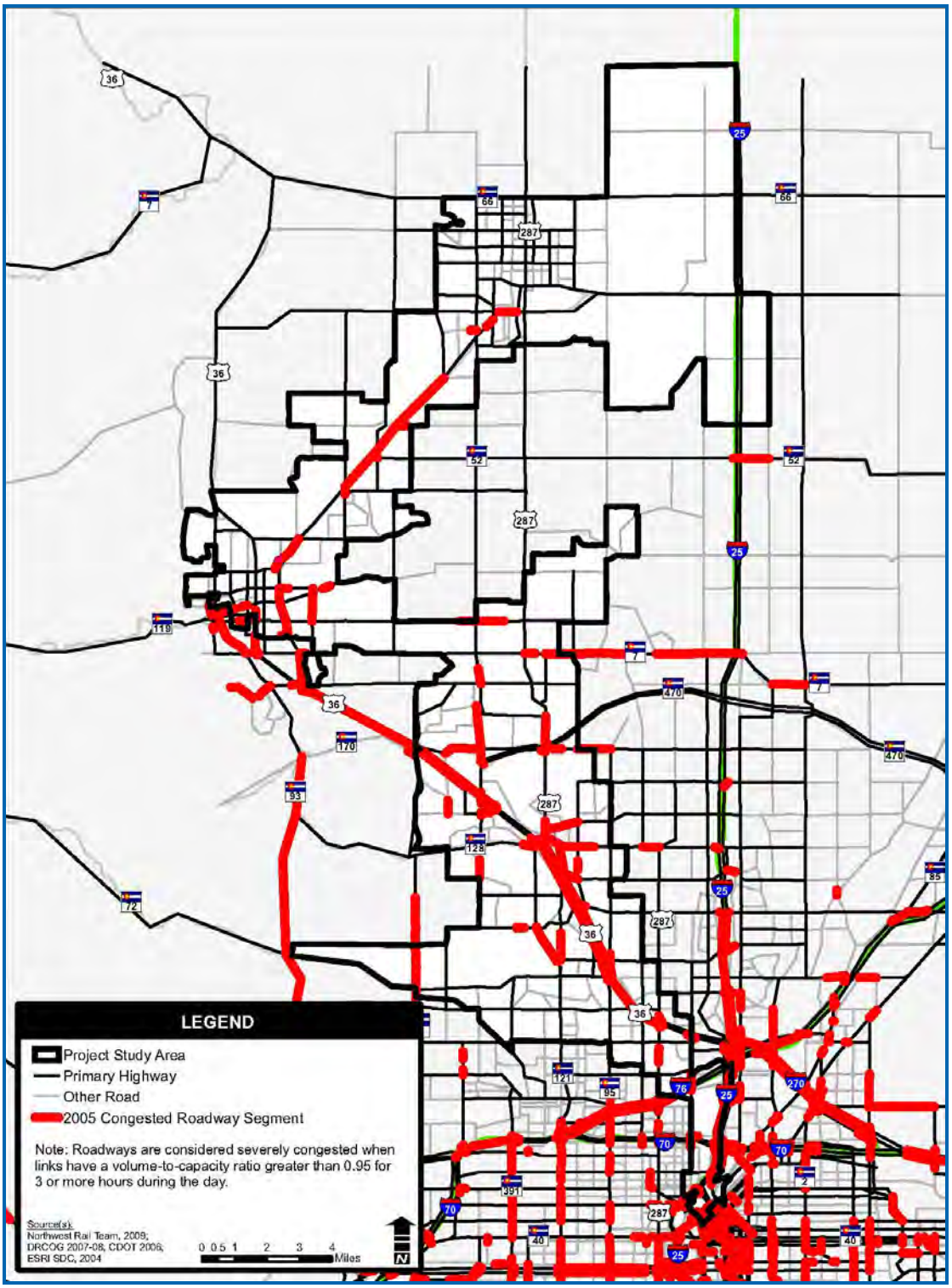
4.6 EXISTING AND FUTURE ROADWAY CONDITIONS

Roadway congestion levels can have a prominent effect on travel times and the propensity of travelers to utilize transit. The tradeoffs between auto and transit travel are important to examine as part of a multi-modal transportation system. Existing and projected travel conditions along key roadways and travel times to key destinations allow for the examination of effects and benefits of a modified transportation system. This section summarizes the affected environment related to the roadway system in the project study area for the NWR Corridor.

Figure 4-6 and Figure 4-7 summarize the existing and projected roadway congestion along key roadways in the NWR Corridor. Severely congested conditions are defined by roadways that exhibit a volume-to-capacity ratio that exceeds 0.95 for more than three hours per day. Figure 4-6 illustrates congestion based on the DRCOG regional travel demand model for 2005, and indicates that several segments along US 36 and SH 119 currently experience severely congested conditions. Figure 4-7 presents projected congested conditions for the No Action Alternative in year 2035, reflecting a dramatic increase in congested roadways in the project study area for the NWR Corridor. Additional segments along US 36, SH 119, and other roads throughout the project study area are expected to operate under severely congested conditions.

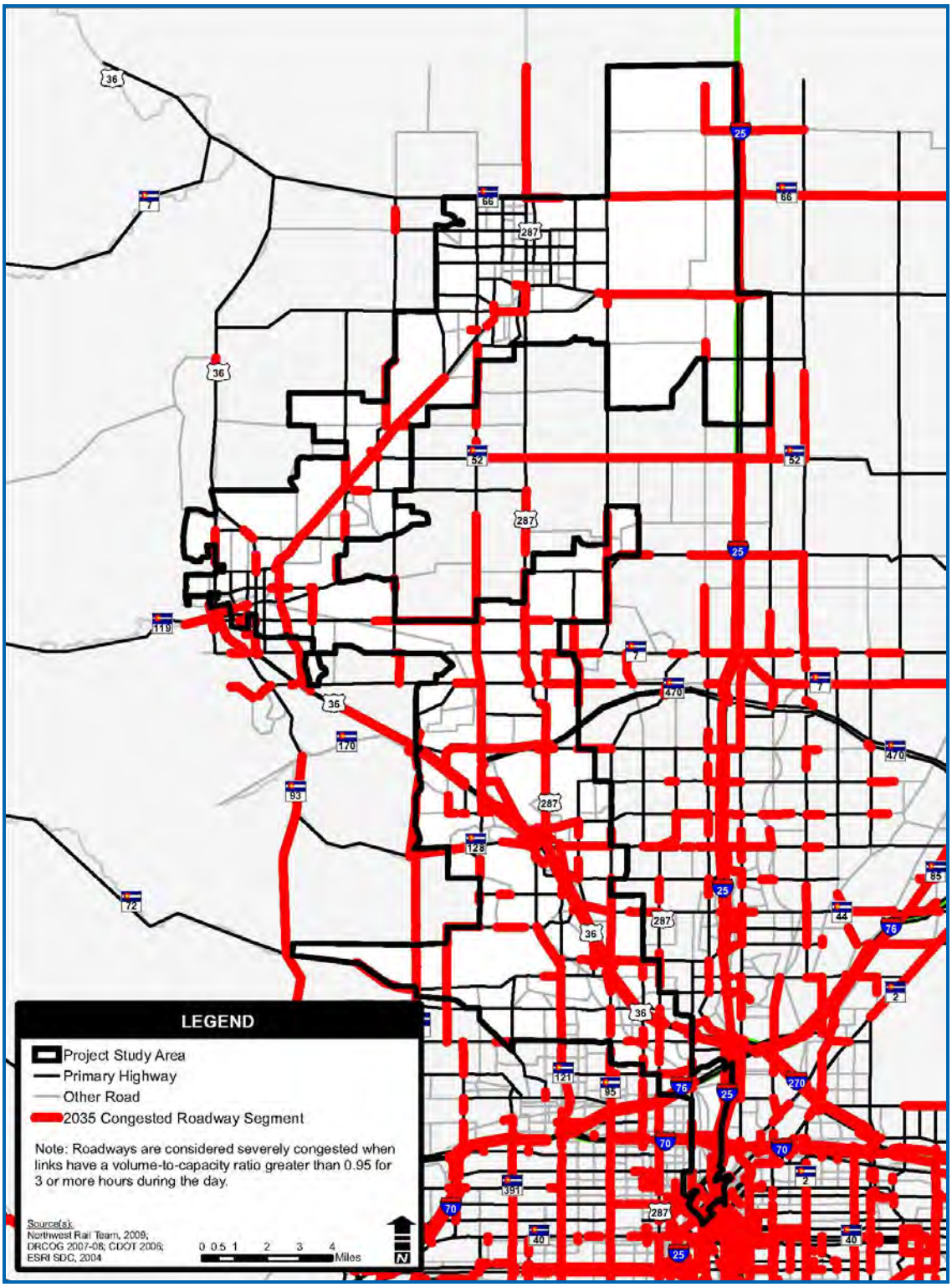
Under 2035 conditions, US 36 was assumed to have the additional benefit of a managed lane in each direction from the reversible HOV lanes at Pecos Street west to Foothills Parkway and improved interchanges at Wadsworth Parkway/120th Avenue, and Sheridan Boulevard. These improvements are consistent with the Phase 1 improvements analyzed in the US 36 Final EIS.

FIGURE 4-6. EXISTING 2005 CONGESTED CONDITIONS: NORTHWEST RAIL CORRIDOR PROJECT STUDY AREA



Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), 2009.

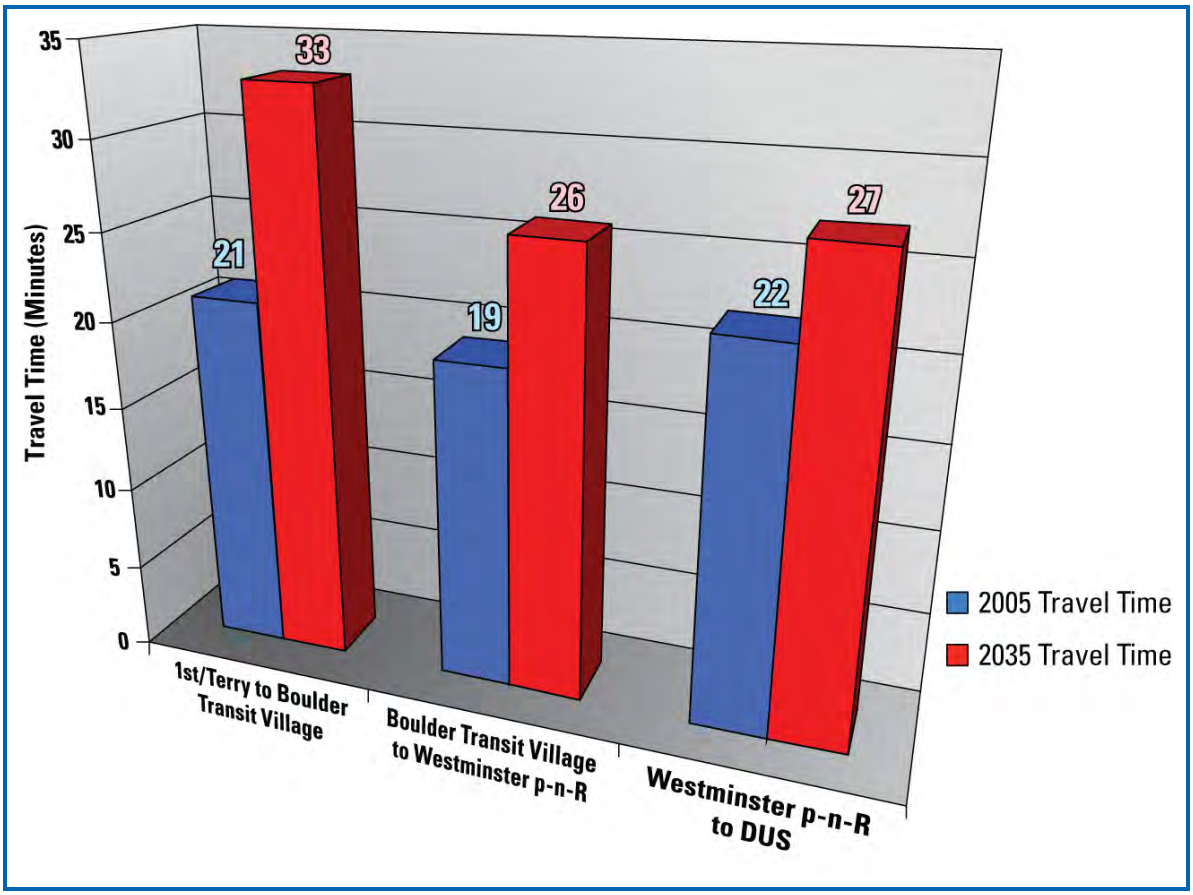
FIGURE 4-7. FUTURE 2035 NO ACTION ALTERNATIVE CONGESTED CONDITIONS: NORTHWEST RAIL CORRIDOR PROJECT STUDY AREA



Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), as modified by the NWR Corridor Project Team, 2009.

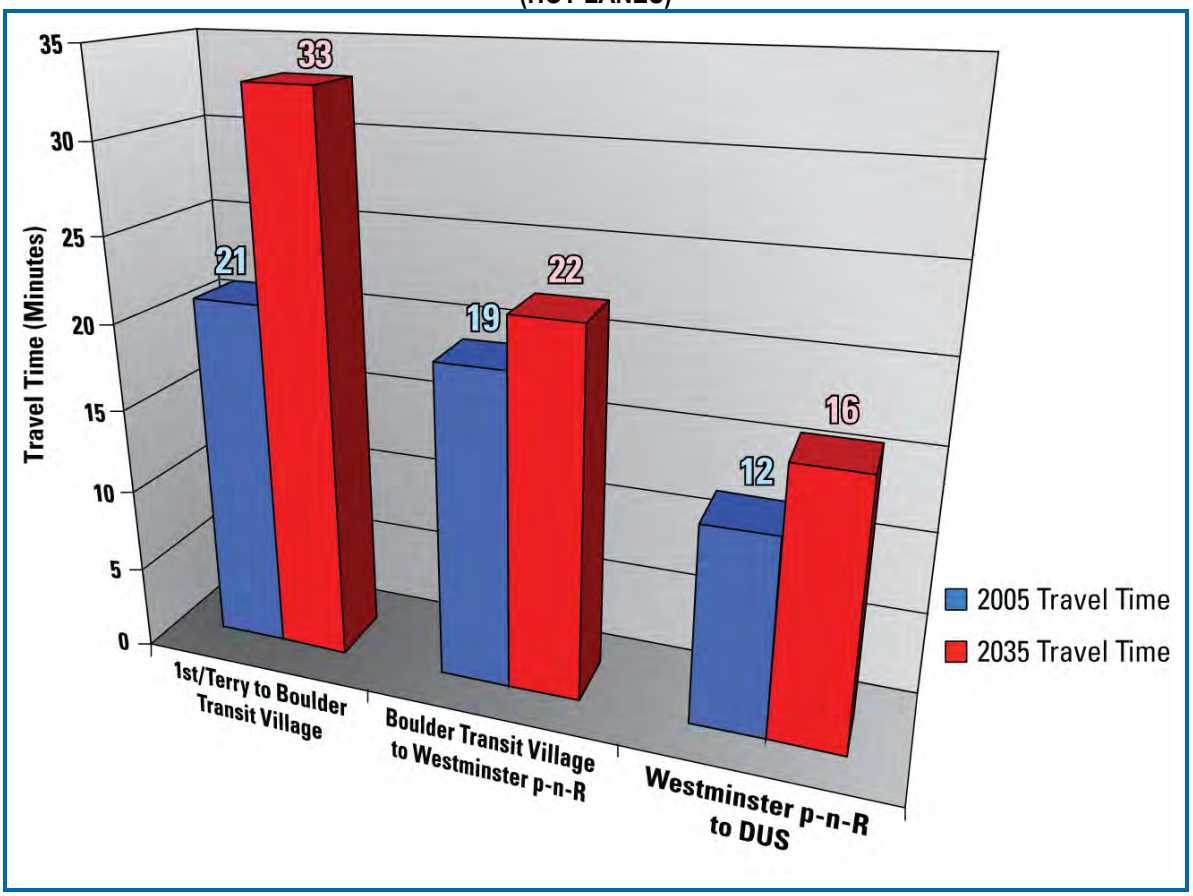
Increases in congestion are also evident when comparing existing and future projected No Action Alternative travel times to key destinations. Figures 4-8 and 4-9 present estimated travel times along different driving routes within the NWR Corridor. Residents within the project study area for the NWR Corridor have several travel options depending on their intended destination. Figure 4-8 shows the total travel time between and among various segments of roadways from Longmont to DUS via general purpose (GP) lanes on SH 119 and US 36. Figure 4-9 shows those same segments using high-occupancy vehicle (HOV) or high-occupancy toll (HOT) lanes where available.

FIGURE 4-8. A.M. PEAK HOUR AUTO TRAVEL TIME TO DENVER UNION STATION VIA SH 119 AND US 36 (GP LANES)



Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), as modified by the NWR Corridor Project Team, 2009.
GP = General Purpose
DUS = Denver Union Station

FIGURE 4-9. A.M. PEAK HOUR AUTO TRAVEL TIME TO DENVER UNION STATION VIA SH 119 AND US 36 (HOT LANES)



Source: DRCOG Regional Travel Demand Model (Cycle 1 '09), as modified by the NWR Corridor Project Team, 2009.

The figures above show that auto travel times along all routes increase between 2005 and 2035 as forecast by the DRCOG travel demand models. For example, total travel time for all segments of SH 119 and US 36 between Longmont and DUS was estimated at a total of 62 minutes in GP lanes; by 2035, auto travel on all segments, even with substantial highway improvements, is forecast to require 86 minutes (an increase of 24 minutes or almost 39 percent). For those using HOV and/or HOT lanes where available in the same segments, the total trip time on SH 119 and US 36 is shown as 52 minutes in 2005, increasing to 71 minutes by 2035, an increase of 19 minutes (or almost 37 percent). These increases in auto travel times create an environment where alternate modes of transportation may be competitive with auto travel. Since rail transit operates separated from auto traffic, rail transit travel times are not affected by increases in roadway congestion. Projected increases in congestion and travel times influence the need for transportation improvements and reliable travel options for travelers in the project study area for the NWR Corridor.

4.7 ROADWAY IMPACTS

This section analyzes the impact of the Preferred Alternative on corridor roadways by evaluating parking and other related needs of the commuter rail system.

4.7.1 Parking Demand Methodology

The DRCOG regional travel demand model for 2035 was used as a tool to estimate the overall demand for parking for park-n-Rides under the Preferred Alternative. Because the regional model does not precisely account for factors related to access characteristic at each station location, the model results were modified as described below.

Person trips accessing the park-n-Rides are the raw output from the regional travel demand model. Those trips are then factored based on previous experience at park-n-Rides in the NWR Corridor and data related to parking space turnover and average auto occupancy. The parking supply of 2,964 spaces was identified in the FasTracks Plan. This supply was then allocated among the funded station locations based on the following factors:

- Origins and destinations of transit person trips to each station
- Roadway connections to station areas
- Existing and projected traffic volumes/congestion level in station areas
- Connectivity of bus routes to stations
- Land availability for the construction of parking
- Local government Transit Oriented Development (TOD) plans at station areas and/or support for TOD
- Community input from the station planning process
- Site accessibility and access characteristics of the station areas

The same process was used to determine parking supply at the unfunded station locations. The parking supply at these locations is in addition to the number of spaces identified in FasTracks.

4.7.1.1 Proposed Station Parking Supply

The construction of parking facilities would be phased, with opening day parking at year 2015 totaling 2,964 spaces for funded stations and 2,035 spaces for unfunded spaces (with a NWR Corridor total of 4,999 spaces). Year 2035 parking totals include 3,399 spaces for funded stations and 2,285 spaces for unfunded spaces for a total of 5,684 spaces throughout the NWR Corridor, as shown in Table 4-10.

TABLE 4-10. PREFERRED ALTERNATIVE STATION AREA PARKING IN 2015 AND 2035

Station	Opening Day 2015 Parking Spaces[1]	Parking Spaces Added by 2035	Total 2035 Parking Spaces
Funded Stations			
South Westminster/ 71st Avenue	925	0	925 surface spaces
Walnut Creek[2]	240	0	240 surface spaces
FlatIron	264	0	264 surface spaces
Downtown Louisville	425	0	425 surface spaces
Boulder Transit Village	290	0	290 surface spaces
Gunbarrel	230	0	230 surface spaces
Downtown Longmont	590	435	1,025 surface spaces
Funded Stations Subtotal	**2,964**	**435**	**3,399 surface spaces**
Unfunded Stations			
Westminster/ 88th Avenue[3]	1,055	0	1,055 surface spaces
Broomfield/ 116th Avenue	350	0	350 surface spaces
East Boulder	530	0	530 surface spaces
Twin Peaks[3]	100	250	350 surface spaces
Unfunded Stations Subtotal	**2,035**	**250**	**2,285 surface spaces**
Corridor Total	**4,999**	**635**	**5,684 surface spaces**

Source: NWR Corridor Project Team, 2009.
Notes:
[1]Number of spaces represents average of FasTracks targets in concept plans.
[2]The Walnut Creek Station is a joint NWR/US 36 BRT station; the parking spaces shown here are for the NWR Corridor Project (not US 36 BRT)
[3]Twin Peaks and Westminster/ 88th Avenue stations are expected to have shared parking with the redeveloped mall adjacent to each station—no RTD-funded/managed spaces.
[4] The use of parking at the Louisville Sports Complex is dependent on an agreement between Louisville, Lafayette, and Boulder County.
US 36 BRT = United States Highway 36 Bus Rapid Transit
RTD = Regional Transportation District

4.7.1.2 Phase 1 Parking

The South Westminster/ 71st Avenue Station is proposed to be the end-of-line station for Phase 1, which is assumed to be an interim and short term construction phase of the overall build out of NWR (see Section 2.4.2.5, Phased Implementation for further description of Phase 1). If full build out of NWR does not come to fruition in the foreseeable future, additional analysis may be needed to determine if the parking provided would be sufficient to meet demand with South Westminster/ 71st Avenue as the end-of-line station.

4.7.2 Station Traffic Projections and Evaluation Methodology

Traffic generation at rail stations typically depends on available parking, transit ridership demand, and travel mode split. Federal criteria require that the regional model be utilized in the development of these traffic projections. However, additional information can be used in the preparation and refinement of peak hour projections, since the model turning movement

forecasts are insensitive to intersection characteristics such as signal timing and turn lane configuration. Since mitigation recommendations are based on this analysis, incorporating RTD data from existing light rail transit (LRT) stations and collecting existing traffic counts improved the quality of the future projections. Two planning horizons were analyzed: opening day at year 2015 and full build out at year 2035.

4.7.3 Station Area Impacts

The following narrative summarizes the traffic operations of the Preferred Alternative and proposed mitigations at each of the station areas (see Figures 2-19 through 2-30 for depiction of station concepts). The following impact criteria were used to determine whether mitigation would be required for the Preferred Alternative. These criteria are consistent with the methodology presented in RTD's *DEIS Traffic Projection and Adverse Effect Methodology Technical Memorandum* (RTD 2007).

4.7.3.1 Station Access and New Intersections

The federal criteria for traffic projections refer to Level of Service (LOS) which describes the average total delay to a motorist at an intersection. Six LOS values (LOS A through LOS F) are used for traffic analyses, with LOS A having the lowest delay and LOS F having the most delay. New intersections that are added as a result of roadway modifications associated with the Preferred Alternative are required to be LOS D or better.

Signalized Intersections:

- Is the overall intersection LOS E or LOS F under No Action conditions?
- If the LOS is LOS E or LOS F under No Action conditions, did the overall intersection delay increase by 10 percent or more from the No Action Alternative?

If both of these conditions were met, then mitigation measures were provided to decrease the Preferred Alternative intersection delay to within 10 percent of the No Action Alternative delay.

Unsignalized Intersections:

- Is the critical approach[1] LOS E or LOS F under No Action conditions?
- If the LOS is LOS E or LOS F under No Action conditions, did the critical approach delay increase by 10 percent or more from the No Action Alternative?

If both of these conditions were met, then mitigation measures were provided to decrease the Preferred Alternative intersection delay to within 10 percent of the No Action Alternative delay. One of the potential mitigation measures considered was signalization, if the intersection is expected to meet signal warrants.

In addition, if a signalized intersection or the critical approach of an unsignalized intersection was LOS D or better under No Action conditions, and degraded to LOS E or F with the addition of station-related traffic, mitigation measures were provided to maintain LOS D or better operations.

[1] The critical approach is the worst operating stop-controlled approach at each intersection.

The evaluation concludes that increases in station-generated traffic can be mitigated by:

- Adding turn lanes by restriping an intersection approach
- Adding a traffic signal
- Minor pavement widening[2] at intersection approach/departure to provide additional lanes
- Modifying access at existing intersection

The specific mitigation measures are presented below for each station area. A map is provided showing the location of mitigation measures, for each station with proposed mitigations. Detailed analyses can be found in the *Northwest Rail Corridor Station Area Traffic Impact Statement, Methodology and General Overview* (URS 2009).

Mitigation measures were assessed for the year 2035 to indicate the ultimate mitigation measures necessary to serve the forecast trips generated by the proposed rail stations. The analysis was not intended to provide a specific year of implementation between 2015 and 2035. Once each rail station is constructed, traffic studies conducted for redevelopment in the area around each station will help determine the timing of mitigations between 2015 and 2035. These traffic studies will best document the changes in non-station related traffic and will provide a better gage for the implementation of recommended mitigations. The uncertainty in long range traffic forecasts reduces the ability of determining an exact year of mitigation implementation, and therefore attempting this estimate at this point in time is not recommended.

4.7.3.2 South Westminster/ 71st Avenue

The South Westminster/ 71st Avenue station would be located west of Federal Boulevard between the railroad tracks and 71st Avenue. Bus loading and unloading and kiss-n-Ride facilities would be provided adjacent to the station platform between Hooker Street and Irving Street. A small parking area would be provided northwest of the station platform adjacent to Irving Street. The main parking area would be located southeast of the station platform between Federal Boulevard and Hooker Street. A pedestrian tunnel would be provided under the rail tracks to the commuter rail platform. A total of 925 parking spaces would be provided for the whole station. Automobile access to the station would be provided by access points on Hooker Street, Irving Street and Federal Boulevard.

The existing Federal Boulevard/ Local Access (south of 70th Avenue) intersection will become the access point to the park-n-Ride on Federal Avenue. The lack of signalization at this location would make access to the park-n-Ride difficult for vehicles and buses. Therefore, this intersection should be signalized in 2015 to provide safe and efficient access to and from the station area. The intersection is forecast to meet the peak hour signal warrant during the PM peak hour with the addition of station-related traffic.

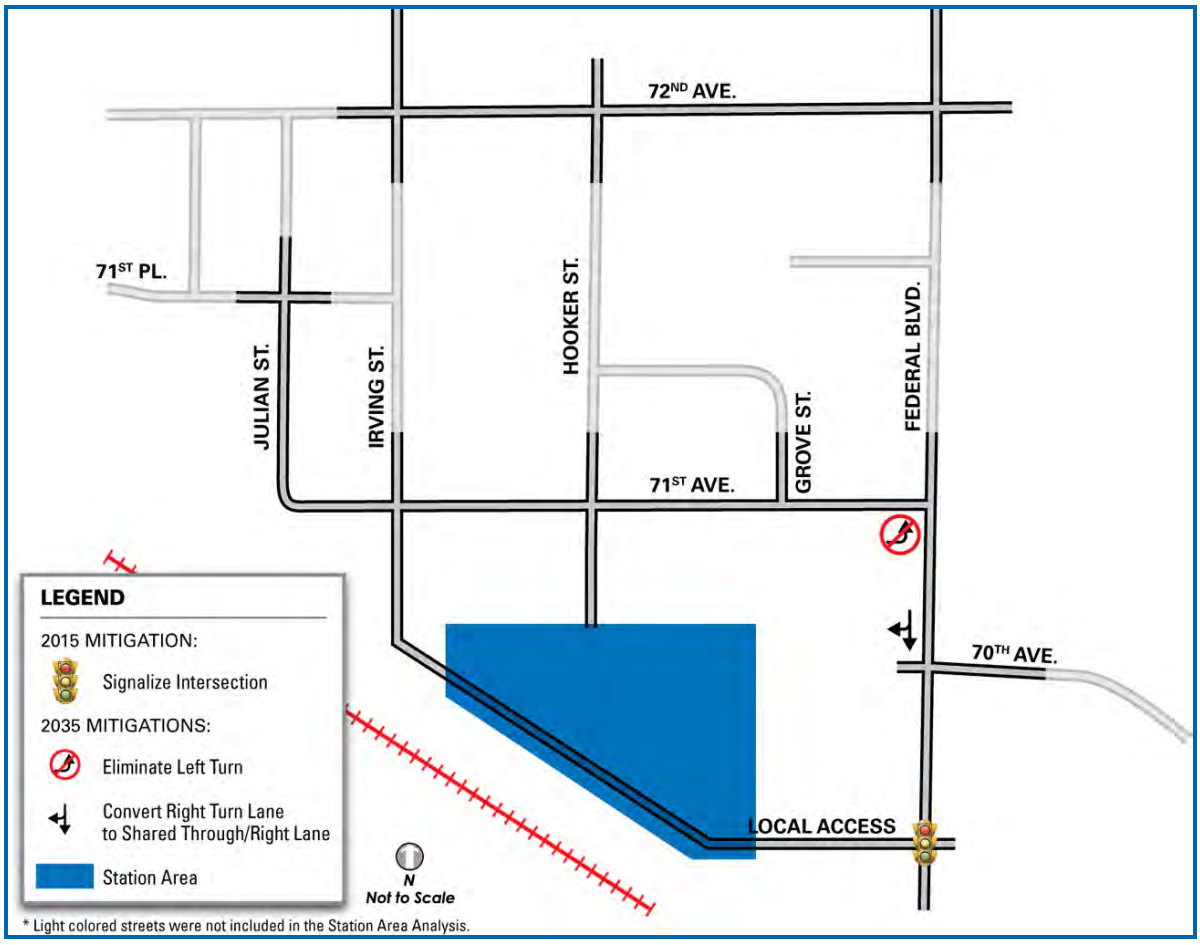
The traffic analysis showed that the intersections of 70th Avenue/ Federal Boulevard and 71st Avenue/ Federal Boulevard will be impacted by station traffic under 2035 conditions. As such, it is proposed to prohibit the eastbound left turn movement from 71st Avenue to Federal

[2] Minor pavement widening could include acquiring right-of-way (ROW) to add lanes or widening pavement within the existing ROW for short distances to aid traffic flow within the station study area.

Boulevard. Drivers desiring to turn left from 71st Avenue at this location will use the local street network to access Federal Boulevard at a different location. The southbound right turn lane at 70th Avenue/ Federal Boulevard will be converted to a shared through/right lane to provide additional southbound through capacity at the intersection.

The roadway mitigations proposed for the South Westminster/ 71st Avenue station area in 2035 are shown in Figure 4-10.

FIGURE 4-10. SOUTH WESTMINSTER/ 71ST AVENUE STATION AREA INTERSECTION MITIGATION



Source: NWR Corridor Project Team, 2009.

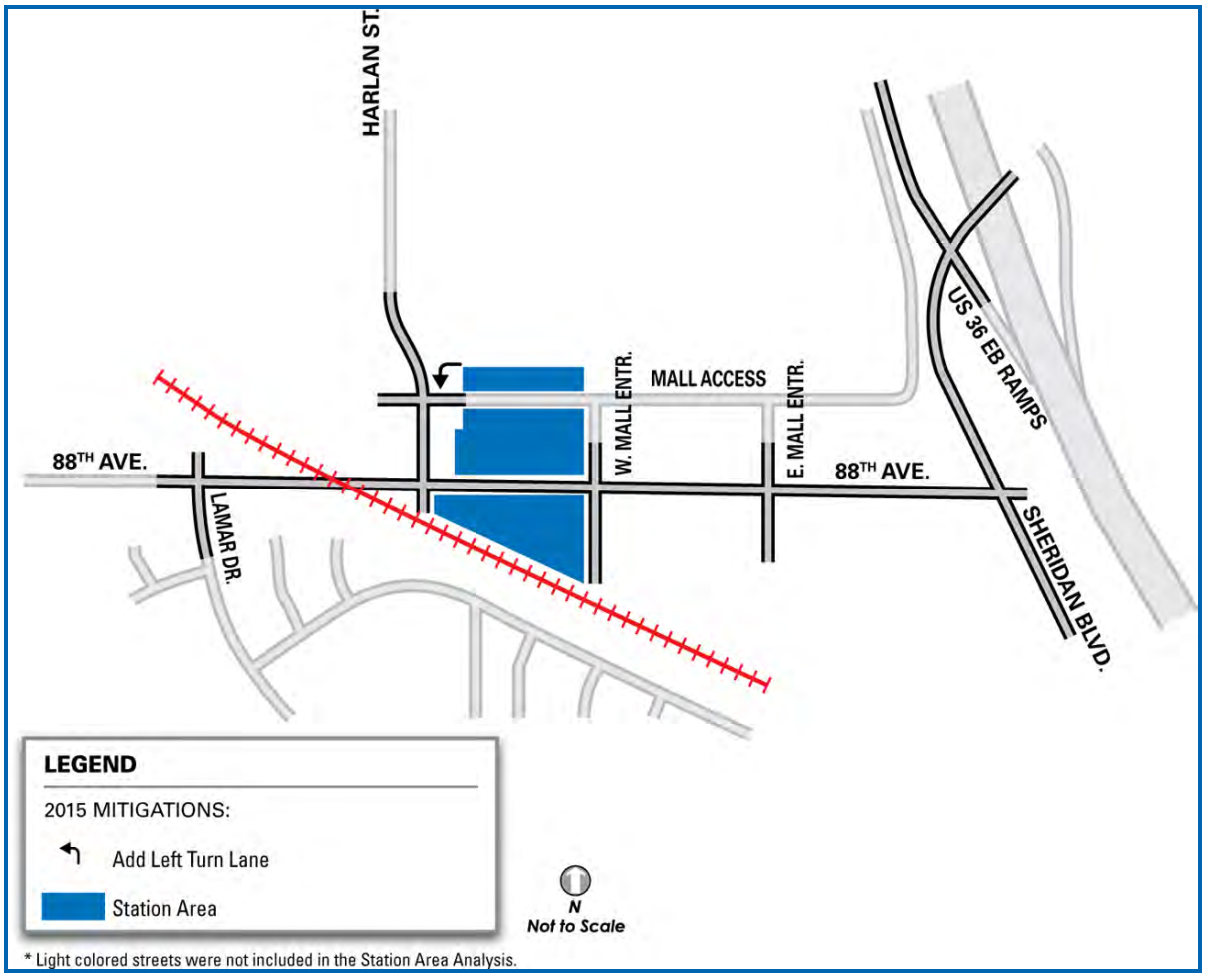
4.7.3.3 Westminster/ 88th Avenue (Unfunded Station)

The Westminster/ 88th Avenue station would be located between Harlan Street and the west entrance to Westminster Mall on 88th Avenue. A parking lot with 1,055 available spaces would be located north of 88th Avenue. These spaces would be shared with the adjacent redevelopment of the Westminster Mall. A bus loop and a kiss-n-Ride area would be provided south of 88th Avenue adjacent to the rail tracks. The bus loop would be accessed from the Harlan Street/ 88th Avenue intersection while the kiss-n-Ride and a small parking area (approximately 50 spaces) would be accessed from the West Mall Entrance/ 88th Avenue intersection. A pedestrian bridge would be provided across 88th Avenue to the northbound and southbound rail platforms and the bus loading and unloading areas.

The traffic analysis showed that to accommodate additional station-related traffic, the existing prohibition on westbound left turns from the Mall Access to Harlan Street should be removed by 2015; this can be accomplished by restriping the pavement (i.e., no new right-of-way is required).

The roadway mitigations proposed for the Westminster Mall/ 88th Avenue station area in 2015 are shown in Figure 4-11; no additional mitigation is needed in 2035.

FIGURE 4-11. WESTMINSTER MALL/ 88TH AVENUE STATION AREA INTERSECTION MITIGATION



Source: NWR Corridor Project Team, 2009.

4.7.3.4 Walnut Creek

The Walnut Creek station would be located on the northwest side of the Walnut Creek retail development at the Church Ranch Blvd/ US 36 interchange. The rail station would be adjacent to the existing bus access on US 36. The park-n-Ride lot would provide 240 parking spaces. Access for the station area would be provided by Promenade Drive from Westminster Boulevard and by Reed Street from Church Ranch Boulevard. A pedestrian bridge would be provided to access the southbound rail platform.

There are no station-related traffic impacts that require mitigation in 2015 or 2035.

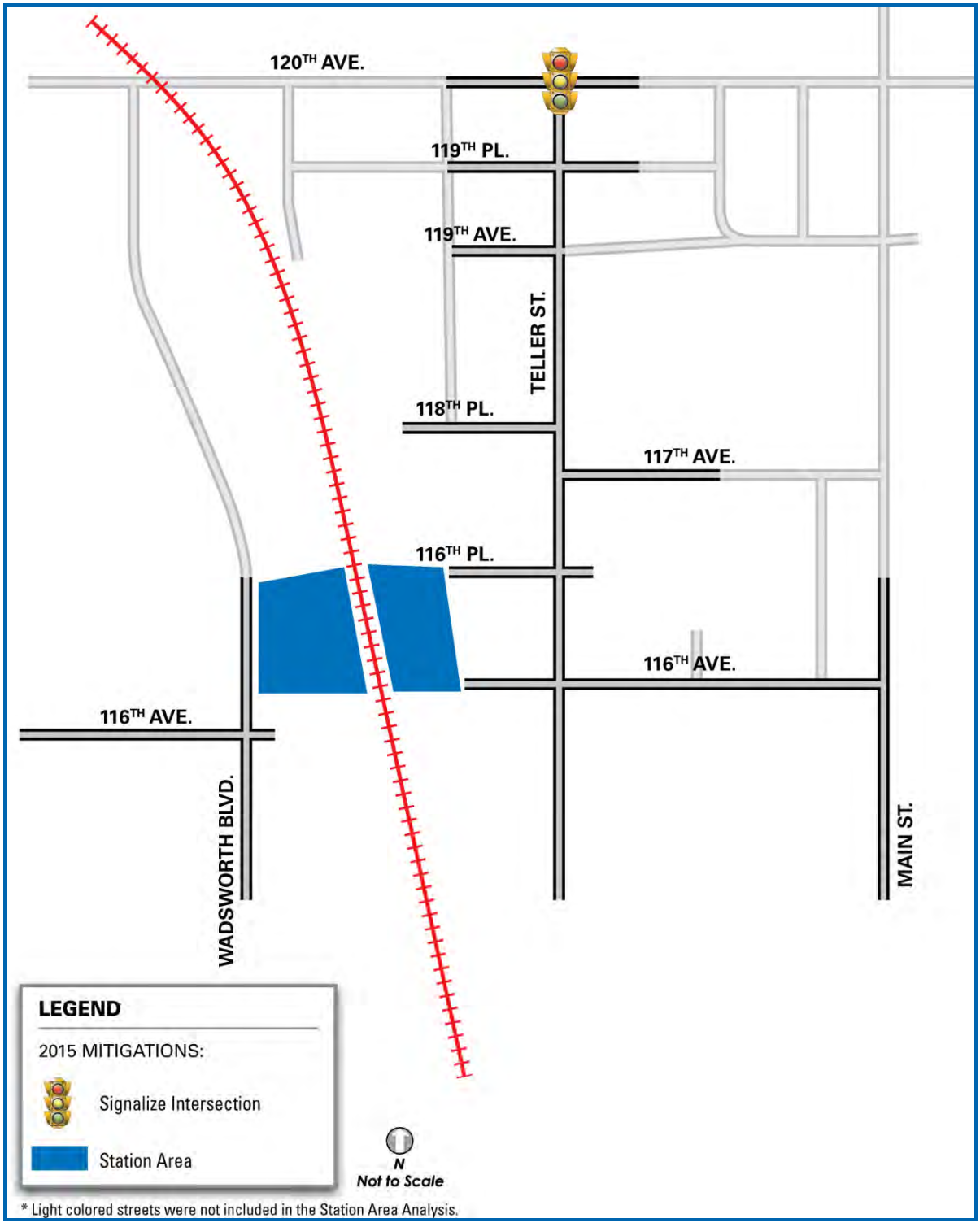
4.7.3.5 Broomfield/ 116th Avenue (Unfunded Station)

The Broomfield/ 116th Avenue station would be located on 116th Avenue between Wadsworth Boulevard and Main Street. Parking would be provided on both the east and west sides of the rail station. The parking area on the west side would provide the majority of the 350 total spaces. This parking area would be accessed from Wadsworth Boulevard north of 116th Avenue. The remainder of the parking would be on the east side of the platform, with access from 116th Avenue and 116th Place via 120th Avenue or Main Street. A bus loop and kiss-n-Ride area would also be provided in the west-side parking area with access from Wadsworth Boulevard at 116th Avenue. A pedestrian tunnel would provide access to the rail platforms from both parking areas.

The 120th Avenue/ Teller Street intersection would be impacted with the addition of station-related traffic. The intersection of 120th Avenue/ Teller Street would be signalized in 2015 to mitigate the impacts associated with station-related traffic, if the station is constructed. No additional mitigation would be required in 2035.

The roadway mitigations proposed for the Broomfield/ 116th Avenue station area are shown in Figure 4-12.

FIGURE 4-12. BROOMFIELD/ 116TH AVENUE STATION AREA INTERSECTION MITIGATION



Source: NWR Corridor Project Team, 2009.

4.7.3.6 Flatiron

The FlatIron station would be located adjacent to the existing FlatIron US 36 BRT station. The station platform would be located across Midway Boulevard northeast of the parking area. The park-n-Ride would provide 264 spaces. The rail station would use the existing kiss-n-Ride and bus loop facilities, with added bus access on Midway Boulevard. A pedestrian bridge would provide access to the northbound rail platform.

There are no station traffic impacts that require mitigation in 2015 or 2035.

4.7.3.7 Downtown Louisville

The Downtown Louisville station would be located between the rail corridor and SH 42 in the City of Louisville. Access to the park-n-Ride would be provided from South Street and Short Street from SH 42. The park-n-Ride would provide 425 spaces. Approximately half of the spaces would be located west of SH 42; the remainder of the spaces would be located east of SH 42. The rail station would provide kiss-n-Ride and bus loop facilities adjacent to the station platform. A pedestrian tunnel would provide access to the southbound platform on the west side of the rail tracks.

Under the No Action Alternative in both 2015 and 2035, the intersections along SH 42 in Louisville are forecast to be severely over capacity (LOS F). The addition of station-related traffic is forecast to impact the following intersections:

- Harper Street/ SH 42
- Griffith Street/ SH 42
- Short Street/ SH 42
- South Street/ SH 42

Each intersection is forecast to have an increase in average delay of more than 10 percent.

The following mitigations in 2015 are proposed to reduce delay at each location:

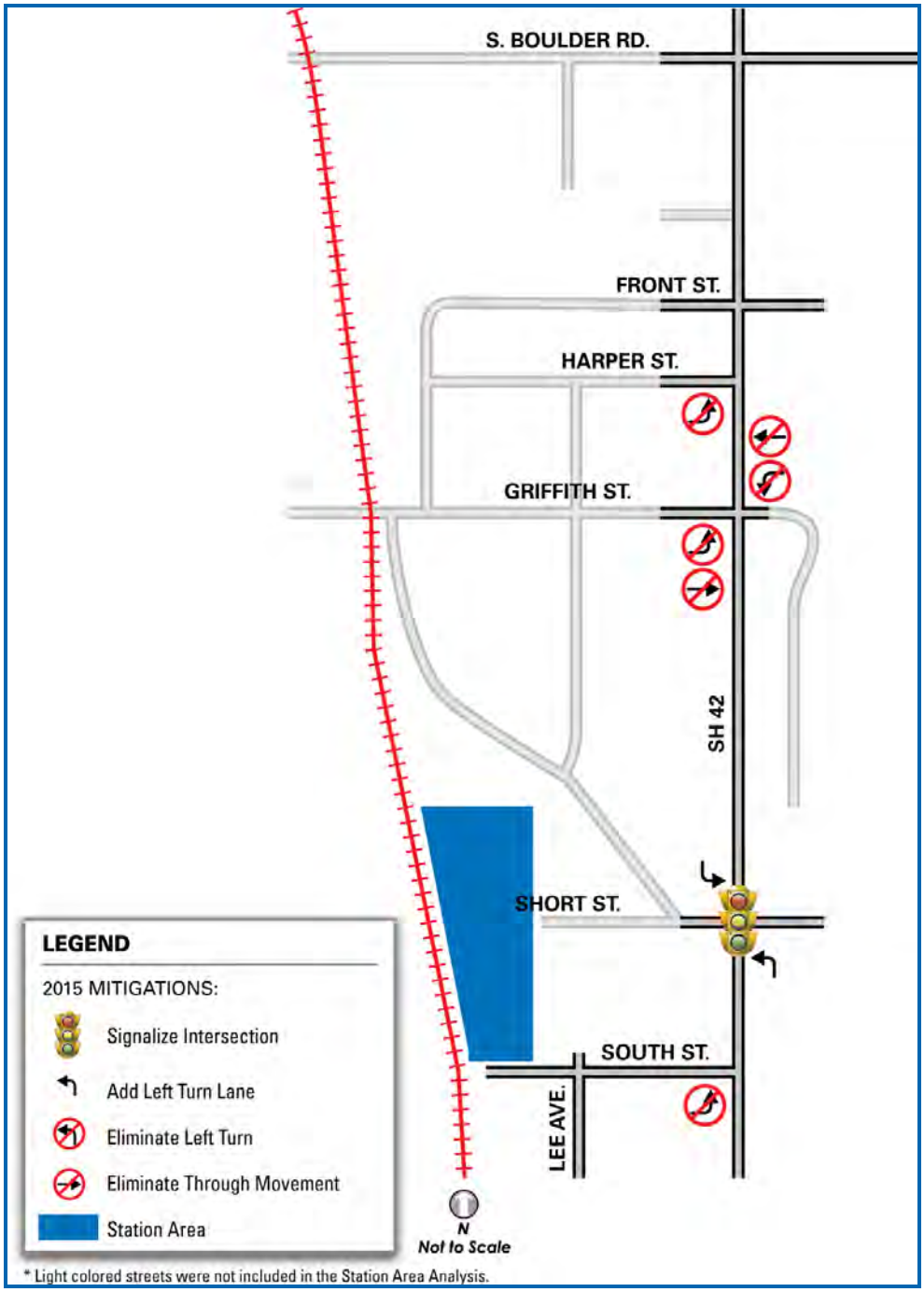
- Harper Street/ SH 42: The eastbound left turn would be prohibited. Drivers wishing to turn left at this location would be required to use the proposed signalized intersection at Short Street.
- Griffith Street/ SH 42: The eastbound and westbound left turns, as well as the through movements would be prohibited. Drivers wishing to make these maneuvers would be required to use the proposed traffic signal at the Short Street/SH 42 intersection.
- Short Street/ SH 42: Northbound and southbound left turn lanes will be striped onto the existing SH 42 pavement at Short Street. The east leg of the intersection will be constructed to connect to the Louisville Sports Complex, and the intersection is proposed to be signalized.
- The use of parking at the Louisville Sports Complex is dependant on an agreement between the City of Louisville, the City of Lafayette and Boulder County. If an agreement is not reached, the east leg of the intersection will not be constructed and the southbound left turn lane will not be provided.

- South Street/ SH 42: The eastbound left turn would be prohibited. Drivers wishing to turn left at this location would be required to use the proposed signalized intersection at Short Street.

All of the proposed mitigations are consistent with recommended improvements presented in the *State Highway 42 Traffic & Access Study* (City of Louisville 2007b) which addressed the future capacity concerns along the corridor. No additional mitigation would be required for 2035.

The proposed mitigations are shown in Figure 4-13.

FIGURE 4-13. DOWNTOWN LOUISVILLE STATION AREA PROPOSED SH 42 IMPROVEMENTS



Source: NWR Corridor Project Team, 2009.

4.7.3.8 East Boulder (Unfunded Station)

The East Boulder station would be located east of 63rd Street and north of Arapahoe Avenue. The park-n-Ride would provide 520 parking spaces as well as kiss-n-Ride and bus loading. Two access points to Arapahoe Avenue would be provided. A pedestrian tunnel would provide access to the northbound rail platform.

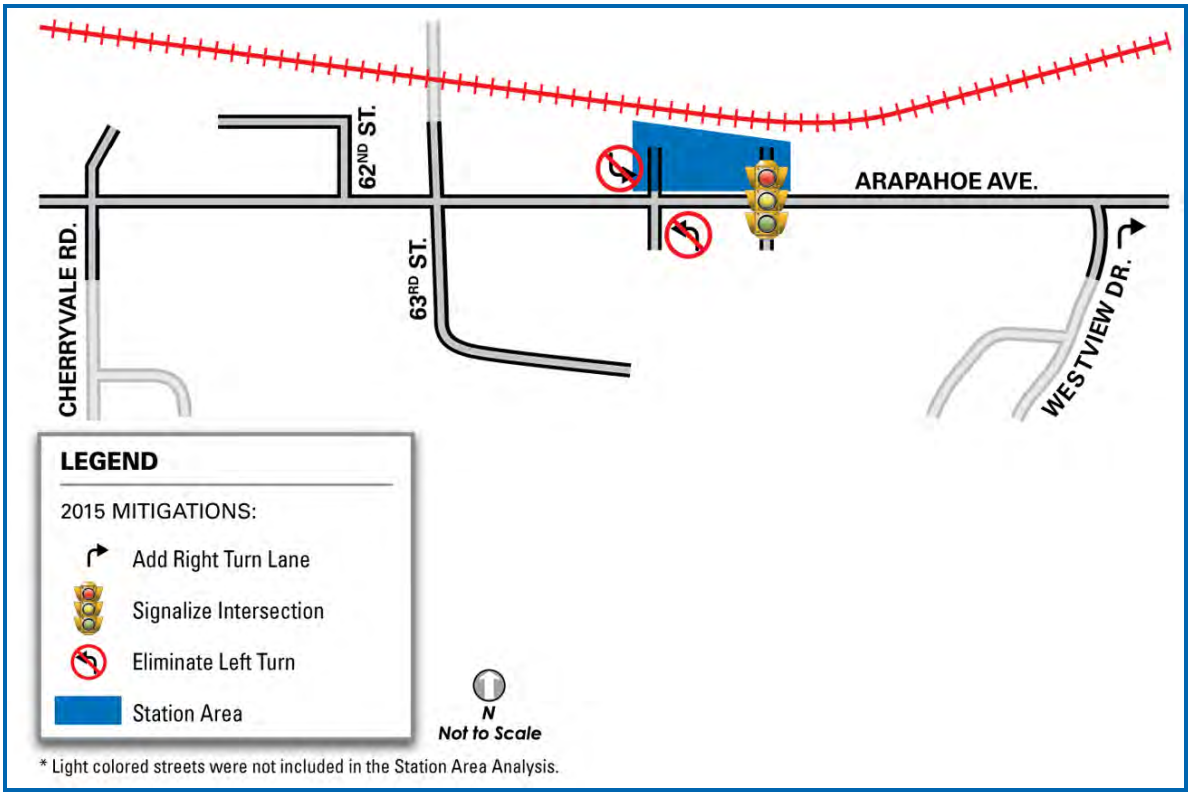
With the addition of station-related traffic, the two station access intersections on Arapahoe Avenue are forecast to operate at LOS F based on existing intersection configuration and control. The delay at Arapahoe Avenue/ Westview Drive is forecast to increase by more than 10 percent during the p.m. peak hour in both 2015 and 2035.

A northbound right turn lane is proposed at the Arapahoe Avenue/ Westview Drive intersection in 2015 to decrease the average stop-controlled delay at the intersection.

The east access to the East Boulder Station from Arapahoe Avenue is proposed for signalization in 2015. At the west access to the park-n-Ride, left turns from the cross-street will be prohibited. Drivers desiring to turn left onto Arapahoe Avenue will be directed to use the east access intersection. With these mitigations the two intersections are expected to operate at LOS D or better.

The roadway mitigations proposed for the East Boulder station area in 2015 are shown in Figure 4-14. No additional mitigation would be required for 2035.

FIGURE 4-14. EAST BOULDER STATION AREA INTERSECTION MITIGATION



Source: NWR Corridor Project Team, 2009.

4.7.3.9 Boulder Transit Village

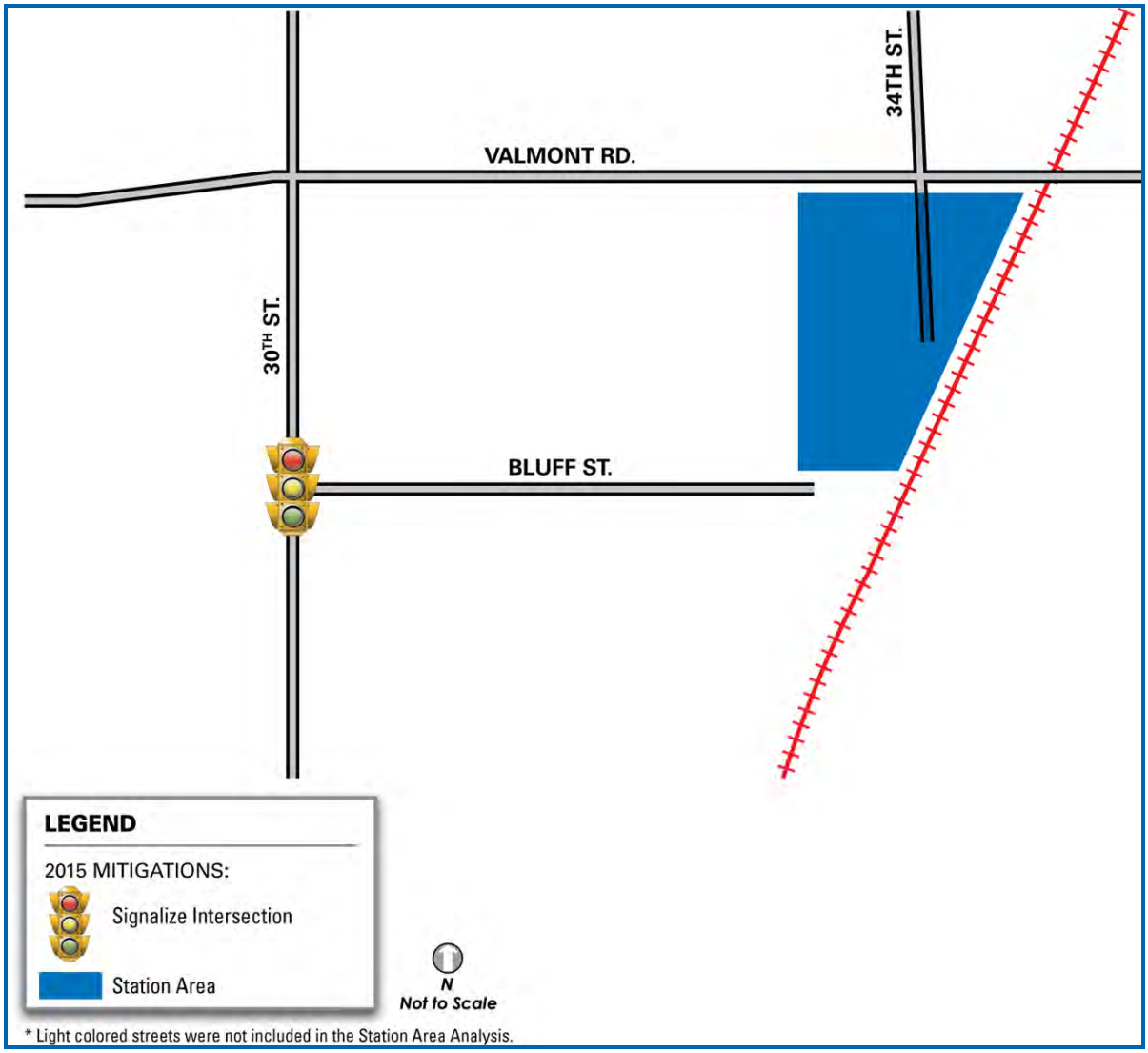
The Boulder Transit Village station would be located in central Boulder southeast of the intersection of Valmont Road and 30th Street. Station access would be provided by Bluff Street and 34th Street. The park-n-Ride would provide 290 parking spaces. The parking area would be provided north and west of the rail platform. A pedestrian underpass would

provide access to the commuter rail platforms. Bus loading and unloading and kiss-n-Ride facilities would be provided at the station.

Station-related traffic is forecast to increase the delay at the Bluff Street/ 30th Street intersection by more than 10 percent under 2015 Preferred Alternative conditions. This location is forecast to operate at LOS E under 2015 No Action conditions. The intersection of Bluff Street/ 30th Street is proposed to be signalized under 2015 action conditions to mitigate the impact of station-related traffic.

The roadway mitigations proposed for the Boulder Transit Village station area in 2015 are shown in Figure 4-15. No additional mitigation would be required for 2035.

FIGURE 4-15. BOULDER TRANSIT VILLAGE STATION AREA INTERSECTION MITIGATION



Source: NWR Corridor Project Team, 2009.

4.7.3.10 Gunbarrel

The Gunbarrel station would be located west of 63rd Street along Lookout Road adjacent to the rail corridor along SH 119. The park-n-Ride would have 230 parking spaces with access provided to Lookout Road. Bus loading and unloading and kiss-n-Ride facilities would be provided at the station. A pedestrian bridge would provide access to the southbound rail platform.

There are no station-related traffic impacts in 2015 or 2035 that require mitigation.

4.7.3.11 Twin Peaks (Unfunded Station)

The Twin Peaks station would be located between Ken Pratt Boulevard and the rail tracks across from the Twin Peaks Mall in Longmont. New parking would not be constructed at this station; rather 350 spaces are assumed at the Twin Peaks Mall for shared use with the rail station. The parking estimate at this station is based on initial station usage forecasts for the year 2035. The estimated number of spaces may change as the station area is further analyzed. A bus loop and kiss-n-Ride would be provided adjacent to the rail platform with access provided at the Ken Pratt Blvd/ East Mall Access intersection. A pedestrian tunnel would be provided to access the northbound rail platform.

There are no station-related traffic impacts in 2015 or 2035 that require mitigation.

4.7.3.12 Downtown Longmont

The Downtown Longmont station would be located between S. Pratt Parkway and Main Street (US 287) with access from Boston Avenue and Main Street in downtown Longmont. The park-n-Ride would provide 590 spaces in 2015 and be expanded to 1,025 spaces in 2035. The rail platform would be located west of the 1st Avenue/ Main Street intersection. Bus loading and unloading and kiss-n-Ride facilities would be provided adjacent to the rail platform. Secondary park-n-Ride access would be provided to Main Street and S. Pratt Parkway.

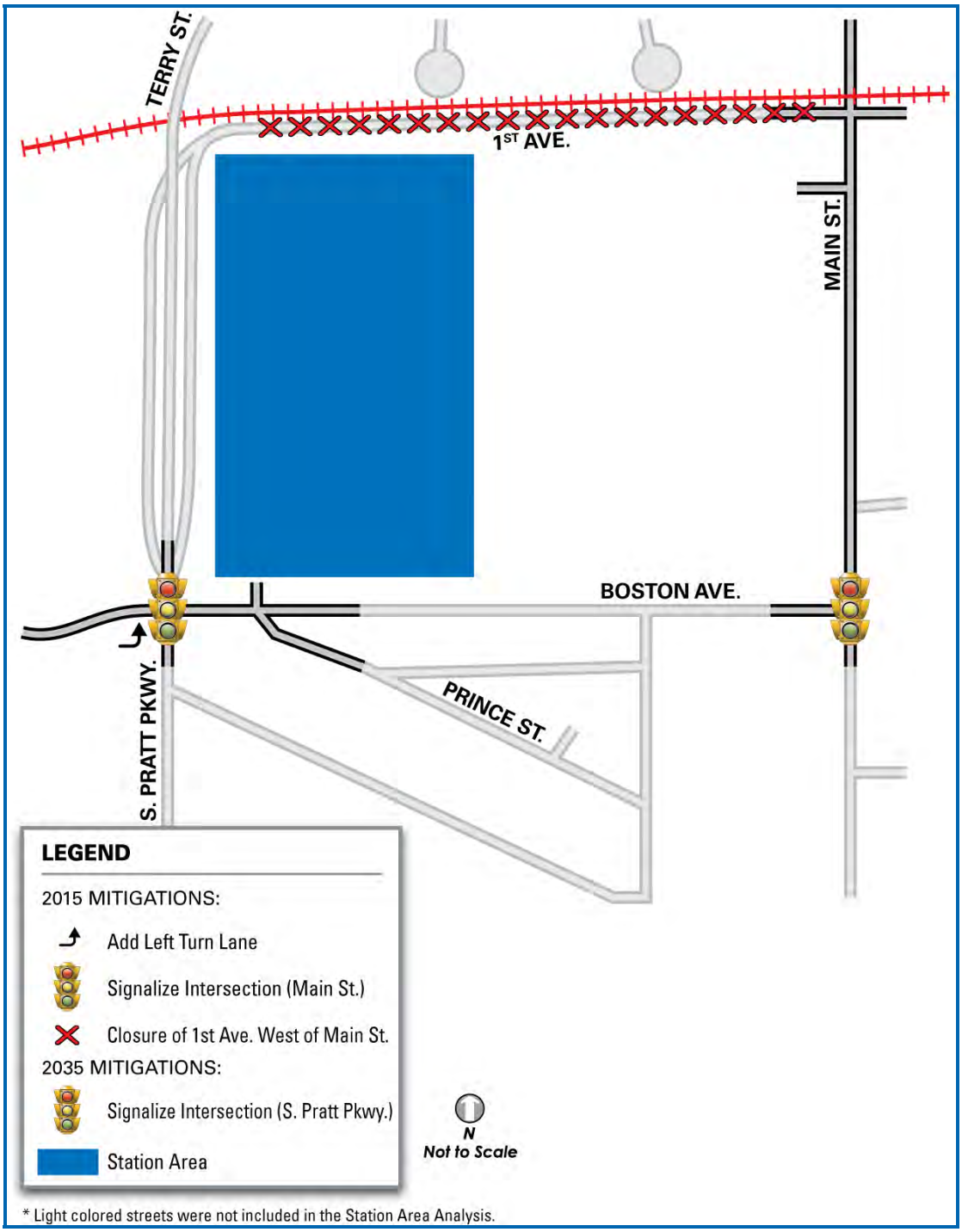
The intersections of Boston Avenue/ Main Street and Boston Avenue/ S. Pratt Parkway are forecast to be impacted by station-related traffic.

An eastbound left turn lane is proposed on Boston Avenue at the intersection of Boston Avenue/ S. Pratt Parkway in 2015 to mitigate project impacts. In 2035, the intersection is proposed to be signalized to further mitigate future station-related impacts. In 2015, the intersection of Boston Avenue/ Main Street is proposed to be signalized to mitigate station-related impacts.

In addition, the construction of the commuter rail platform will require the closure of 1st Avenue between S. Pratt Parkway and Main Street. The west leg of the Main Street/ 1st Avenue intersection will be removed, leaving a three-leg intersection. An access to the station area will be provided just to the south of the Main Street/ 1st Avenue intersection. Given the proximity of this access to the traffic signal, the access point will be a three-quarter access. Left and right turns from Main Street into the station area will be allowed, but only right turns will be allowed out of the station onto southbound Main Street.

The roadway mitigations proposed for the Downtown Longmont station area are shown in Figure 4-16.

FIGURE 4-16. DOWNTOWN LONGMONT STATION AREA INTERSECTION MITIGATION



Source: NWR Corridor Project Team, 2009.

4.7.3.13 Summary of Station Area Mitigation

Table 4-11 summarizes the station target area mitigation that would be required from traffic accessing station parking areas in the NWR Corridor for those seven stations requiring mitigation. The listed intersections and mitigation are required to maintain a LOS D or better, or in cases of worse operations, would maintain an average delay within 10 percent of the 2035 No Action Alternative condition.

TABLE 4-11. STATION AREA INTERSECTION MITIGATION SUMMARY

Intersection	Mitigation
South Westminster/ 71st Avenue Station	
Federal Boulevard/ Station Access	Signalize intersection (2015)
Federal Boulevard/ 70th Avenue	Converted southbound right turn lane into a shared through/right lane (2035)
Federal Boulevard/ 71st Avenue	Prohibited the left turn from eastbound 71st Avenue to northbound Federal Boulevard (2035)
Westminster Mall/ 88th Avenue Station (unfunded)	
Harlan Street/ Mall Access	Added westbound left turn lane (2015)
Broomfield/ 116th Avenue Station (unfunded)	
Teller Street/ 120th Avenue	Signalized Intersection (2015)
Downtown Louisville Station	
SH 42/ Harper Street	Prohibited the left turn from eastbound Harper Street to northbound SH 42 (2015)
SH 42/ Griffith Street	Prohibited the left turns and through movements on Griffith Street to SH 42 (2015)
SH 42/ Short Street	Signalize intersection (2015) Added northbound and southbound left turn lanes (2015)
SH 42/ South Street	Prohibited left turn from eastbound South Street to northbound SH 42 (2015)
East Boulder Station (unfunded)	
West Access/ Arapahoe Avenue	Prohibited left turns from minor streets (2015)
East Access/ Arapahoe Avenue	Signalized Intersection (2015)
Westview Drive/ Arapahoe Avenue	Added northbound right turn lane (2015)
Boulder Transit Village Station	
30th Street/ Bluff Street	Signalized Intersection (2015)
Downtown Longmont Station	
1st Avenue between S. Pratt Parkway and Main Street	Closure of Road (2015)
Main Street/ Boston Avenue	Signalized Intersection (2015)
South Pratt Parkway/ Boston Avenue	Added eastbound left turn lane (2015) Signalized Intersection (2035)

Source: NWR Corridor Project Team, 2009.

Note: No mitigation is required at the Walnut Creek, Flatiron, Gunbarrel, or Twin Peaks Stations.

4.7.4 Station Area Indirect Impacts

Independent of the NWR Corridor Project, it is likely that each of the station areas could experience some degree of redevelopment in the future. Each station area could support TOD that may increase density and encourage use of transit and other modes of travel. While the exact timing of such development is unknown, some of the planning process has begun at certain locations. Any local street improvements required to accommodate proposed TOD would be the responsibility of local jurisdictions and incorporated into planning documents as they are developed. Indirect effects to other environmental resources resulting from TOD are included in Chapter 3, Affected Environment and Environmental Consequences.

4.7.5 Rail Crossing Mitigation

Rail grade crossings were evaluated based on improvements needed for safety (described in RTD's Grade Crossing Evaluation Methodology (RTD 2007)), as well as on improvements needed for Quiet Zones (for more discussion of Quiet Zones, see Section 3.8, Noise and Vibration). Table 4-12 presents the rail crossing treatments for at-grade crossings under the Preferred Alternative in 2015 based on a combination of the safety and Quiet Zone analysis. A grade-separated crossing will be provided for the NWR Corridor commuter rail line at all locations where the adjacent railroad line currently has a grade-separated crossing.

TABLE 4-12. RAIL CROSSING LOCATIONS AND TREATMENTS

Street	Existing Rail Crossing Treatment	Northwest Rail Crossing Recommendations
West 64th Avenue	At-Grade – dual gates	At-Grade – dual gates with raised median
Lowell Boulevard	At-Grade – dual gates	At-Grade – dual gates with raised median
West 72nd Avenue	At-Grade – dual gates	At-Grade – three gate system with raised median
Bradburn Boulevard	At-Grade – dual gates	At-Grade – quad gates
West 76th Avenue	At-Grade – dual gates	At-Grade – quad gates
West 80th Avenue	At-Grade – dual gates	At-Grade – quad gates
West 88th Avenue	At-Grade – dual gates with raised median	Same as existing
Pierce Street	At-Grade – dual gates with raised median	At-Grade – quad gates
Old Wadsworth Boulevard	At-Grade – dual gates	At-Grade – dual gates with raised median
West 112th Avenue	At-Grade – dual gates	At-Grade – dual gates with raised median
West 120th Avenue	At-Grade – dual gates	At-Grade – quad gates
Nickel Street	At-Grade – dual gates with raised median	Same as existing
Brainard Drive	At-Grade – dual gates	At-Grade – dual gates with raised median
Carbon Road	Closed	Same as existing
Dillon Road	At-Grade – dual gates with raised median	Same as existing
Lock Street	Closed	Same as existing
Pine Street	At-Grade – dual gates	At-Grade – quad gates
Griffith Street	At-Grade – dual gates	At-Grade – quad gates

TABLE 4-12. RAIL CROSSING LOCATIONS AND TREATMENTS

Street	Existing Rail Crossing Treatment	Northwest Rail Crossing Recommendations
South Boulder Road	At-Grade – dual gates with raised median	Same as existing
Baseline Road	At-Grade – dual gates	At-Grade – dual gates with raised median
Private Road (MP 22.20)	At-Grade – passive	At-Grade – dual gates
63rd Street	At-Grade – dual gates with raised median	At-Grade – quad gates
55th Street	At-Grade – dual gates with raised median	Same as existing
Private Road (MP 26.96)	At-Grade – passive	At-Grade – dual gates
Pearl Street	At-Grade – dual gates with raised median	Same as existing
Valmont Road	At-Grade – dual gates with raised median	Same as existing
North 47th Street	At-Grade – dual gates with raised median	Same as existing
Independence Road	At-Grade – dual gates	At-Grade – dual gates with raised median
Jay Road	At-Grade – dual gates with raised median	Same as existing
North 55th Street	At-Grade – dual gates	At-Grade – quad gates
North 63rd Street	At-Grade – dual gates with raised median	Same as existing
Mineral Road (SH 52)	At-Grade – dual gates	At-Grade – dual gates with raised median*
Monarch Road	At-Grade – dual gates	At-Grade – dual gates with raised median
Niwot Road	At-Grade -- dual gates with raised median	Same as existing
2nd Avenue	At-Grade – dual gates	At-Grade – dual gates with raised median
83rd Street	At-Grade – dual gates	At-Grade –quad gates
Ogallala Road	At-Grade – dual gates	At-Grade – quad gates
Private Road (MP 40.65)	At-Grade – passive	At-Grade – dual gates
95th Street/Hover Road	At-Grade – dual gates with raised median	Same as existing
Sunset Street	At-Grade – dual gates	At-Grade – dual gates with raised median
Ken Pratt Boulevard/SH 119**	At-Grade – dual gates with raised median*	Same as existing
Terry Street	At-Grade – passive	Closure
Coffman Street	At-Grade – passive	Closure

Source: NWR Corridor Project Team, 2009.
Notes:
*The Mineral Road (SH 52)/ SH 119 intersection is identified as the location of a future interchange in the *2035 MVRTP*; the treatment shown here would be applied under the at-grade condition.
**The rail crossing at Ken Pratt Boulevard/SH 119 includes pedestrian crossings on both sides of SH 119.
At-grade – passive = signs only
At-grade – dual gates = gates on each approach lane
At-grade – dual gates with raised median = curbs that prevent vehicular movement around gates
At-grade – quad gates = gates on all lanes to provide full closure of crossing for vehicles and pedestrians
SH = State Highway
MP = mile post

These mitigations are proposed as a minimum treatment when commuter rail service begins in order to provide for safe train-auto crossings. With these proposed mitigation recommendations, the projected train-auto crash rates are below the established threshold.

The grade crossing locations were also evaluated for the traffic impacts resulting from the implementation of NWR service. The following grade-crossing areas failed the delay evaluation completed during the initial assessment and underwent a more detailed traffic delay and queuing analysis:

- West 72nd Avenue and Bradburn Boulevard (adjacent crossings analyzed as a system)
- Dillon Road
- South Boulder Road
- Niwot Road and 2nd Avenue (adjacent crossings analyzed as a system)
- SH 52/Mineral Road

Detailed analysis of each location is provided in the *Northwest Rail At-Grade Crossing Supplements Analysis Summary* (URS 2009), and the results are summarized below. Impacts resulting from the widening of roadways were not identified as part of this analysis; these impacts will be assessed during the design process.

4.7.5.1 West 72nd Avenue and Bradburn Boulevard Grade-Crossing Mitigation

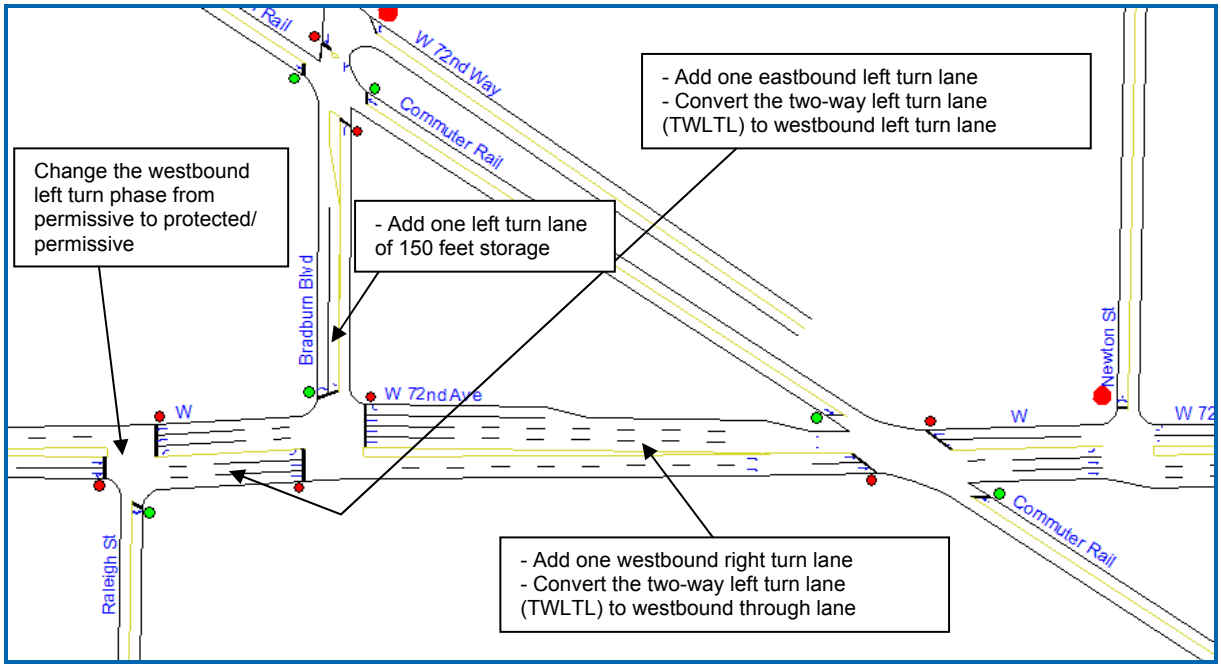
Based on detailed analysis and simulation of the at-grade rail crossing of West 72nd Avenue and Bradburn Boulevard, the following mitigations were developed to improve traffic operations at these locations. The widening of roadways and addition of new pavement in the mitigations would require property acquisition. Specific locations of acquisition would be identified during the design process.

- Add a left turn lane with 150 feet of storage to the southbound approach of Bradburn Boulevard at 72nd Avenue. The approach would consist of one left turn lane and one shared left/right turn lane. If the existing pavement cannot be restriped to accommodate the additional lane, pavement widening would be required.
- Widen 72nd Avenue east of Bradburn Boulevard to six lanes by adding one westbound right turn lane and converting the two-way left-turn lane (TWLTL) to a westbound through lane. The widened segment of 72nd Avenue would consist of three westbound through lanes, a westbound right turn lane and two eastbound through lanes east of Bradburn Boulevard. New pavement would be constructed to accommodate the wider street section. 72nd Avenue returns to a four-lane section at the railroad crossing.
- Widen 72nd Avenue between Bradburn Boulevard and Raleigh Street to six lanes, adding one westbound through lane and one eastbound left-turn lane. The TWLTL would be converted into a westbound left turn lane. The widened segment of 72nd Avenue would consist of two westbound through lanes, one westbound left-turn lane, two eastbound through lanes and one eastbound left turn lane. New pavement would be constructed to accommodate the wider street section.
- Change the westbound left-turn phase of the 72nd Avenue/Raleigh Street intersection from permissive only, to protected/permissive.

- Interconnect all signals, including the four on 72nd Avenue and one on Bradburn Boulevard, into one coordinated signal system. Optimize the signal timing to reduce overall corridor delay and queue lengths.

These mitigation measures are shown in Figure 4-17.

FIGURE 4-17. WEST 72ND AVENUE AND BRADBURN BOULEVARD GRADE-CROSSING MITIGATION



Source: NWR Corridor Project Team, 2009.

4.7.5.2 Dillon Road Grade-Crossing Mitigation

The construction of the Northwest Commuter Rail and a new signal at the Dillon Road at-grade crossing is not expected to have appreciable impacts on traffic operations along the Dillon Road corridor and adjacent signalized intersections. Queues downstream of the rail crossing are not forecast to back up through the crossing location. Therefore mitigation is not needed at the Dillon Road rail crossing for travel delay.

4.7.5.3 South Boulder Road Grade-Crossing Mitigation

Mitigations tested would not completely eliminate the queue spillbacks on South Boulder Road in both directions between the rail crossing and Centennial Drive. It is expected that railroad preemptions control would likely be effective in eliminating queue spillback conflicts; however, the standard software used for analyzing FasTracks corridor traffic impacts is not sophisticated enough to test such signal controls. It is therefore recommended a more detailed study of this location be undertaken using more sophisticated software to perform further study of railroad preemptions control at this location. If such controls prove to be ineffective, corridor capacity improvements along South Boulder road should be evaluated. Additional analysis for this crossing will take place during the design process.

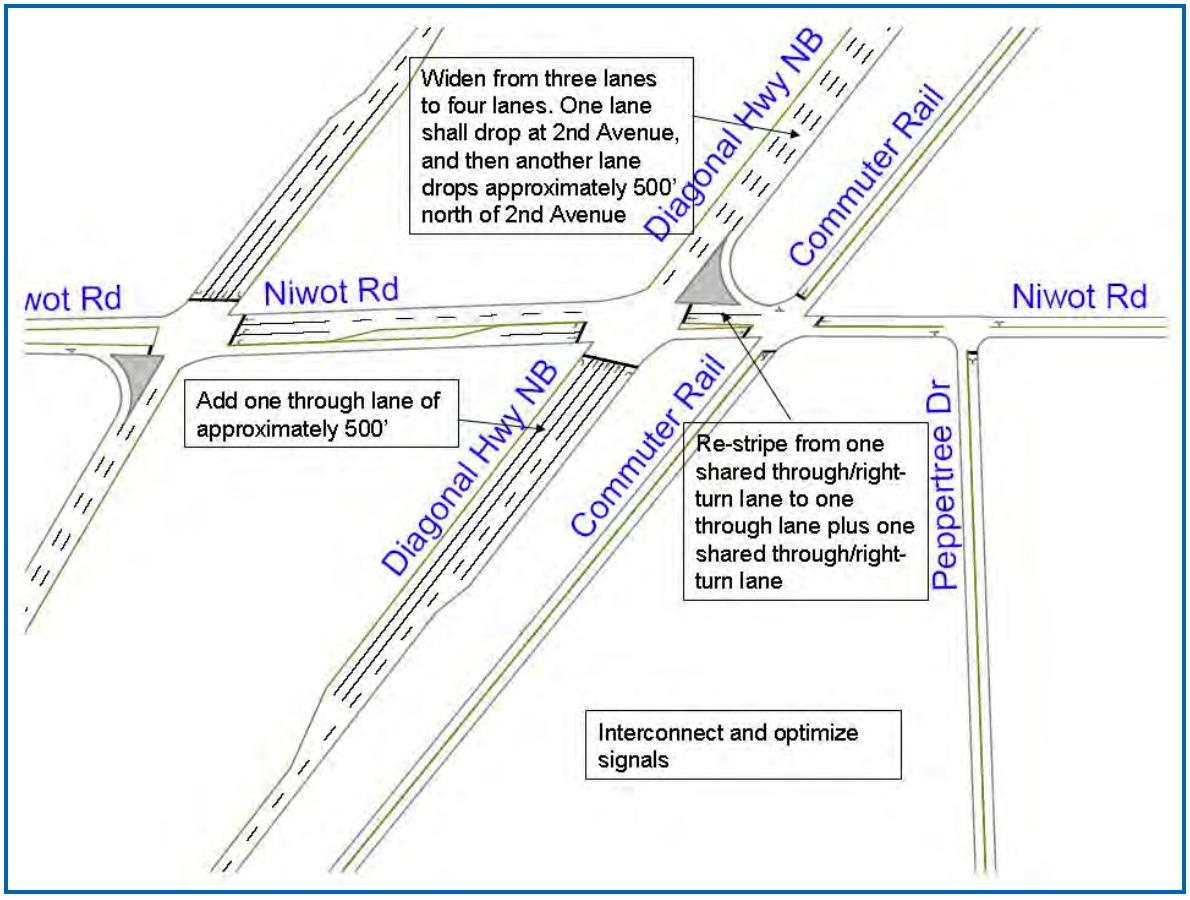
4.7.5.4 Niwot Road and 2nd Avenue Grade-Crossing Mitigation

Based on detailed analysis and simulation of the at-grade rail crossings of Niwot Road and 2nd Avenue, the following mitigations were developed to improve traffic operations along Niwot Road and 2nd Avenue. The widening of roadways and addition of new pavement in the mitigations would require property acquisition. Specific locations of acquisition would be identified during the design process.

- Construct an additional through lane approximately 500 feet in length along northbound Diagonal Highway approaching Niwot Road This would require adding new pavement at this location.
- Construct an additional through lane along northbound Diagonal Highway between Niwot Road and 2nd Avenue (approximately 1,000 feet). The additional lane would become a right-turn lane at 2nd Avenue. This would require adding new pavement at this location.
- Re-stripe westbound Niwot Road between the railroad crossing and northbound Diagonal Highway to provide a though lane and a shared through/right-turn lane.
- Interconnect all four signals to operate at one coordinated system and optimize the signal system for cycle length and offsets.

These mitigation measures are shown in Figure 4-18.

FIGURE 4-18. NIWOT ROAD AND 2ND AVENUE GRADE-CROSSING MITIGATION



Source: NWR Corridor Project Team, 2009.

4.7.5.5 Mineral Road (SH 52) Grade-Crossing Mitigation

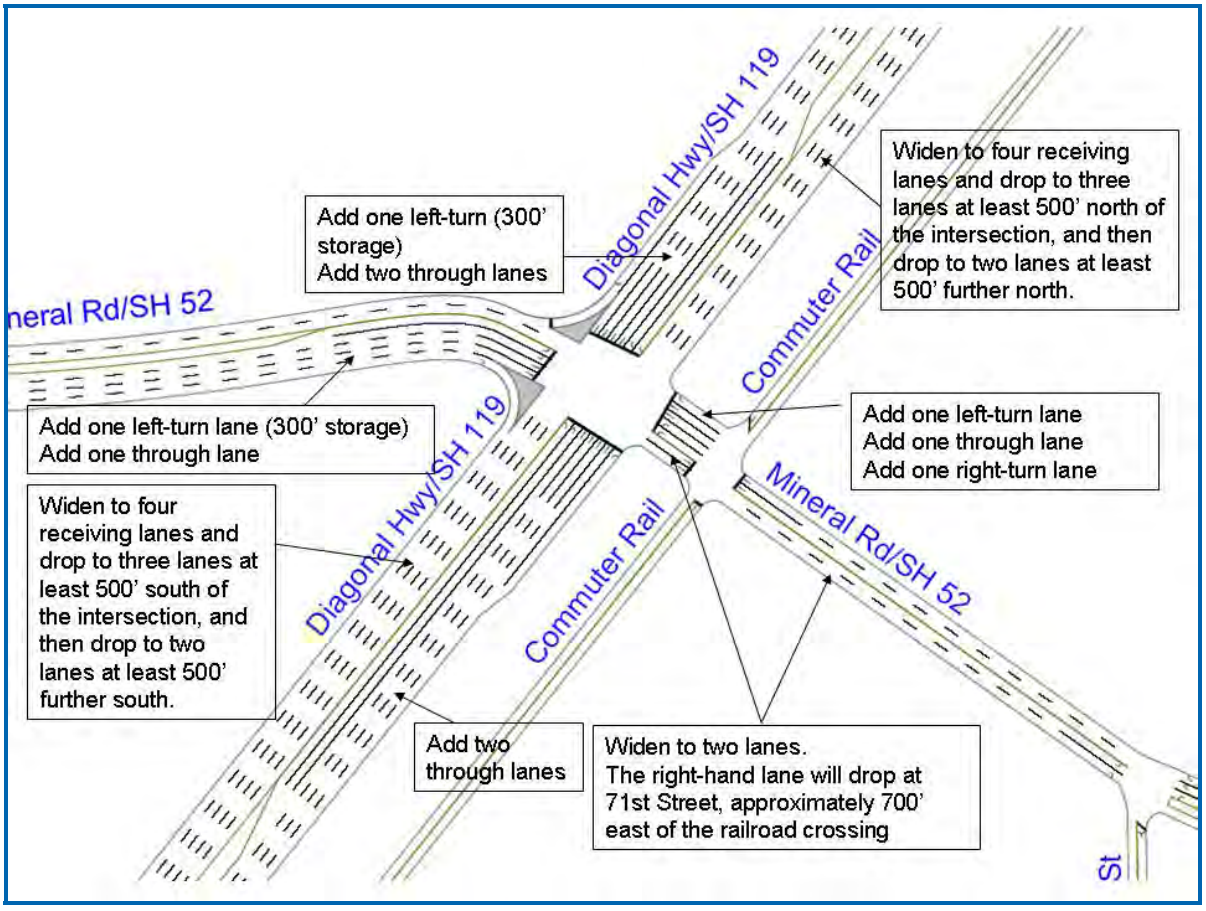
In the *2035 MVRTP* (DRCOG 2007), CDOT has identified an interchange construction project at the Mineral Road (SH 52) and Diagonal Highway (SH 119) intersection. The proposed interchange includes a grade-separation of SH 52 and SH 119. However, funding for the interchange has not been fully identified. RTD will work with CDOT to identify funding possibilities for this project. In the absence of the interchange project moving forward, potential mitigation measures for the interim at-grade condition were studied. Detailed analysis of this location attempted to provide acceptable operations with the provision of roadway or signal timing improvements. Extensive intersection improvement measures were applied since more moderate improvements were ineffective in improving traffic operations.

At the intersection of Mineral Road (SH 52) and Diagonal Highway (SH 119) the following improvements were analyzed:

- Eastbound approach on Mineral Road (SH 52): Construct a second left-turn lane with 300 feet of storage, and a second through lane. The widened approach would consist of two left-turn lanes, two through lanes and one right-turn lane. These improvements would require the widening of pavement for this approach. The second through lane would extend across Diagonal Highway (SH 119) and the rail crossing and would become a right-turn lane at the intersection of Mineral Road/71st Street.
- Westbound approach on Mineral Road (SH 52): Construct a second left-turn lane, a second through lane and a right-turn lane. The widened approach would consist of two left-turn lanes, two through lanes and a right-turn lane. These improvements would require the widening of pavement for this approach.
- Northbound approach on Diagonal Highway (SH 119): Construct two additional through lanes. The widened approach would consist of two left-turn lanes, four through lanes, and one right-turn lane. The four through lanes would extend through the Mineral Road intersection. The additional lanes would end a maximum of 1,000 feet north of the intersection, with only two lanes continuing north along Diagonal Highway. These improvements would require the construction of additional pavement on Diagonal Highway.
- Southbound approach on Diagonal Highway (SH 119): Construct one additional left-turn lane with 300 feet of storage and two additional through lanes. The widened approach would consist of two left-turn lanes, four through lanes and one right-turn lane. The four through lanes would extend through the Mineral Road intersection. The additional lanes would end a maximum of 1,000 feet south of the intersection, with only two lanes continuing south along Diagonal Highway. These improvements would require the construction of additional pavement on Diagonal Highway.
- Set all left-turn signal phases to be protected only.
- Set all right-turn signal phases to be permissive/overlapping.
- The traffic signal should be coordinated with the Mineral Road rail crossing.

These mitigation measures are shown in Figure 4-19.

FIGURE 4-19. MINERAL ROAD (SH 52) GRADE-CROSSING MITIGATION



Source: NWR Corridor Project Team, 2009.

These extensive intersection improvements proved insufficient in eliminating queue spillbacks between the intersection of SH 52/SH 119 and the railroad crossing. RTD and CDOT are working jointly to address future operations at this location including identifying funding for the grade separation as identified in the 2035 MVRTP.

4.8 RAIL FREIGHT MOVEMENTS

Rail freight movements in the project study area for the NWR Corridor include both interstate and intrastate traffic on the BNSF Railway Company line. The BNSF Railway Company line in the NWR Corridor is known as the Front Range Subdivision and runs 119 miles from Denver to Cheyenne, Wyoming. The portion of the route within the project study area consists of approximately 41 miles of single-track main line.

4.8.1 Existing Operations

The existing line is considered to be “dark territory” meaning that there is no railroad signaling system. Trains are dispatched from the BNSF Railway Company Fort Worth Control Facility using Track Warrant Control (TWC) to authorize train movements. Because

there is no railroad signaling system, maximum operating speed is limited to 59 miles per hour (mph) for passenger trains and 49 mph for freight trains. In the Longmont area, there is a 20 mph speed limit that requires all trains to be prepared to stop within line of sight of another train or an obstruction. There are three passing tracks on the line including an 8,976-foot-long siding in Broomfield, a 3,948-foot-long siding in Boulder, and a 4,449-foot-long siding in Longmont. Because of its length, only the siding at Broomfield is used for train meets and passes.

The BNSF Railway Company operates an average of five to seven freight trains per day through the NWR Corridor. These include coal, inter-modal, general merchandise, and special movement trains, as well as local trains that serve industrial customers in the area. Up to two coal trains per week serve the power generating plant in Boulder. Occasionally, coal trains from the Powder River Basin are routed over the Front Range Subdivision rather than over the normal route via the Brush Subdivision which parallels I-76. A special train which handles Boeing 737 airplane fuselages is operated over the line when necessary. The Boeing train handles one to five fuselages with idler cars and is limited to 25 mph over its entire route. Freight trains are operated as needed and have no specific schedules. Typically, three to four freight trains are operated during the day and two to three are operated during the night.

Existing facilities in the NWR Corridor include Rennick Yard (generally located between I-25 and 48th Street) and the BNSF Railway Company Inter-modal Facility (located between 48th Street and Utah Junction).

4.8.2 Future Operations

The NWR Corridor Project would share track with freight operations and would thus likely have some impact upon freight service. Details of impacts to freight operations will be further defined once RTD and BNSF have final negotiations for the operations agreement.

The Colorado Department of Transportation (CDOT) and BNSF Railway Company are currently studying the feasibility of relocating much of the north-south through-freight traffic east of the Denver metro area. However, local freight service would remain in the Denver area, which means this plan would unlikely impact the 7-8 trains per day within the project study area for the NWR Corridor. The construction of such a project is currently unfunded, and no plans have been made to implement this concept. The NWR Corridor Project would not preclude these future relocation concepts, and such a re-route of freight traffic east of Denver should have minimal impact in the NWR Corridor.

4.9 PEDESTRIAN AND BICYCLE FACILITIES

Local jurisdictions and CDOT are developing bicycle and pedestrian plans designed to improve mobility in and around transfer centers, transit stations, and along local roadways. Local bicycle master plans and DRCOG bicycle system plans include facility design, ongoing multi-jurisdictional coordination, and improvements in connectivity between land uses and transit facilities. Traffic engineering design of local roadways to enhance bicycle and pedestrian mobility include bikes lanes, improved at-grade pedestrian crossings, and above- or below-grade crossings to ensure pedestrian safety. RTD provides bicycle parking in the

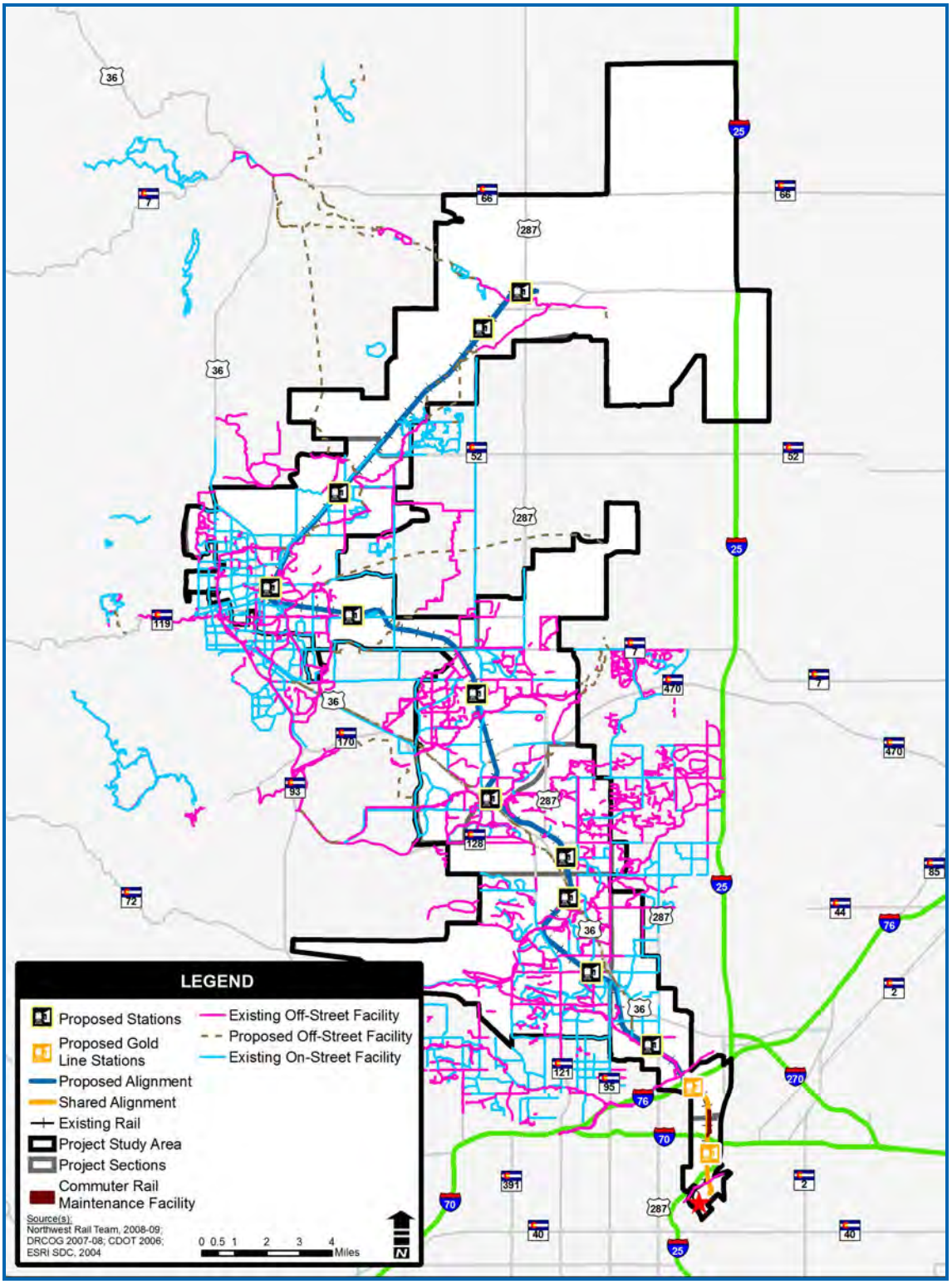
form of lockers and racks for commuters using existing park-n-Rides in the project study area of the NWR Corridor.

4.9.1 Existing Facilities

There are a number of bicycle and pedestrian facilities in the project study area for the NWR Corridor. Many are discontinuous and some include delineated sidewalks for pedestrian use. RTD has policies that allow bicycle users to transport bicycles on transit vehicles. RTD allows bicycles on all buses except the 16th Street Mall Shuttle. RTD will also accommodate bicycles on commuter rail vehicles, but does not have detailed policies in place yet. It is anticipated that RTD will maintain at least the same bicycle accessibility as currently exists for LRT vehicles.

Existing bicycle and pedestrian facilities within the NWR study area are shown in Figure 4-20. Within the context of the project's direct impact area, there are numerous on- and off-street facilities. Northwest Rail's design will not inhibit the existing facility connections. Several locations already have grade-separated pedestrian crossings (e.g., Little Dry Creek Trail, Big Dry Creek Trail, and the recently constructed crossing at Fourmile Canyon Creek). The current at-grade pedestrian crossing that is near Ken Pratt Boulevard in Longmont will be accommodated with a safe and appropriate track crossing. Some existing trails (e.g., Big Dry Creek Trail, Coal Creek Trail, and Goose Creek Trail) may be temporarily impacted during construction. More information on bicycle and pedestrian facilities can be found in Section 3.6, Parklands, Open Space and Recreation Areas.

FIGURE 4-20. EXISTING AND FUTURE BICYCLE AND PEDESTRIAN FACILITIES



Source: Northwest Rail Corridor Project Team, 2009.

4.9.2 Future Facilities

In the NWR Corridor several multi-use trails are proposed by the local municipalities. The Preferred Alternative would not preclude the development of planned pedestrian and bicycle facilities in the vicinity of the proposed alignment and stations, though, if in place, some may be temporarily impacted during construction. Any necessary detours and closures would be coordinated with the appropriate jurisdictions. Within the limits of the NWR corridor, connectivity to these facilities would be essential to providing multi-modal connectivity at station locations (see Figure 4-20).

There are several opportunities for future connections in station areas, both inside and out of the direct impact area. Note that these potential future connections are not a part of NWR but will not be precluded by NWR.

4.9.2.1 South Westminster/ 71st Avenue

- A potential future connection to Little Dry Creek Trail south of the station would be possible.

4.9.2.2 Westminster/ 88th Avenue

- A potential pedestrian bridge across 88th Avenue will connect to the 88th Avenue multi-use path. A plan for this connection has yet to be approved, but is identified in station area concept plans.

4.9.2.3 Walnut Creek

- A pedestrian trail on both sides of the tracks parallel to NWR and around Lower Church Lake proposed by Westminster may be provided though local sources. A potential future connection to US 36 bikeway would be possible.

4.9.2.4 Broomfield/ 116th Avenue

- The *Original Broomfield Neighborhood Plan* (City and County of Broomfield 2008) calls for a number of enhanced bicycle connections in the vicinity of the proposed station:
- On-street bicycle lanes are planned for several streets to provide connectivity to the proposed station and throughout the area.
- Two trails are planned for the station area: one trail would extend north-south along the west side of Commerce Street to the proposed station and the other trail would extend east-west along Airport Creek adjacent to the BIP Sports Complex and extend under the railroad before continuing to the proposed station.
- Potential future connection to planned US 36 bikeway

4.9.2.5 Flatiron

- A potential future connection to planned US 36 bikeway would be possible.

4.9.2.6 Downtown Louisville

- A potential future connection to Coal Creek Trail would be possible.

4.9.2.7 East Boulder

- A pedestrian trail on south side of tracks parallel to NWR proposed by the City of Boulder would be provided. A potential future connection to existing bicycle facilities on Arapahoe Avenue would be possible.

4.9.2.8 Boulder Transit Village

- A number of planned bicycle connections between the Boulder Transit Village Station and surrounding areas have been identified by the City of Boulder as key components of the *Transit Village Area Plan* (City of Boulder 2007), including the following:
- A planned north-south multi-use path along the west side of the railroad tracks would provide access between Goose Creek, the station platform and Valmont Road. A short east-west multi-use path connection would also be provided along the south side of Valmont Road to connect bicyclists to the protected street crossing.
- A second planned north-south multi-use path along the east side of the railroad tracks would also provide access between Goose Creek and the station platform. A short east-west multi-use path connection would also be provided between the rail platform and the street system in the adjacent Wilderness Place business park. The specific location of this path has not been identified at this time.
- A planned north-south bicycle connection between Goose Creek and Bluff Street along future Junction Place would be a shared use special street that would have only limited vehicle traffic. Two additional planned east-west multi-use paths, as well as a planned sidewalk connection, would connect the station platform to Junction Place.

4.9.2.9 Gunbarrel

- Potential future connections to the 63rd Street Multi-Use Path and other Gunbarrel bicycle facilities along Spine Road, Lookout Road, and SH 119 would be possible.

4.9.2.10 Twin Peaks

- A potential future connection to Longmont Diagonal Shared Use Path on Ken Pratt Boulevard would be possible.

4.9.2.11 Downtown Longmont

- A potential future connection to St. Vrain Greenway Trail and South Pratt Parkway bicycle facilities would be possible.

4.10 REGIONAL AND LOCAL TRANSPORTATION PLAN COMPATIBILITY

There are a number of regional and local plans and planning processes that describe aspects of the built environment relevant to the project study area for the NWR Corridor. NWR is consistent with the desire for regional transit investment in the following plans:

- 2035 Metro Vision Regional Transportation Plan (MVRTP) (DRCOG 2007)
- 2008-2013 Transportation Improvement Program (TIP) (DRCOG 2008)
- *Denver Comprehensive Plan* (City and County of Denver [CCD] 2000)
- Blueprint Denver (CCD 2002)
- Denver Strategic Transportation Plan (CCD 2008)
- Downtown Denver Multi-modal Access Plan (CCD 2005)
- Various local government transportation and comprehensive plans as described in the next section.

4.10.1 DRCOG Planned Improvements

As part of the *FasTracks Plan* (RTD 2004), the NWR Corridor Project is included in the *2035 MVTRP* (DRCOG 2007) as a Rapid Transit Corridor and is also included in the *2008–2013 TIP* (DRCOG 2008).

4.10.2 City and County of Denver

4.10.2.1 Denver Comprehensive Plan

The *Denver Comprehensive Plan* (CCD 2000) encourages investment in various modes of transit, including LRT, commuter rail, bus/HOV lanes, and the bus system to better link transportation and land use, increase mobility for Denver residents, and improve air quality. It also advocates design, funding, and construction of the Preferred Alternatives for future major investment corridors as studies are completed, and to continue Denver's active participation in and coordination with regional agencies responsible for transit planning, including RTD, CDOT, and DRCOG. NWR is consistent with these goals.

4.10.2.2 Blueprint Denver Improvements: City and County of Denver

Blueprint Denver (CCD 2002), an integrated land use and transportation plan, identifies the enhancement of the regional rapid transit system as essential to making *Blueprint Denver* a reality. The plan indicates that the city will pursue RTD's rapid transit build-out scenario, in addition to other opportunities for the advancement of rail transit. The NWR Corridor supports the plan's efforts to increase funding for the build-out of the regional rapid transit system, including RTD's FasTracks and the advancement of rail.

4.10.2.3 Denver Strategic Transportation Plan (2008)

The *Denver Strategic Transportation Plan* (CCD 2008) is a multi-modal transportation plan initiated by the Denver Department of Public Works. It addresses several major travel sheds (study areas), recognizing the importance of moving people, not just vehicles.

Due to the large increase in transit trips forecast for the downtown Denver travelshed, major improvements in transit are recommended and are already underway. Travel routes in the *FasTracks Plan* (RTD 2004) will converge at DUS, which is within the downtown travel shed's boundaries. Construction of the West Corridor Line, Gold Line, North Metro, I-70 East, US 36, and NWR transit improvements will significantly increase transit capacity in the downtown Denver area. The construction of these rail lines will require ongoing coordination between RTD, DRCOG, CDOT, and CCD.

4.10.3 Adams County

4.10.3.1 Adams County Transportation Plan

The *Adams County Transportation Plan* (Felsburg Holt & Ullevig 1996) was completed prior to the initial *US 36 Major Investment Study (MIS)* (RTD 2001). However, various corridors were acknowledged for future transit improvements in the *DRCOG 2015 Interim Regional Transportation Plan* (DRCOG 1993). Adams County concurred with recommendations that corridor preservation actions should be taken in the short-term to ensure that future options were not precluded. Rail corridors that would be preserved included the Union Pacific (UP)

Railroad line in Northglenn and Thornton, the BNSF Railway Company line in Westminster and Broomfield, and the UP line through Commerce City and Brighton.

4.10.3.2 Transit Oriented Development Plans and Guidelines

The *Adams County Transit Oriented Development and Rail Station Area Planning Guidelines*, January 2007 were developed in response to Adams County's anticipation of the implementation of the proposed FasTracks program transit improvements.

The *Adams County Clear Creek Valley Transit Oriented Development Plan*, October 2009 was initiated to determine the feasibility of TOD at the two proposed FasTracks stations in Adams County – one at Pecos Street for the NWR Project and the other at Federal Boulevard (Gold Line project).

Additionally, Adams County has been active in the NWR Corridor planning process, as their plan recognizes that Adams County and its cities must work closely with RTD and each other to make the use of transit more attractive and competitive with auto travel and maximize the effectiveness of transit facilities and transit service in general.

4.10.4 City of Westminster

One of the primary goals of the 2004 *Westminster Comprehensive Land Use Plan* (Clarion Associates 2004) is to promote the development of a continuous and multi-modal transportation system, including support of RTD efforts for the NWR Corridor.

Specifically, the plan identifies elements in the *US 36 MIS* (RTD 2001) including commuter rail stations at 70th and Lowell Boulevard (South Westminster Station) and US 36 and Church Ranch (Walnut Creek Station).

4.10.5 City and County of Broomfield

The vision of the 2005 *Transportation Master Plan for the City and County of Broomfield* (Felsburg Holt & Ullevig 2005), a component of the comprehensive plan, is an efficient and well-maintained, multi-modal transportation system that accommodates the demand from growth and facilitates convenient internal and regional accessibility; minimizes environmental impacts; and reduces dependence on the automobile. Specifically, the plan identifies goals that address roadway capacity, major roadway connections, alternative modes of travel, and interconnected bike and pedestrian facilities. Along with rail service proposed for Northwest Rail and North I-25 (North Metro) corridors, "feeder bus service" will take travelers to and from rail stations. Call-n-Rides will provide an overlay to conventional fixed-route bus service throughout most of Broomfield, together forming a system to provide an alternative to driving for Broomfield residents and workers. Expanded bus services for the major employment and activity centers and bicycle and pedestrian facilities along US 36 are also listed in the plan. In addition, the original *Broomfield Neighborhood Plan*, 2008, encourages transit improvements funded by FasTracks and proposes a commuter rail station to serve both sides of the BNSF Railway Company track in the vicinity of West 116th Avenue and the railroad.

4.10.6 City of Louisville

4.10.6.1 Comprehensive Plan

One of the goals of the *2009 Update to the Comprehensive Plan* (RRC Associates, et al 2008) is to capitalize on multi-modal transportation and TOD opportunities. The plan seeks to concentrate residential and commercial activity near proposed regional transit facilities including the proposed commuter rail station in Old Town Louisville and additional feeder buses and trails. These are locations that are ideal for higher density housing. This is due to the availability of public transit, which will provide residents with other transit options and reduce automobile use. These are also areas where new retail and service-oriented businesses will be located to take advantage of the public transit system. These types of businesses benefit from the increased number of people who live in higher density housing that would be located close to transit corridors. These types of development also enhance the opportunities to increase ridership within the NWR Corridor.

The plan also states that the city has a tremendous opportunity to infuse new energy into downtown Louisville, not only with a commuter rail stop but by leveraging this regional multi-modal facility to stimulate commercial investments and TOD. A variety of new, medium to high density housing within walking distance is critical to sustaining a vibrant pedestrian retail-office environment.

4.10.6.2 Downtown Framework Plan

The *Downtown Framework Plan* (City of Louisville 1999) was adopted before the initial *US 36 MIS* (RTD 2001). However, the study states that the historic downtown Louisville area is a special asset to the community and it should be preserved, protected, and enhanced. The study also stated that if a commuter rail line traveling through downtown Louisville is implemented, the city should pursue a downtown stop and that the rail stop should be incorporated into the downtown framework and be integrated into any comprehensive downtown transit facility.

4.10.7 Jefferson County

The *Countywide Transportation Plan* (Jefferson County Highways and Transportation Department 1999) was adopted prior to the *US 36 MIS* (RTD 2001). Goals of the plan included the development of a regional rapid transit network to serve as a foundation for an increased transit mode split in Jefferson County and the rest of the region, and increased participation in the RTD local government planning process.

The *Countywide Transportation Plan Addendum* (Jefferson County Highways and Transportation Department 2002) removed projects from Broomfield (since Broomfield became both a city and county), extended the horizon year to 2025, and removed completed projects. The addendum showed the NWR Corridor Preferred Alternative, but denoted that it was not in the fiscally constrained plan.

4.10.8 City of Boulder

4.10.8.1 Boulder Valley Regional Center Transportation Connection Plan

The *Boulder Valley Regional Center Transportation Connection Plan* (City of Boulder, et al. 2002) supports the implementation of commuter rail and the proposed Boulder Transit Village at 30th and Pearl Street. The plan identifies a range of vehicular and bicycle and pedestrian connections between the Boulder Transit Village and the surrounding neighborhood.

4.10.8.2 Boulder Transportation Master Plan

The goals in the *City of Boulder Transportation Master Plan* (LSA Associates, Inc. 2003) include providing an integrated, multi-modal transportation system emphasizing the role of the pedestrian as the primary mode of travel within the city. Reduction of single-occupant vehicle (SOV) travel for regional travel is identified as a focus area for the plan. Specific objectives to reach that goal include continued progress toward no increase in long-term vehicle traffic, reduction in SOV travel to 25 percent of all person-trips, and expanding transportation alternatives. The implementation of the NWR Corridor Preferred Alternative would provide an alternative mode for Boulder residents and employees. The improved travel time would provide incentive to change modes from SOV to other modes, reinforcing the objectives in the plan. Additionally, the plan identifies the desire for developing regional consensus for multi-modal improvements to regional corridors including, but not limited to, automobile, rail, bus, bicycle, and pedestrian access. The plan specifically supports the Locally Preferred Alternative (LPA) improvements identified in the *US 36 MIS* (RTD 2001), including additional travel lanes, HOV and Bus Rapid Transit (BRT) on US 36 and the Northwest Rail, as well as a corridor bikeway.

4.10.9 Boulder County

The *Boulder and Broomfield Counties Transit Enhancement Plan* (Boulder County 2006) was adopted in 2006 and recommends the expansion of fixed-route transit, specialized transit, and an awareness program to provide an integrated set of transit enhancements for these counties. The plan focuses on bus improvements, many of which are included in the No Action Alternative and Preferred Alternative, that support the capital improvements of the Northwest Rail corridor.

4.10.10 City of Longmont

The *Longmont Multi-Modal Transportation Plan* (LSA 2005) focuses on providing a multi-modal approach to transportation in Longmont, with the Northwest Rail Corridor as a major component. According to the plan, the local bus service will be reoriented to provide better circulation between the proposed rail stations and activity centers.

5. PUBLIC COMMENT AND AGENCY COORDINATION

5.1 PUBLIC INVOLVEMENT OVERVIEW

5.1.1 Goal of Public Involvement

The overall goal of public involvement for the Regional Transportation District (RTD) FasTracks Northwest Rail (NWR) Corridor Environmental Evaluation (EE) is to provide ongoing, accessible, and distinct opportunities for stakeholders and the broader public to engage meaningfully in the EE process. With this goal serving as the foundation, the NWR Public Involvement Plan (PIP) was developed to direct the approach to effectively engage all community stakeholders throughout the EE process.

5.1.2 History of Public Involvement in the NWR Corridor

The public involvement approach for the NWR Corridor EE recognized and built on previous planning and environmental studies that had been conducted for the corridor.

Several studies preceded the NWR Corridor EE. For the segment of the rail corridor from Denver to Boulder, the *US 36 Major Investment Study* (RTD 2001) and the initial stages of the US 36 Environmental Impact Statement planning process (URS 2007) examined both highway and rail improvements in the corridor. For the segment of the rail corridor from Boulder to Longmont, RTD conducted two planning studies, the *Longmont Diagonal Rail Feasibility Study* (RTD 2005) and the *Longmont Diagonal Rail Environmental Evaluation* (RTD 2006).

Public involvement in the previous corridor rail studies focused on informing the public about the studies, keeping the public up to date on their progress, and eliciting public input on an ongoing basis and at project milestones (key decision points). Each public involvement activity was conducted so that it resulted in timely input to RTD about the study issues, alternatives, and recommendations. Public involvement activities for previous studies included advisory committees, public meetings and workshops, key person interviews, transit oriented development workshops (for the Boulder-Longmont segment), project Websites, and project mailing lists.

For an in-depth summary of the public input and recommendations from previous corridor rail studies, see the *Longmont Diagonal Rail Feasibility Study Final Report* (RTD 2005) and the *Longmont Diagonal Rail Environmental Evaluation* (RTD 2006), available at www.RTD-Denver.com.

5.1.3 Public Involvement Linked to the NWR Corridor Project

In addition to the previous studies indicated above, two other projects that are linked to the NWR Corridor Project are the Gold Line Environmental Impact Study (EIS) and the

Commuter Rail Maintenance Facility Supplemental Environmental Assessment (CRMF SEA). These proposed projects are to provide commuter rail from Denver Union Station (DUS) in downtown Denver to Ward Road in Wheat Ridge, Colorado for Gold Line, and a CRMF to serve the FasTracks commuter rail system. Both of these projects conducted substantial public involvement activities that are documented in detail in the Gold Line Final Environmental Impact Study (Final EIS) that was distributed to the public in August 2009, with a record of decision being signed on 2 November 2009. For an in-depth summary of public input and recommendations for these two projects see the *Gold Line Final EIS* (RTD 2009) available at www.RTD-Denver.com.

5.2 PUBLIC INVOLVEMENT IN THE DECISION-MAKING PROCESS

The NWR Corridor Project Team developed a PIP that clearly established the public involvement approach to connect public input to the project's decision-making process by facilitating communication between the public and project decision makers. The Project Team also developed an Agency Coordination Plan that established the foundation for how local, state, and federal agencies would be involved throughout the NWR Corridor EE to provide input in a way that would fulfill the needs of the United States Army Corps of Engineers (USACE). The NWR Corridor PIP and the Agency Coordination Plan worked together to direct the approach to effectively engage stakeholders in the community in the EE process. As mentioned above, project milestones provided a mechanism for the local jurisdictions to discuss, and for the public to review, the specific project considerations at hand.

Figure 5-1 illustrates the decision-making process for the NWR Corridor Project, which provides the broad framework for coordination among RTD, local jurisdictions, resource and regulatory agencies, and how public input influences decision making.

5.2.1 NWR Corridor Project Milestones

The recommendation to implement commuter rail along the BNSF Railway Company alignment between Denver and Longmont had been vetted with the public and agencies throughout the course of the previous commuter rail studies discussed in Section 5.1.2, History of Public Involvement in the NWR Corridor. Therefore, public involvement for the NWR Corridor Project built on this prior recommendation and focused on five key project milestones to assist RTD in implementing commuter rail service along the corridor. These milestones focused on specific study issues, recommendations, or decisions.

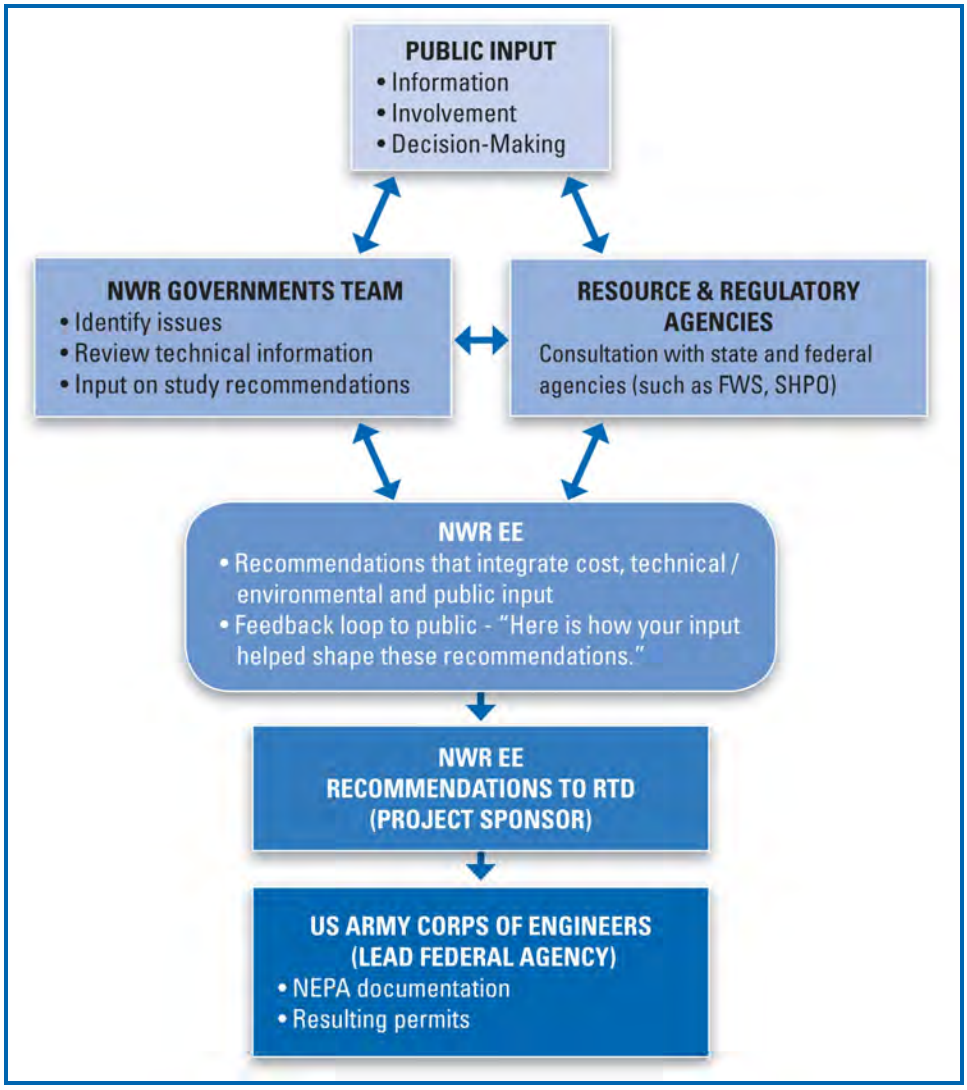
- **Milestone #1:** Project Initiation
- **Milestone #2:** Commuter Rail Vehicle Technology
- **Milestone #3:** Special Issues – Station Planning, Fencing, and Noise/Quiet Zones
- **Milestone #4:** Preferred Alternative, Impacts, and Mitigation
- **Milestone #5:** Review of NWR Corridor Draft EE

Formal project initiation (Milestone #1) occurred with a series of public meetings that were held in July 2007 in Boulder, Westminster and Longmont. A second series of public meetings (Milestone #2) occurred in September 2007 held in Broomfield, Denver and Gunbarrel/

Boulder that reinitiated evaluation of commuter rail vehicle technology and solicited input regarding the evaluation. In addition, several other public involvement activities were conducted with smaller groups of stakeholders to address specific concerns (Milestone #3). For example, meetings were held that focused on station planning, fencing, and noise/Quiet Zones. Prior to the NWR Corridor Draft EE being released, the NWR Governments Team (NWR GT) and regulatory agencies were afforded an opportunity to comment on the anticipated impacts and mitigation measures associated with the Preferred Alternative (Milestone #4). Following the release of the Draft EE, corridor-wide public meetings and associated small group outreach meetings occurred to present the Draft EE to the public including the results of the impacts and analysis and proposed mitigations, and to collect input from members of the public on the document (Milestone #5).

Section 5.5 provides a detailed description of public involvement activities at each Milestone.

FIGURE 5-1. NORTHWEST RAIL CORRIDOR ENVIRONMENTAL EVALUATION DECISION-MAKING PROCESS



Source: NWR Corridor Project Team, 2010.

Public meetings to review the Preferred Alternative, impacts, and mitigation measures for the NWR Corridor Project and to provide an overview of the NWR Corridor Draft EE occurred during the public comment period that took place between 26 February 2010 and 29 March 2010.

For major milestones, the NWR Corridor Project Team used the following approach to ensure RTD received public and local government input in a timely and relevant manner:

- First, the Project Team presented preliminary recommendations to the NWR GT (described in more detail in Section 5.3.3, NWR Governments Team).
- Then, corridor-wide workshops or stakeholder meetings were conducted to gather public input about the proposed recommendations.
- Finally, the Project Team returned to the NWR GT to either finalize or comment on the study recommendations before forwarding them to the RTD Board of Directors.

5.3 PUBLIC INVOLVEMENT ORGANIZATION

RTD recognizes that local government deliberations, public involvement, state and federal agency coordination, and RTD decision making must be linked together and informed by each other at key decision-making milestones to help shape and assess the study's recommendations.

5.3.1 NWR Corridor Project Decision Makers

Two agencies will serve in decision-making roles for the project. The lead Federal agency is the USACE, because the project will impact waters of the United States (US) and requires Section 404 permits. The USACE issued a Section 404 Nationwide Permit for Phase 1 on 1 April 2010. Phase 2 is expected to require a Section 404 Individual Permit.

As the Applicant Agency, RTD is the decision maker for the EE. Recommendations developed during the EE were forwarded to the RTD Board of Directors for consideration and adoption. The RTD Board of Directors adopted the Final EE in May 2010.

5.3.2 State and Federal Resource and Regulatory Agencies

In keeping with the intent of Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU), RTD proactively coordinated with state and federal resource and regulatory agencies. Agency involvement occurred to identify any issues of concern regarding the project's potential social, environmental, or community impacts or any issues that could substantially delay or prevent an agency from granting a permit or other approval needed for the project. These resource and regulatory agencies included the following:

- USACE (Lead Federal Agency)
- Federal Transit Administration
- United States Environmental Protection Agency Region 8
- Federal Railroad Administration
- Colorado Public Utilities Commission
- Urban Drainage and Flood Control District

- Colorado Division of Wildlife
- United States Fish and Wildlife Service (USFWS)
- State Historic Preservation Office
- Colorado Department of Public Health and Environment

Note: The BNSF Railway Company was also invited to agency workshops.

5.3.3 NWR Governments Team

Figure 5-2 depicts the composition of the NWR GT.

FIGURE 5-2. NORTHWEST RAIL CORRIDOR GOVERNMENTS TEAM

Source: NWR Corridor Project Team, 2009.

As illustrated in Figure 5-2, the NWR GT consists of elected officials and technical staff representatives from NWR Corridor communities. It also includes members representing other neighboring communities; local, state, federal agencies; and community organizations. The NWR GT serves several functions, including the identification of project-related issues requiring further study, the provision of input into study recommendations and technical analyses, and consideration of public input. Overall, the NWR GT provides an important mechanism for communicating the interests, concerns, and ideas of the communities along the NWR Corridor to the Project Team and RTD decision makers. The NWR GT includes members representing the following organizations:

- Adams County
- Boulder County
- Jefferson County
- City and County of Broomfield
- City of Louisville
- City of Westminster
- Town of Superior
- USACE

- City and County of Denver
- City of Arvada
- City of Boulder
- City of Lafayette
- City of Longmont
- Federal Transit Administration
- Colorado Department of Transportation (CDOT)
- Denver Regional Council of Governments
- 36 Commuting Solutions
- North Front Range Metropolitan Planning Organization

5.3.4 NWR Fencing Subcommittee

One of the major issues identified during the NWR GT meetings was concern regarding RTD's fencing policy. As a result, the NWR Fencing Subcommittee was established. The purpose of the subcommittee is to communicate and provide clarification of RTD's fencing strategy and design criteria, ensure RTD understands jurisdiction and agency concerns, confirm the NWR Corridor Project fencing recommendations, and clarify how the NWR Corridor EE documents the fencing process and issues. The Fencing Subcommittee included members representing the following organizations:

- Adams County
- City of Louisville
- City of Louisville Open Space Department
- USFWS
- City of Arvada
- Boulder County Transportation Department
- Boulder County Parks and Open Space Department
- City of Westminster
- City and County of Broomfield Open Space Department
- Colorado Division of Wildlife
- City and County of Denver
- CDOT
- City of Boulder Open Space and Mountain Parks Department
- 36 Commuting Solutions
- City of Longmont

5.4 PUBLIC INVOLVEMENT METHODS AND TOOLS

The public involvement program used a multi-faceted system to provide simple, user-friendly project information so stakeholders could develop and provide their opinions and input based on accurate knowledge and a realistic understanding of the needs, constraints, and opportunities of the project. The methods and tools employed during the NWR Corridor Project public involvement process included the following:

NWR Public Meeting Newspaper Ad

- Maintenance and outreach to an approximately 13,500-person stakeholder database
- Printed information and materials including project newsletters and a Noise Impacts and Quiet Zone Resource Packet
- Public meetings (publicized through a variety of mechanisms including: posting information on the Website, contacting the media, placing paid advertisements with corridor newspapers, making radio announcements, distributing flyers, and contacting all parties in the public involvement database/mailing list by e-mail or by mail)
- Interactive project Website
- Informational phone line
- Press and media relations
- Bilingual communications of all media

Table 5-1 lists the media releases, public notices, newsletters, and other publicity materials that have been distributed during the NWR Corridor EE process.

TABLE 5-1. MATERIALS DISTRIBUTED DURING THE NWR CORRIDOR EE PROCESS

Date	Material	Content
Newsletter and Printed Materials		
July 2007	RTD FasTracks NWR Corridor EE Newsletter (English and Spanish)	Presented the NWR Corridor EE process, the project schedule, and information about the project initiation.
July 2007	RTD FasTracks NWR Project Kick-Off Public Meetings Postcard (English and Spanish)	Mailed postcards to 18,000 contacts to inform them of the NWR Corridor EE and kick-off public meetings.
September 2007	RTD FasTracks NWR Corridor September Commuter Rail Vehicle Technology Selection Public Workshops Postcard (English and Spanish)	Mailed postcards to 10,000 contacts to inform them of the NWR Corridor public meetings about the commuter rail vehicle technology selection.

TABLE 5-1. MATERIALS DISTRIBUTED DURING THE NWR CORRIDOR EE PROCESS

Date	Material	Content
November 2007	RTD FasTracks NWR Corridor Times Newsletter (English and Spanish)	Provided an update on the NWR Corridor EE and communicated information about the process for reviewing and selecting a preferred technology for the commuter rail vehicles. Provided review of the September public workshops.
April 2008	RTD FasTracks NWR Corridor Times Newsletter (English and Spanish)	Provided an update on the recent and upcoming activities of the NWR Corridor EE, including how the study would continue to address noise and other project issues.
May 2008 (on-going distribution)	RTD FasTracks NWR Corridor Noise Impacts and Quiet Zone Resource Packet	Provided answers to commonly asked questions about the aspects of noise impacts, analysis, mitigation, and Quiet Zone implementation. Included corridor-specific information and information that applied to all RTD FasTracks corridors.
March 2010	RTD FasTracks NWR Corridor Release of the Draft EE and Public Meetings Postcard	Mailed postcards to 9,136 contacts to inform them of the release of the NWR Draft EE, where to review it, how to comment, and information about the March 2010 corridor-wide public meetings.
E-mails and Other Electronic Communications		
June 22, 2007	NWR Corridor Kick-Off and Public Meeting Invitation	Introduction to the NWR Corridor Project and announcement of the July 2007 public meetings.
July 6, 2007	Public Meetings Reminder	Reminder about July 2007 public meetings.
July 20, 2007	Public Meetings Follow-Up	Appreciation for meeting attendance, recap of the meetings, information about summary materials, and next steps of the NWR Corridor Project.
August 14, 2007	RTD FasTracks NWR Corridor Project Update	Update of the July 2007 public meetings informing the public that there was support for the NWR Corridor Project and disseminating information about the project Website and upcoming public workshops.
August 24, 2007	NWR Corridor – BNSF Railway Company Update	Update on negotiations between the BNSF Railway Company and RTD regarding the increased cost of implementing EMU technology in the NWR Corridor.
August 31, 2007	Announcement for September 2007 Public Workshops	Announcement for the September 2007 public workshops.
September 17, 2007	September 2007 Public Workshops Reminder	Reminder for the September 2007 public workshops.
November 2007	RTD FasTracks NWR Corridor Times Newsletter e-mail (English and Spanish)	Provided an update on the NWR Corridor EE and communicated information about the process for reviewing and selecting a preferred technology for the commuter rail vehicles. Provided review of the September public workshops.
March 3, 2008	RTD FasTracks NWR Corridor Project Update	Informed the public about negotiations with the Union Pacific Railroad and the shared railroad section of the Gold Line and NWR corridors. Also included information about current project activities and the project schedule.

TABLE 5-1. MATERIALS DISTRIBUTED DURING THE NWR CORRIDOR EE PROCESS

Date	Material	Content
March 6, 2008	RTD FasTracks NWR Corridor Project Update and Media Correction	Included additional information about the negotiations with the BNSF Railway Company and a correction confirming that the NWR Corridor would provide mid-day service (an error reported in the newspaper indicated something contrary).
March 15, 2008	Announcement for Gunbarrel Station Working Group Public Meeting	Announcement for Gunbarrel Station Working Group public meeting.
April 1, 2008	Reminder for Gunbarrel Station Working Group Public Meeting	Reminder for Gunbarrel Station Working Group public meeting.
April 11, 2008	Gunbarrel Station Working Group Meeting Follow-Up	An e-mail thanking all Gunbarrel Station Working Group public meeting attendees for participating.
May 4, 2008	RTD FasTracks NWR Corridor Times Newsletter e-mail (English and Spanish)	Provided an update on the recent and upcoming activities of the NWR Corridor EE including how the study would continue to address noise and other project issues.
August 12, 2008	RTD FasTracks NWR Corridor Project Update	Provided an update about the RTD FasTracks budget and Annual Program Evaluation and included an announcement of the release of the Gold Line Draft Environmental Impact Statement. Also informed the public about current project activities and provided the project schedule.
September 12, 2008	RTD FasTracks NWR Corridor Project Update	Provided an update on the economic impacts to the RTD FasTracks Program and an announcement for the September/October 2008 public meetings.
December 17, 2008	RTD FasTracks NWR Corridor Project Update	Provided information about the RTD FasTracks 2008 Annual Program Evaluation and associated public process. Also provided a NWR update about current and upcoming project and program activities (including a link to the RTD FasTracks videos on YouTube).
July 13, 2009	RTD FasTracks NWR Corridor Project Update	Provided programmatic information about RTD FasTracks and updated the public about progress with NWR; project schedule, track alignment, station planning, noise impact analysis and Quiet Zone process, and grade crossing inventory.
February 25, 2010	RTD FasTracks NWR Corridor Release of the Draft EE and Corridor-wide Public Meetings Announcement	Provided information about the release of the Draft EE, where to review it, how to comment during the formal comment period, and information about the corridor-wide public meetings.
March 10 & 17, 2010	RTD FasTracks NWR Corridor Release of the Draft EE and Corridor-wide Public Meetings Announcement to Hispanic/Latino Media Outlets	Provided information about the release of the Draft EE, where to review it, how to comment during the formal comment period, and information about the corridor-wide public meetings.

TABLE 5-1. MATERIALS DISTRIBUTED DURING THE NWR CORRIDOR EE PROCESS

Date	Material	Content
Media Advisories, Print, and Radio Advertisements		
July 2007	NWR Corridor EE Kick-Off Public Meetings Newspaper Advertisements	Advertisements ran in six different corridor publications to inform the public of the NWR Corridor EE and kick-off public meetings.
July 2007	RTD FasTracks NWR Media Advisory	Distributed to all RTD media contacts to inform them about the NWR Corridor EE and kick-off public meetings.
July 2007	RTD FasTracks NWR Radio Interview and Announcement	Karen Morales, RTD FasTracks, conducted a radio interview with KGNU (88.5 FM Boulder/1390 AM Denver) to inform the public about the NWR Corridor EE and kick-off public meetings.
September 2007	NWR Corridor September Public Workshops Newspaper Advertisements	Advertisements ran in six different corridor publications to inform the public about the public workshops focused on selecting a preferred commuter rail vehicle technology.
September 2007	RTD FasTracks NWR Media Advisory	Focused on selecting a preferred commuter rail vehicle technology; was distributed to all RTD media contacts to inform them about the public workshops.
September 2007	RTD FasTracks NWR Television Interview and Announcement	Karen Morales, RTD FasTracks, conducted a television interview, focused on selecting a preferred commuter rail vehicle technology, with Louisville TV Channel 8 to inform the public about the public workshops.
September 2007	RTD FasTracks NWR Latino/ Hispanic Television and Radio Interviews and Announcements	Conducted radio and television interviews focused on selecting a preferred commuter rail vehicle technology with Latino/Hispanic media outlets to inform the public about the public workshops.
February 2010	RTD FasTracks NWR Media Advisory	Announced the Draft EE was available for review and the schedule for corridor-wide public meetings.
March 2010	Release of the NWR Draft EE and Corridor-wide Public Meetings Newspaper Advertisements	Advertisements ran in nine different corridor publications to inform the public about the release of the Draft EE and corridor-wide public meetings to present the Draft EE and collect public input.
March 2010	Release of the NWR Draft EE and Corridor-wide Public Meetings on daily Hispanic radio station news segments	Daily news reports on two different Spanish radio stations to inform the public about the release of the Draft EE and corridor-wide public meetings to present the Draft EE and collect public input.

Source: NWR Corridor Project Team, 2010.
Notes:
EE = Environmental Evaluation
EMU = electric multiple unit
NWR = Northwest Rail
RTD = Regional Transportation District

5.5 PUBLIC AND AGENCY INPUT AT PROJECT MILESTONES

As detailed in Section 5.6, Local Governments and Agency Meetings, and Section 5.7, Targeted Outreach Meetings, the NWR Corridor Project Team held several corridor-wide public meetings and workshops, NWR GT meetings, and targeted small group meetings at key project milestones throughout the course of the NWR Corridor EE. The following section provides a description of public and agency input that informed the decision-making process at each project milestone.

Welcome Board Displayed at Public Meetings

5.5.1 Milestone #1 – Project Initiation (July 2007 Public Meetings)

The first round of public meetings for the NWR Corridor Project was held in July 2007. The NWR Corridor Project Team presented the history of the project to the public; provided an update on developments since the conclusion of the previous corridor rail studies; described the EE process; and identified community issues, needs, and concerns. Meetings were conducted in Boulder, Westminster, and Longmont and a total of 372 individuals attended the three public meetings.

July 2007 Open House at NWR Corridor Project Kick-off Meeting

Public Input. Meeting attendees asked a wide range of general questions about the project, covering such topics as noise impacts, project schedule, and operating plans for opening day. Participants expressed interest in the selection of commuter rail vehicle technology for the NWR Corridor Project.

NWR GT Input. The results of the public meetings were presented to the NWR GT on July 25, 2007. Like input received at the public workshops, agency interests covered issues such as commuter rail vehicle technology, property impacts, station locations, fencing, and noise mitigation measures. Each representative also specified what issues would be important to their jurisdiction/agency during the NWR Corridor EE and it was determined that these issues would be used, in part, to develop public meeting materials and future agendas for the NWR GT. The NWR GT also suggested methods to communicate to the public about commuter rail vehicle technology.

5.5.2 Milestone #2 – Commuter Rail Vehicle Technology (September 2007 Public Workshops)

The NWR Corridor Project Team held a series of public workshops to present the preliminary commuter rail vehicle technology recommendation for the NWR Corridor Project and to gather public input. The workshops were held in Broomfield, Denver, and Gunbarrel/Boulder and were well attended, with 205 individuals attending the three public workshops. An open house format, which included a station in the back of the room for a series of repeated introductory presentations, allowed individuals to obtain information and ask questions surrounding subjects of interest to them by meeting with project staff and viewing station presentation boards that highlighted:


NORTHWEST RAIL
TRANSIT TECHNOLOGY

NORTHWEST RAIL
ENVIRONMENTAL EVALUATION

TECHNOLOGY

STATIONS
TECHNOLOGY
ALIGNMENTS

DMU

EMU

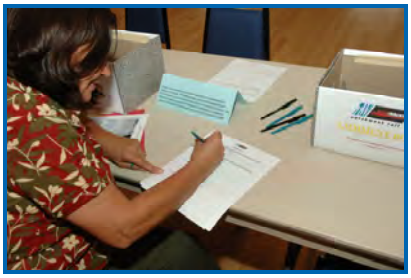
The NWR Corridor Project Vehicle Technology Brochure

- Project Background
- Noise and Vibration by Vehicle Technology
- Air Quality and Energy by Vehicle Technology
- Cost Effectiveness by Vehicle Technology
- Visual Impacts by Vehicle Technology

Meeting Attendees Listening to an Introductory Presentation

Additionally, meeting attendees were encouraged to submit their written comments at an established Comment Station, where copies of the Comment Form were provided.

Public Input. Public input revealed a greater preference for electric multiple unit (EMU) technology, with 60 percent of the vehicle technology comments expressing disagreement with the preliminary recommendation to use diesel multiple unit (DMU) technology. Those in disagreement with the recommendation cited the following concerns (listed in order of frequency, from highest to lowest):



Meeting Attendee Providing a Written Comment

- Noise
- Air quality
- Environmental
- Use of fossil fuels/diesel
- Vibration
- Location of Maintenance facility (i.e., environmental impact on local communities)
- Cost
- Environmental justice (EJ)

Thirty percent of responses expressed support for DMU citing the practicality of DMU over EMU, cost effectiveness, and an aesthetic preference for DMU (as DMU would not require overhead catenary lines). The remaining 10 percent of respondents indicated no preference for either technology.

NWR GT Input. Following the September 2007 public workshops, the NWR GT reviewed the public input and each representative expressed their jurisdiction/agency position in relation to the preliminary vehicle technology recommendation. Each jurisdiction formally submitted their respective comments regarding the selection of DMU versus EMU to the RTD Board of Directors.

Members of the NWR GT expressed mixed support for DMU versus EMU, but did not object to the NWR Corridor Project Team recommendation to carry forward DMU. A key theme from the NWR GT was the need to adopt "the best" DMU technology to minimize environmental impacts. In response to this input and to address ongoing concerns related to noise and other environmental impacts of DMU, the RTD Board of Directors adopted the Responsible Rail Amendment in October 2007. Part of the amendment states that RTD will "work to ensure that it purchases fuel efficient, environmentally responsible, and sustainable commuter rail vehicles for the North Metro and NWR lines" by pursuing the following measures:

- Creating purchasing standards for the new commuter rail vehicles that place environmental features, including fuel efficiency and low emissions, amongst the top evaluation criteria.
- Sending a proactive alert to all prospective commuter rail vehicle vendors, prior to issuing a formal Request for Proposal, concerning the priority focus RTD will give to environmental features in its purchasing decisions.
- Committing to purchase vehicles that have the flexibility to accommodate future advancements in propulsion technology, like hybrid or clean-fuel systems, through upgrades and retrofits over the life of the vehicles.
- Developing a proactive public outreach effort to keep all facets of the community informed and engaged throughout RTD's commuter rail vehicle selection process, including input sessions with stakeholders.

5.5.3 Milestone #3 – Special Issues: Station Planning, Fencing, and Noise/Quiet Zones

Public involvement for Project Milestone #3 included a variety of forums for focused discussions, information dissemination, and public input and feedback on three key issues: station planning, fencing, and noise/Quiet Zones. The following is a summary of these public and agency meetings and input.

5.5.3.1 Station Planning: Public and Agency Input

April 2008 Gunbarrel Station Working Group Public Meeting

In April 2008, the Gunbarrel Station Working Group public meeting was held in the Gunbarrel area near Boulder to update area residents and stakeholders on the status of the Gunbarrel Station since the completion of the *Longmont Diagonal Rail Environmental Evaluation (Longmont EE)* (RTD 2006). The NWR Corridor Project Team also presented site options, reviewed preliminary evaluation results, gathered input, and assessed community levels of support for the preliminary recommendation to set-aside the Gunbarrel East Station site and carry forward the Gunbarrel West Station site for further evaluation in the NWR Corridor EE.

Gathering Comments at the April 2008 Gunbarrel Station Working Group Public Meeting

Public input revealed strong support for the Gunbarrel West Station site due to fewer residential and environmental impacts. Concerns were noted about the parking capacity and parking facility location, access to the station (bus/bicycle/pedestrian/automobile), and traffic and residential impacts. Support was also expressed for providing services at the station (such as restrooms, retail, and bike facilities) and maintaining the RTD BOLT bus service along State Highway 119 between Boulder and Longmont.

Jurisdiction Station Planning Meetings (October 2007 to April 2009)

In October 2007, the NWR Corridor Project Team initiated a series of station planning meetings with representatives from local jurisdictions to refine the previously developed station concept plans to meet the needs of the NWR Corridor Project and local communities. These meetings included a review of the station concept plans developed during the *US 36 Draft Environmental Impact Statement* (URS 2007) and Longmont environmental studies (RTD 2005; RTD 2006). Additionally, there was a discussion of local planning activities that would influence station planning for the NWR Corridor EE. Over the next two years, the Project Team collaborated with jurisdiction staff on an ongoing basis to revise the individual concept plans. Input from these meetings resulted in modifications to the station concept plans including:

- Park-n-Ride configurations (to meet updated ridership and parking estimates, and in response to changes in adjacent land use or new development)
- Station platform locations
- Station access and circulation

In addition to these ongoing staff meetings, several station planning updates were provided to elected officials throughout the course of the station planning process.

5.5.3.2 Fencing: Public and Agency Input

As an area of interest expressed by the public and a subject of concern for members of the NWR GT, fencing was a key issue addressed throughout the course of the NWR Corridor

EE. In response to this issue, the NWR Fencing Subcommittee, a subgroup of the NWR GT, was established to address major issues pertaining to RTD's fencing policy.

RTD design criteria specifies the use of standard 6-foot chain link fences along commuter rail alignments. Representatives from the jurisdictions expressed concerns about (1) the need for fencing and (2) the fencing design, specifically the use of chain link fence. At the first meeting of the NWR Fencing Subcommittee held in May 2008, members identified several concerns, including compatibility with existing and future land uses, public access, aesthetics, duplication of existing fences, maintenance, and wildlife considerations. At the second meeting of the NWR Fencing Subcommittee in June 2008, the NWR Corridor Project Team presented preliminary recommendations that addressed these concerns including alternatives to chain link fence based on surrounding land uses, safety and security, and environmental considerations. Based on information collected by the Project Team and provided by the NWR Fencing Subcommittee, RTD drafted a document identified as the NWR Fencing Framework. The NWR Fencing Framework identified section by section concerns and documented the rationale behind recommendations for section-specific fencing types. The NWR Fencing Framework was refined and revised throughout the process based on feedback received from the NWR Fencing Subcommittee.

Because the Project Team received additional comments from the NWR GT about the fencing recommendations and requests for clarification about the need for fencing in the NWR corridor, in March 2009, a joint meeting of the NWR Fencing Subcommittee and NWR GT provided a forum for RTD to further clarify the need to place fence along the alignment for safety and security reasons. The NWR Corridor Project Team requested that the jurisdictions specify any requests for further modifications to the preliminary fencing design recommendations. Final recommendations that came from the NWR Fencing Subcommittee were incorporated into the NWR Corridor Project and presented in the NWR Corridor EE.

RTD will continue to work with jurisdictions on an individual basis through final design to address specific requests such as specific locations for gates/access and identify the specific locations where existing fencing in lieu of new (i.e., NWR-related) fence would be acceptable.

5.5.3.3 Noise/Quiet Zones: Public and Agency Input

At the public meetings held in July and September 2007, many meeting attendees noted that noise was an issue of concern. Members of the NWR GT also voiced concern that noise was a potential problem with the implementation of DMU. Subsequent to the rail technology workshops in September 2007 and the recommendation to carry forward DMU, the RTD Board of Directors adopted the Responsible Rail Amendment in response to these and other public and agency concerns. The amendment includes a provision calling for RTD to work with railroads and local communities to address the noise concerns of residents along the NWR Corridor.

In coordination with RTD's Board of Directors adoption of the amendment, the NWR Corridor Project Team held a meeting with the NWR GT specifically to address jurisdiction concerns regarding noise impacts. The NWR GT discussed potential noise mitigation measures and expressed a strong desire to coordinate with RTD on Quiet Zone implementation. Quiet Zones would be sections of the railroad corridor where train crews would not be required to sound the horn at railroad crossings unless there was a specific railroad or safety concern.

In May 2008, the NWR Noise Impacts and Quiet Zones Resource Packet was produced and distributed to provide answers to commonly asked questions about aspects of noise impacts, analysis, mitigation, and Quiet Zone implementation. The packet also included a description of the roles and responsibilities of RTD and the individual jurisdictions in the implementation of Quiet Zones. The packets were mailed to all jurisdiction contacts, NWR GT members, members of the public that commented on noise impacts through the comment database, and by request. The information was also posted on the NWR Corridor project Website.

Noise Impacts & Quiet Zones Resource Packet

In conjunction with RTD FasTracks programmatic efforts and as part of the final project milestone, the Project Team will communicate to the public and agencies the process undertaken to determine the location of Quiet Zone treatments as noise mitigation measures and safety improvements for the NWR Corridor EE. For those additional Quiet Zones desired by the local jurisdictions, but not required as part of the noise mitigation or safety improvements needed for the NWR Corridor Project, RTD will provide cost estimates for the improvements that would be necessary for the jurisdictions to pursue Quiet Zones at those locations. After the NWR Corridor EE is completed, RTD will continue to work with local jurisdictions to pursue Quiet Zone improvements at grade crossings where it is not required as part of NWR Project mitigation but desired by the local government.

5.5.4 Milestone #4 – Preferred Alternative, Impacts, and Mitigation

Prior to the NWR Corridor EE being released, the NWR GT and regulatory agencies were afforded an opportunity to comment on the impacts and mitigation measures associated with the Preferred Alternative. Focused meetings with a regulatory agency working group and with the NWR GT were held on September 3, 2009 to provide a forum for agency representatives and the NWR GT to ask questions of the NWR Corridor Project Team members and to submit their feedback on preliminary findings from the NWR Corridor EE.

Overall, there were no major issues identified at these meetings. The meetings served as an effective forum for information exchange between the Project Team and resource agencies, and Project Team to the NWR GT. In the meetings, information was provided about the impacts analysis and proposed mitigation. The Project Team was able to address the questions and comments raised by the agencies and NWR GT. The Project Team followed up on all information requests from the meeting attendees and addressed all comments received. The NWR GT expressed the most interest in noise impacts/mitigations and proposed traffic mitigations at grade crossings. The resource agency working group expressed the most interest in the air quality analysis, noise impacts, biological resources, water quality/floodplains, and wetlands.

5.5.5 Milestone #5 – Review of Draft NWR Corridor EE (March 2010 Public Meetings)

The Draft NWR Corridor EE was provided to the public for review and comment on February 26, 2010 and followed by a formal 30-day public comment period. Announcements were made via the various methods described in Table 5-1. Corridor-wide public meetings occurred in March of 2010 in Longmont, Louisville and Adams County for the primary purpose of reviewing the NWR Corridor EE findings, including impacts and proposed mitigation, and gathering public comments.

During the 30-day comment period, the draft NWR Corridor EE document was made available for public review at the following locations:

Denver
- Denver Public Library – Central Library
  10 West 14th Avenue Parkway
  Denver, CO 80204
- RTD FasTracks
  1560 Broadway, Suite 700
  Denver, CO 80202

Adams County
- Irving Street Library
  7392 Irving Street
  Westminster, CO 80030

Westminster
- Westminster Public Library
  College Hill Branch
  3705 West 112th Avenue
  Westminster, CO 80031

Broomfield
- Mamie Doud Eisenhower Public Library
  3 Community Park Road
  Broomfield, CO 80020

Longmont
- Longmont Public Library
  409 4th Avenue
  Longmont, CO 80501

Louisville
- Louisville Public Library
  951 Spruce Street
  Louisville, CO 80027
- 36 Commuting Solutions
  287 Century Circle, Suite 103
  Louisville, CO 80027

Boulder
- Boulder Public Library - Main
  1000 Canyon Boulevard
  Boulder, CO 80302

Online
www.RTD-FasTracks.com

Comments and questions were accepted in a variety of ways:

- Online: www.RTD-FasTracks.com
- E-mail: nwrail@RTD-FasTracks.com
- US Mail: Northwest Rail Environmental Evaluation
  c/o CDR Associates
  100 Arapahoe, Suite 12
  Boulder, CO 80302
- Written: in person at the public meetings

Appendix G: Response to Comments has responses to all the comments submitted during the formal comment period that occurred between 26 February 2010 and 29 March 2010.

Draft Environmental Evaluation Public Meetings and Comment Period (March 2010)

A series of corridor-wide public meetings were held to present the NWR Draft EE to the public and to solicit comments, feedback and public input. The meetings were held in Longmont, Louisville and Adams County with a total of 222 individuals attending the public meetings. The public meeting format included an on-going open house where members of the public could participate in discussions with project team members with display boards, the Draft EE, comment stations and other informational materials on display. The project team also provided presentations given twice at each meeting, with each presentation followed by a facilitated question and answer session. Display boards and the project presentation highlighted the following:

- Project Background,
- Purpose & Need,
- Project Phasing,
- Impacts and Mitigations,
- Station Concept Plans,
- Project Schedule, and
- Public Involvement.

Public Input: Public input provided during the public meetings and formal comment period raised a wide variety of issues, and generally provided comments indicated below on the following topic areas:

Purpose and Need: Public input indicated general support for the NWR Corridor project and a continued public desire for rail service between Denver Union Station and Longmont. One of the main reasons cited for wanting the service was to alleviate congestion on U.S. 36 and to provide a regional rail alternative for commuters. However, there were some comments that questioned the need for the rail service in lieu of Bus Rapid Transit on U.S. 36.

Project Schedule, Funding and Phasing: Members of the public requested that RTD remain committed to delivering the project on time by 2015 and in its entirety the full length of the corridor to Longmont. Public support was expressed for RTD to accelerate its efforts to fund and build Phase 1 and future phases as soon as possible. Information was requested to be provided to the public as soon as it is available regarding the implementation schedule and if unfunded stations will be built so that property owners can make informed decisions about their properties near the rail line or station areas. There was some concern expressed that funding and support for Northwest Rail could be impacted negatively due to regional support for the implementation of U.S. 36 Bus Rapid Transit service.

Local and Regional Connectivity: Strong support was expressed for RTD to maintain current regional bus service levels once Northwest Rail is in operation due to local buses serving different markets. Strong support was also expressed for RTD to establish connectivity with local circulator routes to stations within each community and to not preclude connectivity to a future Front Range Commuter Rail from the Northwest Rail corridor.

Noise impacts & Mitigations: Many corridor residents near the rail stated that there are current noise impacts from the freight trains sounding their horns at crossings and expressed concern that Northwest Rail would add to the noise impacts they are currently experiencing unless a sufficient noise mitigation plan is implemented. Throughout the corridor, there was overwhelming support for RTD to implement safety upgrades and improvements at grade crossings for the purposes of establishing Quiet Zones that would apply to both Northwest Rail and freight trains, making trains exempt from sounding the horns.

Commuter Rail Vehicle Technology: Concern still exists for a reliance on fossil fuels and potential air quality impacts associated with DMU technology. The public echoed the sentiment expressed in the Responsible Rail Amendment which encourages RTD to seek the most environmentally sustainable technologies and solutions available when procuring the DMU commuter rail vehicles. Support still exists for electrifying the entire line and using EMU vehicles.

Right-of-Way and Property Impacts: Throughout the corridor, the public requested that RTD look to avoid property impacts or acquisitions along the rail right-of-way and at station areas. Adams County residents indicated that some confusion still exists whether property impacts or acquisitions will be occurring in their community due to the Northwest Rail Corridor Project versus the US 36 EIS Project.

Bicycle and Pedestrian: Corridor-wide support was expressed for the inclusion of bicycle friendly features for the commuter rail vehicles and for connectivity from station areas to local bikeways.

Station Area Parking: The public requested RTD provide adequate levels of parking at stations and consider future development of parking garages where the lots are planned in case the need arises to provide additional parking capacity.

Local Corridor Communities/Jurisdiction Input: Jurisdictions provided comprehensive comments addressing specific issues, impacts, and mitigation measures within their communities, while 36 Commuting Solutions provided a coordinated comment on behalf of the local jurisdictions that captures corridor-wide issues. Local jurisdictions expressed overall support for the Northwest Rail project and indicated a commitment to continued partnering with RTD to address regional issues and ones specific to each community. Those comments are presented and addressed in Appendix G: Response to Comments.

Regulatory and Resource Agency Input: On-going coordination occurred throughout the EE with federal, state, and local regulatory and resource agencies. Overall, agency representatives expressed general satisfaction that the Draft EE incorporated the feedback that had been provided to RTD throughout the study.

For more details on comments submitted see Appendix G: Response to Comments.

5.6 LOCAL GOVERNMENTS AND AGENCY MEETINGS

5.6.1 NWR Governments Team Meetings

Table 5-2 lists the dates of NWR GT meetings and the topics discussed. Meeting summaries were developed for all meetings and are available upon request.

TABLE 5-2. NWR GOVERNMENTS TEAM MEETINGS

Meeting Date	Meeting Topics
July 25, 2007	Introduction of the NWR GT, overview of the NWR Corridor EE, role of NWR GT, public meetings review, commuter rail technology for the NWR Corridor, and summary and next steps.
September 13, 2007	Update on NWR Corridor Project issues: incorporation of NWR stations into the Regional Transportation Plan, RTD fencing policy, and project schedule and activities. Commuter rail technology: evaluation criteria and analysis, preliminary project recommendations, September public workshops, comment period for NWR GT, and next steps.
September 27, 2007	Follow-up items and update on project issues, commuter rail technology analysis, public workshop presentation, review of public input from September workshops, NWR GT input, comments on preliminary project recommendation, and next steps.
October 18, 2007	Overview of the FTA Noise and Vibration Manual and Criteria and noise analysis.
January 30, 2008	RTD updates: Union Pacific negotiations, project schedule, and NWR Corridor issues (fencing, Quiet Zones, station planning).
June 24, 2008	RTD FasTracks updates: North Metro Corridor technology re-evaluation, Gold Line Preferred Alternative refinement, annual program evaluation, and NWR Corridor EE updates (modeling, station planning, fencing, Quiet Zones, BNSF Railway Company negotiations, and project schedule).
February 13, 2009	RTD FasTracks Update and NWR Corridor EE Update including: introduction of new USACE representative, modeling, BNSF Railway Company update, fencing, Quiet Zones, station footprints, environmental impact analysis, project schedule, and station design templates.
April 2, 2009	NWR Corridor EE modeling and parking demand requirements and criteria, modeling results, parking demand estimates, and facilitated discussion with corridor stakeholders.
September 3, 2009	Review of the Preferred Alternative, impacts and mitigations.

Source: NWR Corridor Project Team, 2009.
Notes:
EE = Environmental Evaluation
FTA = Federal Transit Administration
GT = Governments Team
NWR = Northwest Rail
RTD = Regional Transportation District
USACE = United States Army Corps of Engineers

5.6.2 NWR Fencing Subcommittee Meetings

Table 5-3 lists when the NWR Fencing Subcommittee met and the topics discussed. Meeting summaries were developed for all meetings and are available upon request.

TABLE 5-3. NWR FENCING SUBCOMMITTEE MEETINGS

Meeting Date	Meeting Topics
May 13, 2008	Overview of FasTracks fencing strategy, review of NWR Fencing Subcommittee guidelines and framework, subcommittee discussion and feedback (section descriptions and design issues), and next steps.
June 19, 2008	Fencing type methodology, updated fencing framework, presentation of preliminary recommendations (fencing type, by section), subcommittee discussion and feedback, and next steps.
March 20, 2009	Joint meeting with NWR GT. Review of RTD fencing criteria and rationale, review of the work of the NWR Fencing Subcommittee and its recommendations, and next steps in reaching closure on fencing approach.

Source: NWR Corridor Project Team, 2009.
Notes:
GT = Governments Team
NWR = Northwest Rail
RTD = Regional Transportation District

5.6.3 State and Federal Resource and Regulatory Agency Meetings

Table 5-4 lists the dates of state and federal agency meetings and topics discussed. Meeting summaries were developed for all meetings and are available upon request.

TABLE 5-4. NWR ENVIRONMENTAL EVALUATION MEETINGS WITH AGENCIES

Meeting Date	Meeting and/or Organizations	Meeting Topics
July 15, 2008	Joint Agencies/NWR GT Workshop	NWR Corridor EE overview: project history, current project phase, and next project phase. RTD FasTracks programmatic initiatives: annual program evaluation, and Quiet Zones. EE decision making: decision-making process and agency roles. EE study elements: project study area, Purpose and Need, stations, alignment, and impacts. Next steps.
October 30, 2008	NWR Corridor Project Team and Natural Resource Agencies Meeting	RTD FasTracks update: 2008 annual program review. NWR Corridor EE overview: project background, current status, and project schedule. Agency coordination plan. Discussion: questions/comments/concerns. Next steps.
September 3, 2009	Resource Agencies	Review of the Preferred Alternative, impacts and mitigations.

Source: NWR Corridor Project Team, 2009.
Notes:
EE = Environmental Evaluation
GT = Governments Team
NWR = Northwest Rail
RTD = Regional Transportation District

5.7 TARGETED OUTREACH MEETINGS

In addition to the public and NWR GT meetings, targeted outreach was conducted with jurisdiction staff; elected officials; neighborhood, civic, and non-governmental/non-profit organizations; and community groups. These were small group meetings designed to respond to requests for information about specific project issues or for the purpose of providing a general project update. The NWR Corridor Project Team participated in over 100 meetings that occurred over a 34-month period.

5.7.1 Jurisdiction Briefings and Coordination

Small group meetings were held with representatives from local jurisdictions for the purposes of information sharing on specific issues. Table 5-5 lists those meetings:

TABLE 5-5. JURISDICTION BRIEFINGS AND COORDINATION

Meeting Date	Meeting/Event	Meeting Topic	Number of Attendees
July 2, 2007	Louisville City Council NWR Corridor EE Briefing	NWR Corridor EE update and RTD FasTracks annual program evaluation.	NA
July 12, 2007	Adams County Planning Commission NWR Corridor EE Briefing	NWR Corridor EE update and RTD FasTracks annual program evaluation.	NA
August 1, 2007	Adams County Commissioners NWR Corridor EE Briefing	NWR Corridor EE Update and RTD FasTracks annual program evaluation.	15
August 7, 2007	Boulder City Council NWR Corridor EE Briefing	NWR Corridor EE Update and RTD FasTracks annual program evaluation.	15
August 9, 2007	Boulder East TMO and GoBoulder (City of Boulder) Meeting	NWR Corridor EE Update and RTD FasTracks annual program evaluation.	25
August 15, 2007	Meeting with City of Boulder, City Manager's Office, and GoBoulder staff	Comment period for technology and BNSF Railway Company update.	5
August 21, 2007	NWR Corridor EE Briefing in Denver City Council Representative Judy Montero's Office (District 9)	Overview of NWR Corridor EE technology alternatives.	6
October 8, 2007	Longmont Transportation Advisory Board Meeting	NWR Corridor EE review of technology alternatives, analysis, and NWR Corridor EE Team recommendation.	NA
October 9, 2007	Longmont City Council Meeting	NWR Corridor EE review of technology alternatives, analysis, and Project Team recommendation.	NA
October 23, 2007	City of Louisville and Boulder County Station Planning Meeting	Review and refinement of station plan, review of station plan concept from US 36 EIS, local planning activities, RTD station design updates, and TOD analysis recommendations.	15

TABLE 5-5. JURISDICTION BRIEFINGS AND COORDINATION

Meeting Date	Meeting/Event	Meeting Topic	Number of Attendees
October 24, 2007	City and County of Broomfield Station Planning Meeting	Review and refinement of station plan, review of station plan concept from US 36 EIS, local planning activities, RTD station design updates, and TOD analysis recommendations.	9
October 30, 2007	City and County of Boulder Station Planning Meeting	Review and refinement of station plan, review of station plan concept from US 36 EIS, local planning activities, RTD station design updates, and TOD analysis recommendations.	12
November 5, 2007	City of Longmont and Boulder County Station Planning Meeting	Review and refinement of station plan, review of station plan concept from US 36 EIS, local planning activities, RTD station design updates, and TOD analysis recommendations.	15
November 9, 2007	City of Westminster and Adams County Station Planning Meeting	Review and refinement of station plan, review of station plan concept from US 36 EIS, local planning activities, RTD station design updates, and TOD analysis recommendations.	15
December 11, 2007	Boulder City Council Study Session	NWR Corridor EE update.	30
December 17, 2007	City of Westminster Jurisdictional Briefing with Matt Lutkus and city staff	Preparation meeting for Westminster City Council briefing.	6
December 19, 2007	City of Lafayette and RTD Board of Directors Briefing	NWR Corridor EE update.	4
January 7, 2008	Westminster City Council Briefing/Study Session	NWR Corridor EE update.	20
January 14, 2008	Boulder Station Planning Meeting	Preliminary parking planning, review of station design, identification of key issues, and review of public involvement strategy.	14
January 14, 2008	Longmont Station Planning Meeting	Preliminary parking planning, review of station design, identification of key issues, and review of public involvement strategy.	8
January 15, 2008	Boulder County Commissioners Briefing	NWR Corridor EE update.	14
January 15, 2008	Westminster Station Planning Meeting	Preliminary parking planning, review of station design, identification of key issues, and review of public involvement strategy.	15
January 16, 2008	Broomfield Station Planning Meeting	Preliminary parking planning, review of station design, identification of key issues, and review of public involvement strategy.	9
January 17, 2008	Louisville Station Planning Meeting	Preliminary parking planning, review of station design, identification of key issues, and review of public involvement strategy.	14
January 30, 2008	NWR GT Meeting	RTD updates, NWR Corridor issues, and station planning.	50

TABLE 5-5. JURISDICTION BRIEFINGS AND COORDINATION

Meeting Date	Meeting/Event	Meeting Topic	Number of Attendees
February 5, 2008	Lafayette City Council Briefing	NWR Corridor EE update.	8
February 12, 2008	Louisville City Council Briefing	NWR Corridor EE update.	25
February 19, 2008	City and County of Broomfield Council Briefing	NWR Corridor EE update.	25
February 20, 2008	City of Westminster Station Planning Meeting	Follow-up station planning meeting.	10
February 25, 2008	Longmont City Council Briefing (special presentation at regular session)	NWR Corridor EE update.	60
26 February 2008	City of Louisville Station Planning Meeting	Follow-up station planning meeting.	8
February 27, 2008	CDOT and City and County of Broomfield Meeting (open house format)	Station information in context of original Broomfield Plan/120th Avenue Environmental Assessment (public outreach for station planning).	100
April 3, 2008	City of Boulder and Boulder County Follow-up Station Planning Meeting	Follow-up station planning meeting.	10
April 7, 2008	City of Westminster Follow-up Station Planning Meeting	Follow-up station planning meeting.	9
June 4, 2008	RTD FasTracks/NWR Quiet Zone Presentation at Consortium of Cities (Boulder County) Meeting	Quiet Zone presentation.	22
June 9, 2008	Louisville Revitalization Commission Meeting	NWR Corridor EE update.	15
July 22, 2008	City of Boulder and RTD BRT Open House	Hosting a NWR Project table at the event to distribute project information.	100
August 14, 2008	Louisville Planning Commission Meeting	Update on station planning and next steps.	15
September 8, 2008	Longmont City Council Briefing	RTD FasTracks/NWR Corridor EE update.	20
September 12, 2008	NWR Corridor Stakeholders Jurisdictional Staff Meeting	2008 FasTracks Annual Program Evaluation update and options for NWR Corridor EE with staff from local jurisdictions.	9
September 17, 2008	Westminster Transportation Commission Meeting	2008 FasTracks Annual Program Evaluation update, RTD FasTracks Program options, and NWR Corridor EE update.	21
September 23, 2008	NWR Corridor Local Jurisdictions' Staff Meeting	2008 FasTracks Annual Program Evaluation update and options for NWR Corridor EE with staff from local jurisdictions.	12
October 3, 2008	Westminster Station Planning Meeting	Planning for the South Westminster/71st Avenue Station and TOD.	4

TABLE 5-5. JURISDICTION BRIEFINGS AND COORDINATION

Meeting Date	Meeting/Event	Meeting Topic	Number of Attendees
October 7, 2008	Lafayette City Council Briefing	2008 FasTracks Annual Program Evaluation and NWR Corridor EE updates.	37
October 13, 2008	City of Longmont Station Planning Meeting	Twin Peaks Station.	4
October 23, 2008	Louisville City Council Meeting	2008 FasTracks Annual Program Evaluation and NWR Corridor EE updates.	12
December 5, 2008	City of Louisville Station Planning Meeting	Louisville Station planning issues.	8
January 23, 2009	Longmont City Council Retreat	Educate/update City Council on FasTracks issues and status.	35
March 9, 2009	City of Boulder Station Planning Meeting	Coordination between NWR Station and City of Boulder Transit Village Area Plan; parking; and relationship between City of Boulder, RTD, and developers.	7
March 10, 2009	Louisville City Council and Revitalization Committee Meeting	Louisville Station design options.	20
April 13, 2009	Louisville Revitalization Committee Meeting	RTD FasTracks/NWR Corridor EE update.	9
April 20, 2009	Westminster City Council Study Session and City Council Briefing	RTD FasTracks/NWR Corridor EE update.	21
August 25, 2009	NWR Jurisdictions Staff Meeting	Impacts analysis and proposed mitigations review: RTD FasTracks program update; Northwest Rail EE update: BNSF Negotiations, Modeling/Ridership; Fencing; Quiet Zone process; Preliminary impacts and proposed mitigations from EE – Q&A with jurisdiction staffs.	28
September 22, 2009	Louisville City Council Briefing	RTD FasTracks/NWR EE project update about impacts analysis and proposed mitigations.	10
February 22, 2010	Longmont City Council Briefing	RTD FasTracks/NWR EE update	21

Source: NWR Corridor Project Team, 2010.

Notes:

BRT = bus rapid transit
CDOT = Colorado Department of Transportation
EE = Environmental Evaluation
EIS = Environmental Impact Statement
GT = Governments Team
NA = not available
NWR = Northwest Rail
RTD = Regional Transportation District
TMO = Transportation Mobility Organization
TOD = Transit Oriented Development
US 36 = United States Highway 36

5.7.2 Small Group Public Outreach Meetings

Public outreach meetings were held for the purpose of collecting public input, sharing information to address specific project issues, and/or providing a general project update. Table 5-6 lists the Small Group Public Outreach Meetings that occurred during the NWR Corridor EE process.

TABLE 5-6. SMALL GROUP PUBLIC OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topic	Number of Attendees
July 24, 2007	Table Mesa park-n-Ride, Boulder	RTD Board Member Outreach Session for Morning Commuters	NWR Corridor Project public outreach.	NA
August 14, 2007	NITA Building, Louisville	36 Commuting Solutions	Overview of NWR Corridor EE, public meetings review, and technology alternatives.	50
August 14, 2007	Gardens of St. Elizabeth, Denver	Highland United Neighbors Inc. Planning and Community Development Committee Meeting	Overview of NWR Corridor, FasTracks Annual Program Evaluation, and Gold Line and NWR stations.	25
September 8, 2007	Old Town and Cottonwood Square, Niwot	Niwot Nostalgia Day – NWR Corridor Project	Partnership in Community – Past, Present, and Future: promoting a sense of community in Niwot and celebrating the many community organizations that make Niwot a great place to live.	NA
September 11, 2007	NITA Building, Louisville	36 Commuting Solutions	Steering committee meeting: update on technology alternatives.	50
September 11, 2007	Peppertree Estates, Niwot	Peppertree Estates Homeowner Association	Technology issues.	15
September 11, 2007	College Hill Library, Westminster	Westminster/Arvada Outreach	Technology issues.	4
September 15, 2007	Meadows Branch Library, Boulder	League of Women Voters – NWR Corridor Project and US 36 presentations	NWR Corridor Project update.	50
September 18, 2007	36 Commuting Solutions, Broomfield	36 Commuting Solutions Workplace Ambassadors	Technology update.	10
September 25, 2007	Superior/Louisville park-n-Ride, Louisville	RTD Board Member Outreach Session for Morning Commuters	NWR Corridor Project public outreach.	NA
October 9, 2007	NITA Building, Louisville	36 Commuting Solutions	NWR Corridor Project update.	30
November 13, 2007	NITA Building, Louisville	36 Commuting Solutions Steering Committee	NWR Corridor Project update.	NA

TABLE 5-6. SMALL GROUP PUBLIC OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topic	Number of Attendees
November 13, 2007	Indian Peaks Golf Course Clubhouse, Lafayette	Indian Peaks HOA	NWR Corridor Project update for, noise impacts and mitigation.	40
December 11, 2007	NITA Building, Louisville	36 Commuting Solutions	Overview of RTD FasTracks approach to Quiet Zones.	25
January 8, 2008	NITA Building, Louisville	36 Commuting Solutions: US 36 Local Jurisdictions Legislative Breakfast	Project updates for the US 36 EIS and NWR Corridor.	70
January 8, 2008	Boulder Optimist Club, Boulder	Boulder Optimist Club Meeting	NWR Corridor Project update.	26
February 12, 2008	NITA Building, Louisville	36 Commuting Solutions Steering Committee	NWR Corridor Project update.	48
March 11, 2008	NITA Building, Louisville	36 Commuting Solutions Steering Committee	NWR Corridor Project update.	48
April 10, 2008	Hotel Boulderado, Boulder	Downtown Boulder Inc.	RTD FasTracks presentation and update.	80
May 13, 2008	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	NWR Corridor Project update.	47
June 10, 2008	NITA Building, Louisville	36 Commuting Solutions Steering Committee	NWR Corridor Project update.	45
July 8, 2008	Conference Call	Meeting with Harris Faberman, property owner representative, 63rd Street and Diagonal (West Gunbarrel Station site)	Conference call with stakeholder/property owner representative to discuss property acquisition.	6
July 15, 2008	Boulder at Talisman HOA Clubhouse, Boulder	The Boulders at Talisman HOA	NWR Corridor Project update focused on noise impacts and Quiet Zone implementation.	17
August 12, 2008	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks and NWR Corridor Project update.	45
September 9, 2008	NITA Building, Louisville	36 Commuting Solutions	RTD FasTracks APE update.	90
January 13, 2009	NITA Building, Louisville	36 Commuting Solutions	RTD FasTracks and NWR Corridor Project update.	60
February 10, 2009	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	Standing RTD FasTracks/NWR Corridor Project update.	50
March 10, 2009	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks/NWR Corridor Project update.	55
March 11, 2009	Arbor Green Townhomes Clubhouse, Arvada	Arbor Green Townhomes Annual Homeowners Meeting	NWR Corridor Project update.	60

TABLE 5-6. SMALL GROUP PUBLIC OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topic	Number of Attendees
April 13, 2009	Louisville Public Library Meeting Room, Louisville	Louisville Revitalization Committee	RTD FasTracks/NWR Corridor Project update.	9
April 14, 2009	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks/NWR Corridor Project update.	54
May 12, 2009	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks/NWR Corridor Project update.	48
June 9, 2009	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks/NWR Corridor Project update.	55
July 7, 2009	Lake Harbor Board Member Residence, Arvada	Lake Harbor HOA	RTD FasTracks/NWR Corridor Project update – Small Group Outreach	8
July 9, 2009	Southwest Fire Station	Goat Hill Neighborhood Group	RTD FasTracks/NWR Corridor Project update – Small Group Outreach – Environmental Justice Community	15
August 11, 2009	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks/NWR Corridor Project update.	50
September 8, 2009	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks/NWR Corridor Project update.	62
September 9, 2009	The Blue Parrot, Louisville	Eye Opener Breakfast: RTD FasTracks and More	RTD FasTracks and NWR presentation	60
September 30, 2009	White Wave Foods, Broomfield	36 Commuting Solutions: Building a Corporate Green Team	Innovative methods to green business operations and current efforts to build sustainable, multi-modal transportation improvements for the NWR/US 36 corridor	75
October 13, 2009	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks/NWR Corridor Project update.	61
November 10, 2009	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks/NWR Corridor Project update.	55
December 8, 2009	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks/NWR Corridor Project update.	55
December 16, 2009	Flat Irons Community Room, Broomfield	36 Commuting Solutions Workplace Ambassadors	Presentation of RTD FasTracks and Northwest Rail	25
March 9, 2010	NITA Building, Louisville	36 Commuting Solutions Steering Committee Meeting	RTD FasTracks/NWR Corridor Project update.	55

TABLE 5-6. SMALL GROUP PUBLIC OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topic	Number of Attendees

Source: NWR Corridor Project Team, 2010.
Notes:
APE = Annual Program Evaluation
EE = Environmental Evaluation
EIS = Environmental Impact Statement
HOA = homeowners association
NA = not available
NITA = National Institute for Trial Advocacy
NWR = Northwest Rail
RTD = Regional Transportation District
US 36 = United States Highway 36
Specific meeting location addresses are available upon request.

5.8 ENVIRONMENTAL JUSTICE OUTREACH

NWR Corridor Project Spanish Newsletter

The NWR Corridor Project Team conducted a customized outreach, education, and input-gathering process to involve low-income and minority communities in the NWR Corridor EE study. A primary goal was to ensure early and meaningful participation of low-income and minority communities. The project's methodology was to take information to these communities rather than rely solely on an expectation that members of these communities would attend the mainstream public involvement events. The environmental justice outreach strategy included the following three key components:

- Bilingual Information: The NWR Corridor Project Team provided quality information simultaneously in both English and Spanish (professionally translated) in order to increase project knowledge among the Hispanic/Latino community.
- Media Relations: The NWR Corridor Project Team worked to develop and maintain good relations with the media in general and with Hispanic/Latino community media in particular.
- Community Liaison: The NWR Corridor Project Team included an individual who served as a liaison to the Hispanic/Latino community. The Community Liaison participated in individual and community meetings to provide information about the project to the Hispanic/Latino community and to encourage the involvement of its members.

The Project Team identified specific locations that included identifiable low-income and/or minority populations. Those locations are included in Table 5-7.

TABLE 5-7. AREAS OF CONCERN FOR ENVIRONMENTAL JUSTICE

Project Section	Description
Denver	South of I-70 and West of the BNSF Railway Company alignment. Mostly single-family residences along Inca and Jason Streets in the Sunnyside neighborhood.
Adams	Residents adjacent to the BNSF Railway between 76th Avenue and 64th Avenue. This includes some single-family homes and small apartments near Harris Park Elementary School.
Broomfield	The Broomfield Mobile Home Park at 119th and BNSF Railway Company alignment.
Boulder	Section 8 housing and residences north of Valmont Road, west of the BNSF Railway Company alignment. Includes San Juan Del Centro Apartments and Orchard Grove Mobile Home Park.
Longmont	Several mobile home communities near downtown Longmont including St. Vrain Village (Price Road and St. Francis Street), Royal Park (Pratt Parkway and Boston Avenue), and a small mobile home park (<15 units) at 1st Avenue and Terry Street.

Source: NWR Corridor Project Team, 2009.

The NWR Project Team conducted outreach to these groups to provide equal opportunities for EJ populations to provide input. During initial phases of the project, interaction with EJ communities was more of an informational exchange to keep them updated of project developments. After the release of the impacts analysis and proposed mitigations, the NWR Project Team contacted, communicated with, and met representatives and residents from the specific NWR Corridor EJ communities to hear directly from these groups. The NWR Project Team has conducted on-going outreach to provide information, answer questions, address concerns, and encourage continued involvement with these communities. Additionally, there was a concentrated effort to involve residents in EJ communities and inform them of the release of the Draft EE and of the corridor-wide public meetings. Materials were provided to them in both English and Spanish.

Environmental Justice Input: Input provided by residents from EJ communities addressed corridor-wide issues as well as community specific issues. The following captures the main topic areas that EJ communities commented on regarding the EE:

Noise Impacts: Because of the proximity of some of these communities to the tracks there are current noise impacts from the freight trains as they sound their horns at grade crossings, and residents have expressed concern for potential NWR noise impacts. Support was expressed for the establishment of Quiet Zones to mitigate for horn noise at crossings.

DMU Commuter Rail Vehicle Technology: Support was expressed for RTD to select DMU vehicles which could operate on bio-diesel or other alternative fuel. This preference is in accordance with the RTD Board's Responsible Rail Amendment which was adopted in conjunction with the commuter rail vehicle technology selection for this corridor. This concern was based on the proximity of some of the communities to the NWR rail line and concern for air quality impacts.

Right-of-Way and Property Impacts: Throughout the corridor, the members of EJ communities requested that RTD look to avoid property impacts or acquisitions along the rail right-of-way and at station areas as much as possible. Adams County residents indicated that some confusion still exists whether property impacts or

acquisitions will be occurring in their community due to Northwest Rail or the US 36 EIS, and asked for clear and timely information from RTD when decisions are made that impact their community.

Station Area Designs: Residents living near stations requested RTD provide adequate levels of parking at stations and to consider access to stations from neighborhoods during final design.

Local and Regional Connectivity: Similar to corridor-wide feedback, EJ communities expressed strong support for RTD to maintain current regional bus service levels once Northwest Rail is in operation due to local buses serving different markets. Strong support was also expressed for RTD to establish connectivity with local circulator routes to stations within each community and to not preclude connectivity to a future Front Range Commuter Rail from the Northwest Rail corridor.

Operational Aspects: Once the project moves to the construction and operating phases, residents encouraged RTD to advertise available jobs in their communities. Once service begins, residents advocated for frequent and efficient rail service levels be provided.

Support for FasTracks: Overall, there was support for Northwest Rail and an eagerness to see it completed on time.

Request for Information and Continued Involvement: A majority of residents were appreciative of RTD's willingness to visit their communities and listen to their concerns. They expressed an interest in on-going involvement and for RTD to stay in direct contact with the communities to inform residents. All communities mentioned that it is helpful to receive materials or information in both English and Spanish.

Table 5-8 describes the environmental justice outreach meetings conducted as part of the Project Team's targeted outreach to low-income and minority communities.

TABLE 5-8. ENVIRONMENTAL JUSTICE OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topics	Number of Attendees
September 12, 2007	Denver	Univision Television Meeting	Meeting with Univision reporters (Crystal Ayala, Portia Berrey, and Rodolfo Cardenas) to provide information about the public meetings and to request coverage before and after the meetings.	NA
September 13, 2007	Longmont	Hispanic/Latino Outreach	Visit to 25 Hispanic/Latino businesses to inform them about the upcoming public meetings and to invite them to those meetings.	NA
September 15, 2007	Longmont	Mexican Independence Day Celebration (organized by El Comite)	Flyers were distributed informing people about the NWR Corridor Project public workshops. Four Latino organizations were contacted.	NA

TABLE 5-8. ENVIRONMENTAL JUSTICE OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topics	Number of Attendees
September 17, 2007	Denver	Alianza Ministerial Meeting	Meeting with Latino pastors to provide information about the upcoming NWR Corridor Project public workshops.	NA
September 20, 2007	Westminster	Hispanic/Latino Outreach	Meeting with pastors to provide information about the upcoming NWR Corridor Project public workshops.	NA
October 9, 2007	Denver	Hispanic/Latino Outreach via Radio La Luz	Meeting with Tony Calatayud, general manager of the new Spanish-language radio station Radio La Luz.	NA
January 2, 2008	Arvada	Hispanic/Latino Outreach: Impacto de Fe	Meeting with Pastor Adan Aguirre, senior pastor of the largest Spanish-speaking congregation in the metropolitan Denver area (north Denver and Longmont).	5
January 7, 2008	Denver	Hispanic/Latino Outreach: Latino Ministerial Alianza of Denver	NWR Corridor Project update.	20
January 9, 2008	Denver	Hispanic/Latino Outreach: US Christian Chamber of Commerce	NWR Corridor Project update for a mixed group of Hispanic, African American, and Anglo business owners.	25
January 14, 2008	Thornton	Hispanic/Latino Outreach: El Renuevo Church	Meeting with Pastor Cesar Rodriguez. His church serves Hispanics and Latinos from all over metropolitan Denver.	5
January 15, 2008	Arvada	Hispanic/Latino Outreach: Impacto de Fe Business Group	NWR Corridor Project update.	70
January 16, 2008	Denver	Hispanic/Latino Outreach: Radio La Buena Onda	Planning meeting with news staff as requested by Virginia Garcia, newly named news director.	6
January 24, 2008	Denver	Hispanic/Latino Outreach: Confianza Latino Group	Meeting with metropolitan Denver Latino leaders.	8
January 24, 2008	Thornton	Hispanic/Latino Outreach: US Christian Chamber of Commerce	NWR Corridor Project update for a mixed group of Hispanic, African American, and Anglo business owners.	35
January 30, 2008	Denver	Hispanic/Latino Outreach: La Voz Newspaper	Planning meeting with Don Bain and his staff.	5
February 4, 2008	Denver	Latino Ministerial Alianza of Denver	NWR Corridor Project presentation.	20

TABLE 5-8. ENVIRONMENTAL JUSTICE OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topics	Number of Attendees
February 13, 2008	Denver	US Christian Chamber of Commerce	NWR Corridor Project presentation for a mixed group of Hispanic, African American, and Anglo business owners.	25
February 16, 2008	Lakewood	Community Meeting at Centro Cristiano	Invited by Pastor Antonio Almanza. NWR Corridor Project update.	25
February 18, 2008	Denver	Latino Business Owners Meeting	Organized by Hector Alvarez, owner of Bocanza Mexican Restaurant. Presentation about RTD FasTracks and NWR Corridor Project.	NA
February 20, 2008	Denver	Chamber of the Americas	NWR Corridor Project information sharing.	40
February 21, 2008	Thornton	Meeting with Pastor Cesar Rodriguez, El Renuevo Church	NWR Corridor Project information sharing.	5
February 26, 2008	Arvada	Meeting with Pastor Adan Aguirre and Staff, Impacto de Fe	NWR Corridor Project information sharing.	5
February 26, 2008	Arvada	Impacto de Fe Business Group	NWR Corridor Project information sharing.	70
February 28, 2008	Denver	Radio en Victoria 810 AM	Participation in an early morning community program with host Ezequiel Martinez.	NA
February 28, 2008	Denver	Radio La Buena Onda 1150 AM	Participation in an afternoon community program with host Virginia Garcia.	NA
March 3, 2008	Denver	Hispanic/Latino Outreach: Alianza Ministerial Vision Milenia	RTD FasTracks/NWR Corridor Project update.	20
March 6, 2008	Denver	Radio La Gran D	Meeting with Chuck Lafontaine, News Director.	NA
March 7, 2008	Lakewood	Hispanic/Latino Outreach: Ministerio En-Hacore	RTD FasTracks/NWR Corridor Project update.	10
March 11, 2008	Thornton	Hispanic/Latino Outreach: Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update for community leaders. Ongoing.	9
March 13, 2008	Lakewood	Hispanic/Latino Outreach: Centro Cristiano Amistad	RTD FasTracks/NWR Corridor Project update.	15

TABLE 5-8. ENVIRONMENTAL JUSTICE OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topics	Number of Attendees
March 15, 2008	Thornton	Hispanic/Latino Outreach: El Renuevo Community Center	RTD FasTracks/NWR Corridor Project update.	18
March 18, 2008	Thornton	Hispanic/Latino Outreach: Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update for community leaders. Ongoing.	9
March 19, 2008	Thornton	Hispanic/Latino Outreach: USCCC Meeting	RTD FasTracks/NWR Corridor Project update.	25
March 25, 2008	Thornton	Hispanic/Latino Outreach: Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update.	10
March 27, 2008	Arvada	Hispanic/Latino Outreach: MT2	RTD FasTracks/NWR Corridor Project update for business that caters to the Hispanic/Latino community.	10
March 27, 2008	Denver	Hispanic/Latino Outreach: National Society of Hispanic MBA (NSHMBA) Meeting	RTD FasTracks/NWR Corridor Project update.	25
March 28, 2008	Lakewood	Hispanic/Latino Outreach: Meeting with Latino business owners	RTD FasTracks/NWR Corridor Project update.	15
April 1, 2008	Thornton	Hispanic/Latino Outreach: Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update.	13
April 2, 2008	Denver	AMA	Presentation about outreach to Hispanics/Latinos. NWR Corridor Project used as a case study. The meeting was part of the 2008 AMA Marketing Conference.	25
April 3, 2008	Denver	Confianza Ministerial Alliance	Meeting with metropolitan Denver Latino ministers/leaders.	15
April 7, 2008	Denver	Hispanic/Latino Outreach: Alianza Ministerial Vision Milenia	RTD FasTracks/NWR Corridor Project update.	20
April 8, 2008	Denver	Hispanic Mobilization, Heart of God Ministries	Information about public transportation projects.	1

TABLE 5-8. ENVIRONMENTAL JUSTICE OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topics	Number of Attendees
April 8, 2008	Thornton	Hispanic/Latino Outreach: Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update.	13
April 10, 2008	Arvada	Hispanic/Latino Outreach: Kingdom Business Alliance	RTD FasTracks/NWR Corridor Project update with group of business owners in Arvada and neighboring cities.	10
April 14, 2008	Wheat Ridge	Jefferson County Mental Health Services	Presentation about outreach to Hispanics/Latinos. NWR Corridor Project used as a case study.	20
April 19, 2008	Denver	American Sunrise Workshop for First Time Homebuyers	Distribution of NWR Corridor Project flyers.	12
April 21, 2008	Denver	Radio en Victoria KLVZ 810 AM	Meeting with Teresa Johnston, new general manager of KLVZ Radio.	1
April 22, 2008	Thornton	Hispanic/Latino Outreach: Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update.	10
April 26, 2008	Lakewood	Hispanic/Latino Outreach: El Sembrador/ Alianza Juvenil Community Event (Health and Community Fair)	RTD FasTracks/NWR Corridor Project information table.	127
April 29, 2008	Denver	Hispanic/Latino Outreach: Colorado 2008 Health Fair	RTD FasTracks/NWR Corridor Project information table.	45
May 2, 2008	Denver	Radio KLVZ 810 AM	RTD FasTracks/NWR Corridor Project update.	20
May 2, 2008	Denver	Hispanic/Latino Outreach: Cinco de Mayo Community Event	RTD FasTracks/NWR Corridor Project update.	150
May 6, 2008	Thornton	Hispanic/Latino Outreach: Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update.	13
May 13, 2008	Thornton	Hispanic/Latino Outreach: Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update.	13
May 16, 2008	Denver	La Voz Newspaper	Meeting with new managing editor of newspaper.	1
May 20, 2008	Thornton	Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update.	13

TABLE 5-8. ENVIRONMENTAL JUSTICE OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topics	Number of Attendees
May 21, 2008	Centennial	Centennial Community Event	Hispanic/Latino Outreach: RTD FasTracks/NWR Corridor Project update.	20
May 22, 2008	Denver	USCCC Hispanic Group	RTD FasTracks/NWR Corridor Project update.	20
May 27, 2008	Thornton	Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update.	13
June 2, 2008	Denver	Alianza Ministerial Vision Milenia	RTD FasTracks/NWR Corridor Project update.	20
June 3, 2008	Thornton	Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update.	13
June 10, 2008	Thornton	Iglesia Nueva Vision	RTD FasTracks/NWR Corridor Project update.	13
June 14, 2008	Commerce City	Adams County Microbusiness Group	RTD FasTracks/NWR Corridor Project update.	10
June 14, 2008	Commerce City	Ohio Broadcasting	Interview with Spanish-speaking broadcast students. Hispanic/Latino Outreach: RTD FasTracks/NWR Corridor Project update.	6
June 19, 2008	Denver	USCCC Networking Luncheon, Meeting with English-speaking business owners	RTD FasTracks/NWR Corridor Project update.	15
June 23, 2008	Denver	Radio en Victoria 810 AM	Meeting with General Manager to update staff. RTD FasTracks/NWR Corridor Project update.	1
June 25, 2008	Denver	USCCC Networking Event	Networking event with Spanish-speaking business owners. RTD FasTracks/NWR Corridor Project update.	25
June 26, 2008	Denver	Metropolitan Newspaper	Meeting with reporters from new Spanish-language publication in Denver. RTD FasTracks/NWR Corridor Project update.	2
July 1, 2008	Denver	Colorado Renewal Project	Workshop with 25 Latino leaders at an annual gathering of community leaders, legislators, and representatives. RTD FasTracks/NWR Corridor Project update.	25
July 1, 2008	Aurora	Eco-Justice Ministries	RTD FasTracks/NWR Corridor Project update.	1
July 3, 2008	Denver	Radio KLVZ 810 AM	RTD FasTracks/NWR Corridor Project update during a 1-hour community program.	NA

TABLE 5-8. ENVIRONMENTAL JUSTICE OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topics	Number of Attendees
July 3, 2008	Denver	US Christian Chamber of Commerce, Community meeting with representatives from different community and ethnic groups.	RTD FasTracks/NWR Corridor Project update.	20
July 7, 2008	Denver	Alianza Ministerial Vision Milenia	RTD FasTracks/NWR Corridor Project update. Community events and activities during July/August 2008.	20
July 11, 2008	Westminster	First Southern Baptist Church Community Event	RTD FasTracks/NWR Corridor Project update.	50
July 13, 2008	Centennial	Metropolitan Denver Spanish-speaking community leaders	RTD FasTracks/NWR Corridor Project update.	15
July 17, 2008	Thornton	US Christian Chamber of Commerce	RTD FasTracks/NWR Corridor Project update.	25
July 24, 2008	Denver	Radio La Buena Onda 1150 AM	RTD FasTracks/NWR Corridor Project update.	NA
August 1, 2008	Westminster	Westminster Neighborhood Fair	RTD FasTracks/NWR Corridor Project Information Table.	NA
August 1, 2008	Westminster	Westminster Neighborhood Fair	RTD FasTracks/NWR Corridor Project information table.	NA
August 4, 2008	Denver	Alianza Ministerial Vision Milenia	RTD FasTracks/NWR Corridor Project update.	20
August 12, 2008	Denver	Radio en Victoria 810 AM Community Program	RTD FasTracks/NWR Corridor Project update.	NA
August 12, 2008	Denver	El Centro San Juan Diego	RTD FasTracks/NWR Corridor Project update.	10
August 14, 2008	Denver	Radio Luz Community Program	RTD FasTracks/NWR Corridor Project update.	NA
August 15, 2008	Denver	Radio Luz Interview	RTD FasTracks/NWR Corridor Project update.	NA
August 21, 2008	Denver	The Crossing Luncheon and Community Event	NWR Corridor Project presentation to staff and residents of long-term rehabilitation and family housing center.	43

TABLE 5-8. ENVIRONMENTAL JUSTICE OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topics	Number of Attendees
September 4, 2008	Arvada	KBA Business Meeting	Networking event for business owners in Arvada. RTD FasTracks/NWR Corridor Project update.	75
September 4, 2008	Longmont	Boulder County Latino Chamber of Commerce	NWR Corridor Project information presented as part of training session for representatives of Latino and non-Latino community and business organizations.	NA
September 13, 2008	Longmont	Longmont Mexican Independence Day Celebration	Invited to provide NWR Corridor Project information by El Comite de Longmont. Distributed flyers and business cards with representatives of local community organizations.	200
September 15, 2008	Denver	Latino Ministerial Alliance	RTD FasTracks/NWR Corridor Project update. Monthly meeting of Latino ministers.	20
September 17, 2008	Denver	US Small Business Administration Resource Fair and Expo	RTD FasTracks/NWR Corridor Project information.	60
September 20, 2008	Commerce City	Taping of RTD FasTracks/NWR Corridor Project Media Piece	Taping of a segment (15 minutes) about RTD FasTracks/NWR Corridor Project and North Metro Corridor for the Spanish-language program of Denver Open Media to be broadcast on Denver Channel 57 and at denveropenmedia.org.	NA
July 9, 2009	Denver	Goat Hill Neighborhood Group	RTD FasTracks/NWR EE Project Update	15
November 30, 2009	Boulder	Orchard Grove Mobile Home Park Leadership Committee	RTD FasTracks/NWR EE Project Update; Presentation of impacts analysis and proposed mitigations	8
March 11, 2010	Longmont	NWR Draft EE Public Meeting – Longmont	Corridor-wide public meeting to present the Draft EE and collect public comments. Held near EJ communities in Longmont which received targeted mailings and communications	67
March 15, 2010	Boulder	NWR Draft EE Meeting with Orchard Grove & San Juan Del Centro	Meeting to present the Draft EE to the residents of Orchard Grove and San Juan Del Centro and collect their comments.	7
March 16, 2010	Broomfield	NWR Draft EE Meeting with Broomfield Mobile Home Park	Meeting to present the Draft EE and collect comments from the Broomfield Mobile Home Park.	3

TABLE 5-8. ENVIRONMENTAL JUSTICE OUTREACH MEETINGS

Meeting Date	Meeting Location	Meeting/Event	Meeting Topics	Number of Attendees
March 18, 2010	Adams County	NWR Draft EE Meeting – Adams County	Corridor-wide public meeting to present the Draft EE and collect public comments. Held in the EJ community in Adams County	63

Source: NWR Corridor Project Team, 2010.
Notes:
AMA = American Marketing Association
CITC = Church in the City
EE = Environmental Evaluation
KBA = Kingdom Business Association
MT2 = Metal Treatment Technologies
MBA = Masters of Business Administration
NA = not available
NWR = Northwest Rail
RTD = Regional Transportation District
US = United States
USCCC = United States Christian Chamber of Commerce
Specific meeting location addresses can be obtained upon request from CDR Associates (303) 442-7367.

5.9 SUMMARY AND ANALYSIS OF PUBLIC INPUT AND COMMENTS RECEIVED

Throughout the course of the NWR Corridor Project, the Project Team received comments from the public which were reviewed and logged. Where appropriate, comment responses were prepared by the project team and sent to the commenter. Comments were received at project milestones (see Section 5.5, Public and Agency Input at Project Milestones), and on an on-going basis through the project website, the project hotline, or by phone. All comments and responses were captured and documented in the RTD FasTracks comment database Comment Sense.

Table 5-9 shows the top issues commented on by the public in relation to the Northwest Rail Corridor Project.

TABLE 5-9. TOP PUBLIC COMMENT ISSUES FOR THE NORTHWEST RAIL CORRIDOR PROJECT

Issue	Description	Response
Cost/Funding	Many comments addressed the budget shortfall for funding the FasTracks program and how that related to Northwest Rail. Later in the project, comments focused on the programmatic decisions regarding how to pursue funding.	The Project Team periodically updated the public about RTD strategies for meeting funding challenges and how programmatic efforts related to Northwest Rail.
Vehicle Technology	Most comments in this category supported the selection of EMU technology over DMU for the commuter rail vehicles.	Public comment was summarized and provided to the RTD Board of Directors to be considered for their decision.

TABLE 5-9. TOP PUBLIC COMMENT ISSUES FOR THE NORTHWEST RAIL CORRIDOR PROJECT

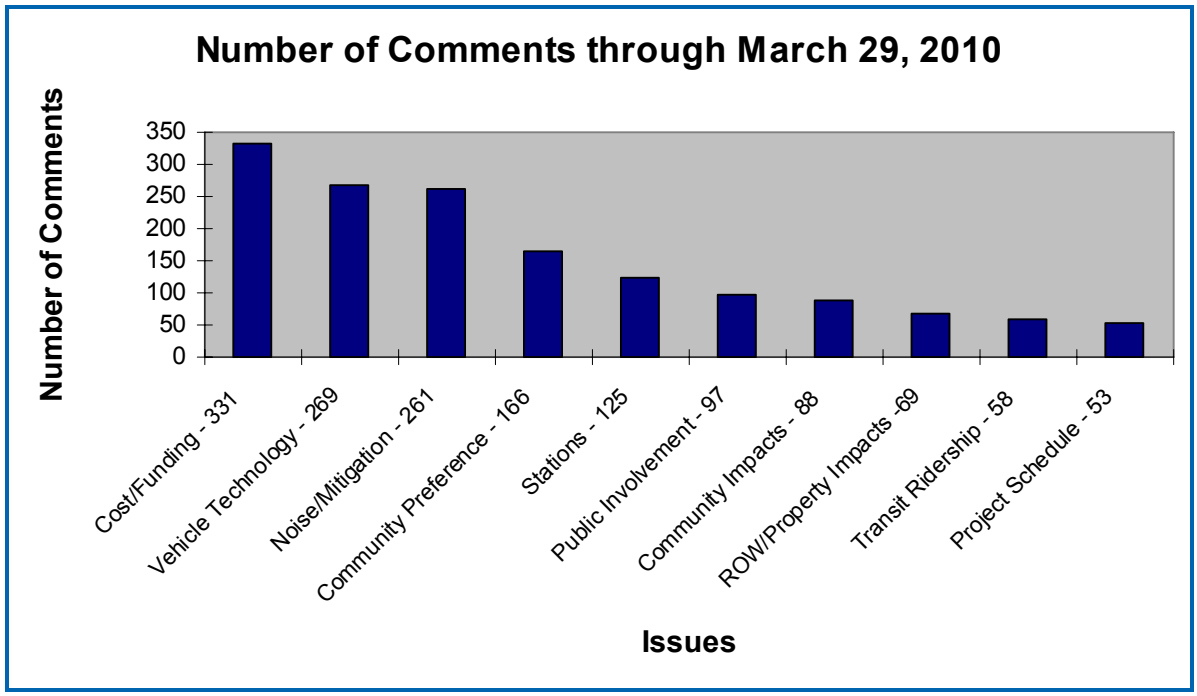
Issue	Description	Response
Noise /Mitigation Measures	Most comments in this category addressed concerns about elevated noise and vibration levels in their respective areas, and advocated for the appropriate mitigation measures to address noise. Many of these comments supported Quiet Zones as a mitigation measure.	The NWR Project Team conducted noise analysis to determine the significance of noise impacts throughout the corridor and proposed the appropriate mitigation strategies. These strategies were also coordinated with an overall RTD FasTracks programmatic effort to address noise.
Community Preference	Most comments expressed general support for the project. Others expressed support for US 36 BRT over NWR rail service.	Public comment was solicited throughout the project and these comments were taken into consideration for RTD decision making.
Stations	Most comments indicated support for the station locations; some advocated for the inclusion of the un-funded stations; some identified specific impacts related to stations; and others requested station plans or other station related information.	The Project Team worked closely with the communities to develop and continuously refine station concept plans, which were ultimately supported by each of the NWR corridor jurisdictions.
Public Involvement	Most comments supported the public involvement process for the project. Many expressed support for frequent and substantive public communications.	Corridor-wide public meetings were held at major milestones to review project developments and elicit public comment. These meetings were held at project kick-off; technology selection; Gunbarrel Station site selection; stations, alignment, impacts/mitigations, and release of the Draft EE. Small group outreach meetings were conducted on an on-going basis throughout the study. Newsletters, email communications, and Web site postings were also provided on a regular basis to keep the public informed.
Community Impacts	Many of these comments supported the benefits that this project will bring into their communities and for their families. Some questioned the need for the project and expressed concern for impacts that NWR may have (i.e. noise levels, property values, disrupting the current community way of life).	The Project Team presented the project at corridor-wide public meetings around the project kick-off, and subsequent milestones. Environmental and traffic impact analyses were conducted to determine the impacts and proposed mitigations for the project which were presented in the Draft EE. These impacts and proposed mitigations were communicated to the public and public comment was taken into consideration for the Final EE. Additionally, responses to comments received on the Draft EE have been provided in the Final EE.

TABLE 5-9. TOP PUBLIC COMMENT ISSUES FOR THE NORTHWEST RAIL CORRIDOR PROJECT

Issue	Description	Response
Right-of-Way/ Property Impacts	Comments in this category addressed individual property impacts and requested responses related to specific properties along the corridor.	Project Team members continually communicated and met with property owners along the rail line to provide them with the most up-to-date information about how their properties would (or would not) be impacted.
Transit Ridership	Some comments in this category expressed concern about the projected ridership numbers in relation to the project cost. Some comments indicated interest in riding Northwest Rail on a regular/daily basis and inquired about projected operating plans.	All comments were responded to by RTD to keep the public informed about the latest ridership projections and project costs. Those inquiring about operations information were responded to with the most up-to-date information.
Project Schedule	Most comments in this category supported project completion and opening day in 2015.	The Project Team periodically updated the public about the project schedule and worked towards keeping the project on schedule.

Source: NWR Corridor Project Team, 2009.

FIGURE 5-3. RTD FASTRACKS NORTHWEST RAIL COMMENT ISSUES



Source: NWR Corridor Project Team, 2010.

In addition, as mentioned previously, for an in-depth summary of public input and recommendations from the Gold Line Final EIS and Record of Decision (ROD), and the CRMF SEA see the *Gold Line Final EIS* (RTD 2009) available at www.RTD-Denver.com.

5.10 NEXT STEPS

This Final EE will be made available to the public on the project Web site. Copies of the document will also be made available to the public at the following locations:

Denver
- Denver Public Library – Central Library
  10 West 14th Avenue Parkway
  Denver, CO 80204
- RTD FasTracks
  1560 Broadway, Suite 700
  Denver, CO 80202

Adams County
- Adams County Planning & Development
  12200 N. Pecos Street
  Westminster, CO 80234

Westminster
- Westminster Public Library
  College Hill Branch
  3705 West 112th Avenue
  Westminster, CO 80031

Broomfield
- City and County of Broomfield
  Community Development
  1 DesCombes Drive
  Broomfield, CO 80021

Longmont
- Longmont Public Library
  409 4th Avenue
  Longmont, CO 80501

Louisville
- Louisville Public Library
  951 Spruce Street
  Louisville, CO 80027
- 36 Commuting Solutions
  287 Century Circle, Suite 103
  Louisville, CO 80027

Boulder
- City of Boulder Transportation & Planning
  1739 Broadway Blvd. 2nd Floor
  Boulder, CO 80306

Online
www.RTD-FasTracks.com

As this project moves towards construction and operation, RTD will continue to work with local, state, and federal resource agencies, local jurisdictions, members of the general public and other stakeholders throughout the Northwest Rail corridor to address issues or concerns relating to this project.

RTD can be contacted with comments and/or public input in the following ways:

METHODS FOR THE PUBLIC TO KEEP INFORMED AND REMAIN INVOLVED
- Visit the RTD FasTracks Web site for the current information about the project
- Submit a comment by phone, email, mail or through the project Web site
- Request a meeting with your organization
- Call the RTD FasTracks information line

HOW YOU CAN CONTACT US

- Web site: www.RTD-FasTracks.com
- Email: nwrail@RTD-FasTracks.com
- Phone: (303) 299-2000
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ES. EXECUTIVE SUMMARY

ES.1 INTRODUCTION

ES.1.1 Why is this report written?

In November 2004, voters in the Denver area Regional Transportation District (RTD) approved the FasTracks initiative through a sales tax increase, to be used to expand public transit services in the metropolitan Denver area over a 12-year period. The *FasTracks Plan* (RTD 2004) is a comprehensive program to construct and operate new rail lines and improve elements of bus rapid transit (BRT), bus service and park-n-Rides throughout the region.

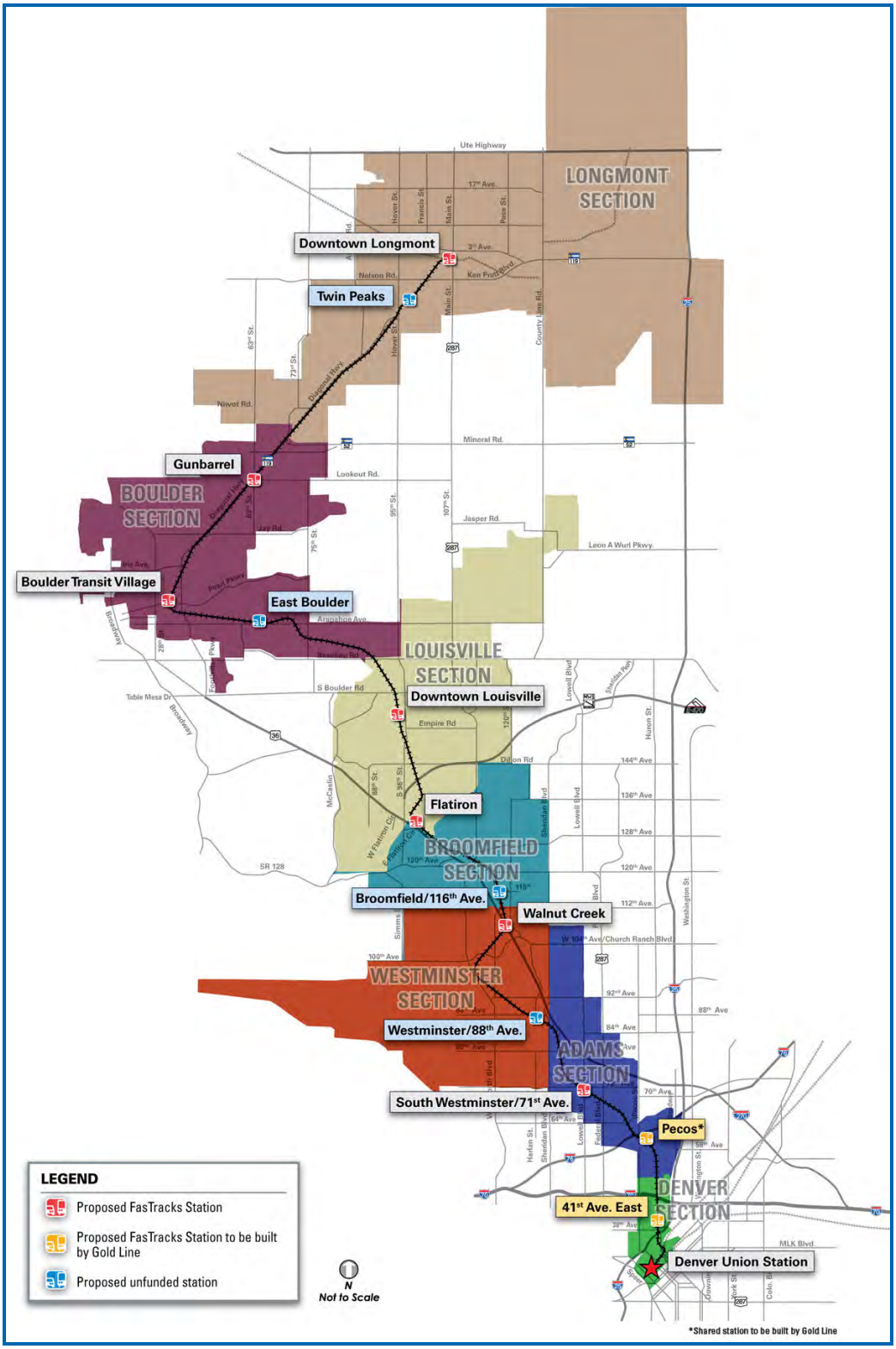
As part of FasTracks, RTD has initiated the Northwest Rail Corridor Environmental Evaluation (NWR Corridor EE) to identify and evaluate impacts of implementing a fixed-guideway, commuter rail transit service between Denver, Boulder and Longmont, Colorado. The project will be phased; the first phase, from Denver Union Station (DUS) to the South Westminster/71^{s} Avenue Station (approximately up to Bradburn Boulevard) would use Electric Multiple Unit (EMU) technology. Phase 2 would use Diesel Multiple Unit (DMU) technology from DUS to Longmont and would share tracks used by the EMU vehicles in the Phase 1 segment between DUS and the South Westminster/71st Avenue Station. The United States Army Corps of Engineers (USACE) is the lead federal agency for this project, rather than the Federal Transit Administration (FTA), because this project will not be seeking federal funds. However, the project will impact waters of the United States (US) consequently requiring wetland permits per Section 404 of the Clean Water Act. The USACE issued a Section 404 Nationwide Permit for Phase 1 on 1 April 2010. Phase 2 is expected to require an Individual Permit as part of the Clean Water Act. Comments received and their responses on the Draft EE are provided in Appendix G: Response to Comments of this Final EE.

RTD developed this document, following National Environmental Policy Act of 1969 (NEPA) processes and procedures, for use by the USACE. The USACE will utilize information contained in this document to determine compliance with NEPA, and the Section 404 (b)(1) guidelines for subsequent Section 404 permit applications submitted by RTD. See Appendix A, Section 404 (b)(1) Showing, for more details on Section 404 (b)(1) guidelines.

ES.1.2 Where is this project?

The project study area (Figure ES-1) includes portions of several communities in the northwest Denver metropolitan area that extend from DUS to Longmont, including the City of Denver, the City of Westminster, the City and County of Broomfield, the City of Louisville, the City of Boulder, the City of Longmont and unincorporated areas of Adams, Boulder and Jefferson Counties.

FIGURE ES-1. NORTHWEST RAIL CORRIDOR PROJECT STUDY AREA AND SECTIONS



Source: NWR Corridor Project Team, 2010.

More specifically, for analysis purposes, the NWR Corridor EE includes two different study areas that are discussed separately in this evaluation:

Project Study Area – Overall area within a specific boundary in which the potential of a project's indirect impacts will be assessed. This area is typically equal to the area described in the affected environment section for each environmental resource.

Resource Analysis Area – An area generally defined by direct impacts to various environmental resources, such as physical acquisition of property and impacts to wetlands. The direct impact area is determined by comparing the construction limits of the project to the physical location of the environmental resources. The construction limits have been defined through engineering design and include permanent and temporary construction features, such as construction access and staging areas.

ES.1.3 What is the organization of this EE?

This EE is organized as follows:

Executive Summary – Provides a summary of the document, including a project description, Purpose and Need, anticipated impacts, and recommended mitigation measures.

Chapter 1: Purpose and Need – Presents a discussion of the Purpose of the project, and the Need for improvements.

Chapter 2: Alternatives Considered – Describes the alternatives screening process and results used to define the Preferred Alternative for the NWR Corridor Project study area.

Chapter 3: Affected Environment and Environmental Consequences – Describes the existing social and natural environmental conditions in the project study area and describes the anticipated impacts associated with the No Action and Preferred Alternative. Proposed mitigation measures are identified. These mitigation measures will be finalized during the development of the final NWR EE. This Final EE will be prepared to assist in obtaining a Nationwide Permit for Phase 1 and eventually an Individual Permit for the remainder of this project (as may be required under the Clean Water Act and in compliance with NEPA).

Chapter 4: Transportation Systems – Discusses the existing transportation system and the anticipated benefits and impacts that would result from implementation of the No Action and Preferred Alternative.

Chapter 5: Public Involvement Program – Describes the public involvement program, including coordination with the NWR Governments Team (NWR GT) and subcommittees, state and federal resource and regulatory agencies, and the general public for selecting the Preferred Alternative.

Chapter 6: List of Preparers

Chapter 7: References – Lists the sources for all references shown in this document. A list of acronyms is provided in a section following the Table of Contents.

Appendix A – 404(b)(1) Showing – The purpose of this document is to summarize the information necessary to meet the requirements of Section 404 mandates. Information in this appendix is extracted from the NWR Corridor EE and associated technical memoranda. Content includes the Purpose and Need, alternatives considered, and impact analysis and mitigation measures associated with the Preferred Alternative for resources under USACE jurisdiction.

ES.1.4 How will this EE inform decision making?

Comments received on the Draft EE were considered as input into the development of this Final EE that was submitted to the USACE, the lead agency. This Final NWR Corridor EE was adopted by the RTD Board of Directors in May 2010.

ES.2 PURPOSE AND NEED FOR ACTION

ES.2.1 What is the purpose of this project?

The purpose of the NWR Corridor Project is to implement fixed guideway, commuter rail, mass transit service between Denver, Boulder and Longmont.

ES.2.2 Why do we need this project?

Need 1: Improve mobility – Mobility improvements are needed to provide alternatives to congested single occupant vehicle (SOV) travel for project study area residents, employees, and visitors.

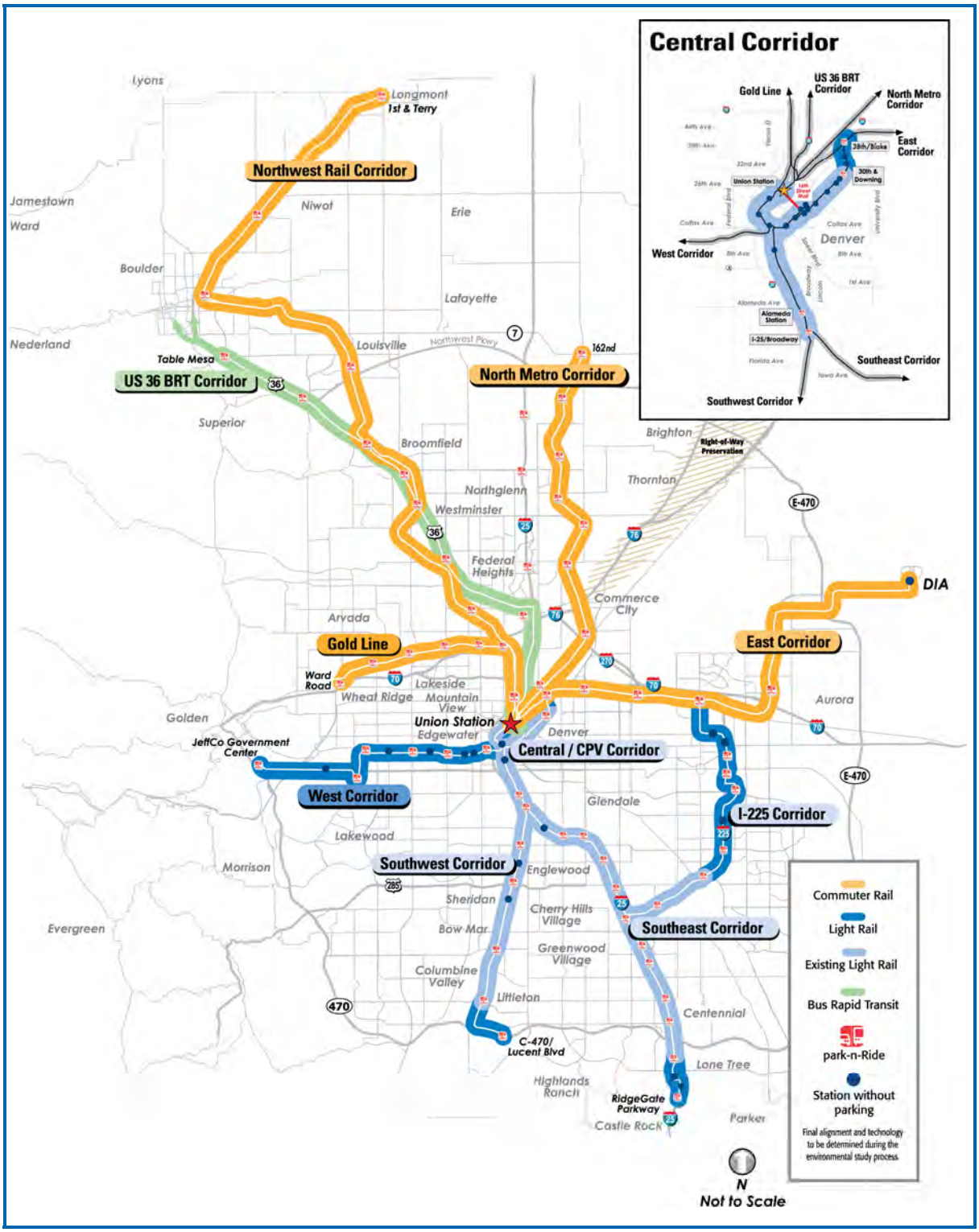
Per the *2035 Metro Vision Regional Transportation Plan (MVRTP)* (DRCOG 2007):

- By 2035, population in the project study area is forecast to increase by 43 percent and employment is forecast to increase by 58 percent.
- Programmed roadway improvements are not expected to keep pace with projected demand, as: (1) regional personal trips will increase by 59 percent, (2) regional vehicle miles traveled (VMT) will increase by 72 percent, (3) regional roadway lane miles with more than three hours per day of severe congestion will increase by 203 percent, and (4) regional vehicles hours of delay will increase by 353 percent.

Need 2: Provide consistent and reliable transit travel times – Unreliable automobile travel times are anticipated both from day to day and throughout the day (peak versus off-peak) in 2035. Travelers will also experience unexpected delays due to accidents or inclement weather. An option such as rail transit would provide more consistent, reliable, safe, and congestion-free travel on its own dedicated and protected right-of-way (ROW).

Need 3: Enhance regional connectivity – The Denver metropolitan region currently has gaps in multi-modal regional transit connectivity. FasTracks is primarily a plan to fill in major gaps with fixed guideway transit (rail) and bus rapid transit. The NWR Corridor would link with seven other RTD rail corridors at DUS (see Figure ES-2).

FIGURE ES-2. FASTRACKS PROGRAM



Source: RTD, 2009.

Need 4: Provide an affordable transit investment – Any transit improvements must be affordable within the FasTracks budget. In addition, the associated operating costs must be realistic and reasonable for RTD to assume the service. In 2004, the *FasTracks Plan* allocated $565.1 million (in year of expenditure dollars) for NWR Corridor capital costs out of the overall $4.7 billion system-wide budget. The 2009 RTD Annual Program forecasts the NWR Corridor Project capital costs at $641.1 million (in 2008 dollars).

Need 5: Reinforce local and regional transportation and land use plans – The NWR Corridor is part of the 122-mile system of new rail transit facilities proposed within the regional FasTracks Program. To assess potential local community acceptance of the NWR Corridor Project, regional and local plans were reviewed. Local plans for communities along the proposed rail alignments were found to be in support of commuter rail serving their jurisdiction. Plans found to be in support of the NWR Corridor Project include:

- *FasTracks Plan* (RTD 2004)*;*
- *2035 MVRTP* (DRCOG 2007)*;*
- *Adams County Comprehensive Plan, 2004;*
- *Adams County Transportation Plan, 1996;*
- *Adams County Transit Oriented Development and Rail Station Area Planning Guidelines, 2007;*
- *Adams County Clear Creek Valley Transit Oriented Development Plan, 2009;*
- *Westminster Comprehensive Plan, 2004;*
- *Original Broomfield Neighborhood Plan, 2008;*
- *City and County of Broomfield Comprehensive Plan, 2005;*
- *City of Broomfield Strategic Plan, 1998;*
- *The Highway 42 Revitalization Area Comprehensive Plan, 2003;*
- *Downtown Louisville Framework Plan, 1999;*
- *Boulder Transit Village Area Plan, 2007;*
- *City of Boulder Transportation Master Plan, 2003;*
- *Boulder County Comprehensive Plan, 1978;*
- *Gunbarrel Community Center Plan, 2004;*
- *Longmont Multi-Modal Transportation Plan, 2005; and*
- *Longmont/RTD Station and Transit Oriented Development (TOD) Analysis, 2005.*

ES.3 PREVIOUS PLANNING STUDIES

Previous studies recommended the implementation of rail transit in the NWR Corridor. The NWR Corridor EE uses those conclusions as the starting point for further evaluation, carries forward the outcomes of those previous rail studies as assumptions, and updates and builds upon the data collected (consistent with FHWA/FTA guidance, *Linking the Transportation Planning and NEPA Processes [FTA and FHWA 2005]*).

The studies that have analyzed transit improvements for portions of the NWR Corridor since 2000 are summarized in Table ES-1.

TABLE ES-1. PREVIOUS TRANSPORTATION STUDIES

Date Completed	Title (Agency)	Summary
2001	*US 36 Major Investment Study* (RTD)	Recommended commuter rail service in US 36 Corridor along the BNSF Railway Company alignment and highway improvements along US 36.
2004	*FasTracks Plan* (RTD)	Regional rail and bus expansion initiative adopted in December 2004 that included commuter rail, specifically DMU, along the BNSF Railway Company alignment.
2005	*Longmont Diagonal Rail Feasibility Study* (RTD)	Determined that a commuter rail transit extension from Boulder to Longmont was feasible.
2006	*Longmont Diagonal Rail Environmental Evaluation* (RTD)	Environmental Evaluation of commuter rail transit improvements along the BNSF Railway Company alignment from Boulder to Longmont.
2007	*US 36 EIS/BE (URS)**	DEIS and BE for transit and roadway improvements in US 36 Corridor between Denver and Boulder. Recommended commuter rail along the BNSF Railway Company alignment and highway improvements along US 36. The US 36 Final EIS was distributed to the public on October 30, 2009 and a ROD was signed by FHWA and FTA in December 2009.
2009	*Commuter Rail Maintenance Facility Supplemental Environmental Assessment to FasTracks Commuter Rail Corridors* (RTD)	Supplemental Environmental Assessment (SEA) for a commuter rail maintenance facility and lead track from DUS to Pecos Street. This document is a supplement to the Gold Line Final EIS that is described below. Recommended a track alignment from DUS to Pecos Street along the BNSF Railway Company alignment and a commuter rail maintenance facility at Fox North site (north of 48th Avenue and Fox Street in the City and County of Denver).
2009	*Gold Line Final EIS* (RTD)	Final EIS and BE for transit improvements primarily along the Union Pacific Railroad Company and BNSF Railway Company alignments from DUS to Ward Road in Wheat Ridge, Colorado. The Gold Line ROD was signed on November 2, 2009.

Source: NWR Corridor Project Team, 2009.

Notes:

*The early stages of US 36 DEIS/BE were a joint effort between CDOT and RTD that analyzed rail and highway improvements. In 2006, FHWA and FTA decided that the rail and highway elements of the project had independent utility and should proceed separately. The resulting US 36 DEIS/BE concluded in 2007 and only included highway improvements.

BE = Basic Engineering
CDOT = Colorado Department of Transportation
DEIS = Draft Environmental Impact Statement
DMU = diesel multiple unit
CRMF SEA = Commuter Rail Maintenance Facility Supplemental Environmental Assessment
DEIS = Draft Environmental Impact Statement
DMU = diesel multiple unit
DUS = Denver Union Station
Final EIS = Final Environmental Impact Statement
FHWA = Federal Highway Administration
DMU = Federal Transit Administration
ROD = Record of Decision
RTD = Regional Transportation District
US 36 = United States Highway 36

ES.4 ALTERNATIVES CONSIDERED

ES.4.1 What alignment alternatives were evaluated?

The NWR Corridor EE evaluated a No Action Alternative and seven Build Alternatives. Table ES-2 and Figure ES-3 through ES-5 present the reasonable range of alternatives considered during the NWR Corridor EE. Under the No Action Alternative, no new rail transit projects would be constructed within the project study area for the NWR Corridor Project. The No Action Alternative provides a basis for comparison to the build alternatives. See Section ES-4.6 for more details.

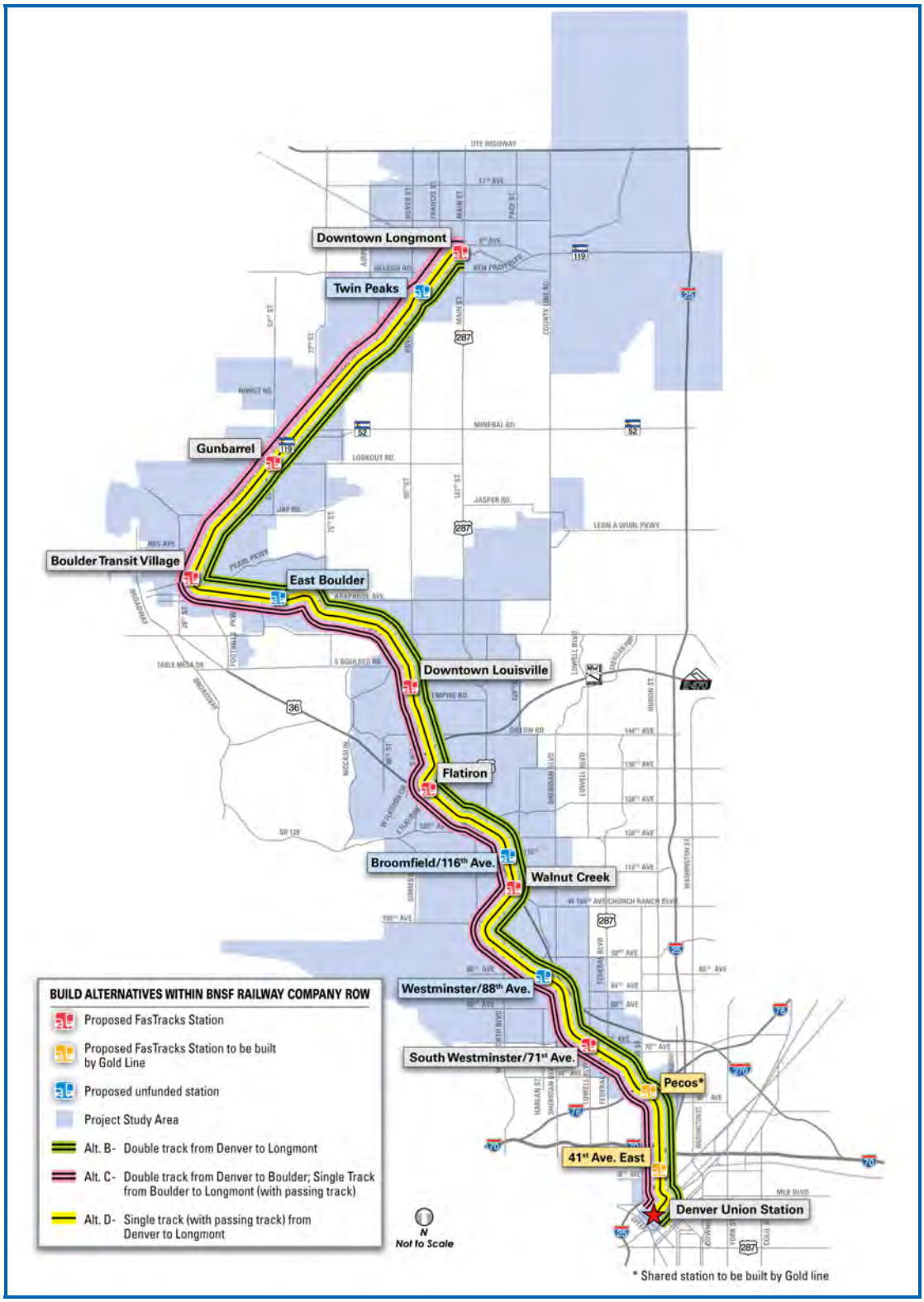
Early on in the NWR EE process, conceptual alignment alternatives were evaluated. The alternatives analysis considered alignments that would stay within the BNSF Railway Company ROW, and others that were outside of the railroad ROW. Alternative alignments outside of the BNSF Railway Company ROW considered building the project along the existing proximate highways (US 36 and SH 119) and roadways or building the project adjacent to, but not within, the BNSF Railway Company ROW. All alternatives located outside of the BNSF Railway Company ROW that were evaluated were eliminated during Level 1 screening because they did not meet the project's Purpose and Need and were not practicable, due to the requirement for additional property acquisition that would result in impacts to a large number of private properties and impacts to sensitive environmental resources.

TABLE ES-2. COMPLETE RANGE OF CONCEPTUAL ALTERNATIVES

No Action Alternative
Alternative A - No Action Alternative
Within BNSF Railway Company Right-of-Way
Alternative B – Double Track from Denver to Longmont
Alternative C – Double Track from Denver to Boulder; Single Track (with passing track) from Boulder to Longmont
Alternative D – Single Track (with passing track) from Denver to Longmont
Outside BNSF Railway Company Right-of-Way (Single Track with Passing Track)
Alternative E – Highway Corridor (US 36/SH 119)
Alternative F – BNSF Railway Company Alignment Adjacent to the East
Alternative G – BNSF Railway Company Alignment Adjacent to the West
Alternative H – BNSF Railway Company Alignment Adjacent East/West Combination

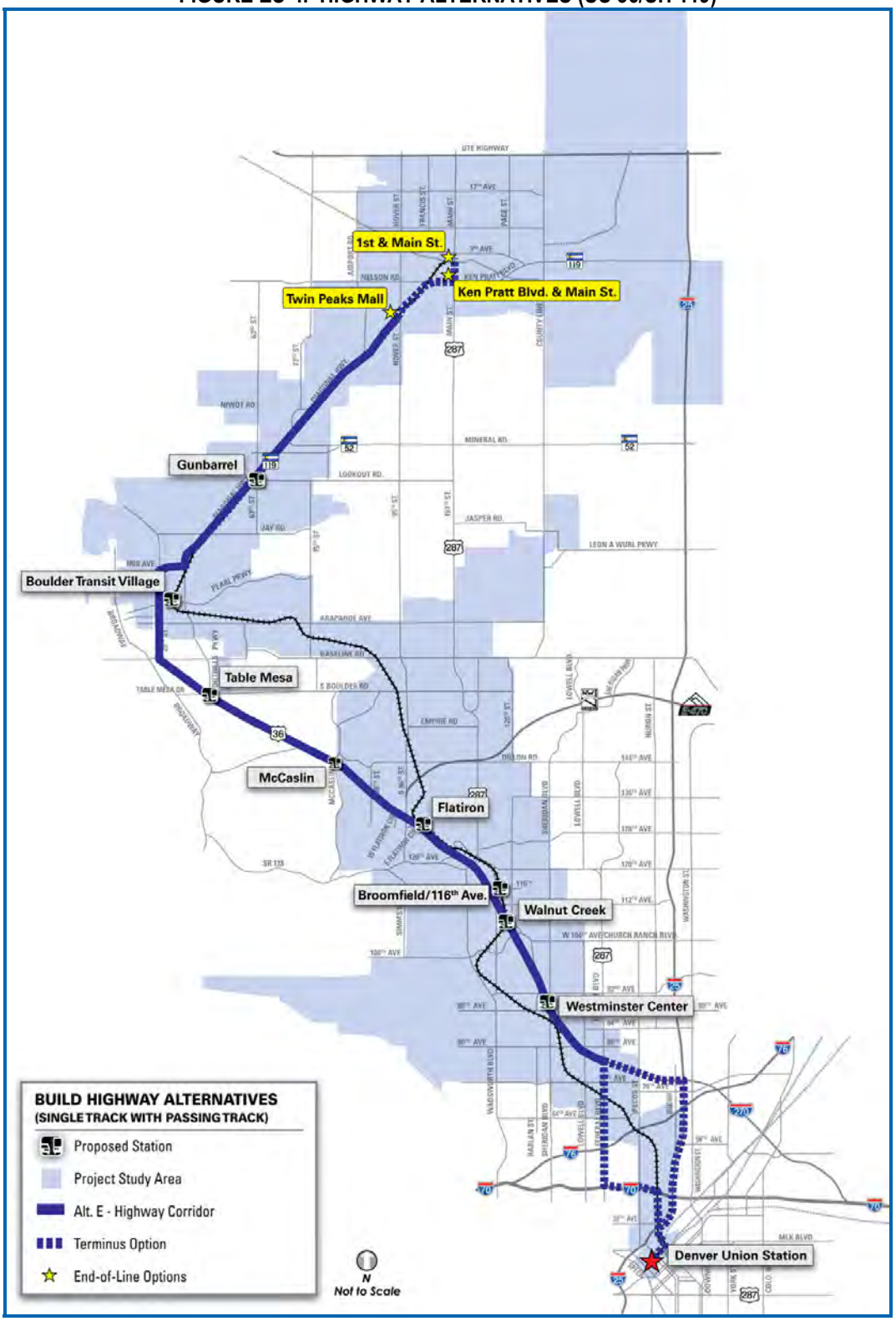
Source: NWR Corridor Project Team, 2008.

FIGURE ES-3. ALTERNATIVES INSIDE BNSF RAILWAY COMPANY RIGHT-OF-WAY



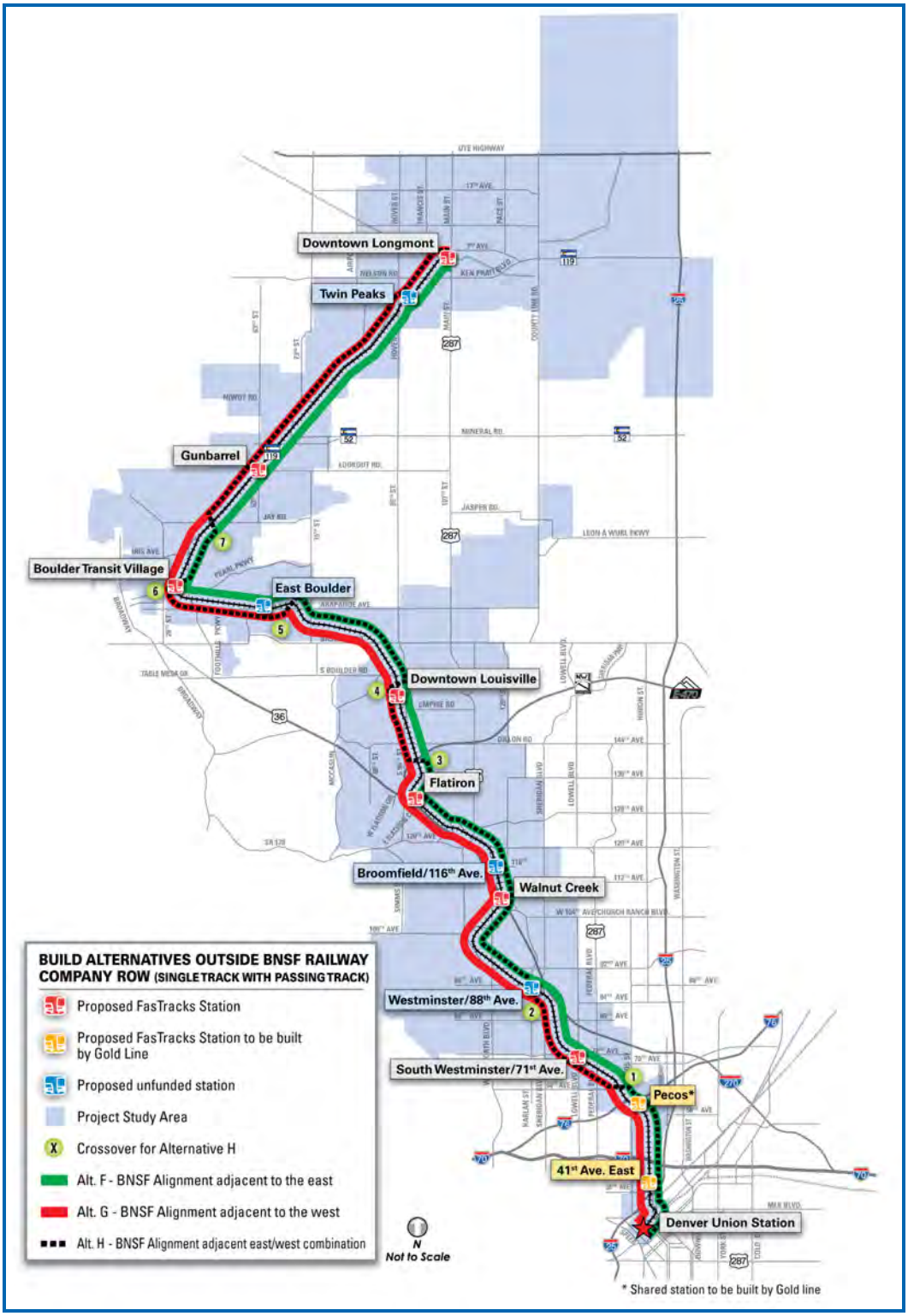
Source: NWR Corridor Project Team, 2010.

FIGURE ES-4. HIGHWAY ALTERNATIVES (US 36/SH 119)



Source: NWR Corridor Project Team, 2007.

FIGURE ES-5. ALTERNATIVES OUTSIDE BNSF RAILWAY COMPANY RIGHT-OF-WAY



Source: NWR Corridor Project Team, 2010.

ES.4.2 How were alternatives evaluated?

The alternatives underwent three levels of screening including: Level 1 – Conceptual Alternative Screening, Level 2 – Preferred Alternative Refinement, and Level 3 – Detailed Alternative Analysis. These are described in more detail below.

Level 1 – The Conceptual Alternative Screening examined a broad range of alternatives. This screening focused on meeting the Purpose and Need statement, avoiding unmitigable environmental impacts, and practicability. An alternative is practicable if it is capable of being implemented after taking into consideration cost, existing technology, and logistics. The result of this screening was the identification of a Preferred Alternative. Since the implementation of a rail transit alternative is a major action, it is important to identify how the Preferred Alternative performs compared to the No Action Alternative within the project study area for the NWR Corridor. All alternatives located outside of the BNSF Railway Company ROW that were evaluated were eliminated during Level 1 screening because they did not meet the project's Purpose and Need.

Level 2 – The Preferred Alternative Refinement focused on design modifications, a re-evaluation of vehicle technologies, development of station architectural styles, and identification of corridor fencing materials. Following the identification of a Preferred Alternative in the Level 1 – Conceptual Alternative Screening, the NWR Corridor Project Team conducted a number of refinements to avoid and/or minimize impacts to environmental resources and to select a preferred vehicle technology.

Level 3 – The Detailed Alternative Analysis subjected the Preferred Alternative to a detailed examination of capital costs, ridership, travel time, environmental impacts, and public and agency support. The Preferred Alternative was also compared with a No Action Alternative (comprised of existing and committed transportation improvements in the corridor). This level of analysis was both qualitative and quantitative and focused on the identification of the Least Environmentally Damaging Practicable Alternative (LEDPA). The LEDPA as defined in 40 CFR Part 230.10(a), is "*the alternative with the least impacts to the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences*." The identification of the LEDPA is important to meet the requirements of the USACE, the lead federal agency involved in the project as well as the overall intent of NEPA. The NWR Corridor EE document summarizes this evaluation and presents the results of the Level 3 – Detailed Alternative Analysis.

ES.4.3 What criteria were used to evaluate the alternatives?

The criteria used to evaluate the alternatives for each screening level are presented in Table ES-3.

TABLE ES-3. NWR CORRIDOR EE SCREENING EVALUATION CRITERIA

Level 1 – Conceptual Alternative Screening	Level 2 – Preferred Alternative Refinement	Level 3 – Detailed Alternative Analysis
Purpose and Need Examination of environmental impacts including: • Social Impacts • Environmental Justice • Land Use • Economic Considerations • Land Acquisition • Cultural/Historic Resources • Visual • Park Land/Open Space • Air Quality and Energy • Noise and Vibration • Biological Resources • Water Quality/Floodplains • Wetlands • Hazardous Materials • Public Safety and Security • Utilities • Transportation	**Purpose and Need** Potential for avoidance and/or minimization of resource impacts including: • Reducing Station Platform Size • Eliminating Bypass Tracks at Stations • Modifying Station Concept Plans • Modifying the Rail Track Alignment to avoid disturbing property, wetlands, and "drainages" along the entire length of the corridor. Technology Evaluation based on: • Cost effectiveness • Environmental Impacts • Noise and Vibration • Air Quality • Expandability • Alternative fuel options • Maintenance • Community Input Other: • Constructability Evaluation of: • Fencing type • Station architectural style	**Purpose and Need** • Capital cost • Ridership • Travel time • Environmental impacts • Public and agency support

Source: NWR Corridor Project Team, 2009.

ES.4.4 What were the results of the screening?

The results of the three levels of screening are presented in below.

Results of Level 1 – Conceptual Alternative Screening:

During Level 1 screening, Alternatives C & D were eliminated because they would not be able to provide reliable and consistent travel times as identified in the project Purpose and Need. Alternatives E, F, G, and H were eliminated because they would result in greater environmental impacts. As a result, the identified Preferred Alternative is Alternative B.

Results of Level 2 – Preferred Alternative Refinement

Avoidance and/or Minimization of Resource Impacts: Through the NWR Corridor EE process, the footprint of the Preferred Alternative was modified to avoid and/or minimize impacts. The following is a brief description of the minimization measures used to avoid and/or minimize impacts.

Reducing Station Platform Size
The length of all station platforms was reduced from 800 feet to 400 feet, which would accommodate a four-car train. The width of the platform was also narrowed.

Eliminating Passing Tracks at Stations
Initially, a design that completely separated the passenger rail traffic from the freight rail by adding passing tracks at each platform was considered to accommodate level boarding of the passenger trains. In the original design, at each station, one 1,500-foot long passing track would be located on each side of the mainline tracks. In order to minimize impacts, the decision was made to redesign the station platforms without passing tracks. Instead, RTD would provide high blocks, ramps, or other accommodations at each station platform to meet the Americans with Disabilities Act requirements for level boarding, while not prohibiting freight movement.

Modifying Station Concept Plans
Prior to a wetland minimization exercise, four of the 11 proposed stations would have wetland impacts. Those stations include Westminster/88th Avenue, Walnut Creek, East Boulder, and Gunbarrel. After re-evaluating each station concept plan, it was determined that the Westminster/88th Avenue Station concept plan could be modified to eliminate impacts to wetlands.

In Chapter 3 of this EE, impacts of the Preferred Alternative are divided into three categories: corridor alignment, corridor stations and Phase 1 (track from DUS to Bradburn Boulevard including the South Westminster/71st Avenue Station). Note that the wetland impacts at the East Boulder Station, Walnut Creek Station, and Gunbarrel Station are associated with the platforms for the stations, which are included in the impact calculations for the NWR Corridor alignment as opposed to the “station” category of impacts.

Modifying the Rail Track Alignment
In order to minimize wetland and drainage impacts along the length of the corridor, several modifications were made to the initial design of the rail tracks. In total, impacts to

jurisdictional wetlands and other waters were reduced by 0.92 jurisdictional (J) acre to 4.15 J acres (3.36 acres of wetlands and 0.79 acre of other waters) for the 41-mile NWR corridor.

Vehicle Technology Evaluation: Although the original FasTracks Plan, the US 36 DEIS, and the Longmont EE assumed diesel technology, the initial selection of the DMU technology was re-evaluated due to concerns and requests raised by the public. EMU and DMU commuter rail technologies were evaluated and compared to determine which was the more appropriate and viable option for the project. DMU was ultimately selected by the RTD Board as the preferred vehicle type for the project, based on the following determinations:

- More cost-effective for future service expansion to North Front Range;
- Consistency with the original FasTracks Plan (RTD 2004);
- No visual impact or additional costs from catenary system;
- Most cost-effective over 30-year planning horizon; and
- Ability to use alternate fuel in the future.

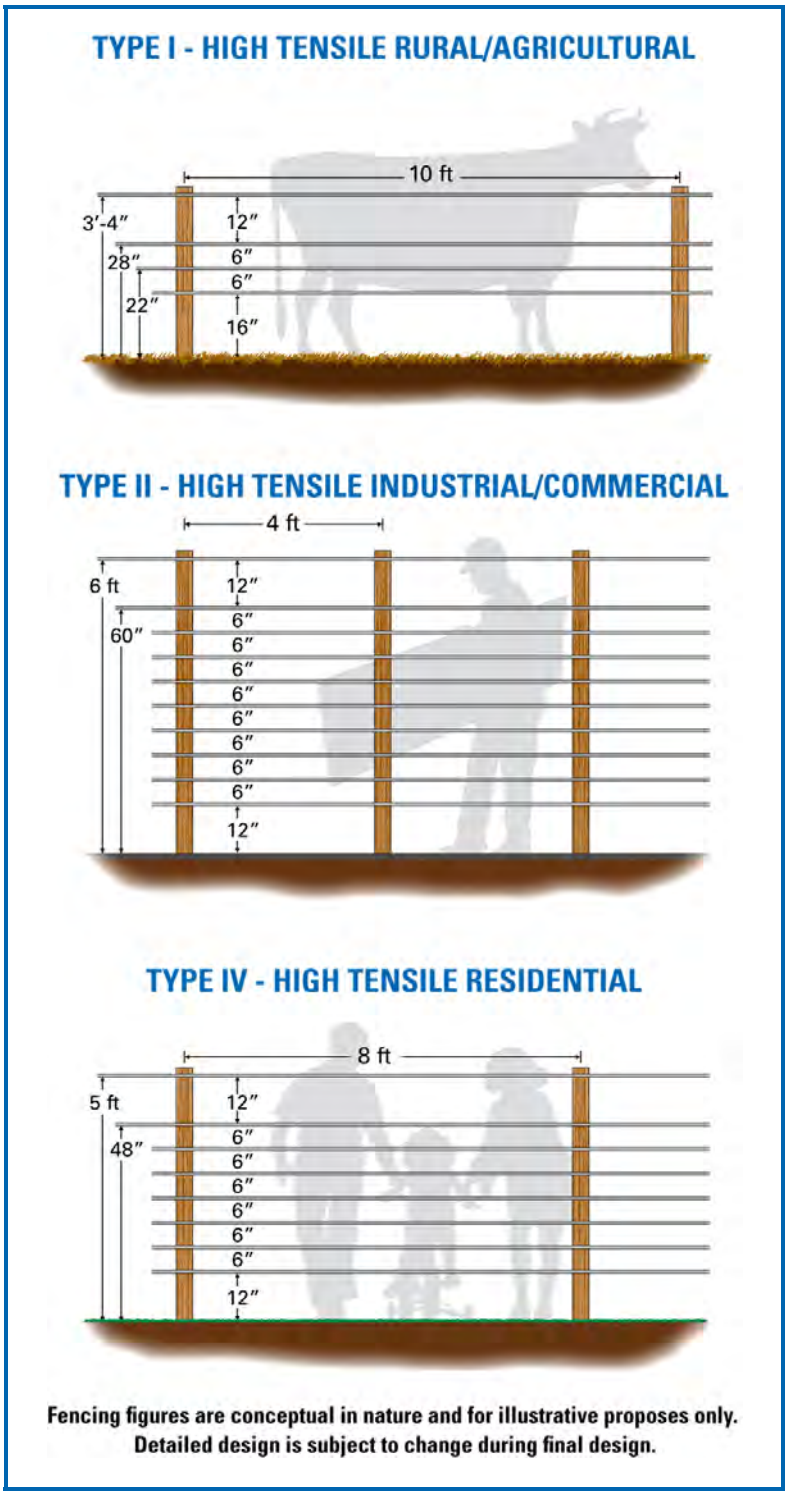
Additionally, in October 2007 the RTD Board unanimously adopted the Responsible Rail Amendment. This amendment commits RTD to work to ensure it purchases fuel efficient, environmentally responsible and sustainable commuter rail vehicles.

Evaluation and Selection of Alignment Fencing Materials: Because trespassers in commuter rail alignments have been found to be the primary cause of fatalities, RTD's Safety and Security protocols require that the alignment be fenced. The presence and aesthetic effect of alignment fencing was a concern of local agencies and jurisdictions during the NWR Corridor EE process. For this reason, RTD developed an approach to engage local governments and agencies in the selection of the proposed fencing materials. This process was conducted with the understanding that in some cases the premium for materials more costly than the chain link fence (RTD design standard) would be paid for by the local entity. The purpose of the process was to review adjacent land use types (rural/agricultural, industrial/commercial, and residential) along the corridor, identify key design issues (train speed and related safety issues, security issues, environmental concerns, and aesthetic concerns) and receive stakeholder feedback on the selected fencing types recommended for the project design, while considering safety and security.

The process involved establishing a NWR Fencing Subcommittee consisting of representatives from the local jurisdictions and resource agencies to assist RTD with developing recommendations for fencing types along the NWR Corridor. As a result of NWR Fencing Subcommittee meetings, specific fencing design and materials were recommended for the alignment. A conceptual depiction of the high-tensile fencing types is provided in Figure ES-6.

Additionally, RTD will consider utilizing existing fences along the alignment in lieu of additional NWR-provided fences in areas where desired and where RTD criteria can be met. RTD criteria includes a requirement that the fence be owned and maintained by a governmental agency or other permanent entity or organization that has authority to enter into an agreement with RTD and where the existing fence meets specific design standards. In these specific locations, RTD will continue to work with the local jurisdictions and adjacent property owners throughout final design.

FIGURE ES-6. PROPOSED FENCING TYPES PROPOSED FOR THE NWR CORRIDOR PROJECT



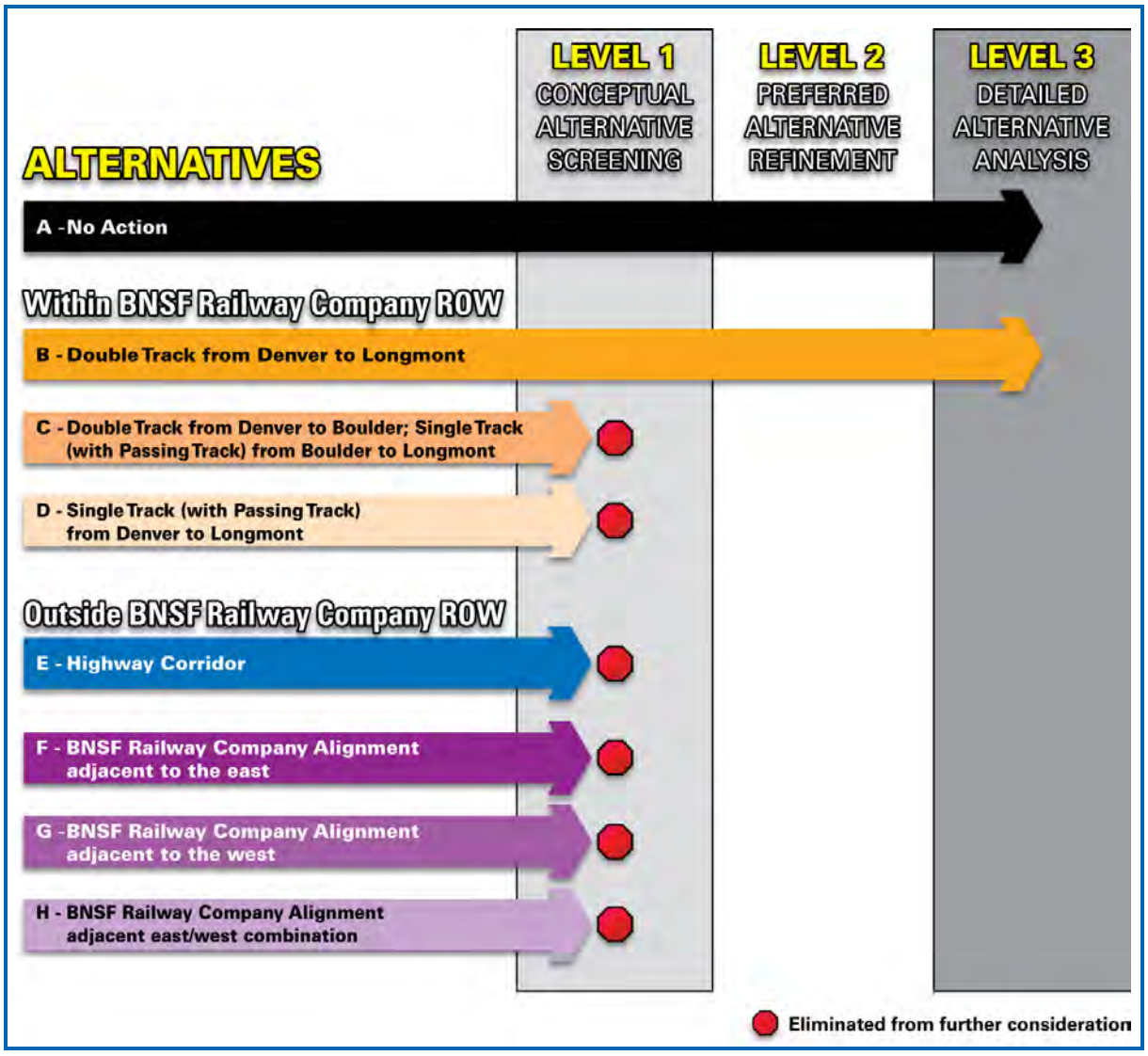
Source: NWR Corridor Project Team, 2009.

Note: This figure is conceptual in nature and for illustrative purposes only. Specific dimensions and details on materials will be identified during final design. No Type III fence was identified for use in the NWR at this preliminary stage. This is subject to change during final design.

Conclusion

As a result of the Level 1 – Conceptual Alternative Screening and Level 2 – Preferred Alternative Refinement, Alternative B – Double Track from Denver to Longmont was selected as the Preferred Alternative. Alternative A – No Action and the Preferred Alternative, with DMU vehicle technology, was carried forward to undergo detailed evaluation in the NWR Corridor EE. Figure ES-7 depicts a summary of the screening process.

FIGURE ES-7. RESULTS OF THREE LEVEL ALTERNATIVES SCREENING PROCESS



Source: NWR Corridor Project Team, 2009.

ES.4.5 What are the alternatives carried into the EE?

Alternative A, No Action, is carried forward as a baseline for comparison to the Preferred Alternative. Alternative B, Double Track within BNSF Railway Company ROW from Denver

to Boulder to Longmont with Downtown Longmont Station terminus was identified as the Preferred Alternative in the Level 1 screening evaluation and was carried forward for detailed evaluation in this EE.

ES.4.6 What is the No Action Alternative?

The No Action Alternative provides a basis of comparison for determining the impacts of project alternatives. It does not mean that "nothing happens." The No Action Alternative includes existing projects and financially committed projects within the study area to respond to the expected growth in the study area to the year 2035. These projects would be completed with or without implementation of the Preferred Alternative. By accounting for other projects to be built in a corridor or study area, the No Action Alternative provides the benchmark from which the Preferred Alternative is evaluated. Both highway and transit projects are part of the No Action Alternative.

Transit Projects

In the No Action Alternative, bus service changes or enhancements likely to occur in the next one to five years were included, as well as committed service enhancements that will occur between 2005 and 2035. The No Action Alternative assumes no additional transit facilities in the project study area for the NWR Corridor. Existing park-n-Rides in the project study area would remain in their same locations and configurations as today. Bus operation modifications for the No Action Alternative include more frequent service on existing routes B and H between Denver and Boulder, a re-routed skyRide route for service from Boulder to Denver International Airport, and new Activity Center Connector routes to activity centers in the corridor. In addition to changes in bus service, the No Action Alternative would assume the implementation of the entire FasTracks Plan, except for the NWR Corridor project.

Roadway Projects

The roadway improvement projects identified under the No Action Alternative for the 2035 planning year horizon (DRCOG, 2009) are indicated in Table ES-4.

TABLE ES-4. NORTHWEST RAIL CORRIDOR NO ACTION ALTERNATIVE HIGHWAY IMPROVEMENTS

Project Location/Name	Project Description
SH 119 (Longmont Diagonal): Foothills Parkway to Hover Road Operational Improvements	Highway operational improvements
SH 119: SH 52 New Interchange	New interchange
US 36 Foothills Parkway to I-25	Add managed BRT/HOV lane
US 36: McCaslin Boulevard Interchange Reconstruction	Interchange reconstruction
US 36: Sheridan Boulevard Interchange Reconstruction	Interchange reconstruction
US 36: Wadsworth Parkway Interchange Reconstruction	Interchange reconstruction
US 36 Bikeway	Bikeway

Source: DRCOG, 2009.
BRT = bus rapid transit
HOV = high-occupancy vehicle
I-25 = Interstate 25
RTP = Regional Transportation Plan
SH = State Highway
US 36 = United States Highway 36

More information on the US 36 EIS/BE process is provided in Section 2.1.3, US 36 EIS and Basic Engineering. The US 36 Final EIS was distributed to the public on October 30, 2009 and a Record of Decision (ROD) was signed by FHWA and FTA in December 2009.

ES.4.7 What is the Preferred Alternative?

Elements of the Preferred Alternative include the rail alignment, station locations, and operational characteristics as described below and depicted in Figure ES-8.

Alignment

The NWR Corridor Project will be phased; the first phase, from DUS to the South Westminster/71^{s} Avenue Station (approximately up to Bradburn Boulevard) would use EMU technology. Phase 2 would use DMU technology from DUS to Longmont and would share the tracks used by the EMU vehicles in the Phase 1 segment between DUS and the South Westminster/71st Avenue Station. Ultimately, the Preferred Alternative would assume the provision of commuter rail transit from DUS in the City and County of Denver to downtown Longmont. Track from the DUS terminal to what is known as the DUS "throat" near Coors Field at Park Avenue was considered a part of the DUS Project. As a result, impacts for this segment of track (DUS to the throat) are presented in the DUS Final Environmental Impact Statement (Final EIS) document. The study area for the NWR EE initiates at the DUS “throat” and extends to the north. The first 3.5 miles of the alignment between the DUS throat and Pecos Street would be shared with the Gold Line Project. The remaining 37.5 miles of track would be dedicated to the NWR Corridor.

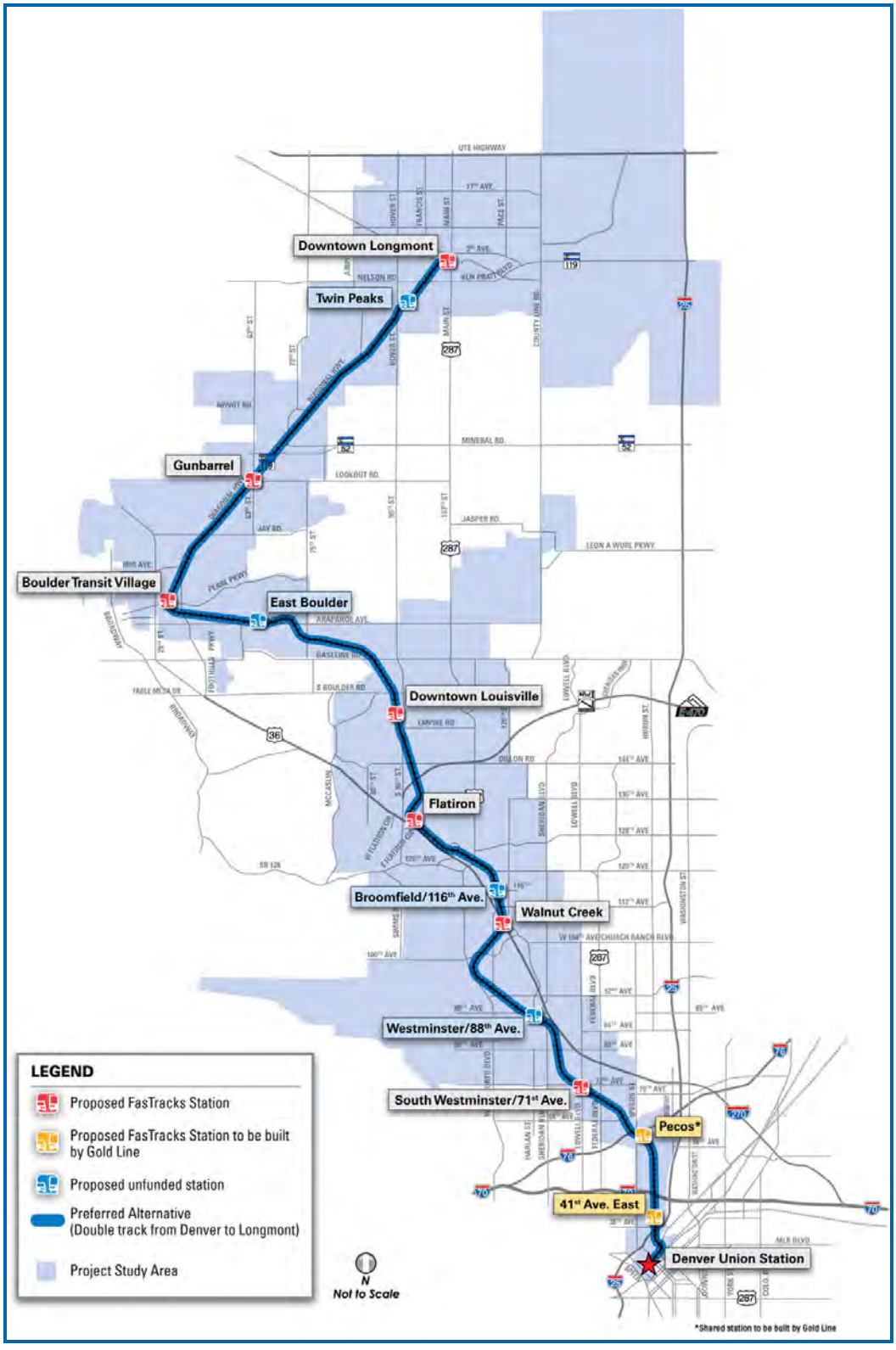
Between the South Westminster/71st Street Station and Longmont, the existing BNSF Railway Company track would be rehabilitated/replaced, and one new track adjacent to the existing BNSF Railway Company track would be constructed. Both tracks would be utilized

by freight and commuter rail vehicles. Between the South Westminster/71st Street Station and DUS, the track would be in exclusive transit ROW, owned by RTD.

The NWR Corridor cannot function without a supporting Commuter Rail Maintenance Facility (CRMF). Therefore, the Preferred Alternative assumes the provision of a CRMF located on the Fox North Site, north of downtown Denver. The CRMF would include facilities to repair, maintain, clean, fuel, and store both DMU and electric multiple unit (EMU) commuter rail trains for the FasTracks commuter rail program. The impacts associated with the CRMF were initially presented in a Supplemental Environmental Assessment (SEA), a supplement to the Gold Line DEIS, which was distributed to the public in April 2009. Since that time, the design of the CRMF was updated and environmental impacts associated with the CRMF are presented in detail in the *Gold Line Final Environmental Impact Statement* (Federal Transit Administration 2009). The Gold Line ROD was signed by FTA on November 2, 2009. The CRMF impacts are incorporated here by reference. See Figure ES-21 in Section ES.4.10, Phased Implementation, for a depiction of the location of the CRMF.

A depiction of a DMU Commuter Rail vehicle

FIGURE ES-8. PREFERRED ALTERNATIVE



Source: NWR Corridor Project Team, 2010.

Stations

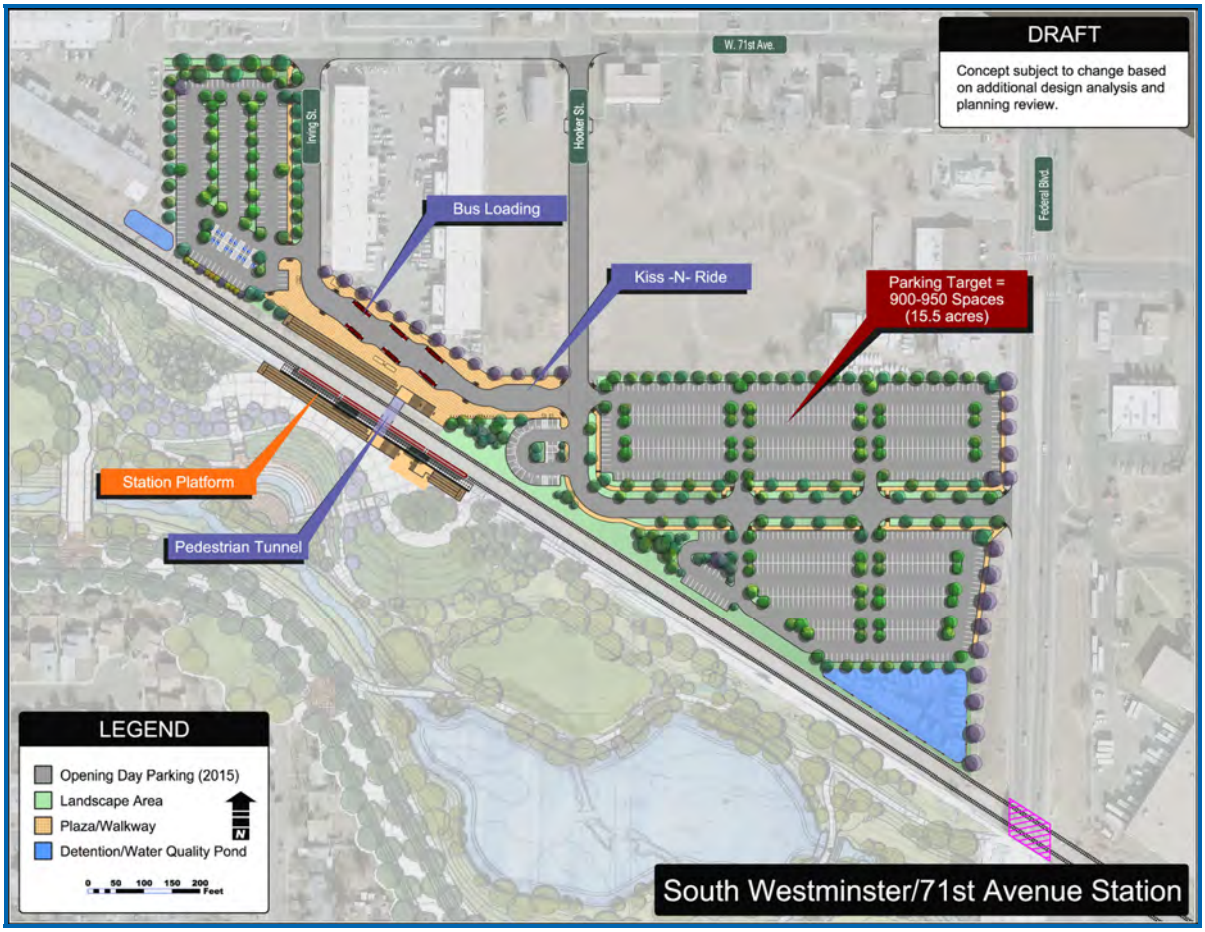
There are 11 stations included as part of the Preferred Alternative located at:

- South Westminster/71st Avenue
- Westminster/88th Avenue
- Walnut Creek
- Broomfield/116th Avenue
- Flatiron
- Downtown Louisville
- East Boulder
- Boulder Transit Village
- Gunbarrel
- Twin Peaks
- Downtown Longmont

Four of the 11 stations – Westminster/88th Avenue, Broomfield/116th Avenue, East Boulder, and Twin Peaks – would not be funded by FasTracks and would require additional funding sources in order to be constructed. The environmental impacts (including aquatic) related to the four unfunded stations are included as part of the evaluation in this EE.

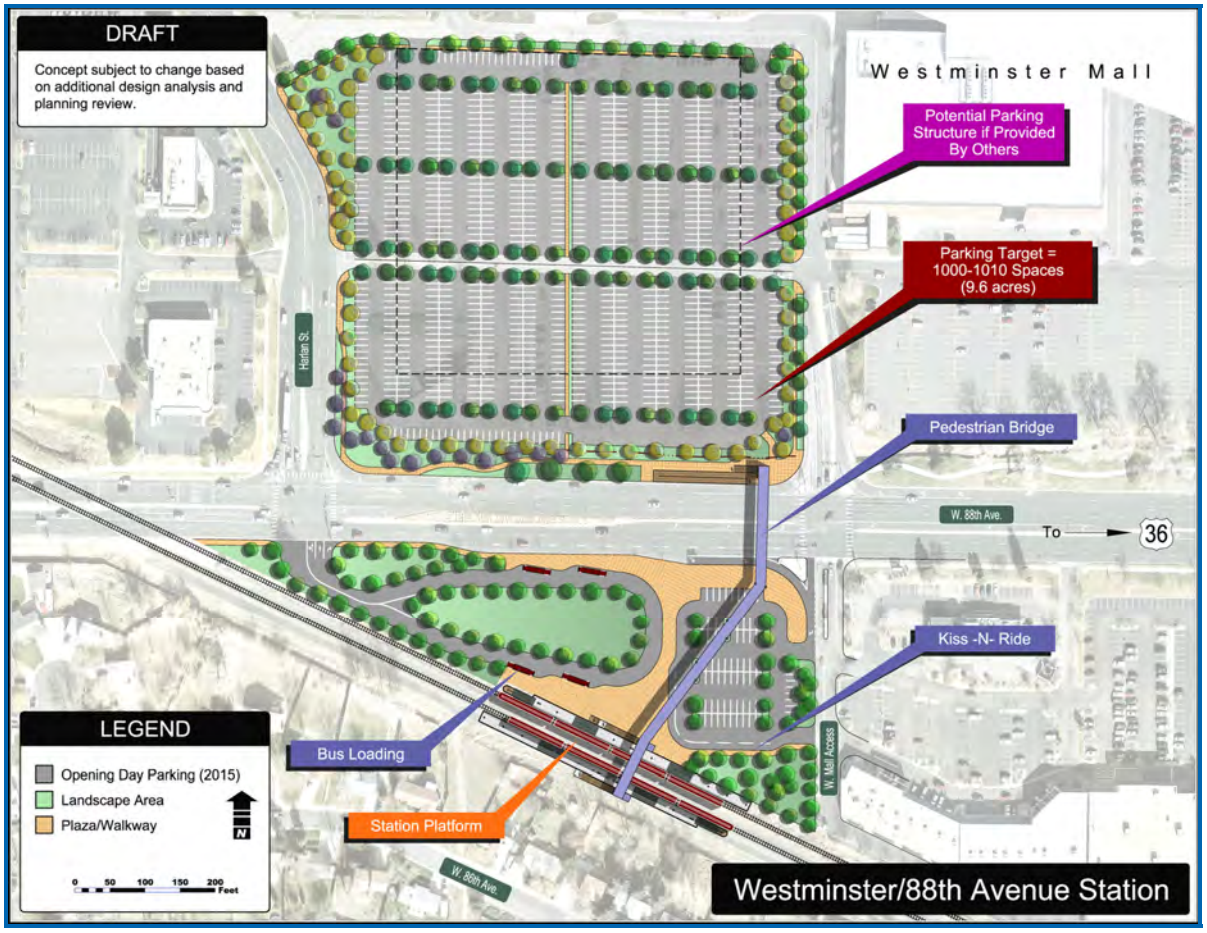
Conceptual site layouts for the proposed stations are provided in Figures ES-9 through ES-20 below.

FIGURE ES-9. SOUTH WESTMINSTER/71ST AVENUE STATION CONCEPT PLAN



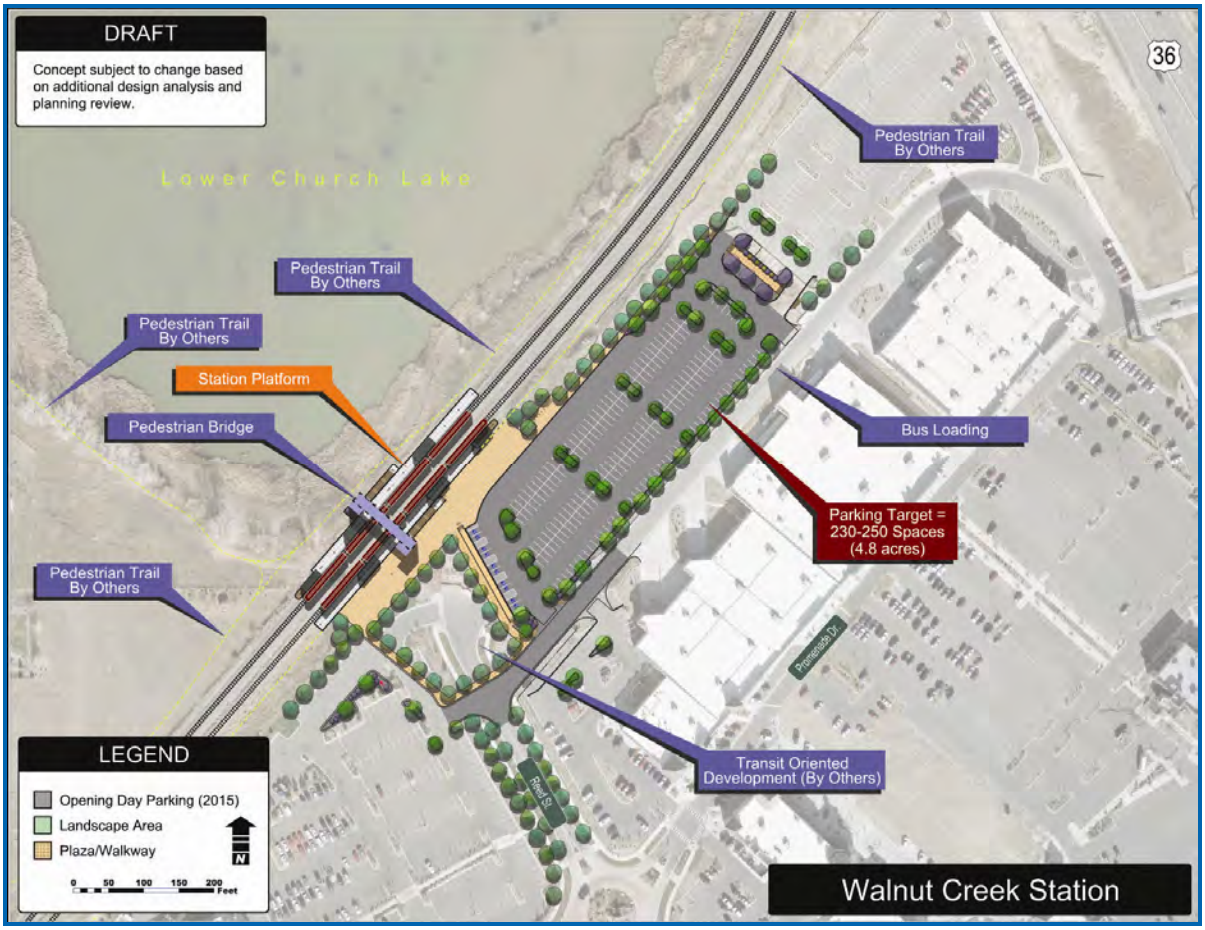
Source: NWR Corridor Project Team, 2009.

FIGURE ES-10. WESTMINSTER/88TH AVENUE STATION CONCEPT PLAN



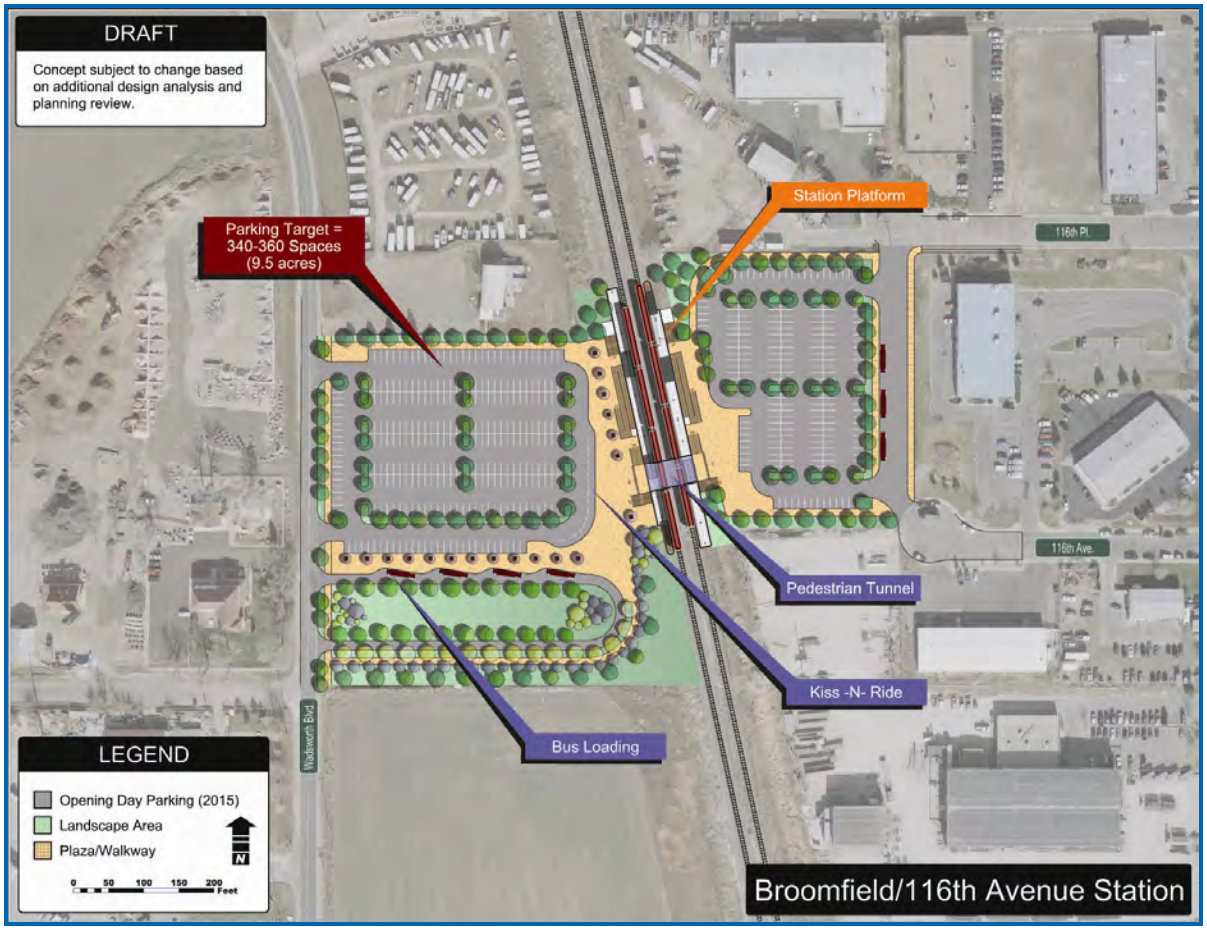
Source: NWR Corridor Project Team, 2009.

FIGURE ES-11. WALNUT CREEK STATION CONCEPT PLAN



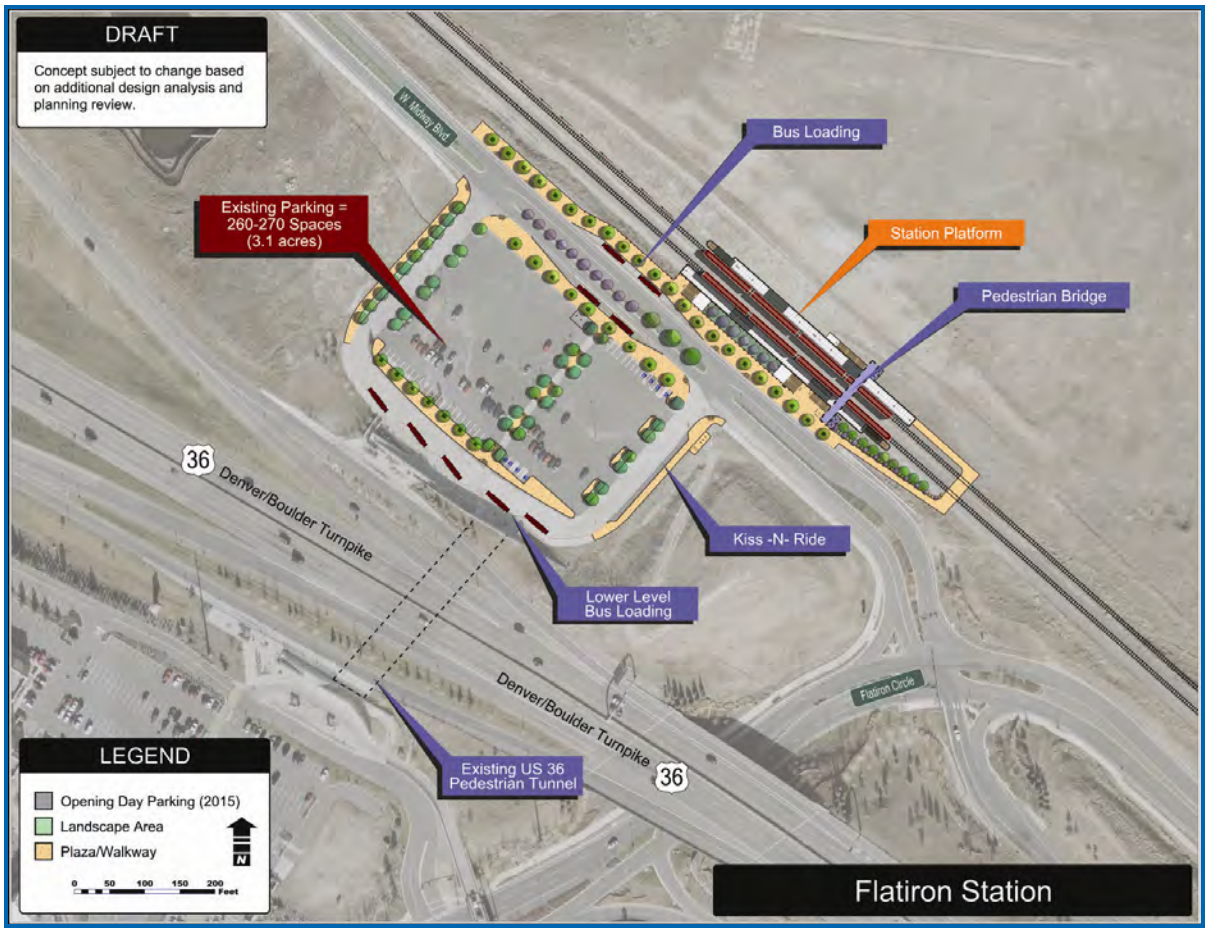
Source: NWR Corridor Project Team, 2009.

FIGURE ES-12. BROOMFIELD/116TH AVENUE STATION CONCEPT PLAN



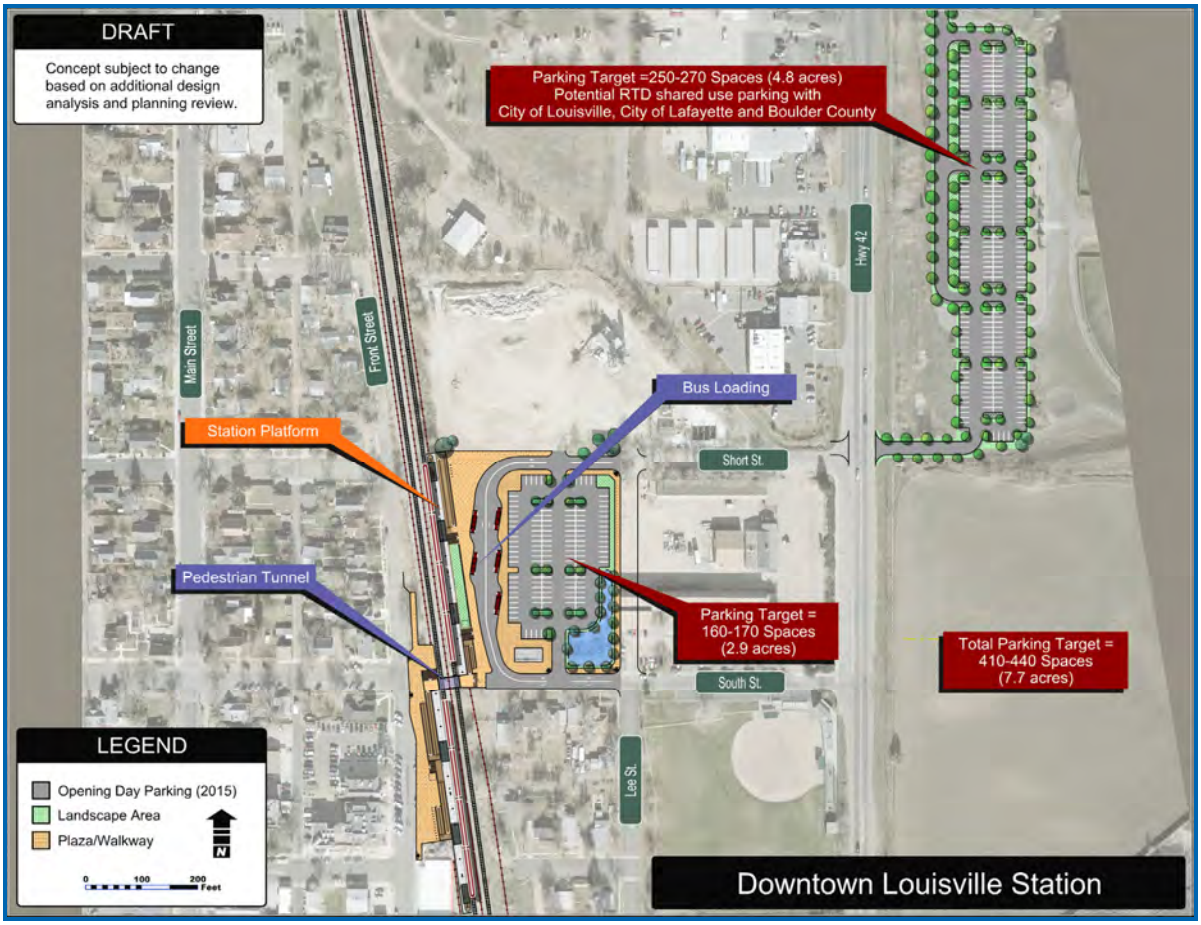
Source: NWR Corridor Project Team, 2009.

FIGURE ES-13. FLATIRON STATION CONCEPT PLAN



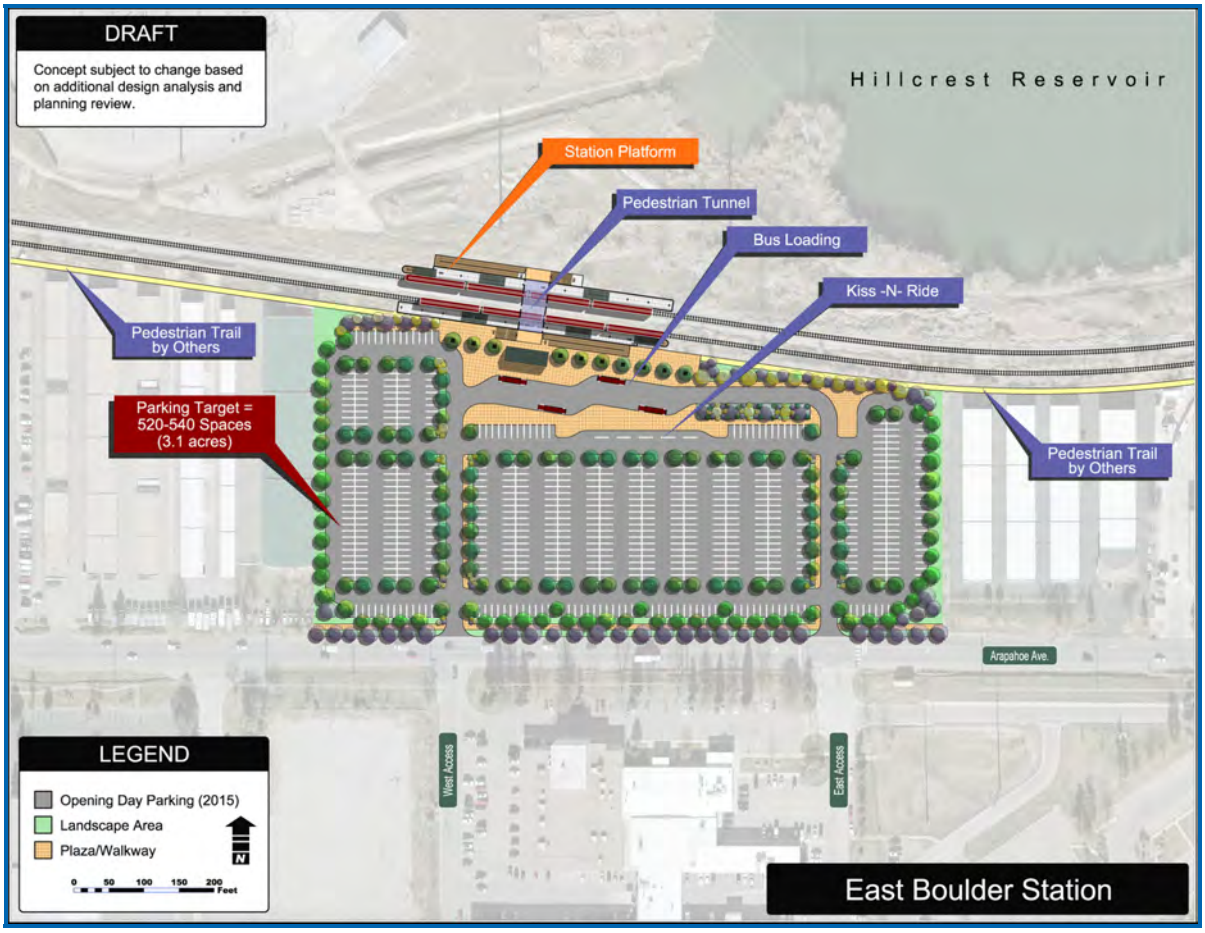
Source: NWR Corridor Project Team, 2009.

FIGURE ES-14. DOWNTOWN LOUISVILLE STATION CONCEPT PLAN



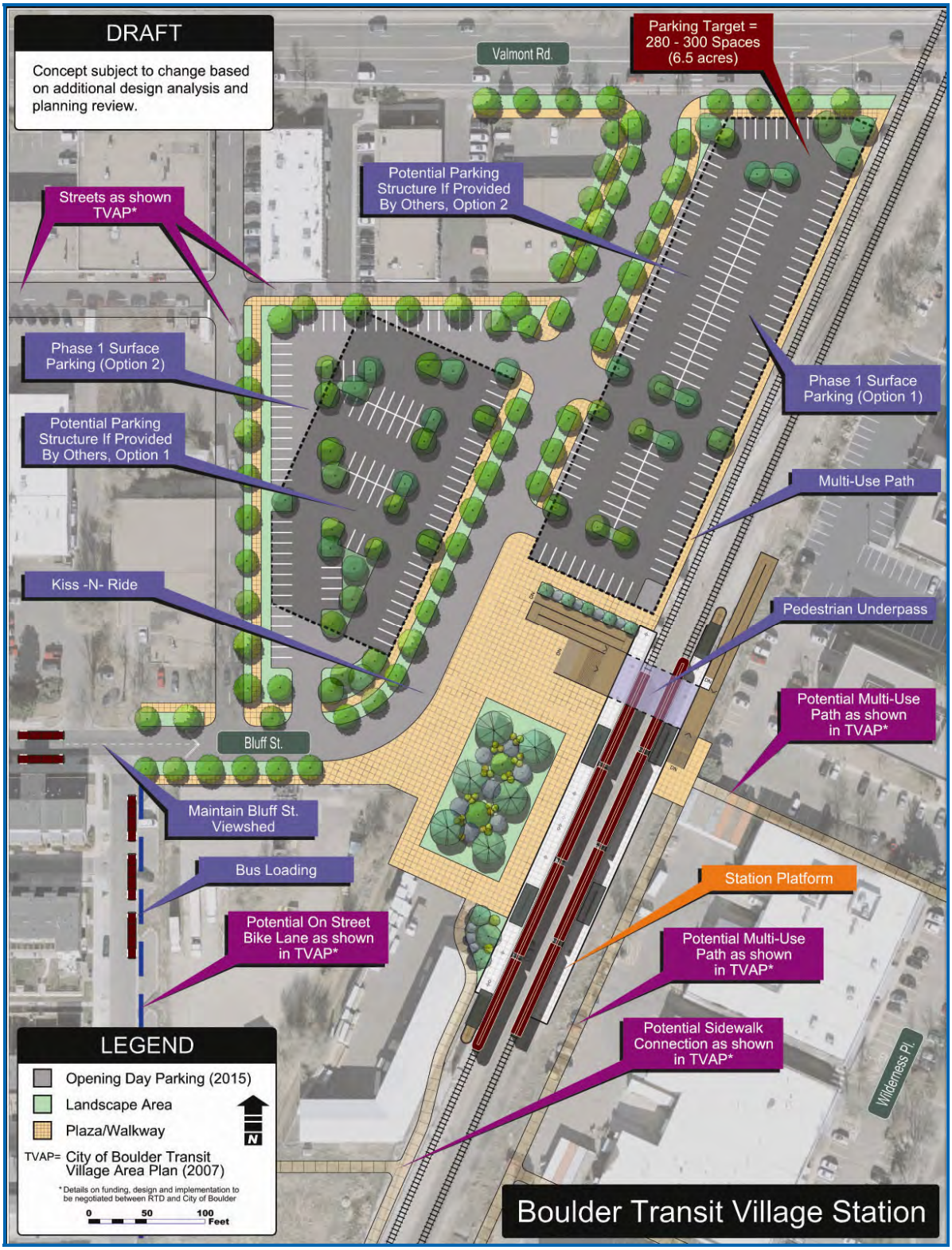
Note: The use of parking at Miners Field is dependent on an agreement between Louisville, Lafayette, and Boulder County.
Source: NWR Corridor Project Team, 2009.

FIGURE ES-15. EAST BOULDER STATION CONCEPT PLAN



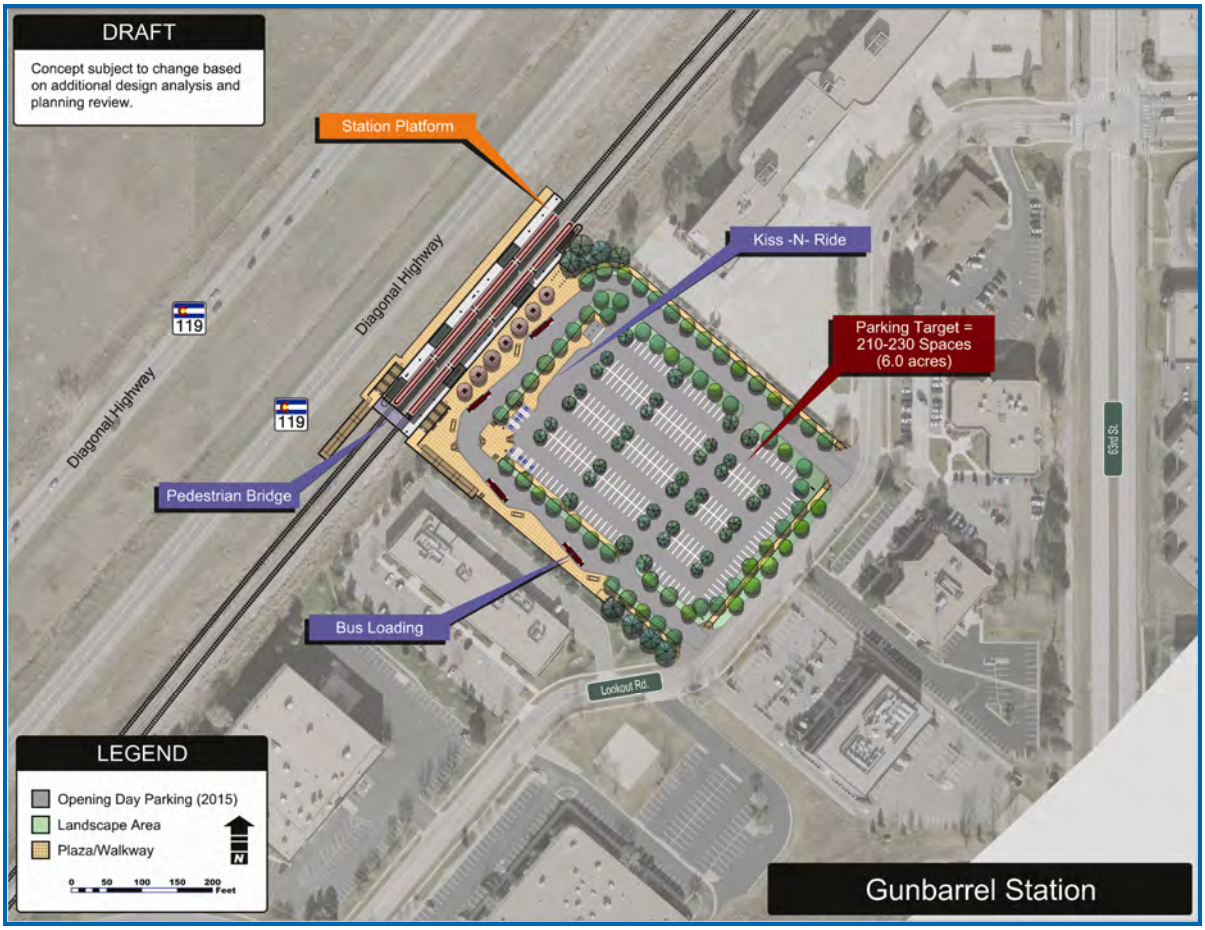
Source: NWR Corridor Project Team, 2009.

FIGURE ES-16. BOULDER TRANSIT VILLAGE STATION CONCEPT PLAN



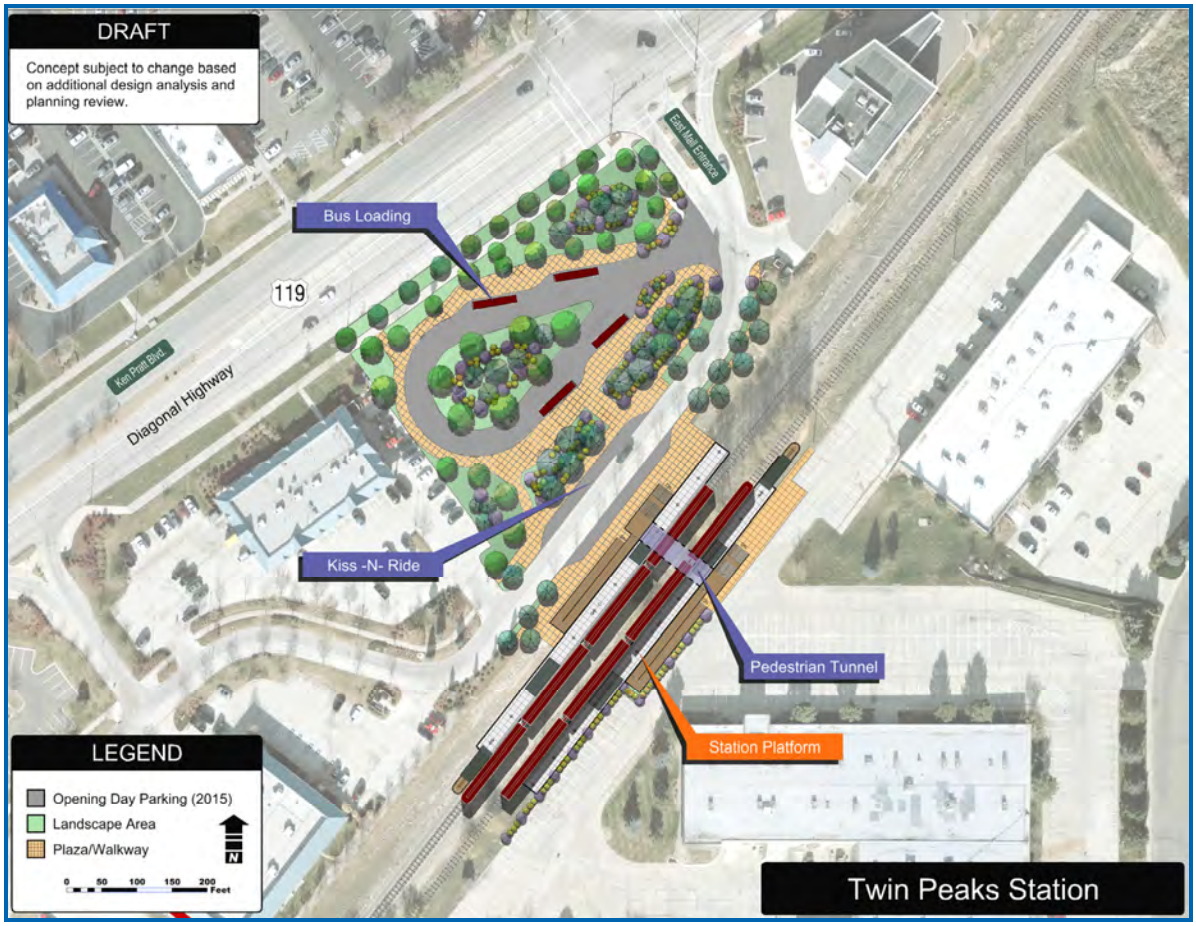
Source: NWR Corridor Project Team, 2009.

FIGURE ES-17. GUNBARREL STATION CONCEPT PLAN



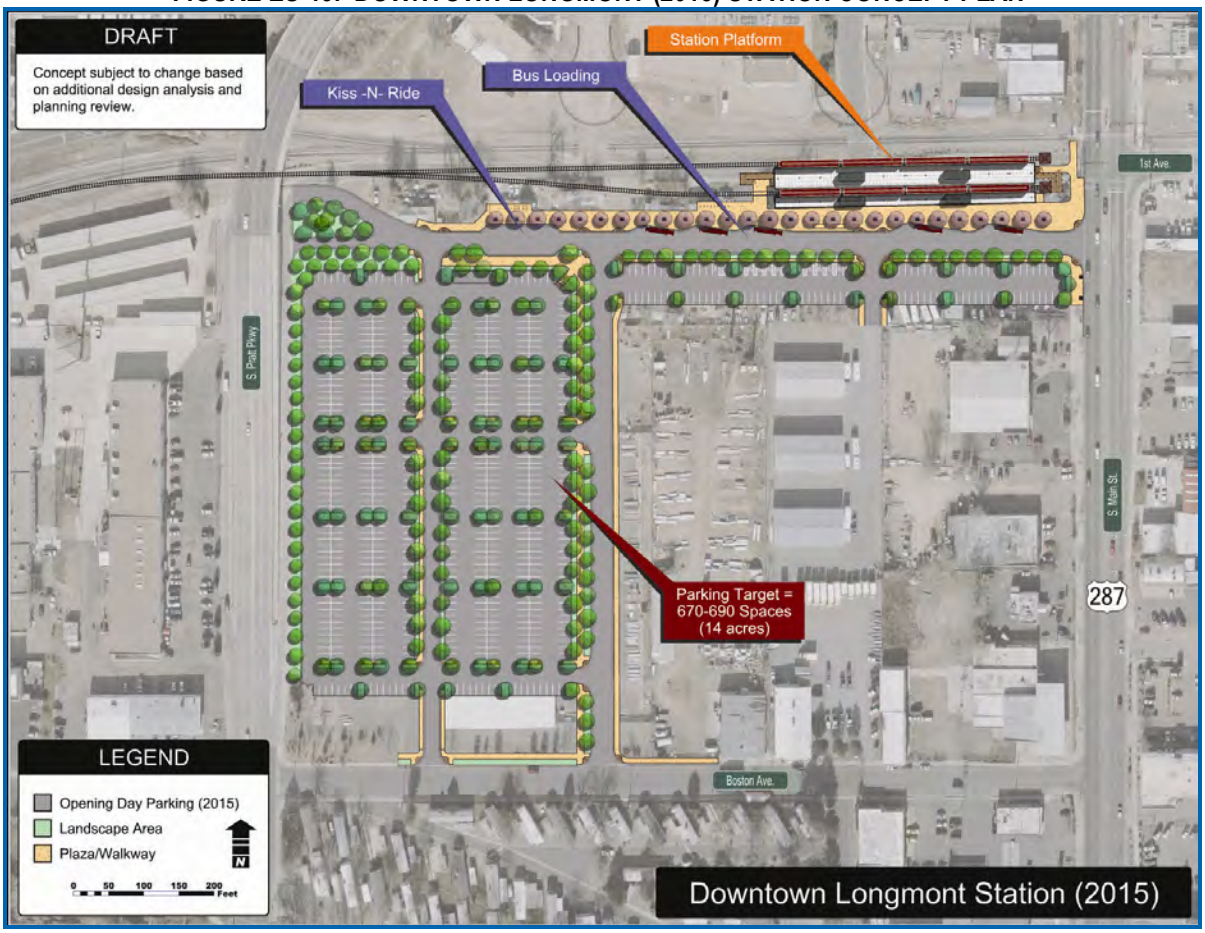
Source: NWR Corridor Project Team, 2009.

FIGURE ES-18. TWIN PEAKS STATION CONCEPT PLAN



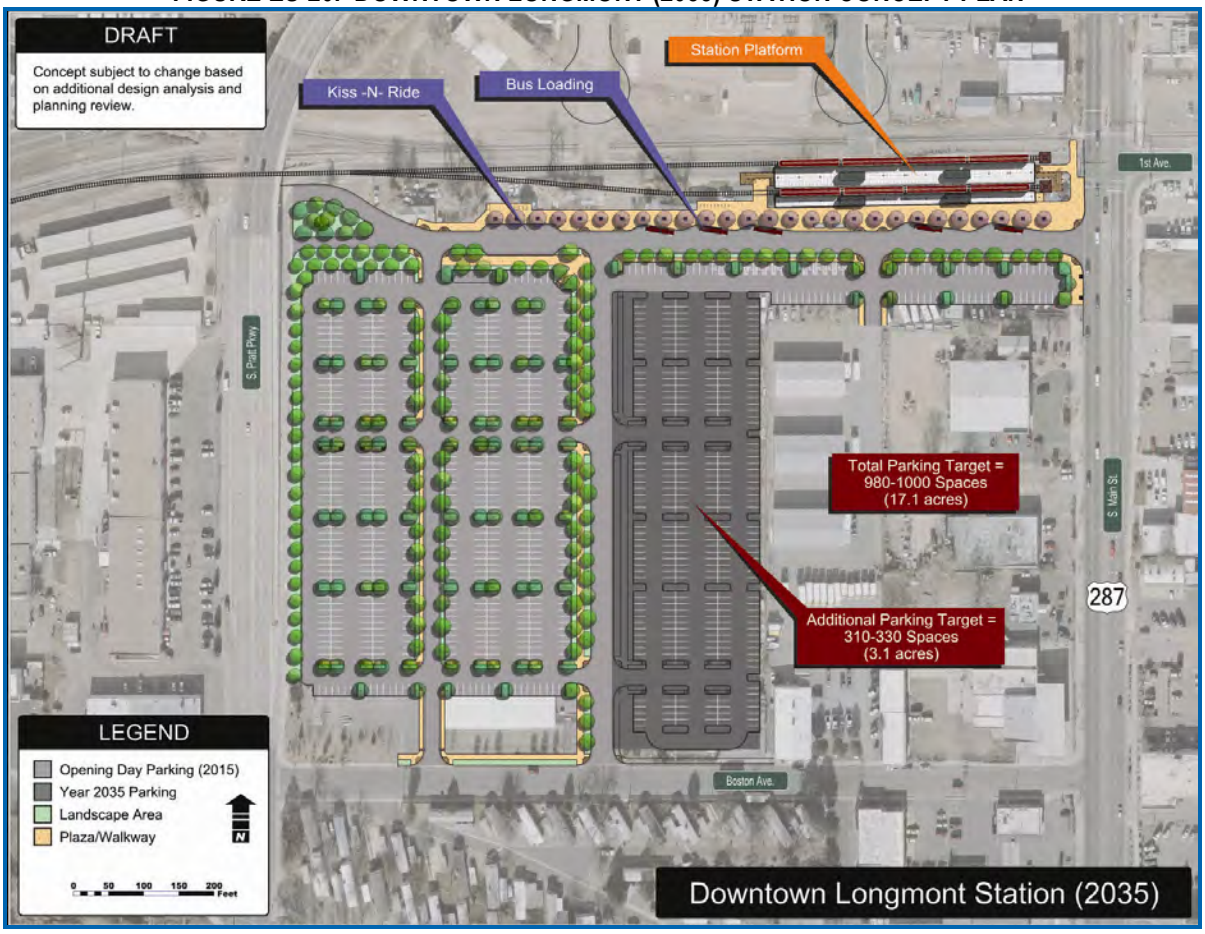
Source: NWR Corridor Project Team, 2009.

FIGURE ES-19. DOWNTOWN LONGMONT (2015) STATION CONCEPT PLAN



Source: NWR Corridor Project Team, 2009.

FIGURE ES-20. DOWNTOWN LONGMONT (2035) STATION CONCEPT PLAN



Source: NWR Corridor Project Team, 2009.

Evaluation and Selection of Station Architectural Styles: Further design refinement of the Preferred Alternative included identification of station typologies for the NWR Corridor Project. Recommended design typologies developed are depicted in Table ES-5.

TABLE ES-5. NORTHWEST RAIL CORRIDOR STATION TYPOLOGIES STYLE

Typology	Schematic Design
Neighborhood Craftsman	
Main Street Historic	
Town Center Contemporary	
Industrial Loft Modern	

Source: NWR Corridor Project Team, 2009.

Transit Improvements

The assumed bus operations for the Preferred Alternative would be the same for the No Action Alternative except that service on the BOLT would be reduced and rerouted to service the Boulder Transit Village Station, and the S route would be eliminated.

Roadway Improvements

The highway improvements assumed under the Preferred Alternative would be identical to those identified for the No Action Alternative.

ES.4.8 When will the train operate?

By 2015 the Preferred Alternative would provide 30-minute peak period service and 60-minute off-peak period service throughout the corridor (Denver to Longmont).

In 2035 the Preferred Alternative would provide 15-minute service in the morning and evening peak periods from Boulder to Denver and 30-minute service between Longmont and Boulder. Service would be provided at 30-minute headways at most other times throughout the corridor. Peak periods are defined as weekday mornings from 6:00 a.m. to 9:30 a.m. and weekday evenings from 2:30 p.m. to 7:30 p.m.

ES.4.9 What would the Preferred Alternative cost?

The capital and operational costs of the Preferred Alternative are included in Tables ES-6 & ES-7.

TABLE ES-6. CAPITAL COSTS

Preferred Alternative Element	Capital Cost* (2008 Dollars)
NWR Corridor Project with proposed FasTracks stations	$641.1 million
Shared Alignment Gold Line/NWR Corridor (DUS to Pecos Street)	$261.5 million[1]
Four Unfunded Stations	$100.3 million[2]
Total	**$1.0 billion**

Source: NWR Corridor Project Team, 2009.

Notes:

* These estimates represent the 2015 planning horizon.

1. The cost for the Shared Alignment segment, although illustrated in this estimate, will be funded as a FasTracks program-wide expense since the section from DUS to the Pecos Station will be shared jointly by the Gold Line, and the section from DUS to the Maintenance Facility will be used by the East and North Metro corridors.

2. Proposed unfunded station costs estimate the following capital cost per station:

– Westminster/88th Avenue Station: $52.9 million
– Broomfield/116th Avenue Station: $13.3 million
– East Boulder Station: $22.8 million
–Twin Peaks Station: $11.3 million

TABLE ES-7. OPERATING COSTS

Preferred Alternative Element	Annual Operations and Maintenance Cost* (2008 Dollars)
NWR Corridor Project with proposed FasTracks stations	$17.9 million
Shared Alignment Gold Line/NWR Corridor (DUS to Pecos Street)	
Four Unfunded Stations	$2.8 million
Total	**$20.7 million**

Source: NWR Corridor Project Team, 2009.

Notes:

* These estimates represent the 2035 planning horizon.

1. The cost for the Shared Alignment segment, although illustrated in this estimate, will be funded as a FasTracks program-wide expense since the section from DUS to the Pecos Station will be shared jointly by the Gold Line, and the section from DUS to the Maintenance Facility will be used by the East and North Metro corridors.

ES.4.10 Phased Implementation

Phase 1 would include construction from DUS to the South Westminster/71st Avenue Station (approximately Bradburn Boulevard). Phase 1 would be constructed as a component of RTD's Eagle P3 project. The Eagle P3 is a Public Private Partnership that will conduct final design and build RTD's East Corridor, the CRMF, Gold Line and this portion of NWR. Phase 1 would be in exclusive transit ROW, owned by RTD and would be EMU. Phase 1 includes a new grade separation where 64th Avenue would cross over the rail corridor. Future phases constructed beyond the South Westminster/71st Avenue Station would share ROW with freight operations and would require an operating agreement for RTD to use BNSF Railway Company's ROW. RTD is currently negotiating the purchase of ROW and operating agreements with the BNSF Railway Company. Because the Eagle P3 project includes EMU technology for the Gold Line and East Corridor projects, the Phase 1 Alignment would be electrified from DUS to the South Westminster/71st Avenue Station.

Future phases constructed north of the South Westminster/71st Avenue Station would be DMU. DMU technology would eventually operate seamlessly (sharing the track with the Phase 1 EMU) from DUS to downtown Longmont. See Figure ES-21 below for a depiction of the Phase 1 study area.

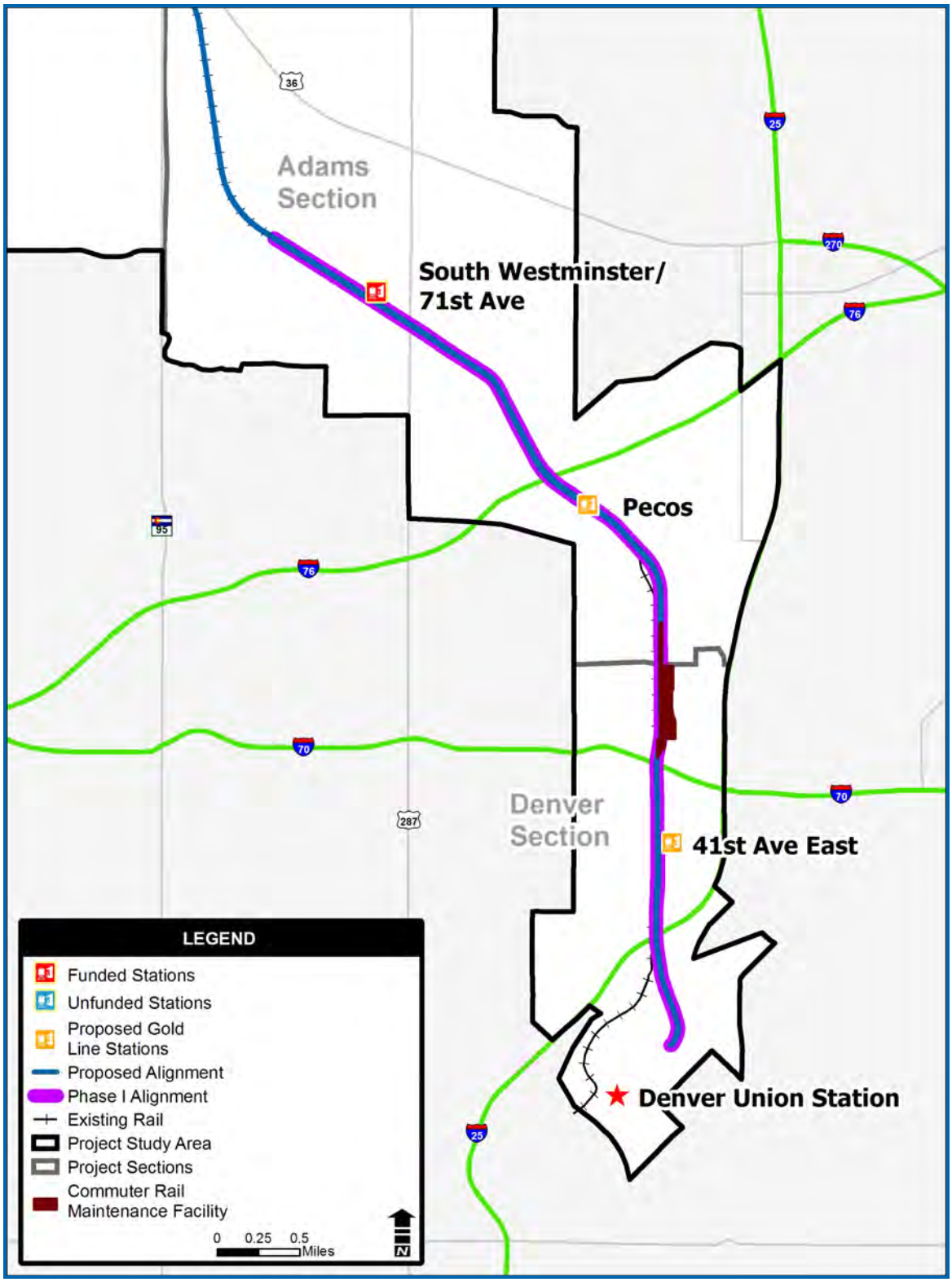
ES.4.11 Projects Linked to the NWR Corridor Project

Two projects that were conducted concurrently and are linked with the NWR Corridor Project are the Gold Line EIS and the Commuter Rail Maintenance Facility Supplemental Environmental Assessment (CRMF SEA). These proposed projects are to provide commuter rail from DUS in downtown Denver to Ward Road in Wheat Ridge, Colorado for Gold Line, and a CRMF to serve the FasTracks commuter rail system.

As indicated earlier, these projects share facilities with the NWR Corridor Project. The Gold Line shares track from DUS to Pecos Street, and the CRMF is located along this segment of track north of 48th Avenue and east of Fox Street in the City and County of Denver. Impacts from the track from DUS to Pecos Street and the CRMF are also part of the impacts of the Preferred Alternative for the NWR Corridor Project.

The CRMF SEA was distributed to the public in April 2009, and the Gold Line Final EIS, which was distributed to the public in August 2009, incorporated updates to the CRMF design and comments on the CRMF SEA document. The impacts documented in the CRMF SEA and in the Gold Line Final EIS are incorporated into this NWR EE document by reference. Subsequently, the Gold Line Project Team responded to comments on the Gold Line Final EIS and a ROD was issued by the FTA on November 2, 2009, marking the end of the project's planning process.

FIGURE ES-21. PHASE 1 STUDY AREA



Source: NWR Corridor Project Team, 2009.

ES.5 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

ES.5.1 What resources were considered?

Resources that were evaluated in the EE are listed below. Five key resources with impacts from the Preferred Alternative have been highlighted and include: land use, zoning, economic considerations, land acquisition, displacements and relocation of existing uses, noise, vibration, and wetlands. The impacts and the proposed mitigation of the Preferred Alternative are shown in Table ES-10 at the end of this Executive Summary under Section ES.8, Mitigation Measures.

- Social Impacts and Community Facilities
- Environmental Justice
- Land use/Zoning
- Farmlands
- Economic Considerations
- Land Acquisition, Displacements and Relocation of Existing Uses
- Historic, Archaeological, and Cultural Resources
- Visual and Aesthetic Qualities
- Parklands, Open Space and Recreational Resources
- Air Quality
- Energy
- Noise
- Vibration
- Biological Resources
- Mineral Resources, Geology and Soils
- Water Resources/Water Quality
- Wetlands and Other Waters
- Floodplains/Drainage/Hydrology
- Hazardous Materials
- Public Safety and Security
- Utilities
- Transportation Systems

ES.5.2 What kind of environmental effects will the project have?

Impacts to key resources are summarized below.

Locations of proposed stations would be generally consistent with planned future land use, zoning, and transportation plans.

Land Use, Zoning, and Economic Considerations

Land Use and Zoning

The intent of the land use and zoning evaluation is to determine that local land use planning around proposed station areas has been prepared to take advantage of the local transit investment. Because the proposed project involves an expansion of the existing rail line rather than construction of a new rail line, improvements are generally compatible with existing and future land uses. The conversion of existing land uses to rail facilities where ROW is currently constrained would primarily occur at the proposed station locations. And, due to the extensive level of proposed station area planning that has already been completed by municipalities, locations of proposed stations would be generally consistent with planned future land use, zoning, and transportation plans.

Implementation of the Preferred Alternative could provide an overall benefit to land use planning and help conserve land resources by promoting increased density at station locations over more consumptive, dispersed development practices. RTD will continue to work with local governments in supporting plans encouraging TOD, which is a compact and mixed-use residential or commercial area designed to maximize access to public transit.

Existing industrial uses and rail yards in Denver

Economic Considerations

Economic impacts of the Preferred Alternative are measured by effects to businesses and employees, and lost revenue from property taxes. During project development, the Preferred Alternative was modified to avoid and minimize impacts to businesses wherever possible. The Preferred Alternative would use the existing rail corridor, minimizing the amount of property required for acquisition. Station footprints were designed in coordination with local municipalities with efforts to minimize the need for business and employment relocations.

Station footprints were designed in coordination with local municipalities with efforts to minimize the need for business and employment relocations.

Even with these avoidance and minimization efforts, the Preferred Alternative would require the acquisition of 134.40 acres of property resulting in the relocation of 76 businesses and approximately 478 employees. Approximately $1,040,226 in annual property tax revenue would be lost as a result of property acquisition. However, potential development at stations associated with the Preferred Alternative could increase land values near the proposed stations and offset this loss of property tax revenue.

Existing industrial uses and railroad in Adams County

The Preferred Alternative would also generate 5,764 direct jobs over the 5-year construction period and would stimulate economic development at station sites.

Land Acquisition, Displacements, and Relocation of Existing Uses

Property acquisition is the result of the need to obtain property for public ROW for the construction of the Preferred Alternative. Concerns regarding property acquisition have been expressed by the public and project stakeholders during public involvement activities and have remained an important issue throughout project development.

Property acquisition and permitting would be a joint effort between the BNSF Railway Company and RTD. Unlike other FasTracks corridors, RTD would not own the entire ROW. Phase 1 of the project (from DUS to the South Westminster/71st Avenue Station) would be constructed as part of the Eagle P3 project. The Eagle P3 project is a Federal Transit Agency (FTA) pilot program that would allow RTD to retain a private contractor to design, build and operate the East Corridor, Gold Line and CRMF commuter rail projects. The Phase 1 portion of the NWR project would operate in exclusive transit ROW. The mainline track north of the South Westminster/71st Avenue Station would be located within BNSF Railway Company ROW to Downtown Longmont. Additionally, the BNSF Railway Company would complete final design, construct, and maintain this portion of the alignment. RTD would acquire, construct, and maintain the proposed station sites funded through the FasTracks program.

BNSF Railway Company ROW Behind Westminster Mall

The majority of property acquisition is associated with proposed stations and consists primarily of private property and slivers of public ROW.

The Preferred Alternative would require the acquisition of 134.40 acres of property, resulting in the relocation of 76 businesses and 16 residences. The majority of property acquisition is associated with proposed stations and consists primarily of private property and slivers of public ROW. The Downtown Louisville Station would impact 3.58 acres of the Louisville Sports Center for shared parking.

The acquisition of real property interests will comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act) and the Fifth Amendment of the United States Constitution. The Uniform Act applies to all acquisitions of real property or displacements of people resulting from federal or federally assisted programs or projects. In addition, all impacted owners will be provided notification of RTD and BNSF's intent to acquire an interest in property, including a written offer letter of just compensation specifically describing those property interests. A relocation analysis and relocation assistance advisory services will also be provided.

Broomfield Industrial Sports Complex

Noise

Noise is one of the principal environmental impacts associated with rail transit projects and has been defined as a public issue of concern throughout the NWR Corridor public involvement process. Prior to implementation of mitigation, the Preferred Alternative would result in both severe and moderate noise impacts at multiple residences

It is predicted that all of the severe noise impacts would be mitigated by implementing Quiet Zones to eliminate train horn noise at selected crossings.

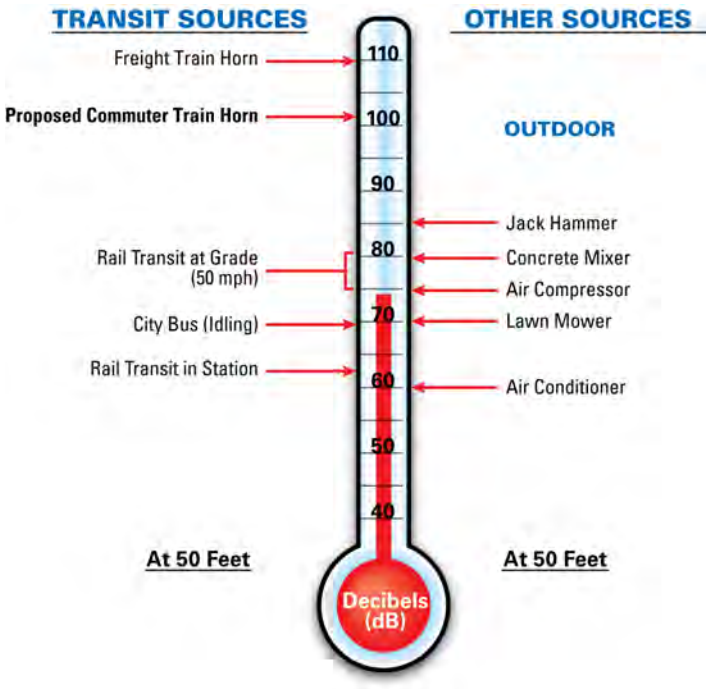
and institutional uses (museums, hospitals, day care centers, etc.) along the Northwest Rail (NWR) Corridor. The summary of severe and moderate impacts is provided in Table ES-8 below. The noise analysis accounted for all 11 stations that are part of the Preferred Alternative. However, because only seven of these stations are currently funded though the FasTracks program, the analysis also examined a scenario with only the seven funded stations for comparison.

TABLE ES-8. SUMMARY OF NOISE IMPACTS (WITHOUT MITIGATION)

		Preferred Alternative FasTracks Only (7 stations)		Preferred Alternative All Stations (11 stations)	
		2015	2035	2015	2035
Severe	Residential	538	723	583	828
	Institutional	8	9	8	9
Total Severe		**546**	**732**	**591**	**837**
Moderate	Residential	1,271	1,505	1,380	1,518
	Institutional	4	3	4	3
Total Moderate		**1,275**	**1,508**	**1,384**	**1,521**

Source: NWR Corridor Project Team, 2009.

It is predicted that all of the severe noise impacts would be mitigated (under either station scenario) by implementing Quiet Zones to eliminate train horn noise at select crossings between West 64th Avenue to State Highway (SH) 119. A Quiet Zone is an area where crossings of the rail line include sufficient safety mechanisms, so that trains are no longer required to sound their horns when crossing. Quiet Zones need to be implemented by local government through approvals from the Public Utilities Commission (PUC), Federal Railroad Administration (FRA), and the railroads. RTD is committed to assisting jurisdictions in the Quiet Zone application, but cannot itself submit the application to implement a Quiet Zone. Because implementation of Quiet Zones would eliminate horn noise from existing freight train operations (as well as from future commuter rail operations), the total horn noise exposure along the Quiet Zone would be significantly reduced from current conditions. Additionally, the Quiet Zone would be supplemented by noise barriers at three locations along the NWR Corridor.



It is expected that residual moderate noise impacts would remain in 2035 following the implementation of the Quiet Zone and noise barrier mitigation measures. However, the residual moderate impacts in 2035 would be limited to 235 residences for the all-stations scenario and to 89 residences for the FasTracks-only scenario. Moderate noise impacts in 2035 would also remain at four institutional uses under both the station scenarios.

Vibration

Vibration is a fine movement or low rumble that is radiated through the ground and is felt in the motion of room surfaces. The FTA impact criteria for a General Vibration Assessment are based on land use and train frequency and vibration impacts that exceed FTA criteria are considered to be significant and to warrant mitigation, if reasonable and feasible. Like the noise analysis, the vibration analysis also included a FasTracks-only scenario with 7 stations and an all-stations scenario with 11 stations.

Potential vibration impacts from NWR commuter trains in both opening year and 2035 are projected at 113 residences (for the FasTracks-only scenario) and 144 residences (for the all-stations scenario). The greater number of impacts for the all-stations scenario reflects higher speeds between stations needed to offset the delays from added station stops. In addition to the residential impacts, vibration impacts are projected at one school, one hotel and two day care facilities for both scenarios in both opening year and 2035.

Based on the current analysis, it is expected that the relocation or use of special hardware for selected turnouts could eliminate vibration impacts at 30 residences and three institutional uses. For the remainder of the impacts, the feasibility of track vibration isolation treatments would need to be investigated. The current General Vibration Assessment is likely to be somewhat conservative. A Detailed Vibration Analysis will be carried out to refine the impact assessment and mitigation recommendations during final design.

Wetlands and Other Waters of U.S.

Throughout the NWR EE process, the footprint of the Preferred Alternative was refined to avoid and/ or minimize impacts to wetlands.

Wetlands are defined by the U.S. Army Corps of Engineers (USACE) (33 Code of Federal Regulations [CFR] 328.3, 1986) and the US Environmental Protection Agency (40 CFR 230.3, 1980) as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” The protection of these areas is critical for maintaining the physical, chemical, and biological integrity of the waters within the United States.

Left Hand Creek

The USACE 404(b)(1) permitting process requires the consideration of all jurisdictional (J) wetlands and other water features impacted, including temporary construction impacts. As a result, the USACE considers a total of 4.91 J acres of wetlands and other water features to be impacted by the Preferred Alternative. Phase 1 of the Preferred Alternative is

considered by the USACE to impact 0.31 J acre of wetlands and other water features. A Nationwide Permit would be required for Phase 1 of this project and was issued by the USACE on 1 April 2010. An Individual Permit would be required for the remainder of this project, per Section 404 of the Clean Water Act.

Also per Section 404 of the Clean Water Act, impacts to wetlands and other water features must be avoided, minimized, or mitigated (in order of preference). Throughout the NWR EE process, the footprint of the Preferred Alternative was refined to avoid and/or minimize impacts to wetlands. All impacted wetlands and other water features will be mitigated in accordance with current USACE mitigation policies and in accordance with the USACE Section 404 Permit. In addition, all mitigation plans will be developed in coordination with the USACE and other appropriate agencies during the Section 404 permitting process. USACE requires mitigation for all impacts to jurisdictional wetlands and other water features, and focuses on maintaining existing levels of function. However, RTD policy requires 1:1 mitigation for all impacts, either jurisdictional or non-jurisdictional. All mitigation for the wetlands along the proposed alignment would be mitigated in accordance with USACE, RTD and local policies.

For the NWR EE process, wetlands and other water feature impacts, along with riparian buffers are categorized in terms of two categories: (1) direct and permanent; and (2) temporary construction. They are presented below.

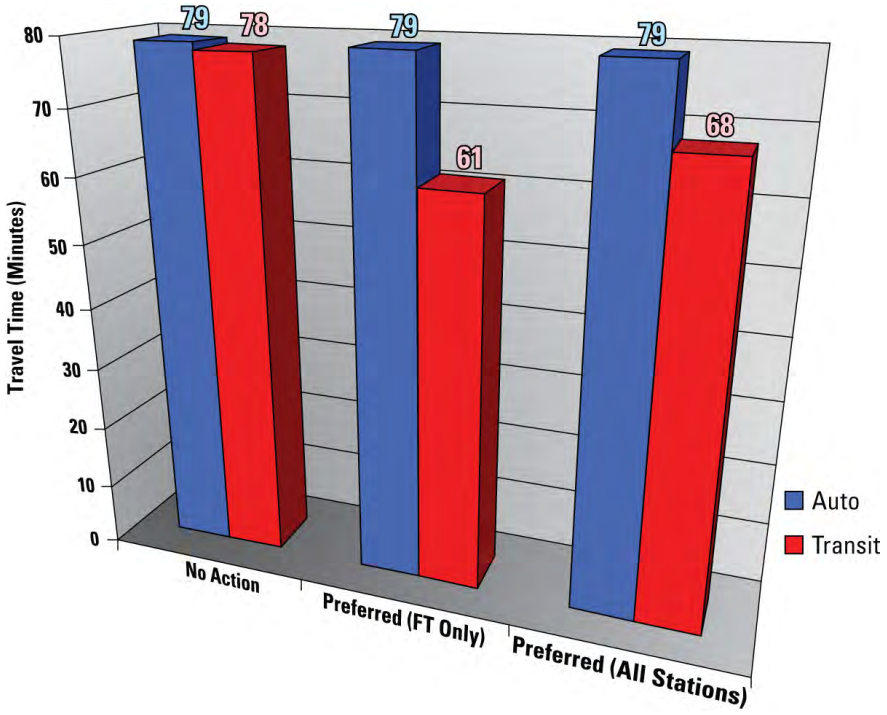
Related to the EE process, the Preferred Alternative would result in the direct, permanent impact of 6.15 acres (3.36 J and 2.79 non-jurisdictional [NJ]) of wetlands in the project study area. In addition, the project would result in direct permanent impact to 1.25 acres (0.79 J and 0.46 NJ) of other water features and 2.37 acres of impact to riparian buffers (an important consideration related to water quality). Jurisdictional waters of the United States are coastal waters, rivers, streams, lakes and other waters the Clean Water Act identifies as requiring a permit from the U.S. Army Corps of Engineers before dredged or fill materials can be put into them. Therefore, the Preferred Alternative would have a permanent impact on 4.15 J acres of wetlands and other waters of the United States. Construction of the Preferred Alternative would result in temporary impacts to.0.76 J acre of wetlands and other waters of the United States. It was determined that no impacts to waters of the US would result along the NWR Corridor Project between DUS and Pecos Street.

Jurisdictional waters of the United States are coastal waters, rivers, streams, lakes and other waters the Clean Water Act identifies as requiring a permit from the U.S. Army Corps of Engineers before dredged or fill materials can be put into them.

For Phase 1 a total of 0.06 J acre of wetlands and 0.07 J acre of other water features would be impacted by the Preferred Alternative. In addition, temporary construction impacts would occur to 0.07 J acre of wetlands and 0.11 J acre of other water features.

ES.6 TRANSPORTATION IMPACTS

This section summarizes how the Preferred Alternative would affect future transit, roadways, freight rail, bicycle and pedestrian facilities, and parking in the NWR Corridor Project study area. The picture below indicates the travel time savings for NWR users in the early morning rush hour.



2035 A.M. Peak Hour Travel Times (Longmont to DUS)

The following summarizes the primary mobility improvements and benefits of the Preferred Alternative that address the NWR Project Purpose and Need.

ES.6.1 What transit benefits would the Preferred Alternative provide?

The Preferred Alternative would provide new high-capacity commuter rail service to areas in the NWR Corridor generally along US 36 and SH 119 and meet the Purpose and Need of the project. Such service would enhance regional connectivity and reinforce regional transit plans.

Location of Proposed Downtown Longmont Station

The Preferred Alternative would provide a reliable transit option to congested roadway travel and offer improved travel times. Estimated transit travel time in the early morning peak hour in 2035 for the Preferred Alternative from the Downtown Longmont Station at 1st Avenue/Terry Street to DUS is 61 minutes with FasTracks-only stations and 68 minutes with all stations. The projected auto travel time from 1st Avenue/Terry Street in Downtown Longmont to DUS is 79 minutes along I-25 in general travel lanes.

The assumed bus operations for the Preferred Alternative would be the same as for the No Action Alternative except that service on the BOLT would be reduced so as not to compete with the new NWR Corridor rail line, and the S route would be eliminated. Existing bus routes would be routed to provide service to the proposed commuter rail stations.

Estimated transit travel time in the early morning peak hour in 2035 for the Preferred Alternative from the Downtown Longmont Station to DUS is 61 to 68 minutes while projected auto travel time is 79 minutes along I-25 in general travel lanes.

The Preferred Alternative would serve between 8,400 and 12,100 rail riders daily.

The Preferred Alternative would provide service to 8,400 rail riders under the funded FasTracks program scenario and 12,100 riders including the unfunded stations during an average weekday in 2035.

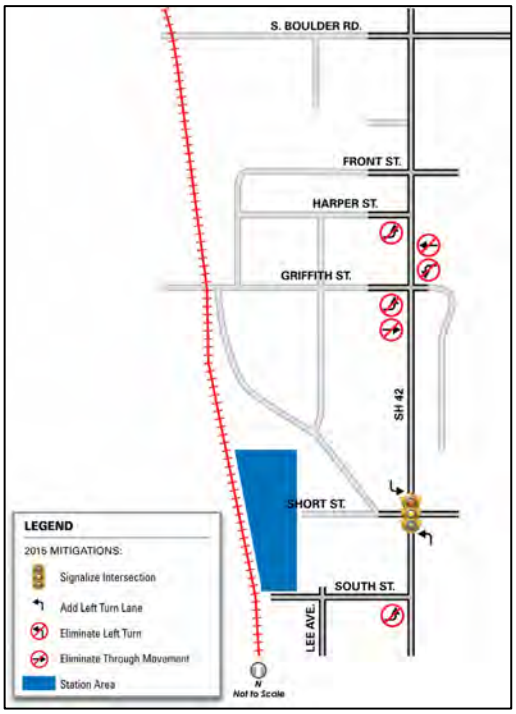
ES.6.2 How will the improvements affect existing roadways in the study area?

The Preferred Alternative would reduce regional VMT by approximately 4,710 miles per day. Implementation of the NWR Corridor would have impacts on local roadways as a result of ridership and associated parking demand. The EE forecast those impacts and made recommendations on mitigation measures for them.

The following summarizes the mitigation required for station areas.

Diagonal Highway

- South Westminster/71st Avenue: The station access intersection at Federal Boulevard would be signalized (2015). The southbound right turn lane will be converted into a shared through/right lane at the Federal Boulevard/70th Avenue intersection (by 2035). At the Federal Boulevard/71st Avenue intersection, the left turn from eastbound 71st Avenue to northbound Federal Boulevard will be prohibited (by 2035).
- Westminster Mall/88th Avenue: A westbound left turn lane will be added at the Harlan Street /Mall Access intersection (2015).
- Broomfield/116th Avenue: The Teller Street/120th Avenue intersection will be signalized (2015).
- Downtown Louisville: No project specific mitigation is required for the Downtown Louisville Station if the proposed improvements along SH 42[1] are constructed prior to the construction of the station. If the SH 42 improvements are not made prior to the construction of the station, the following mitigation measures will be made. Each mitigation is consistent with the recommendations in the *State Highway 42 Traffic & Access Study* (City of Louisville 2007).



Downtown Louisville Station Mitigations

  - Harper Street/SH 42: The eastbound left turn would be eliminated (2015).
  - Griffith Street/SH 42: The eastbound and westbound left turns, as well as the through movements would be eliminated (2015).
  - Short Street/SH 42: Northbound and southbound left turn lanes will be striped onto the existing pavement at Short Street. The east leg of the intersection will be constructed and the intersection is proposed to be signalized (2015).

[1] Proposed improvements are detailed in the State Highway 42 Traffic and Access Study (February 9, 2007)

- South Street/SH 42: The eastbound left turn would be eliminated (2015).

- East Boulder: The West access/Arapahoe Avenue intersection will have left turns prohibited from minor streets (2015), and the East access/Arapahoe Avenue intersection will be signalized (2015). A northbound right turn lane will be added to the intersection of Westview Drive/Arapahoe Avenue (2015).

Boulder Transit Village

- Boulder Transit Village: The 30th Street/Bluff Street intersection will be signalized (2015).

- Downtown Longmont: The Main Street/Boston Avenue intersection will be signalized (2015). An eastbound left turn lane on Boston Avenue would be added at the Pratt Parkway/Boston Avenue intersection in 2015, and by 2035 that intersection will be signalized.

ES.6.3 What railroad/roadway crossing improvements would be made?

Railroad Crossing Improvements

The majority of improvements to at-grade crossings under the Preferred Alternative include providing either dual gates with a raised median or quad gates (gates on all lanes to provide full closure), if the crossing does not already have these elements installed. See below for more details on improvements at railroad crossings.

At-Grade Crossing Roadway Improvements

The following summarizes the mitigation required for at-grade roadway crossings of the railroad in the year 2035:

West 72nd Avenue and Bradburn Boulevard

- Add a left turn lane with 150 feet of storage to the southbound approach of Bradburn Boulevard at 72nd Avenue. The approach would consist of one left turn lane and one shared left/right turn lane.

- Widen 72nd Avenue east of Bradburn Boulevard to six lanes by adding one westbound right turn lane and converting the two-way left-turn lane (TWLTL) to a westbound through lane. The widened segment of 72nd Avenue would consist of three westbound through lanes, a westbound right turn lane and two eastbound through lanes east of Bradburn Boulevard.

- Widen 72nd Avenue between Bradburn Boulevard and Raleigh Street to six lanes, adding one westbound through lane and one eastbound left-turn lane. The TWLTL

would be converted into a westbound left turn lane. The widened segment of 72nd Avenue would consist of two westbound through lanes, one westbound left-turn lane, two eastbound through lanes and one eastbound left turn lane.

- Change the westbound left turn signal phase of the 72nd Avenue/Raleigh Street intersection from permissive only, to protected/permissive.

- Interconnect all signals, including the four on 72nd Avenue and one on Bradburn Boulevard, into one coordinated signal system. Optimize the signal timing to reduce overall corridor delay and queue lengths.

- The widening of roadways and addition of new pavement in the mitigations would require property acquisition. Specific locations of acquisition would be identified during the design process of proposed mitigations.

South Boulder Road

Mitigations tested would not completely eliminate the traffic queues on South Boulder Road in both directions between the rail crossing and Centennial Drive. It is expected that railroad priority or preemption controls would likely be effective in eliminating the problem; however, the standard software used for analyzing FasTracks corridor traffic impacts is not sophisticated enough to test such signal controls. It is therefore recommended a more detailed study be undertaken at this location using more sophisticated software to perform further study of railroad priority/preemptions controls. If such controls prove to be ineffective, corridor capacity improvements along South Boulder road should be evaluated.

Niwot Road and 2nd Avenue

- Construct an additional through lane approximately 500 feet in length along northbound Diagonal Highway approaching Niwot Road.

- Construct an additional lane along northbound Diagonal Highway between Niwot Road and 2nd Avenue (approximately 1,000 feet). The additional lane would become a right turn lane at 2nd Avenue.

- Re-stripe westbound Niwot Road between the railroad crossing and northbound Diagonal Highway to provide a though lane and a shared through/right turn lane.

- Interconnect all four signals to operate at one coordinated system and optimize the signal system.

- The widening of roadways and addition of new pavement in the mitigations would require property acquisition. Specific locations of acquisition would be identified during the design process of proposed mitigations.

Mineral Road (SH 52)

In the DRCOG 2035 Metro Vision Regional Transportation Plan, CDOT has identified an interchange construction project at the Mineral Road (SH 52) and Diagonal Highway (SH 119) intersection. The proposed interchange includes a grade-separation of SH 52 and SH

119. However, funding for the interchange has not been fully identified. In the absence of the interchange project moving forward, potential mitigation measures for the interim at-grade condition were studied.

- Eastbound approach on Mineral Road (SH 52): Construct a second left turn lane with 300 feet of storage, and a second through lane. The widened approach would consist of two left turn lanes, two through lanes and one right turn lane. These improvements would require the widening of pavement for this approach. The second through lane would extend across Diagonal Highway (SH 119) and the rail crossing and would become a right turn lane at the intersection of Mineral Road/71st Street.

- Westbound approach on Mineral Road (SH 52): Construct a second left turn lane, a second through lane and a right turn lane. The widened approach would consist of two left turn lanes, two through lanes and a right turn lane.

- Northbound approach on Diagonal Highway (SH 119): Construct two additional through lanes. The widened approach would consist of two left turn lanes, four through lanes, and one right turn lane. The four through lanes would extend through the Mineral Road intersection. The additional lanes would end a maximum of 1,000 feet north of the intersection, with only two lanes continuing north along Diagonal Highway.

- Southbound approach on Diagonal Highway (SH 119): Construct one additional left turn lane with 300 feet of storage and two additional through lanes. The widened approach would consist of two left turn lanes, four through lanes and one right turn lane. The four through lanes would extend through the Mineral Road intersection. The additional lanes would end a maximum of 1,000 feet south of the intersection, with only two lanes continuing south along Diagonal Highway.

- Optimize the signal system.

- The traffic signal should be coordinated with the Mineral Road rail crossing.

These extensive intersection improvements proved insufficient in eliminating queue spillbacks between the intersection of SH 52/SH 119 and the railroad crossing. RTD will work with CDOT to identify funding possibilities for implementing CDOT's proposed interchange project.

ES.6.4 What parking would be provided?

As a result of the Preferred Alternative, parking will be provided at stations as indicated in Table ES-9.

TABLE ES-9. PREFERRED ALTERNATIVE STATION AREA PARKING IN 2015 AND 2035

Station	Opening Day 2015 Parking Spaces[1]	Parking Spaces Added by 2035	Total 2035 Parking Spaces
Funded Stations			
South Westminster/71st Avenue	925	0	925 surface spaces
Walnut Creek[2]	240	0	240 surface spaces
FlatIron	264	0	264 surface spaces
Downtown Louisville[4]	425	0	425 surface spaces
Boulder Transit Village	290	0	290 surface spaces
Gunbarrel	230	0	230 surface spaces
Downtown Longmont	590	435	1,025 surface spaces
Funded Subtotal	**2,964**	**435**	**3,399 surface spaces**
Unfunded Stations			
Westminster/88th Avenue[3]	1,055	0	1,055 surface spaces
Broomfield/116th Avenue	350	0	350 surface spaces
East Boulder	530	0	530 surface spaces
Twin Peaks[3]	100	250	350 surface spaces
Unfunded Subtotal	**2,035**	**250**	**2,285 surface spaces**
Corridor Total	**4,999**	**685**	**5,684 surface spaces**

Source: NWR Corridor Project Team, 2009.
Notes:
[1]Number of spaces represents average of FasTracks targets in concept plans.
[2]The Walnut Creek Station is a joint NWR/US 36 BRT station; the parking spaces shown here are for the NWR Corridor Project (not US 36 BRT)
[3]Twin Peaks and Westminster/88th Avenue stations are expected to have shared parking with the redeveloped mall adjacent to each station —no RTD-funded/managed spaces.
[4] The use of parking at the Louisville Sports Complex is dependent on an agreement between Louisville, Lafayette, and Boulder County.
US 36 BRT = United States Highway 36 Bus Rapid Transit
RTD = Regional Transportation District

ES.6.5 What are the impacts to freight operations?

The Preferred Alternative would allow for shared use of tracks for freight rail operations. It is estimated that there would be negligible effects on freight rail operations. There would be no at-grade crossings (rail to rail) of freight tracks. Details of impacts to freight operations will be further defined once RTD and BNSF have final negotiations for the operations agreement.

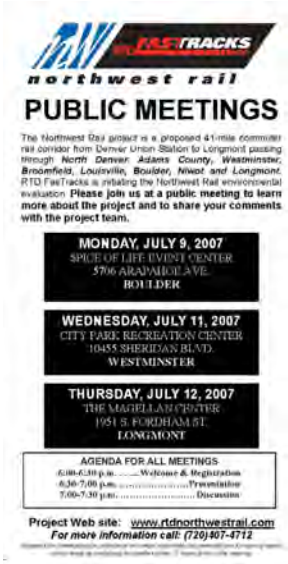
ES.6.6 How will bicyclists and pedestrians access the rail?

Connectivity between stations and bicycle and pedestrian facilities is essential to providing multi-modal connectivity at station locations. The Preferred Alternative would not permanently impact existing pedestrian and bicycle facilities and would not preclude the development of planned pedestrian and bicycle facilities in the vicinity of the proposed alignment and stations. Some trails may be temporarily impacted due to construction, but would be mitigated by providing temporary detours. Any necessary detours and closures

would be coordinated with the appropriate jurisdictions. Detours which have been agreed to as of February, 2010 appear in Appendix C, Agency and Public Coordination.

ES.7 COORDINATION, CONSULTATION, AND COMMENTS

ES.7.1 How has the public been involved with this project?



NWR Public Meeting Newspaper Ad

Between 2007 and 2010 an extensive public involvement program has been conducted for the NWR Corridor Project to engage the public and stakeholders in an exchange that would be both informative and solicit comments. More details on the public involvement process and its history are provided in Chapter 5, Public Comment and Agency Coordination.

The public involvement for the NWR Corridor EE built on the recommendations from previous studies to implement commuter rail along the BNSF Railway Company alignment between Denver and Longmont. The NWR Corridor EE public involvement focused on five key project milestones which included:

Milestone #1: Project Initiation
Milestone #2: Commuter Rail Vehicle Technology
Milestone #3: Special Issues – Station Planning, Fencing, and Noise/Quiet Zones
Milestone #4: Preferred Alternative, Impacts, and Mitigation
Milestone #5: Review of Draft NWR Corridor EE

During the NWR Corridor EE process numerous pieces of informational materials were distributed to keep the public informed of project progress starting in June 2007. Materials distributed included newspaper ads, radio announcements, flyers, meeting invitations and newsletters. Materials were distributed in both hard copy and electronic format (via e-mail).

Formal project initiation (Milestone #1) occurred with a series of public meetings that were held in July 2007 in Boulder, Westminster and Longmont. There were 372 individuals that attended these meetings.

July 2007 Open House at NWR Corridor Project Kick-off Meeting

A second series of public meetings (Milestone #2) occurred in September 2007 held in Broomfield, Denver and Gunbarrel/Boulder that reinitiated evaluation of commuter rail vehicle technology and solicited input regarding the evaluation.

In addition, several other public involvement activities were conducted with smaller groups of stakeholders to address specific concerns (Milestone #3). For example, meetings were held that focused on station planning, fencing, and

noise/Quiet Zones. A total of over 30 small group public outreach meetings were conducted between July 2007 and April 2010.

Prior to the NWR Corridor Draft EE being released, the NWR Governments Team (NWR GT) and regulatory agencies were afforded an opportunity to comment on the impacts and mitigation measures proposed to address impacts associated with the Preferred Alternative (Milestone #4).

Following the release of the Draft EE, corridor-wide public meetings and associated small group outreach meetings occurred to present the Draft EE to the public including the results of the impacts and analysis and proposed mitigations, and to collect input from members of the public on the document (Milestone #5).

Extensive public outreach was also conducted to engage environmental justice communities (minority and/or low income populations). Project publicity materials were distributed in both Spanish and English. Numerous meetings with Spanish speaking groups and Spanish radio announcements and interviews were broadcast. A total of over 90 outreach efforts with environmental justice communities and groups were conducted between September 2007 and November 2009. These efforts included one-on-one meetings, small and large group meetings, flyer distributions, television and radio programs, and information tables at fairs.

ES.7.2 How have agencies been involved?

Numerous agencies have been involved during the NWR Corridor EE process. Three primary groups of agencies involved include:

- State and Federal Resource and Regulatory Agencies
- NWR Governments Team (NWR GT)
- NWR Fencing Committee

State and Federal Resource and Regulatory Agencies: In keeping with the intent of the Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU), RTD proactively coordinated with state and federal resource and regulatory agencies. Agency involvement occurred to identify any issues of concern regarding the project's potential social, environmental, or community impacts or any issues that could substantially delay or prevent an agency from granting a permit or other approval needed for the project.

To date, a total of three meetings occurred with the state, federal and regulatory agencies during the NWR Corridor EE process, between July 2007 and September 2009.

NWR Governments Team (NWR GT): The NWR GT consists of elected officials and technical staff representatives from NWR Corridor communities. It also includes members representing other neighboring communities, local, state and federal agencies, and community organizations. The NWR GT serves several functions, including the identification of project-related issues requiring further study, the provision of input into study recommendations and technical analyses, and consideration of public input. Overall, the NWR GT provides an important mechanism for communicating the interests, concerns, and

ideas of the communities along the NWR Corridor to the Project Team and RTD decision makers.

For major milestones, the NWR Corridor Project Team took the following approach to ensure that local government input informed RTD decision making in a timely and relevant manner:

- First, the Project Team presented preliminary recommendations to the NWR GT.
- Then, corridor-wide workshops or stakeholder meetings were conducted to gather public input about the proposed recommendations.
- Finally, the Project Team returned to the NWR GT to either finalize or comment on the study recommendations before forwarding them to the RTD Board of Directors for consideration.

To date, a total of nine NWR GT meetings took place during the NWR Corridor EE process between July 2007 and September 2009. In addition, small group meetings were held with representatives from local jurisdictions for the purposes of information sharing on specific issues. Over 50 meetings (briefings and coordination) were conducted between July 2007 and September 2009.

NWR Fencing Committee: A subgroup of the NWR GT, the NWR Fencing Subcommittee, was formed to address major issues pertaining to RTD's fencing policy. A total of three Fencing Subcommittee meetings took place during the NWR Corridor EE process between May 2008 and March 2009.

ES.7.3 What issues or comments have been most common among the community?

Table ES-10 below highlights the comments received from the public and stakeholders during the NWR Corridor EE process. See Appendix G: Response to Comments for comments received during the formal comment period that occurred between 26 February 2010 and 29 March 2010.

TABLE ES-10. TOP PUBLIC COMMENT ISSUES FOR NORTHWEST RAIL CORRIDOR PROJECT

Issue	Description	Response
Noise /Mitigation Measures	Most comments in this category addressed concerns about elevated noise and vibration levels in their respective areas, and advocated for the appropriate mitigation measures to address noise. Many of these comments supported Quiet Zones as a mitigation measure.	The NWR Project Team conducted noise analysis to determine the significance of noise impacts throughout the corridor and proposed the appropriate mitigation strategies. These strategies were also coordinated with an overall RTD FasTracks programmatic effort to address noise.
Stations	Most comments indicated support for the station locations; some advocated for the inclusion of the un-funded stations; some identified specific impacts related to stations; and others requested station plans or other station related information.	The Project Team worked closely with the communities to develop and continuously refine station concept plans, which were ultimately supported by each of the NWR corridor jurisdictions.

TABLE ES-10. TOP PUBLIC COMMENT ISSUES FOR NORTHWEST RAIL CORRIDOR PROJECT

Issue	Description	Response
Cost/Funding	Many comments addressed the budget shortfall for funding the FasTracks program and how that related to Northwest Rail. Later in the project, comments focused on the programmatic decisions regarding how to pursue funding.	The Project Team periodically updated the public about RTD strategies for meeting funding challenges and how programmatic efforts related to Northwest Rail.
Project Schedule	Most comments in this category supported project completion and opening day in 2015.	The Project Team periodically updated the public about the project schedule and worked towards keeping the project on schedule.
Right-of-Way/ Property Impacts	Comments in this category addressed individual property impacts and requested responses related to specific properties along the corridor.	Project Team members continually communicated and met with property owners along the rail line to provide them with the most up-to-date information about how their properties would (or would not) be impacted.
Community Impacts	Many of these comments supported the benefits that this project will bring into their communities and for their families. Some questioned the need for the project and expressed concern for impacts that NWR may have (i.e. noise levels, property values, disrupting the current community way of life).	The Project Team presented the project at corridor-wide public meetings around the project kick-off, and subsequent milestones. Environmental and traffic impact analyses were conducted to determine the impacts and proposed mitigations for the project which were presented in the Draft EE. These impacts and proposed mitigations were communicated to the public and public comments are taken into consideration for the Final EE. Additionally, responses to comments received on the Draft EE have been provided in the Final EE.
Public Involvement	Most comments supported the public involvement process for the project. Many expressed support for frequent and substantive public communications.	Corridor-wide public meetings were held at major milestones to review project developments and elicit public comment. These meetings were held at project kick-off; technology selection; Gunbarrel Station site selection; stations, alignment, impacts/mitigations, and release of the Draft EE. Small group outreach meetings were conducted on an on-going basis throughout the study. Newsletters, email communications, and Web site postings were also provided on a regular basis to keep the public informed.
Vehicle Technology	Most comments in this category supported the selection of EMU technology over DMU for the commuter rail vehicles.	Public comment was summarized and provided to the RTD Board of Directors to be considered for their decision.
Community Preference	Most comments expressed general support for the project. Others expressed support for US 36 BRT over NWR rail service.	Public comment was solicited throughout the project and these comments were taken into consideration for RTD decision making.

TABLE ES-10. TOP PUBLIC COMMENT ISSUES FOR NORTHWEST RAIL CORRIDOR PROJECT

Issue	Description	Response
Transit Ridership	Some comments in this category expressed concern about the projected ridership numbers in relation to the project cost. Some comments indicated interest in riding Northwest Rail on a regular/daily basis and inquired about projected operating plans.	All comments were responded to by RTD to keep the public informed about the latest ridership projections and project costs. Those inquiring about operations information were responded to with the most up-to-date information.

Source: NWR Corridor Project Team, 2009.

ES.7.4 How can we provide effective input to RTD?

The Draft NWR Corridor EE was distributed to the public for review and comment on 26 February 2010. Announcements were provided via the various publicity material distribution methods including local newspaper ad, radio announcement, emails, flyers and postings on the project website. NWR Corridor Project public meetings occurred in March of 2010. Once the draft NWR Corridor EE was made available, a formal 30-day public comment period ensued. During this period a series of public meetings were conducted for the primary purpose of reviewing the NWR Corridor EE findings, including impacts and proposed mitigation, and gathering and recording public comments. At the public meetings, verbal comments were recorded. See Appendix G: Response to Comments, for the summaries of public meetings and a matrix compiling responses to comments received during the formal comment period that occurred between 26 February 2010 and 29 March 2010.

This Final EE will be made available to the public on the project Web site. Copies of the document will also be made available to the public at the following locations:

Denver

- Denver Public Library – Central Library
  10 West 14th Avenue Parkway
  Denver, CO 80204
- RTD FasTracks
  1560 Broadway, Suite 700
  Denver, CO 80202

Adams County

- Adams County Planning & Development
  12200 N Pecos Street
  Westminster, CO 80234

Westminster

- Westminster Public Library
  College Hill Branch
  3705 West 112th Avenue
  Westminster, CO 80031

Longmont

- Longmont Public Library
  409 4th Avenue
  Longmont, CO 80501

Louisville

- Louisville Public Library
  951 Spruce Street
  Louisville, CO 80027
- 36 Commuting Solutions
  287 Century Circle, Suite 103
  Louisville, CO 80027

Boulder

- City of Boulder Transportation & Planning
  1739 Broadway Blvd. 2nd Floor
  Boulder, CO 80306

Broomfield

- City and County of Broomfield
  Community Development
  1 DesCombes Drive
  Broomfield, CO 80021

Online

www.RTD-FasTracks.com

METHODS FOR THE PUBLIC TO KEEP INFORMED AND REMAIN INVOLVED

- Visit the RTD FasTracks Web site for the current information about the project
- Submit a comment by phone, email, mail or through the project Web site
- Request a meeting with your organization
- Call the RTD FasTracks information line

HOW YOU CAN CONTACT US

- Web site: www.RTD-FasTracks.com
- Email: nwrail@RTD-FasTracks.com
- Phone: (303) 299-2000
- Mail Comments to:

  RTD FasTracks Northwest Rail
  1560 Broadway, Suite 700
  Denver, CO 80202

ES.8 IMPACTS AND MITIGATION MEASURES

Table ES-11 provides a summary of impacts and mitigation measures described in greater detail in Chapter 3, Affected Environment and Environmental Consequences. The table is organized as follows:

Direct Impacts: Effects that occur immediately with implementation of the proposed action.

Direct impacts assocated with the Preferred Alternative are presented based on the following categories:

NWR Corridor Alignment – Impacts that would result from implementation of the track alignment north of the South Westminster/71st Station to Longmont.

Proposed Stations – Impacts that would result from implementation of the station platforms and associated park-n-Rides. Both funded and unfunded stations are included in the impact analysis. Impacts associated with the South Westminster/71st Station are included in Phase 1, because this station would be constructed as part of Phase 1.

Phase 1 – Impacts that would result from implementation of the project between DUS and the South Westminster/71st Street Station. Phase 1 would be constructed first, as part of RTD's Eagle P3 project.

Indirect Impacts: Impacts caused by the proposed action later in time or impacts further removed in distance but reasonably foreseeable. For example, transit-oriented development may develop over time near stations to serve the needs of transit commuters.

Temporary Construction Impacts: Temporary construction impacts have been included for consideration in this analysis. These impacts result from the actual construction of the proposed action and may include, but are not limited to, noise, dust, clearing and excavation, visual change, and traffic congestion from construction equipment.

Cumulative Impacts: Results of the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or organization undertakes those actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. See Appendix B, Programmatic Cumulative Effects Analysis, for more details.

Mitigation Measures: Describes mitigations that will be implemented to avoid, minimize, or compensate for impacts. Note that Phase 1 mitigations are called out separately.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Social Impacts and Community Facilities	
NWR Corridor Alignment and Proposed Stations Direct Impacts – With the combination of Quiet Zones and the noise barrier mitigation proposed, residual moderate noise impacts would remain at 235 residences and 4 institutional uses in 2035. – Preferred Alternative would provide a benefit to approximately 128,000 residents in neighborhoods within 0.5 mile of proposed transit stations by offering an alternative mode of transportation. – Preferred Alternative would benefit community services located within 0.25 mile of the proposed stations and serving populations with limited access to personal vehicles. – Preferred Alternative would require acquisition and relocation of the Boulder Emergency Squad, an emergency response organization that provides supplemental assistance to other emergency response providers and whose service area includes all of Boulder County.	– The Boulder Emergency Squad facility will be relocated in compliance with the Uniform Relocation Assistance and Real Property Act of 1970 (Public Law 91-646, 84 Stat.1894) as amended. To the greatest extent possible, the Boulder Emergency Squad will be relocated along a major arterial or highway to maintain easy access for responding to emergencies. – Refer to mitigations below for Land Acquisition, Displacements, and Relocation of Existing Uses, for additional information on relocation procedures. – Noise walls and quiet zones will be implemented to mitigate noise impacts and are described below for Noise and Vibration.
Phase 1 Direct Impacts – Implementation of Phase 1 would not require acquisition of community facilities. Phase 1 would not bisect residential areas along the alignment from DUS to South Westminster/71st Avenue Station. Two residual moderate level noise impacts would occur in the Adams Section.	– No mitigation required.
Preferred Alternative Indirect Impacts – Preferred Alternative could increase population density within 0.5 mile of proposed station areas due to TOD and higher density development. These changes are supported by local and regional plans.	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Temporary Construction Impacts – During the 5 year construction phase, neighborhoods would experience increased congestion and out-of-direction travel, dust, increased noise levels, and visual impacts due to construction materials storage and activities. – Harris Park Elementary school in Adams County would temporarily be affected by detours, the movement of construction materials and equipment, and increases in noise levels, vibration, and dust.	– Working with the communities, RTD will prepare a Construction Management Plan that specifies public communications and construction means and methods to reduce or mitigate the inconveniences of construction such as noise, dust, visual blight, construction traffic, and preservation of access to homes, businesses, and community facilities. – RTD will coordinate with impacted neighborhoods prior to and during construction activities. – Refer to mitigation for Transportation Systems – Refer to mitigation for Noise and Vibration – Refer to mitigation for Air Quality – Refer to mitigation for Visual and Aesthetic Qualities.
Preferred Alternative Cumulative Impacts – Preferred Alternative could encourage redevelopment opportunities surrounding the transit stations. In combination with other planned transportation improvement projects, the Preferred Alternative may promote compact development patterns, reducing the need for extensive infrastructure systems and reducing less efficient development patterns.	– No mitigation required.
Environmental Justice	
NWR Corridor Alignment and Proposed Stations Direct Impacts – The Preferred Alternative would not result in disproportionate impacts to minority or low-income populations in the project study area. Minority and low-income populations would benefit from the Preferred Alternative as a result of improved access to community facilities. – The Downtown Longmont station would require the acquisition of 15 low-income residences. Ten of these are associated with the Park Patio mobile	– Refer to mitigation for Land Acquisition, Displacement, and Relocations of Existing Uses below. – RTD will provide displaced residents with an RTD EcoPass for a one year period.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
home park at 1st Avenue and Terry Street. This area is constrained by industrial uses and a historic property to the north, with limited opportunities for realignment.	
Phase 1 Direct Impacts – Phase 1 would not result in disproportionate impacts to minority or low-income communities. No residential properties would be acquired in this segment. Adjacent neighborhoods would not be further divided. Project effects would not exceed those of the general population.	– No mitigation required.
Preferred Alternative Indirect Impacts – With access to the FasTracks system, connections between communities would be strengthened. – Proximity to mass transit stations may increase the desirability of adjacent property. This may affect minority and low-income residents near the proposed Downtown Longmont and Boulder Transit Village stations.	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Temporary Construction Impacts – Construction in minority and/or low-income areas could result in increased noise, visual effects, and traffic congestion. However, these impacts would not exceed those experienced by the general population within the NWR project study area.	– No mitigation is required.
Preferred Alternative Cumulative Impacts – With additional opportunities for TOD, the Preferred Alternative may be able to accommodate regional demand for affordable housing more efficiently than the No Action Alternative. – Preferred Alternative would provide additional transportation options throughout the NWR project study area and would moderately improve the mobility of minority, low-income, and traditional transit users to access to the rest of the RTD system.	– No mitigation required.
Land Use/Zoning	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Preferred Alternative would include conversion of existing land uses to rail facilities where ROW is currently constrained, particularly at proposed stations. – Development of the proposed alignment is compatible with all adopted land use and transportation plans, and planned future land uses.	– No mitigation required.
Phase 1 Direct Impacts – Phase 1 would include conversion of existing land uses for ROW expansion, particularly at the South Westminster/71st Avenue Station. – Development of Phase 1 would be compatible with all adopted land use and	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
transportation plans.	
Preferred Alternative Indirect Impacts – Preferred Alternative would result in higher density residential and/or commercial development within a 0.25-mile radius of proposed stations.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Land use policies and planning would be unaffected by the construction activities associated with the Preferred Alternative.	– No mitigation required.
Preferred Alternative Cumulative Impacts – Residential and commercial growth in the proximity of the proposed stations would limit the need to drive, improve localized air quality, could limit the consumption of undeveloped land, and require compact infrastructure.	– No mitigation required.
Farmlands	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Preferred Alternative would impact 4.0 acres of farmland (3.6 acres of prime farmland and 0.4 acre of farmland of statewide importance) along the alignment due to need for acquisition of small slivers of land adjacent to existing BNSF Railway Company ROW in the Broomfield, Boulder and Longmont sections. – No permanent loss of access to farmland or isolation of portions of active farm properties would result from the Preferred Alternative.	– Mitigation will be provided to agricultural properties, consistent with the ROW policies described in Section 3.3, Land Acquisition, Displacements, and Relocation of Existing Uses. – Existing, legal access to farm properties will remain available during and after construction. Typically, access rights are demonstrated by easements, license agreements, or other legal permits, etc.
Phase 1 Direct Impacts – No impacts to farmlands would occur as a result of Phase 1, because there is no farmland located within 1,000 feet of the project impact area.	– Same mitigation proposed for direct impacts.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Indirect Impacts – Approximately 229 acres of farmland (46 acres of farmland classified as prime if irrigated, and 183 acres of farmland of statewide importance) surround the Flatiron, East Boulder, and Gunbarrel station sites. Land surrounding these sites is primarily protected as open space and is not currently being used for agricultural purposes. New development around these stations would be limited by current regulations and plans that protect these lands from development.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Construction of the Preferred Alternative would temporarily impact 5.8 acres of farmlands (increase in traffic, noise, dust and need for temporary easements) but not impair the agricultural productivity of the area or the potential for agricultural activities in the future.	– All irrigation pipes and ditches will be replaced in-kind – Irrigation will not be interrupted during construction. – Mitigation will be provided to agricultural properties, consistent with the ROW policies described in Section 3.3, Land Acquisition, Displacements, and Relocation of Existing Uses. – Existing, legal access to farm properties will remain available during and after construction. Typically, access rights are demonstrated by easements, license agreements, or other legal permits, etc.
Preferred Alternative Cumulative Impacts – Preferred Alternative could result in increased densities around proposed stations, possibly delaying development of existing farmland in the fringes of local jurisdictions. By reducing the conversion of important farmlands, the Preferred Alternative could result in fewer cumulative impacts. Future development would be restricted in areas protected as open space.	– No mitigation required.
Economic Considerations	
NWR Corridor Alignment and Proposed Stations Direct Impacts	– Refer to mitigation for Land Acquisition, Displacements, and Relocation of Existing Uses.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– The NWR Corridor Alignment would require acquisition of 12.77 acres of private property that would result in a loss of $40,836 in property tax revenues each year. No business or employee relocations would be required. – Proposed station sites would require acquisition of approximately 72.99 acres of private property, resulting in the relocation of 69 businesses and 249 employees. An estimated loss of $706,190 in annual property tax revenues is anticipated.	
Phase 1 Direct Impacts – Phase 1 would require an acquisition of 48.64 acres (36.41 acres for the alignment and 12.23 acres for the station), resulting in the relocation of seven businesses and approximately 229 employees. These acquisitions would potentially result in an annual property tax revenue loss of $293,200.	– Refer to mitigation for Land Acquisition, Displacements, and Relocation of Existing Uses.
Preferred Alternative Indirect Impacts – Anticipated development surrounding stations may offset property tax impacts and create a net growth in the tax base and revenues by 2035. – Number and variety of businesses and employment opportunities could be likely to increase around proposed stations. – Approximately 369 jobs would be created for maintenance and operation of the Preferred Alternative.	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Temporary Construction Impacts – Direct construction jobs: 5,764 jobs over the 5-year construction period, or approximately 1,153 jobs per year – Jobs created indirectly by construction: 1,460 jobs – Construction activities would temporarily inconvenience shoppers and affect businesses along the proposed alignment with noise, traffic, and visual degradation. – Some businesses would temporarily experience restricted access during construction.	– Create Construction Management Plans and work with local communities and businesses. – Provide clear signage and directions for alternate access. – Coordinate with local groups, business districts, and jurisdictions using a variety of media (for example radio, flyers, advertisements, and Web Site), where appropriate. – Provide temporary access during normal business hours, where possible. – Ensure contractors obtain all necessary local permits. – Develop traffic maintenance plans to maintain access and circulation. – Refer to mitigation for Visual and Aesthetic Qualities. – Refer to mitigation for Air Quality. – Refer to mitigation for Noise and Vibration. – Refer to mitigation for Transportation Systems.
Preferred Alternative Cumulative Impacts – FasTracks is expected to save individuals $210 annually in 2030, as compared to the cost of congestion without FasTracks (RTD, 2007). – Construction of FasTracks would result in additional employment and economic activity. For every dollar spent on construction capital costs, more than 2 dollars of additional economic activity would be generated in the Denver region. In addition, every dollar spent on capital costs would translate directly into $0.72 in new wages and salary for jobs outside the construction field. Furthermore, for every 1,000 workers hired for the operation of FasTracks, 1,533 jobs would be in industries not involved in FasTracks (RTD 2007).	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Land Acquisitions, Displacements and Relocations of Existing Uses	
NWR Corridor Alignment and Proposed Stations Direct Impacts – NWR Corridor alignment would require the acquisition of 12.77 acres of private property. This excludes BNSF Railway Company ROW. No businesses or residences would be relocated as a result of the proposed alignment. – Proposed station sites would require acquisition of approximately 72.99 acres of private property, resulting in relocation of 16 residences and 69 businesses. – The Downtown Longmont Station would result in the relocation of 15 residences. Ten of these 15 residences are located in the Park Patio mobile home park. The one other residential relocation, of the 16 total residences, would occur at the Broomfield/116th Avenue Station. – The businesses impacted by proposed stations range from offices and retail/commercial businesses to larger warehouse and manufacturing operations.	– **Acquisition.** The acquisition of real property interests will comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act) and the Fifth Amendment of the United States Constitution. The Uniform Act applies to all acquisitions of real property or displacements of people resulting from federal or federally assisted programs or projects. – All impacted owners will be provided notification of the acquiring agency's intent to acquire an interest in property, including a written offer letter of just compensation specifically describing those property interests. – **Relocation Analysis.** RTD will prepare a relocation analysis to enable relocation activities to be planned in such a manner that the problems associated with the displacement of property are recognized and solutions are developed to minimize the adverse impacts of displacement. The Relocation Study will estimate the number, type, and size of businesses to be displaced and the approximate number of employees that may be affected; and consider any special advisory services that may be necessary from RTD and other cooperating agencies. – **Relocation Assistance Advisory Services**. Relocation assistance will include determining the relocation needs and preferences of each property to be displaced and explaining the relocation payments and other assistance for which each owner or tenant is eligible; providing current and continuing information on the availability, purchase prices, and rental costs of comparable replacement properties, and other programs administered by the Small Business Administration and other federal, state, and local programs offering

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	assistance to displaced businesses. – **Payments**. The relocation payments provided to displaced businesses are determined by federal eligibility guidelines.
Phase 1 Direct Impacts – Phase 1 would result in acquisition of 48.64 acres (36.41 acres for the alignment and 12.23 acres for the station). Acquisitions would result in relocation of seven businesses.	– Mitigation for Phase 1 will be the same as those measures identified for the direct impacts above.
Preferred Alternative Indirect Impacts – Property acquisitions would indirectly result in job losses as discussed under Economic Considerations.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Temporary construction impacts are related to the temporary easements that would be needed from 162 parcels on approximately 22.7 acres to build the Preferred Alternative. The needs for easements would be greatest in the Louisville, Boulder, and Longmont sections.	– No mitigation required.
Preferred Alternative Cumulative Impacts – Property acquisition required for the Preferred Alternative would be additive to the property required for the roadway and transit projects included in the No Action Alternative, plus the additional land needed for new public infrastructure to serve the 2035 population in the NWR project study area, estimated at approximately 1,800 acres. As described under the No Action Alternative, up to 31,000 acres would be required for public infrastructure to accommodate the 2035 population estimated for the Denver metropolitan area and up to 5,800 acres would be required for public infrastructure to	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
accommodate the 2035 population of the North Front Range metropolitan area.	
Historic, Archaeological, and Cultural Resources	
NWR Corridor Alignment and Proposed Stations Direct Impacts – There are no known direct impacts to National Register of Historic Places (NRHP)-eligible or –listed archaeological resources from the Preferred Alternative. – The NWR Corridor Alignment would impact 16 NRHP-eligible or –listed resources, none of which result in a finding of Adverse Effect. – There is one direct impact related to Proposed Stations. – Impacts to these resources result in a finding of No Adverse Effect.	– No mitigation would be required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Phase 1 Direct Impacts – Phase 1 results in directly impacting six NRHP-eligible or –listed resources. Impacts to these resources result in a finding of No Adverse Effect.	– No mitigation is required.
Preferred Alternative, Indirect, Temporary Construction, and Cumulative Impacts – There are no known indirect, temporary construction, or cumulative impacts to NRHP-eligible or -listed archaeological resources from the Preferred Alternative. – Historic properties within the Area of Potential Effect (APE) would be subject to indirect impacts due to noise or visual change and include: The Bowles House Museum and the Oleson House in the Adams Section under Phase 1; and the La Salla-Wilson House, the Stolmes House, Mrs. Downer's Cabins (2 properties), and the Steinbaugh-Murgallis House in the Louisville Section. No Adverse Effects would result from noise impacts and/or visual changes. – Temporary impacts due to the noise, air quality, visual, and traffic- diverting effects of construction would occur. These impacts would result in a finding of No Adverse Effect to the historic resources.	– Refer to mitigation for Transportation Systems – Refer to mitigation for Visual and Aesthetic Resources – Refer to mitigation for Air Quality – Refer to mitigation for Noise and Vibration. – Where known archaeological sites are present, ground-disturbing activities will be avoided, where possible. RTD may complete archaeological monitoring during construction activities. In the even that cultural deposits are discovered during construction, work would cease in the area of discovery and the SHPO would be notified. The designated representative would evaluate any such discovery, and in consultation with SHPO, complete appropriate mitigation measures, if necessary, before construction activities resume. – There would be no vibration impacts to the Bowles House Museum (5AM64) resulting from the project. However, RTD has committed to the following mitigation measure for this property: – RTD will conduct additional vibration analysis at the Bowles House prior to construction. The vibration measurements will be taken adjacent to the Bowles House and the vibration analysis will be re-run at that time based on those measurements.
Visual and Aesthetic Qualities	
NWR Corridor Alignment and Proposed Stations Direct Impacts Project features that present the potential for visual change include:	– Noise barriers and retaining walls will be designed with consideration for rail passengers' and residents' views. When feasible, noise barriers and retaining walls will avoid impacting open areas, reflect natural appearance in textures

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– In areas where retaining walls, bridges, or noise walls would be proposed, these structures would have the potential to block views of visual resources. – Noise barriers, though required only along three segments, would generate a high degree of visual change. Refer to Noise and Vibration for more information. – The widening of the existing rail corridor from one track to two and the provision of fencing along the entire rail corridor would constitute the largest permanent change along the proposed alignment, though it would generate a low degree of visual change. – RTD developed fencing recommendations through an extensive outreach process with local jurisdictions to provide fencing that is compatible with the surrounding land uses. RTD will continue ongoing coordination with the local jurisdictions regarding fencing, including the use of existing fencing at specific locations along the proposed alignment. – At proposed station sites the degree of visual alteration would be noticeable. However, proposed stations would be constructed with compatible architectural designs, would fit in with planned future land uses, and would be located in areas of previous development. – Overhead pedestrian walkways would be included at the following stations: Westminster/88th Avenue, Walnut Creek, Flatiron, and Gunbarrel. Additionally, station platforms, roof shelters, parking, and drop-off areas would constitute other visual changes.	and colors, and be graffiti resistant. – Stations will be landscaped consistent with RTD design criteria. Parking lot design will conform to local parking standards. – Fencing options will be compatible with surrounding land uses as is feasible. Proposed fencing recommendations are listed in Table 2-19, Northwest Rail Alignment Fencing Recommendations.
Phase 1 Direct Impacts – New structures, retaining walls, track, catenary, and fencing would be visually compatible with the industrial character of the corridor. – Provision of electrification would represent a visual change, but is	– Mitigation for Phase 1 will be the same as those measures identified for the Alignment and Stations Direct and Temporary Construction Impacts.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
considered compatible with the industrial character of the area.	
Preferred Alternative Indirect Impacts – Preferred Alternative may result in a potential increase in urban density around the proposed stations. In general, increased density surrounding NWR transit stations is anticipated to be moderate. The extent of this development would depend on the market feasibility of the sites.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Throughout construction, the visual appearance of the NWR project study area would change due to the presence of construction equipment, staging areas, machinery, vehicles, construction materials, and excavated material piles. – Temporary construction would create the largest impact when adjacent to the open space areas where disturbed vegetation may take years to reestablish.	– Staging areas will be fenced and/or screened. – Construction lighting will be shielded and directed at work areas to reduce glare and light trespass. – All landscaping will be replaced where removed for construction efforts, except in immediate trackway.
Preferred Alternative Cumulative Impacts – Since the 1950s, substantial development has occurred in the NWR project study area. Much of the undeveloped, rural lands north of the Denver metropolitan area have been developed into commercial and residential land uses. Overall, the FasTracks program would encourage higher density development within urban areas and would slightly slow the continued conversion of undeveloped lands. This would help to preserve the existing visual character of the NWR project study area.	– No mitigation required.
Parklands, Open Space and Recreational Resources	
NWR Corridor Alignment and Proposed Stations Direct Impacts	– Negotiate compensation for parkland acquisition with the owner of the public

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– Preferred Alternative would result in the acquisition of 1.68 acres of parks, open space, and recreational resources along the proposed alignment. – Additional impact to 3.58 acres at the Louisville Sports Complex, which would share parking with the Downtown Louisville Station. Parking would be constructed in an area already used for parking and would not result in an impact to any of the recreational features of the complex. – The BNSF Railway Company has discussed the potential need for additional storage track in Westminster along Little Dry Creek Trail. If this additional storage track is required by the BNSF Railway Company, the track would result in an additional impact of 0.18 acres.	lands' local representatives. – Open space acquired from the City of Boulder will follow the approved process set forth in the Charter of the City of Boulder, Article XII, Section 177, which states that transfer of open space from City of Boulder ownership must be approved by City Council and the Open Space Board of Trustees.
Phase 1 Direct Impacts – Phase 1 would result in the acquisition of 1.11 acre of parklands.	– Refer to mitigation for impacts above.
Preferred Alternative Indirect Impacts – No indirect impacts to park or recreation resources.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Construction of the Preferred Alternative would require temporary construction staging areas, requiring temporary use of 5.67 acres of park and open space land. – Construction of the Preferred Alternative would result in temporary construction impacts where existing trails cross the proposed alignment. Impacted trails would include: the South Platte River Greenway Trail, Little Dry Creek Trail, Wolff Run Trail, Big Dry Creek Trail Crossing, Walnut Creek Trail Crossing, Coal Creek Regional Trail, South Boulder Creek Trail, Boulder Creek Trail, Goose Creek Trail, Fourmile Creek Trail, and the St. Vrain Greenway Trail.	– Detour plans for the South Platte River Greenway Trail were approved by the City and County of Denver in a letter dated September 25, 2008 and proposed trail detours for Big Dry Creek and Wolf Run Trails in the City of Westminster were approved in documentation dated January 29, 2010. In addition, the City of Longmont approved a detour to the St. Vrain Greenway in documentation dated February 5, 2010, and Adams County approved detours for Little Dry Creek and Clear Creek Trails in documentation dated May 26, 2010. – Return trails to their existing or comparable state following construction. – In coordination with local jurisdictions, construction plans defining the best management practices (BMP) for the following will be developed: (1) Public safety and security for the project site, this plan should include all appropriate

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	access, signing, and public information BMPs; (2) Maintain traffic, pedestrian, and bicycle access to the project area during construction – Refer to mitigation for Visual and Aesthetic Qualities. – Refer to mitigation for Noise and Vibration.
Preferred Alternative Cumulative Impacts – It can be anticipated that additional parkland and recreation areas would be provided as part of the TOD around proposed stations.	– No mitigation required.
Air Quality	
NWR Corridor Alignment and Proposed Stations Direct Impacts Air Quality impacts were assessed for both the seven and eleven station scenarios. – Preferred Alternative would have similar emissions to the No Action Alternative. The scenario including all 11 stations would result in slightly lower VMT and emissions when compared to the seven funded station scenario. The decreased VMT for the All-Station scenario is likely to be related to the shorter distances the passenger vehicles drive to the additional four stations. – Region-wide daily emissions of VOC, CO, NO_x, and PM_{10} in 2015 and 2035 for both station scenarios are much lower than those in the baseline year 2005, attributed to the addition of newer vehicles with tighter emission controls, cleaner fuels, and more stringent emission restrictions in future years. – The Preferred Alternative would have higher emissions in 2035 than in 2015 due to the increased VMT in the region in 2035. – The analytical results indicated that the project operation would not cause a	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
CO hot spot impact in the future years. – MSAT emissions (although slightly higher) were comparable to both existing conditions and the No Action Alternative. – Both the seven station scenario and the 11 stations scenario under Preferred Alternative would result in small increase of PM_{10} emissions when compared to the No Action Alternative – The Preferred Alternative would not be expected to cause any violation of the PM_{10} NAAQS. – The anticipated traffic reduction due to FasTracks ridership (system-wide) would result in a slight decrease in future CO_2 emissions (RTD 2007), therefore reducing the impacts of global warming.	
Phase 1 Direct Impacts – Phase 1 would not cause any regional air quality impacts for criteria pollutants. – The MSAT analysis and CO hot spot analysis demonstrated comparable emissions to the No Action Alternative and no anticipated PM_{10} or CO violations of the NAAQS.	– No mitigation required
Preferred Alternative Indirect Impacts – The Preferred Alternative would have no indirect impacts.	– No mitigation required
Preferred Alternative Temporary Construction Impacts – The fugitive dust emissions (estimated as PM_{10}) associated with construction of the proposed project would be 100 pounds per day, based on the assumption that the maximum disturbed area would be 10 acres per	– For winter construction, the contractor shall install engine pre-heater devices to eliminate unnecessary idling. – The contractor shall be prohibited from tampering with equipment to increase horsepower or to defeat emissions control device effectiveness.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
day. There would also be emissions associated with diesel fueled equipment used for temporary construction activities, which would cause air quality violations.	– Construction vehicles and equipment used by the contractor shall be properly tuned and maintained. – Construction vehicles and equipment used by the contractor shall be equipped with the minimum practical engine size for the intended job requirement. – All construction equipment used by the contractor will be equipped to burn ultra low sulfur diesel fuel. – The contractor shall use water or wetting agents to manage dust. – The contractor shall use wind barriers and wind screens to minimize the spreading of dust in areas where large amounts of materials are stored. – The contractor shall use a wheel wash station and/or large-diameter cobble apron at egress/ingress areas to minimize dirt being tracked onto public streets. – The contractor shall use vacuum powered street sweepers to control dirt tracked onto streets. – The contractor shall cover all dump trucks leaving the site. – The contractor shall cover or wet temporary excavated materials. – The contractor shall use a binding agent for long-term excavated materials.
Preferred Alternative Cumulative Impacts – The Preferred Alternative would have not cumulative impacts.	– No mitigation required
Energy	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Preferred Alternative would result in 0.0005 percent more regional energy usage than the No Action Alternative in both 2015 and 2035. – An increase in energy consumption by 90,481,000 British thermal units (Btu) in 2015.	BMPs to reduce energy usage during construction could include: – Locating materials onsite or within close proximity to the project site. – Using newer, more energy efficient construction vehicles. – Programs to encourage construction workers to carpool or use public transportation for travel to and from the construction site.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– 143,392,000 Btu consumed annually in 2035. – Regional reduction of 2.4 million passenger vehicle miles traveled (VMT) per year and a total regional reduction of 0.1 million VMT per day in 2035 compared to 2015.	Design efforts to reduce energy consumption and overall VMT could include: – Creating multiple access points for parking lots, where possible. – Carefully designing "kiss-n-ride" drop-offs to maximize efficiency and minimize number of idling vehicles. – Positioning stations to be more easily acceptable by pedestrians and bicyclists. – Design park-n-Ride improvements to decrease energy usage consistent with RTD's sustainability policy.
Phase 1 Direct Impacts – The difference in technology from DMU to EMU would result in a negligible increase in regional energy use.	– Refer to mitigation for Alignment and Stations Direct Impacts above.
Preferred Alternative Indirect Impacts – Energy use associated with TOD is potentially less then the No Action Alternative because of smaller residences, decreased dependence on automobiles, and increase in transit use.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – During the 5-year construction period, approximately 990,080 million Btus would be consumed for the construction of the Preferred Alternative. – Approximately 17 percent of this (169,844 Btus) would be for the construction of Phase 1.	– Refer to mitigation for Alignment and Station Direct Impacts above.
Preferred Alternative Cumulative Impacts – The implementation of the Preferred Alternative and the No Action Alternative would result in comparable regional energy consumption. The projected modest density increases surrounding the proposed stations may result in smaller average home sizes and more efficient use of public	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
infrastructure. Both of these effects would help to reverse the past trends of energy consumption increasing faster than population. Although the Preferred Alternative would result in a negligible increase in energy over the No Action Alternative, as stated in the *Programmatic Cumulative Effects Analysis* (RTD 2007), the entire FasTracks Plan would result in an overall energy reduction of 116,233,392 Btus/year (RTD 2007).	
Noise	
NWR Corridor Alignment and Proposed Stations Direct Impacts Noise impacts were assessed for both the FasTracks-Only Station scenario (seven stations) and for the All-Station scenario (11 stations) – Severe noise impacts would range from 533 residences under the 2015 FasTracks-Only station scenario and eight institutional uses to 811 residences, one hospital, two schools, one park and four day care facilities under the All-Stations scenario in 2035 without mitigation. However, all severe impacts would be mitigated with implementation of Quiet Zones and noise barriers. – Quiet Zones proposed at rail crossings under the Preferred Alternative would significantly decrease horn noise compared to the existing conditions under the No Action Alternative. – Moderate noise impacts would range from 1,212 residences plus four institutional uses under the FasTracks-Only scenario in 2015 to 1,434 residences, plus three institutional uses for the All-Stations scenario in 2035 without mitigation. – In terms of year of operation, greater noise impact is projected in 2035 than	– Quiet Zones will be implemented prior to operations at all but 7 grade crossings from W. 64th Avenue in Adams County to SH 119 in Longmont. – RTD will assist the local jurisdictions with their applications to the railroads and the FRA. Applications for Quiet Zones must be submitted by the local jurisdictions. – Should Quiet Zones not be implemented prior to operations, alternate methods of noise mitigation, such as wayside horns and sound insulation, will be used. – Install 3,200 lineal feet of 10-foot high noise barriers.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
in 2015 due to the higher train volumes in 2035. – With regard to station scenario, greater noise impact is projected for the all-stations scenario than for the FasTracks-only scenario due to the effects of DMU speed and throttle profile effects near the additional stations. – With the recommended Quiet Zone and noise barrier mitigation measures, moderate impacts in 2035 would remain at 89 residences for the FasTracks-Only scenario and at 235 residences for the All-Stations scenario. – There would be residual moderate noise impacts at four institutional sites in the Boulder Section including one hotel (the Marriott Courtyard hotel), one school (Naropa University), and two day care facilities (the UCAR Child Care Center and the Family Learning Center) for both station scenarios in 2035 with proposed mitigation.	
Phase 1 Direct Impacts – Severe impacts range from five residential in 2015 for FasTracks-Only to 16-17 residential and one institution under the 2035 for All-Stations scenario without mitigation. – Moderate impacts range from 59 residents and one institution in 2015 for FasTracks-Only to 84-85 residences in 2035 under the All-Station scenario in 2035 without mitigation. – There would be two residual moderate noise impacts for Phase 1 in the Adams Section for both station scenarios in 2035 with proposed mitigation.	– Implementation of Quiet Zones and Noise Walls as indicated above.
Preferred Alternative Indirect Impacts – No indirect noise impacts are projected for the Preferred Alternative.	– No mitigation required

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Temporary Construction Impacts – Noise would result from utility relocation, grading, excavation, paving, installation of structures, and track work. Such impacts may occur in residential areas and at other noise-sensitive land uses located within several hundred feet of the alignment. The potential for noise impact would be greatest at locations near pile-driving operations for bridges and other structures and at locations close to any nighttime construction activities.	– Minimize nighttime construction in residential neighborhoods. – Locate stationary construction equipment as far as possible from noise-sensitive sites. – Construct noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers. – Re-route construction-related truck traffic along roadways that will cause the least disturbance to residents.
Preferred Alternative Cumulative Impacts – There would be no cumulative noise impacts for the Preferred Alternative.	– No mitigation required.
Vibration	
NWR Corridor Alignment and Proposed Stations Direct Impacts Vibration impacts were evaluated for both the FasTracks-Only scenario (seven stations) for the All-Stations scenario (11 stations). – Impacts would be the same under both the 2015 and 2035 operating scenarios. The results project vibration impacts at a total of 110 residences and 141 residences, respectively, for these two scenarios. – The greater number of impacts for the all-stations scenario reflects higher speeds between stations needed to offset the delays from added station stops. – Project vibration impacts also result at one school, one hotel and two day care facilities for both station and year scenarios.	– Relocate turnouts away from sensitive areas or use special turnout hardware. – Install track vibration isolation treatment if necessary and feasible based on Detailed Vibration Analysis. – Consider operational changes to minimize impacts.
Phase 1 Direct Impacts – Phase 1 would result in three residential vibration impacts for both station and year scenarios.	– Refer to vibration mitigations above for Direct Impacts.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Indirect Impacts – No indirect vibration impacts are projected for the Preferred Alternative.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – The Preferred Alternative would result in temporary construction impacts related to activities associated with utility relocation, grading, excavation, track work, and installation of structures and systems components. – Impacts may occur in residential areas and at other vibration-sensitive land uses located near the proposed alignment. – The potential for vibration impact would be greatest at locations near pile driving for bridges and other structures and at locations close to vibratory compactor operations.	– Minimize nighttime construction in residential neighborhoods. – Use alternative construction methods to minimize the use of impact and vibratory equipment (such as, pile drivers and compactors). – Re-route construction-related truck traffic along roadways that will cause the least disturbance to residents.
Preferred Alternative Cumulative Impacts – No cumulative vibration impacts are projected for the Preferred Alternative.	– No mitigation required.
Biological Resources: Fish, Wildlife, Vegetation, and Threatened and Endangered Species	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Preferred Alternative would impact a total of 89.7 acres of wildlife habitat as follows: • 77.3 acres in large blocks of grasslands in the Louisville, Boulder, and Longmont sections. • 12.4 acres of riparian woodland, riparian shrubland, and marsh habitat along the proposed alignment (mostly in the Boulder section). • 0.3 acres of riparian woodland habitat impacts at Downtown Louisville Station. • 2.1 acres of grasslands impacts at proposed stations. – Vegetation and habitat impacts would primarily occur from vegetation	– Bridge structures will span the largest amount of riparian habitat as possible under a constructed bridge to limit the amount of disturbance to vegetation and to allow for travel along the water's edge. – Fencing installed along the proposed alignment should use wildlife-friendly design at crossings of wildlife corridors, other stream and ditch crossings, and in all areas adjacent to open space land. In addition, other areas considered high quality wildlife habitat should provide for wildlife friendly fencing. – RTD is committed to coordination with USFWS and CDOW throughout final design and will consider additional mitigation measures, if necessary.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
clearing and earth moving. – Preferred Alternative would affect 18.7 acres of black-tailed prairie dog towns, primarily in the Boulder, Westminster, and Longmont sections. – Proposed alignment would not cause a new division of previously contiguous habitat. – Preferred Alternative is not expected to adversely affect the movement of wildlife along wildlife corridors at various streams and ditches. Security fences required by the Regional Transportation District (RTD) have been designed to allow movement through these areas. – Noise barriers would be located in primarily developed areas where noise sensitive receptors exist (residential areas, etc.). Therefore, wildlife movement through these areas is limited and would not block or impact significant wildlife corridors. – Preferred Alternative could affect nesting raptors and other migratory birds. One red-tailed hawk nest active in 2004 and 2008 is located within the 300 feet of the proposed alignment, and 10 additional nests that were active in 2008 are located near the proposed alignment and could be affected by construction noise or human activity. – Project related construction could introduce new noxious weeds into the NWR project study area or increase the abundance of existing noxious weeds.	
Phase 1 Direct Impacts – Phase 1 would primarily affect industrial habitat. It would affect 0.70 acre of riparian woodland and riparian shrubland in the Adams Section at Clear Creek and along Little Dry Creek.	– Refer to Preferred Alternative mitigation above.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– Impacts to 5.0 acres of grasslands would occur. – Construction impacts on aquatic resources are estimated to be 0.1 acre. Pier construction of bridge over the South Platte River in the Denver Section would occur above the riparian corridor, spanning the river, thus reducing the impact. No impacts to wetlands are anticipated. – The new bridge at the South Platte River would be elevated above the river and riparian area and would have no adverse effects on the wildlife corridor – Two bridges in the Adams Section one at Clear Creek and the other at Little Dry Creek would impact 0.2 acre of aquatic resources, but would have no adverse effects on the wildlife corridors. – South Westminster/88th Avenue Station would not directly impact biological resources. – No prairie dog towns or raptor nests would be affected in the Denver and Adams Sections.	
Preferred Alternative Indirect Impacts – The majority of the impacts would be within 0.25 mile of the proposed station platforms. However, this more efficient land use scenario and the more effective provision of urban services could allow more undeveloped land to be preserved within the region.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Removal or physical disturbance of existing vegetation on 99.5 acres of habitat. The majority (61.1 acres) would occur in the grasslands. – Wildlife disturbance and displacement, temporary habitat fragmentation, and effects on wildlife movement due to increased noise and activity associated with construction.	**Vegetation and Habitat** – Restoration of disturbed riparian habitat will include planting of native trees and shrubs, as well as seeding and re-grading. Native grasses, forbs, and shrubs will also be seeded in riparian areas. – Grading plans will minimize removal of riparian vegetation where possible. – During construction, vehicle operation will be limited to the designated construction area, and the limits of the construction area will be fenced

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– Temporary effects on aquatic habitats could also occur from erosion and sedimentation at stream crossings.	where adjacent to sensitive habitats including riparian areas, marshes, and upland trees and shrubs. – Silt fencing, erosion logs, temporary berms, and other BMPs will be used to prevent degradation of habitats adjacent to the construction area by transport of eroded sediment. – Areas of temporary disturbance within the right-of-way will be seeded with an appropriate mixture of native grasses and forbs. Shrubs will be planted where appropriate. **Prairie Dog Colonies** – RTD has issued guidance on prairie dog mitigation for the FasTracks projects. Corridor projects will be designed and constructed to avoid and minimize impacts to prairie dog colonies. Relocation of prairie dogs will be coordinated with CDOW and conducted in compliance with the CDOW Permit to Capture and Relocate Prairie Dogs. If a relocation site cannot be located for towns greater than 2 acres, the prairie dogs will be captured and donated to raptor rehabilitation facilities or turned over to USFWS for the black-footed ferret reintroduction program. At no time will RTD authorize earth-moving activities that result in burying live prairie dogs. If needed, humane techniques will be used for killing prairie dogs. – Prairie dog mitigation will be coordinated with applicable local jurisdictions including the City of Boulder, Boulder County, the City and County of Broomfield, and CDOT. **Migratory Birds (including Raptors)** – In compliance with the MBTA, construction activities in grassland, riparian, marsh, and stream habitats, and those that occur on bridges that would otherwise result in the take of migratory birds, eggs, young, and/or active nests will be avoided. – Although the provisions of MBTA are applicable year-round, most migratory bird nesting activity in eastern Colorado occurs during the period of April 1 to August 31. Raptors can be expected to nest in woodland from February 1 to July 15.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	– The USFWS recommends that a qualified biologist conduct a field survey of the affected habitats and structures to determine the presence or absence of nesting migratory birds. – Surveys will be conducted during the nesting season prior to construction. Where possible, nesting may be prevented until construction is complete, by removal of vegetation. The results of field surveys for nesting birds, along with information regarding the qualifications of the biologist(s) performing the surveys, will be maintained on file for potential review by the USFWS, until such time as construction on the proposed project has been completed. – The USFWS Colorado Field Office will be contacted immediately for further guidance if a field survey identifies the existence of one or more active bird nests that cannot be avoided by the planned construction activities. – Raptor nest surveys will be conducted annually during an appropriate season (generally May 1 to June 1) to determine presence of active raptor nests. If an active nest is located, seasonal buffers will be established and coordinated with the CDOW to prevent disturbance of nesting raptors during construction. – Raptor and other nests in the construction footprint will be removed when they are inactive, outside of the nesting season. **Noxious Weeds** An Integrated Noxious Weed Management Plan will be developed during final design. This plan will be implemented during construction and will include identification of noxious weeds in the area, weed management goals and objectives, and preventive and control measures. Preventive measures include the following: – Contractor's vehicles will be inspected before they are used for construction to ensure that they are free of soil and debris capable of transporting noxious weed seeds or roots. – Noxious weeds observed in and near the construction area at the start of

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	construction would be treated with herbicides or physically removed to prevent seeds blowing into disturbed areas during construction. – Potential areas of topsoil salvage would be assessed for presence and abundance of noxious weeds prior to salvage. Topsoil from heavily infested areas would either be treated by spraying, taken off-site, or buried during construction. – Areas of temporary disturbance will be reclaimed as soon as construction is finished and seeded using a permanent seed mixture. If areas are completed and permanent seeding cannot occur due to the time of year, mulch and mulch tackifier would be used for temporary erosion control until seeding can occur. – Only certified weed-free mulch and bales will be used in the project area. Weed control would use the principles of integrated pest management, to treat target weed species efficiently and effectively by using a combination of two or more management techniques (biological, chemical, mechanical, and/or cultural). Weed control methods would be selected based on the management goal for the species, the nature of the existing environment, and methods recommended by Colorado State University, county weed boards, and other weed experts. The presence of important wildlife habitat or threatened and endangered species would be considered when choosing control methods. ` **Aquatic Habitat** – BMPs will be used to control erosion and sedimentation during construction and to protect water quality in streams. BMPs may include berms, brush barriers, check dams, erosion control blankets, filter strips, sandbag barriers, sediment basins, sheet mulching, silt fences, straw-bale barriers, surface roughening, and/or diversion channels. A spill prevention and emergency response plan will be prepared and used during construction for storage, handling and use of chemicals, fuels and similar products. – Refer to mitigation for Water Resources and Water Quality **Special Status Species** Burrowing owl (state-listed threatened) CDOW recommendations (CDOW,

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	2007b) for surveys and protection of nesting burrowing owls will be followed: – Surveys will be conducted prior to construction to determine presence of burrowing owls in prairie dog towns, and the locations of occupied nests. Surveys will be conducted for any construction activities in suitable habitat from March 15 to October 31 in prairie dog towns. – Construction will be avoided within 150 feet of burrows used by burrowing owls from March 15 to October 31. – Federally Listed Species. Consultation was conducted with the USFWS under Section 7 of the Endangered Species Act. A Biological Assessment was prepared, and the USFWS will issue a Biological Opinion with a determination of effect. Based on presence/absence surveys conducted in 2009, the Biological Assessment indicates that the project may affect but is not likely to adversely affect federally listed species. The USFWS concurred with this finding in December 2009. If requested by the USFWS, additional surveys will be conducted prior to construction. If individuals or populations of federally listed species are found or if other information indicates that a federally listed species has become present in the construction corridor, consultation will be reinitiated with the USFWS. Any conservation measures identified in the Biological Opinion will also be implemented.
Preferred Alternative Cumulative Impacts – Vacant land that now serves as generally marginal wildlife habitat would continue to be developed as the population increases by the year 2035. However, the TOD anticipated to be stimulated by the Preferred Alternative would slightly modify this trend because some percentage of the new development would occur at higher densities. This would have a modest	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
positive effect on wildlife as some vacant land would not be developed during the foreseeable future.	
Mineral Resources, Geology, and Soils	
Preferred Alternative Direct, Indirect and Temporary Construction Impacts – Geotechnical challenges, such as those that could lead to increased instability, soil erosion, slumping and caving of excavated or altered slopes, and shallow groundwater. – If unmitigated, the destructive effects of these factors may increase over time and damage structure foundations. – Seismic risk in the project study area is consistent with the moderate seismic risk present in the Denver metropolitan area. – No mineral extraction opportunities would be precluded with the implementation of the Preferred Alternative.	– Engineering slope cuts for stability; shoring of slope cuts and shallow excavations; retaining walls; and dewatering systems where appropriate. – Engineering techniques such as drainage systems to direct surface water and runoff; slope design; covering slope during construction; use of engineered fill; and prompt and appropriate revegetation. – Mitigation of expansive bedrock, soil, and surficial materials with deep foundations into bedrock below perennial water table; specialized piers and footings; over-excavation with moisture treatment and compaction of backfill; engineered or imported fill; subsurface drainage systems; and surface water diversions. – Mitigation of collapsible soils with shoring of excavations; retaining walls; drainage systems; excavation and engineered or imported fill; compaction; pre-construction flooding and/or loading; and use of geogrids or geotextiles. – Mitigation of corrosive soils with coated and resistant steel and concrete; and drainage systems. – Mitigation of shallow groundwater with engineered fills and dewatering systems. – Identification of shallow subsurface voids. – Engineering techniques such as grouting to fill shallow voids. – Appropriate engineering of foundation and structure. – Engineering and design to conform with anticipated probable maximum seismic event.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Phase 1 Impacts – Potential impacts to mineral resources in Phase 1 would be the same as those described above under Direct, Indirect and Temporary Construction Impacts above.	– Mitigation for the Phase 1 will be the same as those measures identified for the Preferred Alternative Direct, Indirect and Temporary Construction impacts above.
Preferred Alternative Cumulative Impacts – No cumulative impacts.	– No mitigation required.
Water Resources/Water Quality	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Potential decrease in water quality would be primarily due to the construction of an additional commuter rail track and improvements to the existing track, and the construction of 11 proposed stations. Amount of impervious area for the proposed stations would increase due to asphalt paving to cap the site (estimated at 69 acres), while the amount of impervious surfaces of the tracks would slightly increase due to new structures (estimated at 1 acre). Driscoll modeling indicates that there would be no negative water quality impacts as a result of urban runoff from the new parking facilities.	– Discharge into nearby storm sewer in accordance with local discharge permits. – Water detention ponds at all proposed stations. – Temporary BMPs such as silt fences, erosion log barriers, and temporary check dams during construction. – Spill, Prevention, Control, and Countermeasure Plan, if required. – Compliance with RTD Municipal Separate Storm Sewer System (MS4) requirements, as well as Adams County, Boulder County, City of Boulder, City and County of Broomfield, City and County of Denver, City of Longmont, City of Louisville, City of Westminster, and Colorado Department of Transportation (CDOT) MS4 requirements as appropriate. – During project construction within CDOT right of way, the CDOT Water Quality Consent Decree, which was issued to CDOT by Colorado Department of Public Health and Environment (effective, January 2009) will be followed as appropriate. – Permanent BMPs such as water quality detention basins and rip rap. – Non-Structural BMPs such as parking lot sweeping, use of vegetative buffers, spill containment measures, and minimizing disturbed areas by project

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	construction phasing. – Temporary and permanent BMP maintenance. – Onsite detention basins at each station in accordance with local requirements. This may benefit some areas that currently have no stormwater controls. – Permanent BMPS including, if necessary, flow attenuation devices and/or detention basins and rip rap. – Clean Water Act Section 402 NPDES Permits, including a stormwater construction permit, in accordance with all local and state regulations and dewatering permits. – Stormwater BMPs. – Project-specific temporary and permanent water quality plans. – Project-specific stormwater management plans. – Construction of onsite detention basins for water quality at all stations in accordance with municipal and state regulations and parking areas designed to minimize directly connected impervious surfaces. – Operations monitoring and supply wells will be protected or replaced in the same or similar location depending on the site conditions. – Non-operational monitoring and supply wells will be abandoned in accordance with state requirements.
Phase 1 Direct Impacts – Phase 1 would add 7.65 acres of new impervious surface. Runoff from the rail structures would be collected and brought to the stormwater system through under-drains and discharged to the local storm drainage system. – The South Westminster/71st Avenue Station would add approximately 14 acres of impervious surfaces. The potential for ground water to be encountered.	– Mitigation will be the same as those measures above.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Indirect Impacts – It is assumed that through traditional land development and local stormwater regulations, increased runoff would be detained in local and regional detention and retention ponds.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Potential for temporary riparian vegetation and water quality impacts during construction due to an increase in erosion and subsequent sedimentation of nearby surface waters. – It is estimated that a total of 580 acres would be temporarily disturbed during the construction of the Preferred Alternative.	Mitigation will be the same as those measures for Alignment and Stations Direct Impacts, with the addition of the following: – Temporary BMPs for construction, including reestablishment of native vegetation. – Dewatered water will be discharged to the storm sewer in accordance with discharge permits.
Preferred Alternative Cumulative Impacts – Construction of the Preferred Alternative would be consistent with existing land uses, but the amount of impervious surfaces would increase. As the population increases between 2005 and 2035, the amount of impervious area would increase by approximately 3,300 acres, assuming an average density of 10 people per acre and 40 percent impervious surfaces (Federal Highway Administration 2007). – .Water quality is not anticipated to degrade below existing conditions and may improve as water quality control measures are updated. – Development density is expected to increase around proposed stations, reducing the amount of urban sprawl and preserving more natural pervious surfaces that would be a qualitative benefit to water quality.	– No mitigation required.
Wetlands and Other Waters	
The USACE Section 404 permitting process requires the consideration of all jurisdictional (J) wetlands and other water features impacted by the Preferred	– All mitigations outlined in the USACE permit will be followed.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Alternative, including temporary construction impacts. As a result, the USACE considers a total of 4.91 J acres of wetlands and other water features to be impacted by the Preferred Alternative. Phase 1 of the Preferred Alternative is considered by the USACE to impact 0.31 J acre of wetlands and other water features. These numbers are further categorized below into two groups: (1) direct, permanent and (2) temporary construction. In addition, they are grouped by alignment, station and Phase 1, as is done for the other resource areas. NWR Corridor Alignment and Proposed Stations Direct Impacts **Wetlands** – Direct permanent impact to 6.03 acres of wetlands from the construction of the proposed alignment. The Boulder Section contains the greatest acreage of wetlands impacted (4.45 acres). The greatest impact would occur from the platform construction (considered as part of the alignment impacts), of the proposed Gunbarrel Station (0.58 acre). – The unavoidable impacts to wetlands impacted at the Gunbarrel Station are considered jurisdictional by the USACE. – A wetland functional assessment was conducted using the FACWet method. Wetlands were assessed both individually and in groups. – A total of 11 wetlands were assessed individually and either fell into the Functioning or Functionally impaired categories. The individually assessed wetland with the highest functional capacity index is Lower Church Lake. – All of the four groups assessed had generally low functional scores for hydrologic and wildlife habitat. This is mostly a result of the presence of contaminated water, managed/manipulated flows, and/or the presence of exotic plants. – Of the total direct, permanent impact from the construction of the alignment	– Wetland replacement will be completed per USACE requirements. – Wetland 1:1 replacement for non-jurisdictional wetlands per RTD requirements. Credits will be purchased or on-site mitigation conducted for non-jurisdictional impacts. – Appropriate permits will be acquired. Phase 1 Section 404 Permit was issued by USACE on 1 April 2010. – There will be no equipment staging, storage of materials, use of chemicals (such as soil stabilizers, dust inhibitors, and fertilizers), or equipment refueling within 50 feet of wetlands or other water features. – Any new or modified bridges will be designed to minimize direct discharge of stormwater runoff into wetlands.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
(6.03 acres), 1.79 J acres are PEM wetlands and 1.51 J acres are PEM/PSS wetlands, for a total of 3.30 J acres of wetlands. – An additional 0.7 non-jurisdictional (NJ) acre of permanent impact to wetlands would occur from development of all stations. **Other Water Features** – The Preferred Alternative alignment would result in 1.17 acres (0.72 J and 0.45 NJ) of direct, permanent impact to other water features. The most impacted acreage would occur to natural other water features within the Adams Section. – An additional 0.02 NJ acre of direct, permanent impact to other water features would occur from the construction of the Downtown Louisville and East Boulder stations. No impacted acreage from station construction is considered jurisdictional. **Riparian Buffers** – The alignment would result in a total of 1.86 acres of direct, permanent impact to mature, woody riparian buffers. The greatest amount of impact would occur to woody riparian buffers within the Boulder Section. – No impact to mature, woody riparian buffers would occur from station construction.	
Phase 1 Direct Impacts – Phase 1 would result in direct permanent impact to .0.06 J acre of impact to wetlands; 0.07 J acre of impact to other water features; and 0.51 acre of impact to riparian buffers. – Wetlands between DUS and Pecos Street were included in the February Nationwide Permit approved for the Gold Line Final EIS (FTA 2009) (Appendix C).	– Mitigation will be the same as those measures for Alignment and Stations Direct and Temporary Construction Impacts.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– The BNSF Railway Company is considering an additional storage track near the South Westminster/71st Avenue Station. If this option were to be implemented, it would create an additional direct, permanent impact to other water features of <0.01 acre. The impacted other water feature is not considered jurisdictional by the USACE.	
Preferred Alternative Indirect Impacts – Indirect permanent impacts to wetlands and other water features would include constriction of stream flow from bridge construction, erosion resulting in sedimentation, and noxious weed invasion.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Construction of the Preferred Alternative would result in temporary impacts to 0.93 acres (0.76 J and 0.17 NJ) of waters of the United States – Construction of Phase 1 of the Preferred Alternative would impact 0.24 acre (0.07J and 0.17 NJ) of waters of the United States.	– Prior to construction, orange temporary fence and sediment control measures will be placed to protect existing wetlands that are located outside the planned area of disturbance. – Wetland areas designated as areas of temporary disturbance that will be used for construction access will be covered with geotextile, straw, and soil prior to use. – Temporarily impacted wetlands will be restored to their preconstruction condition. – Construction equipment moving between watersheds will be washed prior to commencing work within a new area to prevent the spread of aquatic invasive species. – BMPs will be implemented during all phases of construction to reduce impacts from sedimentation and erosion, including the use of berms, brush barriers, check dams, erosion control blankets, filter strips, sandbag barriers, sediment basins, silt fences, straw-bale barriers, surface roughening, and/or diversion channels.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	– When practicable, construction in waterways will be performed during low-flow or dry periods. – Flowing water will be diverted around active construction areas. – No fill material will be stored in wetlands or other water features. – No unpermitted discharges will be allowed. – There will be no equipment staging, storage of materials, use of chemicals (such as soil stabilizers, dust inhibitors, and fertilizers), or equipment refueling within 50 feet of wetlands or other water features. – Any new or modified bridges will be designed to minimize direct discharge of stormwater runoff into wetlands. – City of Boulder wetlands mitigations will be completed per City of Boulder requirements.
Preferred Alternative Cumulative Impacts – Since 1950, the amount of wetlands located in both the NWR project study area and the larger Denver metropolitan area has decreased due to more than doubling of the population. Historically, Colorado's wetlands only accounted for 3 percent of the surface area of the state. Due to a lack of regulations prior to the early 1970s, up to 50 percent of those wetlands have been lost, which is proportionately greater than other habitat type losses in Colorado (RTD, 2007). Due to improved regulations protecting wetlands, the loss of wetlands will be markedly less than experienced historically. Implementing the Preferred Alternative could encourage moderately denser growth, thus slightly reducing the potential for wetlands on some undeveloped land to be impacted in the future.	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Floodplains/Drainage/Hydrology	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Minimal effects on future flood elevations due to the construction of new bridges and the expansion of existing crossings on the 18 different 100-year floodplain crossings. But in two places the 100-year floodplain either remains the same or lowers in elevation. – Floodplain elevations would increase at Coal Creek and South Boulder Creek bridge crossings. In both cases, the proposed bridges would be adequate to pass the 100-year flow and the changes are less than the FEMA criteria allowing no more than a 1.0 foot elevation rise in the 100-year water surface elevation. – The Downtown Longmont Station (75% of total area) would be located within the 100-year floodplain, including parking lots and commuter rail platforms. – The City of Longmont is currently evaluating options for capturing and conveying flows from the 100-year storm event area that would minimize 100-year floodplain impacts at the Downtown Longmont Station.	– Onsite detention in accordance with UDFCD and local jurisdictions. – Obtain required floodplain modification permits.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Phase 1 Direct Impacts – Phase 1 would cross the South Platte River on a new bridge. Requires construction of two bridge piers in the South Platte 100-year floodplain, which is estimated to result in a rise of the 100-year flood elevation of 0.19 foot, which meets the FEMA criteria of a less than a 1-foot rise in the 100-year flood elevation. – Phase 1 would also cross the Clear Creek on a new bridge built just upstream of the existing bridge. The new bridge would result in an overtopping of the 100-year floodplain by 0.47 feet. – The South Westminster/71st Avenue Station (3% of total area) would be located in the floodplain. This station would be designed to accommodate the 100-year floodplain flows and adhere to all FEMA regulations.	– Onsite detention in accordance with Urban Drainage and Flood Control District (UDFCD) and local jurisdictions. – Obtain required floodplain modification permits.
– Preferred Alternative Indirect Impacts – Planned increase in urban density due to TOD would result in additional impervious surfaces. All planned developments would be required to fulfill state and local government storm drainage requirements that limit storm runoff to historic undeveloped levels.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Temporary construction impacts within the 100-year floodplain resulting in increased erosion and sedimentation due to land disturbance activities would be minimal due to the proper implementation of BMPs and erosion control techniques and devices.	– UDFCD and local jurisdictional requirements. – Temporary BMPs such as silt fence, erosion logs, check dams, sediment traps and basins, as well as storm sewer inlet protection and rip rap, will be implemented to reduce the amount of erosion and sedimentation during the construction process and prevent sediment from reaching state waters
Preferred Alternative Cumulative Impacts – The amount of impervious surfaces and runoff would continue to increase with continued urban expansion in the NWR project study area. Projected	– No mitigation required.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
development would substantially increase impervious surfaces in existing undeveloped areas by adding buildings, sidewalks, and streets to support an expanding economy as well as population. Continued population growth between 2005 and 2035 would result in approximately 3,300 acres of impervious surfaces in the NWR project study area. The Preferred Alternative would result in an additional 92 acres of impervious surfaces, or less than 3 percent of the estimated new impervious surfaces in 2035. Impacts associated with additional impervious surfaces would be managed to predevelopment conditions using jurisdictional detention requirements, which have proven to be effective in minimizing the effects of urban runoff (RTD, 2007b).	
Hazardous Materials	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Assessment and management of hazardous materials during construction of the proposed alignment outside the proposed station footprints would be the responsibility of BNSF Railway Company – Greatest potential to encounter hazardous materials would be during construction and would be closely correlated to land use; specifically with properties that have a history of commercial and/or industrial uses. There are approximately 27 sites ranked with a moderate to high risk ranking located within the proposed station footprints.	– Prepare a Materials Management Plan to address the potential to encounter contaminated soil and groundwater. – Conduct an individual site-specific Phase I Environmental Site Assessment (ESA) of properties prior to acquisition. – Complete site-specific Phase II ESA with subsurface investigation (soil and groundwater) for sites that may have been contaminated or affect final design, as documented by the Phase I ESA, where appropriate. – Determine engineering controls to minimize quantity of contaminated materials. – Determine long-term maintenance of potentially contaminated properties. – Complete an asbestos survey and a lead-based paint survey on the buildings and structures proposed for demolition; complete abatement as needed. – Follow Environmental, Health and Safety CDOT Standard Specifications for

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	Road and Bridge Construction. – Implement construction BMPs in accordance with a Stormwater Pollution Prevention Plan. BMPs may include secondary containment areas for refueling construction equipment, berms or ponds to control runoff, and a monitoring program to test stormwater for contaminants prior to discharge from the construction site. – Prepare and implement a Health and Safety Plan. – Compliance with Occupational Safety and Health Administration requirements for construction workers who may be exposed to hazardous materials.
Phase 1 Direct Impacts – Phase 1 would result in potentially impacting 12 hazardous sites generally associated with private commercial or industrial businesses. – Construction-related activities that may encounter hazardous materials include: • Removal or replacement of contaminated track ballast or railroad ties; • Excavation and drilling during construction of bridge abutments and piers; and • Excavation during construction of the proposed alignment • In addition, three potential hazardous materials sites at the South Westminster/71st Avenue Station may be impacted.	– Mitigation for Phase 1 will be the same as those measures identified for the Alignment and Stations Direct and Temporary Construction Impacts above.
Preferred Alternative Indirect Impacts – No indirect impacts.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – Impacts would be the same as those identified under Direct Impacts.	– Mitigation for temporary construction impacts will be the same as those measures identified for direct impacts above.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
Preferred Alternative Cumulative Impacts – No cumulative impacts.	– No mitigation required.
Public Safety and Security	
NWR Corridor Alignment and Proposed Stations Direct Impacts – Crime at transit stations or on board vehicles is expected to reflect the crime activity of the surrounding communities. – Increased train frequency at at-grade railroad crossings could increase emergency response times. The higher frequency of trains could also impact safety at railroad crossings. However, safety at most crossings would improve when crossings are outfitted with the minimum crossing protection measures required by RTD standards.	– No mitigation required beyond the adherence to RTD's station design standards for safety and security. – RTD will convene a Fire and Life Safety Committee that will assist in preparing in an emergency plan and coordinate response to emergency situations.
Phase 1 Direct Impacts – Phase 1 would result in no new public at-grade crossings, therefore avoiding any impairment to emergency services. – Crime rates at the South Westminster/71st Avenue Station would be expected to remain low, consistent with crimes reported at existing park-n-Ride stations in the area.	– Mitigation for Phase 1 will be the same as those measures identified for the direct and temporary construction impacts above.
Preferred Alternative Indirect Impacts – Transit stations may induce additional development in the surrounding areas that would generate higher traffic volumes in those areas and increase the potential for accidents at at-grade railroad crossings. However crossing protection measures required by RTD standards would improve safety at most crossings.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts	– RTD will prepare a Construction Management Plan that specifies public

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
– Construction-related hazards are a potential concern. – Police, fire, and emergency services may be adversely affected by increased response times due to construction activities.	communications and construction means and methods to reduce or mitigate construction traffic and preserve access to homes, businesses, and community facilities. – RTD will follow standard operating procedures to minimize traffic disturbances. – Traffic detour plans will be provided to address the two week closure of local streets during at-grade crossing construction.
Preferred Alternative Cumulative Impacts – No cumulative impacts to public safety and security.	– No mitigation required.
Utilities	
NWR Corridor Alignment and Proposed Stations Direct Impacts All impacts of the Preferred Alternative would occur during construction: – 235 potential utility relocations and 28 potential utility adjustments for construction of the proposed alignment. – 19 potential utility relocations and 58 potential utility adjustments for construction of the proposed stations.	– Relocation of electric transmission towers: schedule construction during period of low use (October to April); and modify design to avoid/minimize conflict. – Adjustment or relocation of high pressure gas line(s): schedule construction during period of lower use (May to September); modify design to avoid/minimize conflict; and protect in place. – Adjustment or relocation of buried fiber optic: early coordination with utility owners; modify design to avoid/minimize conflict; protect in place; and obtain variance to minimum depth requirement. – Adjustment or relocation of water lines and sanitary sewers: modify design to avoid conflict; schedule disruption of service for low use period; and minimize disruption of service to water lines. – New roadway or additional/reduced cover on buried utilities: add encasement or protective cover over utilities (protect in place). – Relocation of overhead telephone and electric distribution lines: early coordination with utility owners.
Phase 1 Direct Impacts	– Mitigation for Phase 1 will be the same as those measures identified for the

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
All impacts of the Preferred Alternative would occur during construction: – 58 potential utility relocations. – 19 potential utility adjustments.	Alignment and Stations Direct Impacts above.
Preferred Alternative Indirect Impacts – Increase in population related to TOD would require more utilities near stations. – Additional storm sewers to accommodate increase in impervious surface areas.	– No mitigation required.
Preferred Alternative Temporary Construction Impacts – All construction impacts to utilities are direct impacts.	– Mitigation for temporary construction will be the same as those measures identified for the Alignment and Stations Direct Impacts above.
Preferred Alternative Cumulative Impacts – Proposed development of the areas adjacent to the proposed stations would require the extension, augmentation, or modification of utilities. – Overall, the Preferred Alternative would not result in significant long-term secondary or cumulative adverse impacts on utilities.	– No mitigation required.
Transportation Systems	
Transportation Impacts	– All mitigation measures will be implemented as noted in 2015 or by 2035
NWR Corridor Preferred Alternative Direct Impacts – The Preferred Alternative would provide new high-capacity commuter rail service to areas in the NWR Corridor generally along United States Highway 36 (US 36) and State Highway (SH) 119. – The Preferred Alternative would provide a reliable transit option to congested roadway travel and offer improved travel times. Estimated a.m. peak hour transit travel time in 2035 for the Preferred Alternative from the Downtown Longmont Station at 1st Avenue/Terry Street to Denver Union Station (DUS) is 61 minutes with FasTracks-only stations and 68 minutes with all stations. The projected auto travel time from 1st Avenue/Terry Street in Downtown Longmont to DUS is 79	

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
minutes along Interstate 25 (I-25) in general travel lanes. – The Preferred Alternative would provide service to 8,400 riders under the FasTracks-only scenario and 12,100 riders under the all stations scenario during an average weekday in 2035. – The assumed bus operations would be the same as for the No Action Alternative except that service on the BOLT would be reduced so as not to compete with the new NWR Corridor rail line, and the S route would be eliminated. In addition, existing bus routes would be routed to provide service to the proposed commuter rail stations. – The Preferred Alternative would allow for shared use of tracks for freight rail operations. There would be negligible effects on freight rail operations. – The Preferred Alternative would not permanently impact existing pedestrian and bicycle facilities and would not preclude the development of planned pedestrian and bicycle facilities in the vicinity of the proposed alignment and stations. Some trails may be temporarily impacted due to construction. Trails would be rerouted when possible, and detours would be coordinated with local jurisdictions. – The Preferred Alternative would provide approximately 4,899 additional parking spaces at stations by 2015 as indicated in Table ES-8 above and add another 435 spaces by 2035 (at Downtown Longmont).	
– Station Area Traffic Impacts	South Westminster/71st Avenue – The station access intersection to Federal Boulevard will be signalized (2015) – The southbound right turn lane will be converted into a shared through/right lane at the Federal Boulevard/70th Avenue intersection (by 2035). – At the Federal Boulevard/71st Avenue intersection, the left turn from eastbound 71st Avenue to northbound Federal Boulevard would be prohibited (by 2035).

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	Westminster Mall/88th Avenue – A westbound left turn lane will be added at the Harlan Street/Mall Access intersection (2015).
	Broomfield/116th Avenue – The Teller Street/120th Avenue intersection will be signalized (2015).
	Downtown Louisville – No project specific mitigation is required for the Downtown Louisville Station if the proposed improvements along SH 42 are constructed prior to the construction of the station. – If the SH 42 improvements are not constructed prior to the construction of the station, then the following mitigations will be made: – Harper Street/SH 42: The eastbound left turn would be prohibited (2015). – Griffith Street/SH 42: The eastbound and westbound left turns, as well as the through movements would be prohibited (2015). – Short Street/SH 42: Northbound and southbound left turn lanes will be striped onto the existing pavement at Short Street. The east leg of the intersection will be constructed and the intersection is proposed to be signalized (2015). – South Street/SH 42: The eastbound left turn would be prohibited (2015).
	East Boulder – The West Access/Arapahoe Avenue intersection will have left turns prohibited from minor streets (2015), and the East Access/Arapahoe Avenue intersection will be signalized (2015). – A northbound right turn lane would be added to the intersection of Westview Drive/Arapahoe Avenue (2015).
	Boulder Transit Village – The 30th Street/Bluff Street intersection will be signalized (2015).

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	Downtown Longmont – The Main Street/Boston Avenue intersection would be signalized (2015). – An eastbound left turn lane will be added on Boston Avenue at the Pratt Parkway/Boston Avenue intersection in 2015, and by 2035 that intersection will be signalized.
– Roadway Mitigations Proposed in the vicinity of at-grade railroad crossings	West 72nd Avenue and Bradburn Boulevard – Add a left turn lane with 150 feet of storage to the southbound approach of Bradburn Boulevard at 72nd Avenue. The approach would consist of one left turn lane and one shared left/right turn lane. – Widen 72nd Avenue east of Bradburn Boulevard to six lanes by adding one westbound right turn lane and converting the two-way left turn lane (TWLTL) to a westbound through lane. The widened segment of 72nd Avenue would consist of three westbound through lanes, a westbound right turn lane and two eastbound through lanes east of Bradburn Boulevard. – Widen 72nd Avenue between Bradburn Boulevard and Raleigh Street to six lanes, adding one westbound through lane and one eastbound left turn lane. The TWLTL would be converted into a westbound left turn lane. The widened segment of 72nd Avenue would consist of two westbound through lanes, one westbound left turn lane, two eastbound through lanes and one eastbound left turn lane. – Change the westbound left turn phase of the 72nd Avenue/Raleigh Street intersection from permissive only, to protected/permissive. – Interconnect all signals, including the four on 72nd Avenue and one on Bradburn Boulevard, into one coordinated signal system. Optimize the signal timing to reduce overall corridor delay and queue lengths.
	South Boulder Road

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	– Railroad preemption controls (recommend further study)
	Niwot Road and 2nd Avenue – Construct an additional through lane approximately 500 feet in length along northbound Diagonal Highway approaching Niwot Road. – Construct an additional lane along northbound Diagonal Highway between Niwot Road and 2nd Avenue (approximately 1,000 feet). The additional lane would become a right turn lane at 2nd Avenue. – Re-stripe westbound Niwot Road between the railroad crossing and northbound Diagonal Highway to provide a though lane and a shared through/right turn lane. – Interconnect all four signals to operate at one coordinated system and optimize the signal system for cycle length and offsets.
	Mineral Road (SH 52) In the DRCOG 2035 Metro Vision Regional Transportation Plan, CDOT has identified an interchange construction project at the Mineral Road (SH 52) and Diagonal Highway (SH 119) intersection. The proposed interchange includes a grade-separation of SH 52 and SH 119. However, funding for the interchange has not been fully identified. In the absence of the interchange project moving forward, potential mitigation measures for the interim at-grade condition were studied. – Eastbound approach on Mineral Road (SH 52): Construct a second left turn lane with 300 feet of storage, and a second through lane. The widened approach would consist of two left turn lanes, two through lanes and one right turn lane. These improvements would require the widening of pavement for this approach. The second through lane would extend across Diagonal Highway (SH 119) and the rail crossing and would become a right turn lane at the intersection of Mineral Road/71st Street.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative	
Impacts	**Proposed Mitigation**
	– Westbound approach on Mineral Road (SH 52): Construct a second left turn lane, a second through lane and a right turn lane. The widened approach would consist of two left turn lanes, two through lanes and a right turn lane. – Northbound approach on Diagonal Highway (SH 119): Construct two additional through lanes. The widened approach would consist of two left turn lanes, four through lanes, and one right turn lane. The four through lanes would extend through the Mineral Road intersection. The additional lanes would end a maximum of 1,000 feet north of the intersection, with only two lanes continuing north along Diagonal Highway. – Southbound approach on Diagonal Highway (SH 119): Construct one additional left turn lane with 300 feet of storage and two additional through lanes. The widened approach would consist of two left turn lanes, four through lanes and one right turn lane. The four through lanes would extend through the Mineral Road intersection. The additional lanes would end a maximum of 1,000 feet south of the intersection, with only two lanes continuing south along Diagonal Highway. – Set all left turn signal phases to be protected only. – Set all right turn signal phases to be permissive/overlapping. – The traffic signal should be coordinated with the Mineral Road rail crossing. – The extensive intersection improvements proved insufficient in eliminating traffic queues between the intersection of Mineral Road/Diagonal Highway and the railroad crossing. These extensive intersection improvements proved insufficient in eliminating queue spillbacks between the intersection of SH 52/SH 119 and the railroad crossing. It is recommended that RTD and CDOT consider possibilities for joint participation in implementing CDOT's proposed interchange project.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative			
Impacts	**Proposed Mitigation**		
Improvements to grade crossings required for safety and/or Quiet Zones.	Street	Existing Rail Crossing Treatment	Mitigation (All 2015)
	West 64th Avenue	At-Grade – dual gates	At-Grade – dual gates with raised median
	Lowell Boulevard	At-Grade – dual gates	At-Grade – dual gates with raised median
	West 72nd Avenue	At-Grade – dual gates	At-Grade – three gate system with raised median
	Bradburn Boulevard	At-Grade – dual gates	At-Grade – quad gates
	West 76th Avenue	At-Grade – dual gates	At-Grade – quad gates
	West 80th Avenue	At-Grade – dual gates	At-Grade – quad gates
	West 88th Avenue	At-Grade – dual gates with raised median	Same as existing
	Pierce Street	At-Grade – dual gates with raised median	At grade – quad gates
	Old Wadsworth Boulevard	At-Grade – dual gates	At-Grade – dual gates with raised median
	West 112th Avenue	At-Grade – dual gates	At-Grade – dual gates with raised median
	West 120th Avenue	At-Grade – dual gates	At-Grade – quad gates
	Nickel Street	At-Grade – dual gates with raised median	Same as existing
	Brainard Drive	At-Grade – dual gates	At-Grade – dual gates

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative			
Impacts	**Proposed Mitigation**		
			with raised median
	Carbon Road	Closed	Same as existing
	Dillon Road	At-Grade – dual gates with raised median	Same as existing
	Lock Street	Closed	Same as existing
	Pine Street	At-Grade – dual gates	At-Grade – quad gates
	Griffith Street	At-Grade – dual gates	At-Grade – quad gates
	South Boulder Road	At-Grade – dual gates with raised median	Same as existing
	Baseline Road	At-Grade – dual gates	At-Grade – dual gates with raised median
	Private Road (MP 22.20)	At-Grade – passive	At-Grade – dual gates
	63rd Street	At-Grade – dual gates with raised median	At-Grade – quad gates
	55th Street	At-Grade – dual gates with raised median	Same as existing
	Private Road (MP 26.96)	At-Grade – passive	At-Grade – dual gates
	Pearl Street	At-Grade – dual gates with raised median	Same as existing
	Valmont Road	At-Grade – dual gates with raised median	Same as existing
	North 47th Street	At-Grade – dual gates with raised median	Same as existing

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative			
Impacts	**Proposed Mitigation**		
	Independence Road	At-Grade – dual gates	At-Grade – dual gates with raised median
	Jay Road	At-Grade – dual gates with raised median	Same as existing
	North 55th Street	At-Grade – dual gates	At-Grade – quad gates
	North 63rd Street	At-Grade – dual gates with raised median	Same as existing
	Mineral Road/SH 52	At-Grade – dual gates	At-Grade – dual gates with raised median[2]
	Monarch Road	At-Grade – dual gates	At-Grade – dual gates with raised median
	Niwot Road	At-Grade -- dual gates with raised median	Same as existing
	2nd Avenue	At-Grade – dual gates	At-Grade – dual gates with raised median
	83rd Street	At-Grade – dual gates	At-Grade – quad gates
	Ogallala Road	At-Grade – dual gates	At-Grade – quad gates
	Private Road (MP 40.65)	At-Grade – passive	At-Grade – dual gates
	95th Street/Hover Road	At-Grade – dual gates with raised median	Same as existing

[2] The Mineral Road (SH 52)/SH 119 intersection is identified as the location of a future interchange in the 2035 MVRTP; the treatment shown here would be applied under the at-grade condition.

TABLE ES-11. SUMMARY OF IMPACTS AND PROPOSED MITIGATION

Preferred Alternative			
Impacts	**Proposed Mitigation**		
	Sunset Street	At-Grade – dual gates	At-Grade – dual gates with raised median
	Ken Pratt Boulevard/SH 119**	At-Grade – dual gates with raised median**	Same as existing
	Terry Street	At-Grade – passive	Closure
	Coffman Street	At-Grade – passive	Closure
Preferred Alternative Indirect Impacts – Preferred Alternative would encourage TODs and slightly reduce future VMT.	– No mitigation required.		
Preferred Alternative Temporary Construction Impacts – Increased construction traffic would occur with the Preferred Alternative.	– Construction Mitigation Plans (CMPs). – Methods of handling traffic to be identified that could limit times of construction traffic on major routes.		

Source: NWR Corridor Project Team, 2009.