

## 7.1 APPLICATION OF SECTION 4(f)

### Introduction

Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966, as amended, and codified in 49 United States Code (USC) § 303, declares that “[i]t is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.” The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) have adopted regulations to ensure its compliance with Section 4(f) (23 Code of Federal Regulations [CFR] 774).

Section 4(f) specifies that:

“The Administration may not approve the use of a Section 4(f) property unless it makes a determination that:

1. there is no feasible and prudent avoidance alternative to the use of land from the property; or
2. the action includes all possible planning to minimize harm to the property resulting from such use.”

Section 4(f) further requires consultation with the Department of Interior and, as appropriate, the involved offices of the U.S. Department of Agriculture and the U.S. Department of Housing and Urban Development, and relevant state and local officials, in developing transportation projects and programs that use lands protected by Section 4(f).

The Preferred Alternative, as described in Chapter 2, Alternatives Considered, is a transportation project that may receive federal funding and/or discretionary approvals through USDOT; therefore, documentation of compliance with Section 4(f) is required.

This Section 4(f) evaluation has been prepared in accordance with the joint FHWA/FTA regulations for Section 4(f) compliance codified at 23 CFR §774 and Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU). Additional guidance has been obtained from the FHWA Technical Advisory T 6640.8A (1987) and the revised FHWA Section 4(f) Policy Paper (2005). The Technical Advisory and Policy Paper will be followed to the extent that they do not conflict with 23 CFR 774.

At this stage, approximately 5 to 10 percent design, the Section 4(f) evaluation is preliminary, and serves to help distinguish uses between packages. Consultations with local jurisdictions on parks and wildlife and waterfowl refuges will continue through the National Environmental Policy Act of 1969 (NEPA) process and final design.

### Section 4(f) “Use”

As defined in 23 CFR §774.17, the “use” of a protected Section 4(f) resource can be classified as a direct use, a temporary use, a *de minimis* use, or a constructive use. These terms are defined in the following sections.

#### **Direct Use**

A direct use of a Section 4(f) resource takes place when the land is permanently incorporated into a transportation facility.

#### **Temporary Use**

A temporary use of a Section 4(f) resource occurs when there is a brief use of a Section 4(f) resource, considered adverse in terms of the preservationist purposes of the Section 4(f) statute. After the period of use, the resource must be restored to the condition in which it was originally found.

Under the FHWA/FTA regulations, a temporary occupancy of property *does not* constitute a use of a Section 4(f) resource when the following conditions are satisfied:

- The occupancy must be of temporary duration (i.e., shorter than the period of construction) and not involve a change in ownership of the property.
- The scope of work must be minor, with only minimal changes to the protected resource.
- There are no permanent adverse physical effects to the protected resource, nor will there be temporary or permanent interference with activities or purpose of the resource.
- The property being used must be fully restored to a condition that is at least as good as that which existed prior to the proposed project.
- There must be documented agreement of the appropriate officials having jurisdiction over the resource regarding the foregoing requirements.

### **Constructive Use**

Constructive use occurs when the transportation project does not incorporate land from a Section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the resource are substantially diminished. This determination is made through the following:

- Identification of the current activities, features, or attributes of the resource that may be sensitive to proximity impacts.
- Analysis of the proximity impacts on the resource.
- Consultation with the appropriate officials having jurisdiction over the resource.

### **De minimis**

Section 4(f) requirements allow the USDOT to determine that certain uses of Section 4(f) land will have no adverse effect on the protected resource. When this is the case, the use is considered *de minimis*, and compliance with Section 4(f) is greatly simplified. A thorough discussion of *de minimis* requirements, processes, and resources recommended for *de minimis* findings appears in Section 7.4, Uses of Section 4(f) Resources.

## 7.2 PROJECT INFORMATION

### Purpose and Need

FHWA and FTA, in cooperation with the Colorado Department of Transportation (CDOT) and the Regional Transportation District (RTD), have jointly initiated this Final Environmental Impact Statement (FEIS) to identify and evaluate impacts of multi-modal transportation improvements in the United States Highway 36 (US 36) corridor, an existing highway alignment between Interstate 25 (I-25) in Adams County and Foothills Parkway/Table Mesa Drive in Boulder (a distance of approximately 18 miles). The corridor is divided into six segments as shown in Figure 7.2-1, Project Area. Between I-25 and the edge of Boulder County, US 36 transects through a highly urbanized area lined with residential and commercial properties. Various parks, recreational areas, and historic resources are interspersed along the alignment. Ditches that range in length between 3 and 34 miles cross the alignment in multiple locations and in the Boulder Segment, wildlife and waterfowl refuges surround US 36 and the City of Boulder. All of these features are shown on Figure 7.2-2, Section 4(f) Resources Within the Project Area. The U.S. Army Corps of Engineers (USACE) is a cooperating agency for this project.

The purpose of improvements in the US 36 corridor is to improve mobility between I-25 in Adams County and Foothills Parkway/Table Mesa Drive in Boulder, and among intermediate destinations. The transportation needs of the project are:

- Increase trip capacity
- Expand access
- Provide congestion relief
- Provide multi-modal opportunities
- Create efficient transit service
- Upgrade outdated highway facilities

These six Purpose and Need elements were used along with other requirements from state and federal laws, existing local land use policies, and funding availability, to develop four project goals: improve mobility, minimize adverse socioeconomic and environmental impacts, support the *2035 Metro Vision Regional Transportation Plan*, as amended (DRCOG 2009), and local plans and policies, and provide a cost-effective and efficient transportation investment strategy. These goals were used to develop different criteria to evaluate alternatives and packages at the general, conceptual, and package screening levels. A complete discussion of the project Purpose and Need is provided in Chapter 1, Purpose and Need, and a discussion of the alternatives screening process is provided in Chapter 2, Alternatives Considered.

### Project Packages

Four packages are being considered in this FEIS: Package 1, Package 2, Package 4, and the Combined Alternative Package (Preferred Alternative).

#### **Package 1: No Action**

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

The 2004 *FasTracks Plan* (RTD 2004) included seven rail stations for the Northwest Rail commuter line. Those stations were located at Twin Peaks in Longmont, IBM at Diagonal Highway (State Highway [SH] 52/SH 119 in Niwot), Boulder Transit Village, Downtown Louisville, Flatiron in Broomfield, Church Ranch Boulevard, and Westminster Center. Additional rail stations at 88<sup>th</sup> Avenue/Sheridan Boulevard in Westminster, 116<sup>th</sup> Avenue in Broomfield, and 63<sup>rd</sup> Avenue/Arapahoe Road in Boulder, were added in the early planning stages of the US 36 Environmental Impact Statement (EIS) at the request of corridor stakeholders when the Northwest Rail Corridor and US 36 projects were one combined project. The IBM Station was subsequently moved south and renamed the Gunbarrel West Station. The exact station locations and amenities at each station will be determined in the USACE/RTD Northwest Rail Environmental Assessment/Environmental Evaluation, now a separate study. The additional stations and the relocation of the IBM Station may be reconsidered in that study.

The No Action Package includes replacement of the 80<sup>th</sup> Avenue and Cherryvale Road bridges. It also includes the 120<sup>th</sup> Avenue connection in Broomfield. These are CDOT projects already planned or under construction.

### **Package 2: Managed Lanes/Bus Rapid Transit**

In general, Package 2 would add two managed lanes in each direction on US 36. The managed lanes would connect to and be an extension of the existing I-25 express lanes that go to and from downtown Denver. The managed lanes would be located in the median, and separated from the general-purpose lanes by a concrete barrier. Bus rapid transit (BRT) stations would be located in the median and connected to adjacent parking via pedestrian bridges or underpasses.

A barrier-separated facility is proposed due to the potential for large speed differences between traffic in the general-purpose and managed lanes. Access to and from the managed lanes would be provided by a combination of drop- and slip-ramps. Drop-ramps would be used because travel demand forecasts showed that the volume of traffic trying to exit and enter the managed lanes through a slip-ramp would be enough to cause congestion in both the managed and general-purpose lanes. The drop-ramps would provide access to and from the managed lanes at the existing Westminster Boulevard bridge and a new bridge at Midway Boulevard. The drop-ramps would consist of one or more separate lanes in each direction that would transition from the managed lanes up to bridges, allowing access to and from arterial streets. Bypass managed lanes would continue on either side of the drop-ramp lanes. Additional information on Package 2 is located in Chapter 2, Alternatives Considered.

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

The basic configuration in Package 4 consists of one additional general-purpose lane and one additional BRT/high-occupancy vehicle (HOV) lane in each direction. The BRT/HOV lanes would be located in the median of US 36 in a buffer-separated configuration similar to the existing condition between Sheridan Boulevard and Pecos Street, with new median BRT stations connected to adjacent park-n-Rides via pedestrian bridges or underpasses. Rather than exiting the highway to pick up and drop off passengers at park-n-Rides, buses would stop at the median stations for passenger boarding and alighting. Additional information on Package 4 is also located in Chapter 2, Alternatives Considered.

### **Additional Options to Package 2: Managed Lanes/Bus Rapid Transit, and Package 4: General-Purpose Lanes, High-Occupancy Vehicle, and Bus Rapid Transit**

Two options, Option A and Option B, are being considered in Packages 2 and 4 for the project terminus at Foothills Parkway/Table Mesa Drive. Detailed descriptions of these options are contained in the Technical Reports, *US 36 Alignment Operational Details* (URS 2007), and *US 36 West End Termini Design Options* (URS 2005). The options are summarized below:

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

Bicycle/pedestrian facilities are part of both Packages 2 and 4. In general, the bicycle/pedestrian facilities planned for these packages include a 12-foot wide path between Bradburn Boulevard in Westminster, and the Table Mesa park-n-Ride in Boulder. Crossings of major arterials along US 36 would be grade-separated. An alternative for the west end of the bicycle facility would transition the bikeway to off-street bike routes on Cherryvale Road and South Boulder Road.

Packages 2 and 4 would both provide substantially enhanced bus service in the US 36 corridor, including regional, express, local bus service, and a new layer of bus service called activity center circulator/connector routes.

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

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

The Combined Alternative Package (Preferred Alternative) roadway changes would include improvements to cross street intersections and interchanges. Those improvements would include upgrading lane transitions of ramp terminals, widening cross streets at the intersection, lengthening turn-lanes and adding turn-lanes.

The Combined Alternative Package (Preferred Alternative) would include a bikeway facility adjacent to US 36. In general, the bikeway would be an off-street separated multi-use path adjacent to US 36. Where appropriate, the bikeway would connect to and make use of existing on-street and off-street facilities.

At this location, two options were evaluated to provide access from the University of Colorado, Boulder South Campus to Table Mesa Drive. This access is currently provided through Loop Drive, which connects to Table Mesa Drive at an intersection with the eastbound US 36 exit to Table Mesa Drive. The Combined Alternative Package (Preferred Alternative) would maintain this connection and require buses to access the BRT station on the south side of US 36 from a ramp located on Loop Drive. In the Local Streets Option, this access would be provided from Table Mesa Drive, eliminating direct access from the University of Colorado, Boulder South Campus to Table Mesa Drive from Loop Drive. Instead, this access to Table Mesa Drive would be provided through a connection to Tantra Drive.

Finally, the Combined Alternative Package (Preferred Alternative) would provide BRT improvements including new and more frequent bus service in the US 36 corridor.



## 7.3 PROJECT PROCESS AND DESCRIPTION OF SECTION 4(f) RESOURCES

The Section 4(f) resources in the vicinity of the proposed project include publicly owned parks and recreation areas, wildlife and waterfowl refuges, and significant historic sites. Initially, as part of this project, public parks and recreation areas, wildlife and waterfowl refuges, and historic sites were identified along the US 36 corridor. The recreational uses of the public parks and recreation areas were evaluated to determine if they are considered Section 4(f) properties. Management plans and agencies were consulted to evaluate if the waterfowl and wildlife refuges were actively managed as refuges. Historic properties were evaluated under the National Register of Historic Places (NRHP) criteria to determine their significance. Significant historic sites are on or eligible to the NRHP for local, regional or national significance.

### **Consultation and Coordination**

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Formal consultation for purposes of the Section 4(f) evaluation has been initiated and is expected to continue through the final design and engineering phase. The consultation and coordination efforts that have occurred thus far are summarized below.

#### **Consultation with Public Park, Recreation, and Wildlife and Waterfowl Refuge Stakeholders**

Consultation and coordination with public park, recreation, and wildlife and waterfowl stakeholders have consisted of numerous personal meetings and correspondence.

The officials with jurisdiction include:

- Hyland Hills Park and Recreation District
- City of Westminster
- City and County of Broomfield
- City of Louisville
- City of Boulder, Open Space and Mountain Parks (OSMP)

Numerous meetings have been held with the above-mentioned agencies to discuss the Section 4(f) resources. The meetings have focused on the following topics:

- Amenities and activities of the resources
- Management of the resource
- Potential uses from the US 36 expansion and their severity
- Potential *de minimis* findings, if applicable
- Possible measures to minimize harm
- Consultation and coordination with the stakeholders will continue through the NEPA process and in final design

### **Cultural Resources Consultation**

FHWA has consulted with the State Historic Preservation Officer (SHPO) and the consulting parties since 2004 with regard to the identification of historic properties. Eligible properties have been identified and effects to these properties were evaluated by SHPO and the consulting parties in the Draft Environmental Impact Statement (DEIS) in August 2007. Because the US 36 Corridor Project is being documented per 36 CFR 800.8(c), this FEIS serves as the Section 106 consultation document and contains additional information on effect determinations and mitigation for SHPO and consulting party review. CDOT is also preparing a Programmatic Agreement to address how Section 106 will be conducted as construction projects associated with the Preferred Alternative are undertaken. The APE has since been updated to reflect the modified footprint of the Combined Alternative Package (Preferred Alternative). Consultation with SHPO for all Section 4(f) historic resources, and written concurrence for *de minimis* uses will be sought to satisfy the requirements of 23 CFR §138 and 49 USC §303. Section 106 consulting parties include SHPO, City of Louisville, Town of Superior, Historic Boulder, Inc., Broomfield Depot Museum, and Colorado Preservation, Inc.

### **Identified Section 4(f) Resources**

The US 36 project area is divided into six segments: Denver, Adams, Westminster, Broomfield, Superior/Louisville, and Boulder. As there are no Section 4(f) uses in the Denver Segment, it is not included in this Section 4(f) evaluation. Uses of Section 4(f) resources are discussed together by resource type in Section 7.4, Uses of Section 4(f) Resources. Figures 7.3-1 through 7.3-5 depict the Section 4(f) resources by segment.

### **Public Parks and Recreation Areas**

An initial study area was identified to determine the current and planned public parks and recreation areas within 0.5 mile of the US 36 corridor. The complete list of all public parks and recreation areas identified within the 0.5-mile study area is provided in *Parks and Open Space Technical Report* (US 36 Mobility Partnership 2005). For purposes of this Section 4(f) evaluation, only Section 4(f) resources used by the US 36 build packages are discussed.

The public parks and recreation areas considered in this evaluation include neighborhood, city, regional, state, and/or federal resources located within 150 feet of the US 36 corridor. Publicly owned trail crossings are also included. A total of 10 parks or recreational facilities (including trails) would be used by any of the build packages (see Table 7.3-1, Section 4(f) Resources — Public Parks and Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites). The locations of the Section 4(f) resources by segment are shown on Figures 7.3-1 through 7.3-5.

### **Historic Resources**

In accordance with the joint FHWA/FTA regulations, Section 4(f) requirements are applicable to historic resources of national, state, or local significance, as determined by federal, state, or local officials having jurisdiction (23 CFR Section 774 and FHWA Section 4(f) Policy Paper, March 1, 2005), and are used by the transportation project. All resources eligible for or listed on the NRHP that have been determined to have a use as a result of this project are discussed in this evaluation. A full list of historic resources is discussed in Section 4.7, Historic and Archaeological Preservation.

One archaeological site, a prehistoric hearth, would be impacted as a result of Package 2 and Package 4, but would not be impacted by the Combined Alternative Package (Preferred Alternative). Section 4(f) does not apply to archaeological sites when it is determined, after consultation with SHPO, that the resource is important chiefly because of what can be learned by data recovery. It is proposed that the hearth, as an isolated feature with little or no associated contextual material, has little value for preservation in place. This document will serve as coordination with SHPO on mitigation and adverse

effects related to the archaeological site. For additional information on Native American consultation and this archaeological site, see Section 4.7, Historic and Archaeological Preservation.

A total of 19 historic resources were identified as Section 4(f) resources that would be used by any of the build packages. Table 7.3-1, Section 4(f) Resources — Public Parks and Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites, lists resource specifics, including location and type of resource, and the reason each listing is considered a Section 4(f) resource.

## **Wildlife and Waterfowl Refuges**

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A number of wildlife and waterfowl refuges are located along the US 36 corridor in the Boulder Segment. The ownership of these properties is wholly public. Access to these properties also varies, with some having full public access and others having only limited public access or none at all. The determination of Section 4(f) applicability to these properties has been conducted in accordance with 23 CFR 774, FHWA Technical Advisory T 6640.8A (1987), and the FHWA Section 4(f) Policy Paper (2005). Only those properties that met certain criteria have been studied as part of this Section 4(f) evaluation. The criteria include the following:

- They have public ownership, in fee or in public easement.
- They have a management plan and are actively managed as a wildlife or waterfowl refuge.
- There is a use of the land.

In order to ascertain the primary purpose of the properties, applicable management plans and jurisdictions have been consulted. Only the properties that meet the above-mentioned requirements have been determined Section 4(f) wildlife and waterfowl resources. A total of nine wildlife and waterfowl refuges parcels would be used by any of the build packages (see Table 7.3-1, Section 4[f] Resources — Public Parks and Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites).

**Table 7.3-1: Section 4(f) Resources — Public Parks and Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites**

Figure and ID Number	Resource	Address/Location	Size (acres or feet)	Amenities	Official with Jurisdiction	Reasoning
<b>Adams Segment</b>						
Figure 7.3-1 578	Commissioners Park	West 76 <sup>th</sup> Avenue and Vallejo	3.2 acres	Barbeque grills, basketball, picnic tables, trail, playground, field	Hyland Hills Park and Recreation District	Recreational park
Figure 7.3-1 257	Westminster Hills Park	4105 West 80 <sup>th</sup> Avenue	2.5 acres	Basketball, baseball, picnic tables, field, tennis courts, playground, trail	City of Westminster	Recreational park
Figure 7.3-1 554	Oakwood Park	8295 Oakwood Drive	2.7 acres	Field, picnic tables	City of Westminster	Recreational park
Figure 7.3-1 123	Rotary Park	West 84 <sup>th</sup> Avenue and Wagner Drive	6.0 acres	Baseball field, playground, field	Hyland Hills Park and Recreation District	Recreational park
Figure 7.3-1 5AM1132.3/5AM1132.4/5AM1132.1/5JF1132.1/5JF1762.4 <sup>1</sup>	Allen Ditch	US 36 and Turnpike Drive, north of 80 <sup>th</sup> Avenue	34,790 feet	Historic ditch, Criterion A	SHPO	Eligible to the NRHP
<b>Westminster Segment</b>						
Figure 7.3-2 TC2	Big Dry Creek Trail Crossing	US 36 south of West 104 <sup>th</sup> Avenue	<1 acre	Trail, greenbelt	City of Westminster	Recreational trail crossing
Figure 7.3-2 5JF3787/5JF3787.2	Niver Canal	US 36 and Sheridan Boulevard	180,000 feet	Historic canal, Criterion A	SHPO	Eligible to the NRHP
Figure 7.3-2 5JF240/5JF250.4	Farmers Highline Canal	US 36 and Westminster Boulevard	180,000 feet	Historic canal, Criterion A	SHPO	Eligible to the NRHP
<b>Broomfield Segment</b>						
Figure 7.3-3 308	East Interlocken Park	US 36/Interlocken Parkway	12.9 acres	Multi-purpose fields, trails, picnic tables/shelter, greenbelt	City and County of Broomfield	Recreational park
Figure 7.3-3 TC16	East Interlocken Trail Crossing	US 36/Interlocken Parkway	<1 acre	Trail, greenbelt	City and County of Broomfield	Recreational trail crossing
Figure 7.3-3 5BF9	Residence	8375 West 120 <sup>th</sup> Avenue	N/A	Historic Residence, Criterion C	SHPO	Eligible to the NRHP

**Table 7.3-1: Section 4(f) Resources — Public Parks and Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites**

Figure and ID Number	Resource	Address/Location	Size (acres or feet)	Amenities	Official with Jurisdiction	Reasoning
Figure 7.3-3 5BF109	Residence	11415 Wadsworth Boulevard	N/A	Historic Residence, Criterion C	SHPO	Eligible to the NRHP
Figure 7.3-3 5BF7/5BF7.2	Dry Creek Valley Ditch	US 36 and 120 <sup>th</sup> Avenue	36,960 feet	Historic Ditch, Criterion A	SHPO	Eligible to the NRHP
Figure 7.3-3 5BF67/5BF67.5	Community Ditch	Irrigation canal	190,044 feet	Historic Ditch, Criterion A	SHPO	CDOT determined entire resource is not eligible to NRHP; did not get official SHPO concurrence
Figure 7.3-3 5BF98.1/5JF3752.1	Equity Ditch	Irrigation canal	58,480 feet	Historic Ditch, Criteria A and C	SHPO	Entire ditch is eligible to NRHP; this segment is non-supporting
<b>Superior/Louisville Segment</b>						
Figure 7.3-4 380	Frank Varra Park	US 36/West Flatiron Circle	16.9 acres	Open space, trail	City and County of Broomfield	Recreational park
Figure 7.3-4 TC5	Coal Creek Trail Crossing	US 36 east of McCaslin Boulevard	<1 acre	Trail, greenbelt	City of Louisville/Town of Superior	Recreational trail crossing
Figure 7.3-4 5BL5664/5BL5664.33	Coal Creek Ditch	US 36 and McCaslin Boulevard	28,000 feet	Historic Ditch, Criterion A	SHPO	Eligible to the NRHP
<b>Boulder Segment</b>						
Figure 7.3-5 TC12	South Boulder Creek Trail Crossing	US 36 between Cherryvale Road and South Boulder Road	<1 acre	Trail, greenbelt	City of Boulder	Recreational trail crossing
Figure 7.3-5 885, 886, 887	Van Vleet Open Space	US 36 and Cherryvale Road	767.9 acres	Open space, farm, nature preserve, wildlife refuge, and South Boulder Creek Trail	City of Boulder Open Space	Refuge (as designated by the City of Boulder): Actively managed for PMJM and Ute Ladies'-tresses orchid
Figure 7.3-5 889	Short Open Space	North of US 36 and east of Cherryvale Road	50.7 acres	Open space, farming, wildlife refuge	City of Boulder Open Space	Refuge (as designated by the City of Boulder): Actively managed for PMJM
Figure 7.3-5 892, 893, 897, 898	Yunker Open Space	US 36 and Cherryvale Road	189.1 acres	Open space, farm, wildlife refuge	City of Boulder Open Space	Refuge (as designated by the City of Boulder): Actively managed for PMJM, Ute ladies'-tresses orchid, Black-tailed prairie dog, and Colorado tallgrass prairie

**Table 7.3-1: Section 4(f) Resources — Public Parks and Recreation Areas, Wildlife and Waterfowl Refuges, and Historic Sites**

Figure and ID Number	Resource	Address/Location	Size (acres or feet)	Amenities	Official with Jurisdiction	Reasoning
Figure 7.3-5 903	Gallucci Open Space	North of US 36 and east of Cherryvale Road	49.0 acres	Open space, farm, wildlife refuge	City of Boulder Open Space	Refuge (as designated by the City of Boulder): Actively managed for Black-tailed prairie dog
Figure 7.3-5 5BL7529.3	US 36	US 36, MP 39.26 to MP 41.67	N/A	Historic highway, Criterion A	SHPO	Eligible to the NRHP
Figure 7.3-5 5BL750/5BL750.51	South Boulder Canyon Ditch	US 36 and South Boulder Creek	67,056 feet	Historic ditch, Criterion A	SHPO	Eligible to the NRHP
Figure 7.3-5 5BL2719/5BL2719.38	Goodhue Ditch	US 36 and Cherryvale Road	61,776 feet	Historic ditch, Criterion A	SHPO	Eligible to the NRHP
Figure 7.3-5 5BL9577/5BL9577.1	Louisville Reservoir Inlet	US 36 and Marshall Drive	16,368 feet	Historic ditch, Criterion A	SHPO	Eligible to the NRHP
Figure 7.3-5 5BL5040/5BL5040.1	Shearer Ditch	US 36 and Cherryvale Road	10,727 feet	Historic ditch, Criterion A	SHPO	Eligible to the NRHP
Figure 7.3-5 5BL453/5BL453.2	Davidson Ditch	US 36, between Cherryvale Road and Marshall Drive	53,328 feet	Historic ditch, Criterion A	SHPO	Eligible to the NRHP
Figure 7.3-5 5BL4165/5BL4165.1	McGinn Ditch	South Boulder Road, north of US 36	26,400 feet	Historic ditch, Criterion A	SHPO	Eligible to the NRHP
Figure 7.3-5 5BL5036	Viele Homestead	Southwest corner of Cherryvale Road and South Boulder Road	16 structures	Historic residence, homestead, Criteria A and C	SHPO	Eligible to the NRHP
Figure 7.3-5 5BL5042.1	Marshallville Ditch	Irrigation ditch	29,500 feet	Historic Ditch, Criterion A	SHPO	Eligible to the NRHP
Figure 7.3-5 5BL3935.34/5BL3935.35	Anderson Extension Ditch	Irrigation canal	27,984 feet	Historic Ditch, Criteria A and C	SHPO	Eligible to the NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

<sup>1</sup>Resource 5JF1762 is shown on Figure 7.3-2, Section 4(f) Resources in the Westminster Segment.

- < = less than
- CDOT = Colorado Department of Transportation
- ID = identification
- MP = milepost
- N/A = not applicable
- NRHP = National Register of Historic Places
- PMJM = Preble's meadow jumping mouse
- SHPO = State Historic Preservation Officer
- TC = trail crossing
- US 36 = United States Highway 36

## 7.4 USES OF SECTION 4(f) RESOURCES

### Introduction

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Several corridor-wide alternatives have been considered in order to avoid direct use of Section 4(f) resources along the US 36 corridor. Chapter 2, Alternatives Considered, details the three build packages under consideration along the US 36 corridor. The three build packages evaluated in this document are combinations of alternatives that satisfy the Purpose and Need for the project. All of the build alternatives (Packages 2 and 4 and the Combined Alternative Package [Preferred Alternative]) use Section 4(f) resources. The resources are shown on Figures 7.4-1 through 7.4-35, and in Photographs 7.4-1 through 7.4-15.

The use of resources for Packages 2 and 4 and the Combined Alternative Package (Preferred Alternative) are discussed together.

### Approach/Methodology

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This section describes how the proposed project would use Section 4(f) resources. For each of the resources, an overview of Section 4(f) uses is provided, followed by a description of avoidance alternatives, measures to minimize harm, and mitigation measures that have been considered. In every instance, an assessment has been made as to whether any permanent or temporary use of a resource would occur and whether the proximity of the project would cause any access disruption, ecological intrusion, noise, or aesthetic effects that would substantially impair the features or attributes that qualify the resource for protection under Section 4(f). Where there are no prudent and feasible avoidance alternatives, a least harm analysis was undertaken for each Section 4(f) resource.

The analysis of potential effects on Section 4(f) resources include:

- Evaluation of how the proposed packages would affect each Section 4(f) resource, and whether effects would result from use of the resource.
- An evaluation of any prudent and feasible alternatives to avoid use of the Section 4(f) resource. An alternative is not feasible if it cannot be built as a matter of sound engineering practice. A feasible alternative is not prudent if there are truly unusual factors present in a particular case, if there are uniquely difficult problems, if there are extraordinary operational or safety problems, or if the cost or community disruption resulting from the alternative reaches extraordinary magnitude. An alternative that fails to satisfy the Purpose and Need of the project results in an alternative that is not prudent and feasible.
- Identification of measures to minimize harm to Section 4(f) resources. When a Section 4(f) resource must be used, all planning to minimize harm, including development of mitigation measures, must be undertaken in coordination with the officials having jurisdiction over the resource.
- In instances where there are no prudent and feasible avoidance alternatives, a least harm analysis was completed for each Section 4(f) resource.

The results of the analysis are detailed in this chapter for each identified resource.

## Identified Uses

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### **Package 2: Managed Lanes/Bus Rapid Transit; Package 4: General-Purpose Lanes, High-Occupancy Vehicle, and Bus Rapid Transit; and the Combined Alternative Package (Preferred Alternative): Managed Lanes, Auxiliary Lanes, and Bus Rapid Transit**

Impacts to Section 4(f) resources for Package 2, Package 4, and the Combined Alternative Package (Preferred Alternative) are discussed together.

## Corridor-Wide Avoidance Alternatives

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Corridor-wide avoidance alternatives and whether they are prudent and feasible are described below for the three levels of evaluation: General Alternatives, Conceptual Alternatives, and Initial Package Evaluation.

### **General Alternatives**

The general alternatives were evaluated using the six project needs, and the criteria developed during the general alternatives screening process. More information on the six transportation needs can be found in Chapter 1, Purpose and Need. If an alternative did not meet the project Purpose and Need, that alternative was considered not prudent and feasible. General alternatives that avoid use of the Section 4(f) properties include the No Action Package, New Freeways on a New Alignment, Alternative Transportation Strategies, Advanced Guideway Transit, and Commuter Rail.

### **No Action Package**

The no action avoidance package makes no improvement to the current US 36 highway and maintains the existing bus system. Because this alternative does not meet the Purpose and Need of the project to increase trip capacity, expand access and mode of travel options, provide congestion relief and efficient transit service, and update outdated highway facilities, it is not a feasible and prudent alternative for avoiding the impacted Section 4(f) properties in the US 36 corridor.

### **New Freeways on a New Alignment**

The alternative for new freeways on a new alignment was determined to not meet the Purpose and Need of the project because this alternative would not substantially improve mobility in the US 36 corridor. The project Purpose and Need requires increasing capacity and providing greater access to existing land uses and future land development in the corridor. Therefore, new freeways outside the existing US 36 corridor would not serve the existing and planned activity centers in the project area. For these reasons, the alternative for new freeways on a new alignment was unable to meet the Purpose and Need of the project and therefore is not considered to be a prudent and feasible alternative.

### **Alternative Transportation Strategies**

Alternative transportation strategies, which includes Transportation System Management (TSM) and TDM and contains elements such as ramp metering and bicycle facilities, would by themselves not meet the Purpose and Need of the project since they would not substantially improve mobility or travel times between Denver and Boulder. While the US 36 corridor has a large amount of employment and retail activity, few of these areas are highly concentrated enough to substantially reduce trips within the corridor through the use of alternative transportation strategies. The overall effect of alternative transportation strategies, such as a TSM alternative, in the US 36 corridor by itself would not be sufficient to meet the Purpose and Need. Therefore, alternative transportation strategies are not considered to be prudent and feasible alternatives, although those strategies have been included as part of Packages 2 and 4 and the Combined Alternative Package (Preferred Alternative).

### ***Advanced Guideway Transit***

A monorail or similar grade-separated, guided-beam transit improvement is very complex. There is no situation anywhere in the United States, similar to the US 36 corridor, where such a technology has been used in everyday proven transit revenue service. In addition, advanced guideway transit would be a new technology that is much different than what is in use or planned for other transit service in the Denver metropolitan area and would not be able to interface with other regional transit systems. Other rapid transit alternatives would provide a similar or greater level of transportation service at one-third to one-fifth the cost and complexity than the advanced guideway transit alternative. For these reasons, advanced guideway transit was not considered a prudent and feasible alternative.

### ***Commuter Rail***

Due to technology and cost issues, commuter rail within or on the US 36 corridor was not considered prudent and feasible. At Davidson Mesa, near McCaslin Boulevard, the grade is a sustained 5 percent for approximately 1 mile westbound and approximately 0.5 mile eastbound. According to RTD criteria, the maximum grade that diesel-multiple unit or locomotive-hauled coach rail technology would accommodate for moderate distances is approximately 2.5 percent. Therefore, a tunnel would be required. Constructing a rail tunnel through Davidson Mesa and addressing ground subsidence issues with abandoned underground coal mines would present extraordinary construction costs that would be 10 to 15 times more than at-grade construction. For these reasons, the commuter rail alternative was not considered a prudent and feasible alternative.

### **Conceptual Alternatives**

After the general alternatives evaluation, the seven remaining major alternatives were further refined using results of the travel demand and engineering concept studies. The alternatives were then subjected to an evaluation process using the Purpose and Need, four project goals and the criteria developed during the conceptual alternatives evaluation process. More information on the project goals and the conceptual level criteria can be found in Chapter 2, Alternatives Considered, and more information on the Purpose and Need can be found in Chapter 1, Purpose and Need. Conceptual alternatives that avoid use of the Section 4(f) properties include new arterial lanes and light rail transit (LRT).

### ***New Arterial Lanes***

New arterial lanes do not meet the project Purpose and Need nor the project's goal to minimize adverse impacts to socioeconomic and natural environments. This alternative would not meet several elements of the Purpose and Need in that it would not provide a noticeable increase in regional automobile capacity, transit capacity, or percentage of trips carried by transit. It would not meet the projected demand threshold of an additional 10,000 peak-hour person-trips, would not expand mode of travel options nor access to activity centers, and would not make improvements to the highway design and safety issues on US 36. New arterial lanes would not minimize environmental impacts because nearly every arterial in the US 36 corridor would need to be widened. In addition, the alternative would not reduce US 36 congestion because it would not serve longer trips through the corridor. For these reasons, the alternative for new arterial lanes was unable to meet the project Purpose and Need and is not considered a prudent and feasible alternative.

### ***Light Rail Transit***

LRT on US 36 failed to meet the project Purpose and Need because without the highway improvements, the LRT alternative would not meet the projected demand threshold of an additional 10,000 peak-hour person trips. Implementation of LRT as the sole improvement in the corridor would not provide for improvements to encourage other modes of travel such as HOV, and would not expand access to activity centers because interchanges would not be upgraded and improved as identified in the Purpose and Need. Additionally, the LRT alternative would not improve existing design and safety issues that need to be addressed on US 36, therefore not meeting that element of the Purpose and Need. For these reasons, LRT

on US 36 alternative failed to meet the project Purpose and Need and was not found to be a prudent and feasible alternative.

### **Initial Package Evaluation**

Using the evaluation results from the conceptual alternatives phase, the project team developed multi-modal packages for further evaluation. Five build packages (Packages 2 through 5 and the Combined Alternative Package [Preferred Alternative]), were developed and carried forward for further analysis. As with the general and conceptual alternatives, each of the packages was subjected to an evaluation process using the four goals and criteria developed as part of the Purpose and Need.

All of the packages use Section 4(f) properties. Packages 3 and 5 were found to be not prudent and feasible for the reasons described below.

Package 3: General-Purpose Lanes and Exclusive Bus Rapid Transit, does meet the Expand Mode of Travel Options and Provide Efficient Transit Service elements of the project Purpose and Need, because Package 3 does not include HOV lanes to serve carpools and vanpools. This package has an exclusive BRT guideway that is only used by buses. Therefore, carpools and vanpools would travel in the general-purpose lanes, and would not have the travel time savings required to attract new users to these high-occupancy modes. Because of the exclusive BRT guideway that would be implemented, the capital cost of Package 3 is of an extraordinary magnitude. With a capital cost of \$784 million for the BRT facilities, Package 3 is five times more expensive than the next most expensive package with similar effectiveness in attracting new riders. For these reasons, this package does not meet the project Purpose and Need, and was not found to be prudent and feasible.

Package 5: General-Purpose Lanes and HOV, does not meet the project Purpose and Need because it would not improve interchange intersections providing expanded access to activity centers as identified in the project Purpose and Need. For this reasons, Package 5 did not meet the project Purpose and Need and was not found to be prudent and feasible.

### **Use of Parks and Recreation Resources**

Table 7.4-1, Uses of Parks and Recreation Section 4(f) Resources by Segment, summarizes the direct uses of the individual parks and recreation Section 4(f) resources identified in the study area. The resources are described in more detail in the sections following the table. The *de minimis* use of park and recreational resources is discussed later in this chapter.

**Table 7.4-1: Uses of Parks and Recreation Section 4(f) Resources by Segment**

Map Number	Resource	Section 4(f) Use			Type of Use
		Impacts Related to Package 2 Use	Impacts Related to Package 4 Use	Impacts Related to the Combined Alternative Package (Preferred Alternative) Use	
<b>Adams Segment</b>					
578	Commissioners Park	Permanent incorporation of 0.1 acre	No use	Permanent incorporation of 0.1 acre	Direct use (Package 2 and the Combined Alternative Package [Preferred Alternative])
554	Oakwood Park	Permanent incorporation of 1.8 acres	Permanent incorporation of 1.5 acres	No use	Direct use (Package 2 and Package 4)

**Table 7.4-1: Uses of Parks and Recreation Section 4(f) Resources by Segment**

Map Number	Resource	Section 4(f) Use					Type of Use
		Impacts Related to Package 2 Use		Impacts Related to Package 4 Use		Impacts Related to the Combined Alternative Package (Preferred Alternative) Use	
123	Rotary Park	Permanent incorporation of 0.6 acre		Permanent incorporation of 0.5 acre		No use	Direct use (Package 2 and Package 4)
257	Westminster Hills Park	Permanent incorporation of 0.34 acre		Permanent incorporation of 0.3 acre		Permanent incorporation of 0.5 acre	Direct use
<b>Westminster Segment</b>							
TC2	Big Dry Creek Trail Crossing	Temporary incorporation of land		Temporary incorporation of land		Temporary incorporation of land	Temporary use
<b>Broomfield Segment</b>							
TC16	East Interlocken Trail Crossing	Temporary incorporation of land		Temporary incorporation of land		Temporary incorporation of land	Temporary use
<b>Superior/Louisville Segment</b>							
TC5	Coal Creek Trail Crossing	Temporary incorporation of land		Temporary incorporation of land		Temporary incorporation of land	Temporary use
Map Number	Resource	Section 4(f) Use					Type of Use
		Impact Related to Package 2 Use		Impact Related to Package 4 Use		Impact Related to the Combined Alternative Package (Preferred Alternative) Use	
		Option A	Option B	Option A	Option B		
<b>Boulder Segment</b>							
TC12	South Boulder Creek Trail Crossing	Temporary incorporation of land	Temporary incorporation of land	Temporary incorporation of land	Temporary incorporation of land	Temporary incorporation of land	Temporary use

Source: US 36 Mobility Partnership, 2009.

Notes:

Temporary use indicates no permanent acquisitions are required for the trail crossing; however, there would be interference with these resources on a temporary basis, thus constituting a temporary use. The trail crossing would be temporarily closed during construction activities because a detour would not be able to be provided (as described below on a case-by-case basis).

< = less than

TC = trail crossing

### Commissioners Park (Map Identification Number 578)

#### Description

<i>Location</i>	West 76 <sup>th</sup> Avenue and Vallejo
<i>Size</i>	3.2 acres
<i>Type</i>	Community park
<i>Access</i>	Automobile/bicycle/pedestrian via West 84 <sup>th</sup> Street/Wagner Drive
<i>Facilities/Amenities</i>	Barbeque grills, basketball, picnic tables, trail, playground, and field
<i>Usage/Patronage</i>	Public, annual patronage unknown
<i>Relationship to Other Resources</i>	1 of 36 parks and recreation facilities in regional district
<i>Ownership/Jurisdiction</i>	Hyland Hills Park and Recreation District
<i>Significance</i>	Comparing the availability and function of this resource with the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

#### Uses of Commissioners Park by Package

Package 2 Use	Package 4 Use	Combined Alternative Package (Preferred Alternative) Use
Permanent incorporation of 0.1 acre/direct use	No use	Permanent incorporation of 0.1 acre/direct use

Source: US 36 Mobility Partnership, 2009.

#### Resource Description

Commissioners Park (see Figure 7.4-1, Uses of Commissioners Park [Map Identification Number 578], and Photograph 7.4-1) is located on the north side of US 36. Amenities include a basketball court, picnic tables, barbeque grills, and a trail. Package 2 and the Combined Alternative Package (Preferred Alternative) would require the permanent acquisition of property from the south side of Commissioners Park, along the US 36 right-of-way (ROW). The acquisition would be necessary for construction activities to accommodate the proposed widening of US 36 in this area. Package 4 would not require the acquisition of any property from Commissioners Park.

#### Section 4(f) Use

The property to be permanently acquired in Package 2 and in the Combined Alternative Package (Preferred Alternative) is a 30-foot wide and 255-foot long grassy area with picnic benches and a paved trail. Part of the trail and a picnic table are located within the construction footprint. The trail would be rebuilt 10 to 15 feet north of its current location, and the picnic table would be relocated once the trail is rebuilt. During construction activities, a trail detour around the north side of the park would be designated. Although the area used under Package 2 and the Combined Alternative Package (Preferred Alternative) would be a relatively small proportion of the total park acreage (i.e., about 3.2 percent), the acquisition of property from this public park would result in the direct use of a Section 4(f) resource. The use would not result in a change of functionality for the remainder of the park. Consultation with Hyland Hills Park and Recreation District has begun, and will continue after the publication of the FEIS.

#### Avoidance Alternative

A shift in the proposed alignment of US 36 would avoid the 0.1 used acre of Commissioners Park, but is not prudent and feasible. Since this is a long tangent in US 36, a 2-mile segment of the road would need to be shifted to the south, starting at the curve west of the Federal Boulevard interchange and ending at the curve to the east of the Pecos Street interchange. Shifting the alignment for a length of 2 miles to the south would cause severe impacts to an established community because two rows of houses and

neighborhood streets would be acquired; this would be a disproportionate impact to avoid a 30-foot wide by 255-foot long grassy area. Avoiding the park would require the acquisition of 20 residences at an estimated total cost of \$5 million, which is an extraordinary cost to avoid the impacts. Package 4 is also an avoidance alternative.

**All Possible Planning to Minimize Harm**

To minimize harm to Commissioners Park, a retaining wall will be constructed on the south side of the park. A noise wall will be built above the retaining wall to mitigate noise and visual impacts from the highway. During construction activities, a trail detour around the north side of the park will be provided. CDOT will continue to work with Hyland Hills Park and Recreation District and the local community to evaluate other ways to enhance Commissioners Park. These current plans have been discussed with the Hyland Hills Park and Recreation District, the official with jurisdiction over Commissioners Park.

As additional modifications are made during further engineering, it may be possible to further minimize harm to Commissioners Park.

Table 7.4-2, Mitigation Measures for Commissioners Park, shows the mitigation measures that will be taken under Package 2 and the Combined Alternative Package (Preferred Alternative).

**Table 7.4-2: Mitigation Measures for Commissioners Park**

Use Type	Impacts Related to the Use	Mitigation Measures <sup>1</sup>
Temporary Incorporation of Land	Disruption of use/enjoyment	<ul style="list-style-type: none"> <li>A public safety and security program will be developed and implemented for Commissioners Park with Hyland Hills Park and Recreation District, including access management, signage, and public information.</li> <li>BMPs will be used to avoid or minimize construction-related nuisances in affected areas from noise/vibration, dust, light/glare, etc.</li> </ul>
	Temporary removal of trail and picnic tables	<ul style="list-style-type: none"> <li>A detour during construction will be provided and trail and picnic tables will be replaced after construction activities are completed.</li> </ul>
Permanent Incorporation of Land	Removal of noise wall	<ul style="list-style-type: none"> <li>The existing noise wall will be replaced with an improved concrete noise wall that would be designed to minimize noise and visual impacts from the highway.</li> </ul>
	Property acquisition	<ul style="list-style-type: none"> <li>Commissioners Park or other parks owned by Hyland Hills Park and Recreation District will be enhanced to compensate for the uses of Commissioners Park.</li> <li>Property acquisition will be completed under the Uniform Act.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Notes:

<sup>1</sup>These mitigation measures apply for Package 2 and the Combined Alternative Package (Preferred Alternative).

BMP = best management practice

Uniform Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970

### Westminster Hills Park (Map Identification Number 257)

#### Description

<i>Location</i>	4105 West 80 <sup>th</sup> Avenue
<i>Size</i>	2.5 acres
<i>Type</i>	Community park
<i>Access</i>	Automobile/bicycle/pedestrian via West 80 <sup>th</sup> Avenue
<i>Facilities/Amenities</i>	Basketball court, baseball field, picnic tables, open field, tennis courts, playground, and trails
<i>Usage/Patronage</i>	Public, annual patronage unknown
<i>Relationship to Other Resources</i>	1 of 50 parks and recreation facilities in the city
<i>Ownership/Jurisdiction</i>	City of Westminster
<i>Significance</i>	Comparing the availability and function of this resource with the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

#### Uses of Westminster Hills Park by Package

Package 2 Use	Package 4 Use	Combined Alternative Package (Preferred Alternative) Use
Permanent incorporation of 0.3 acre/direct use	Permanent incorporation of 0.3 acre/direct use	Permanent incorporation of 0.5 acre/direct use

Source: US 36 Mobility Partnership, 2009.

#### Resource Description

Westminster Hills Park (see Figure 7.4-2, Uses of Westminster Hills Park [Map Identification Number 257], and Photograph 7.4-2) is a community park on the northwest corner of US 36 and 80<sup>th</sup> Avenue. Park amenities include a basketball court, baseball field, picnic tables, open field, tennis courts, playground equipment, and a trail.

#### Section 4(f) Use

All of the build packages would require the permanent acquisition of property of Westminster Hills Park. Acquisition under Packages 2 and 4 would be necessary to accommodate the proposed widening of US 36 in this area. The property to be acquired is part of a grass field and a landscaped slope. The Combined Alternative Package (Preferred Alternative) would require acquisition in order to accommodate the US 36 bikeway alignment along the eastern boundary of the park. The trail segment may be temporarily used during construction activities, but would be enhanced as part of the proposed bikeway. Although the area used under all of the build packages would be a relatively small proportion of the total park acreage (i.e., about 12 to 20 percent) and no facilities would be displaced, the acquisition of property from this public park would result in the direct use of a Section 4(f) resource. The use would not result in a change of functionality for the remainder of the park. All build packages would result in the similar uses of Westminster Hills Park.

#### Avoidance Alternative

Shifting the entire US 36 alignment to the north would avoid the park; however, this shift is not prudent and feasible because of extraordinary costs and severe community disruption. A 1-mile alignment shift would be required to avoid 0.5 acre of Westminster Hills Park. The new alignment would require the replacement of the newly constructed 80<sup>th</sup> Avenue bridge. The cost of a bridge replacement was not anticipated. This avoidance alternative would add 100 percent to the cost of the bridge. A northern shift would increase the impacts to other nearby Section 4(f) resources, Rotary Park and Oakwood Park, which would otherwise be avoided under the Combined Alternative Package (Preferred Alternative). Specifically, open fields, picnic tables, and a trail would be converted into a transportation facility.

Property acquisitions of 39 residences, at a cost of approximately \$10 million, would create additional construction costs of extraordinary magnitude. These individual impacts would create an accumulated severe impact of extraordinary magnitude to avoid less than 1 acre of park. For these reasons, an alignment shift to avoid Westminster Hills Park is not a prudent and feasible avoidance alternative.

**All Possible Planning to Minimize Harm**

To minimize harm to the Westminster Hills Park, a retaining wall will be considered on the south side of the park, along 80<sup>th</sup> Avenue, for Package 2 and Package 4. The retaining wall will decrease the amount of land acquisition needed to widen US 36. The existing wall will be replaced and enhanced with a noise barrier that will mitigate for noise and visual impacts. During construction activities, a safe trail detour will be provided if one is reasonable. The US 36 bikeway project will widen the trail to 10 feet and will give trail users access to the entire trail system. These current plans have been discussed with the City of Westminster, the official with jurisdiction of Westminster Hills Park.

As additional modifications are made during further engineering, it may be possible to further minimize harm to Westminster Hills Park.

In general, the used area of Westminster Hills Park from construction activities will be returned to existing conditions or improved after construction. The trail will be temporarily used during construction activities, but will be improved as part of the US 36 bikeway project. To mitigate for the property acquisition, enhancements will be made to Westminster Hills Park or other parks owned by the City of Westminster. Table 7.4-3, Mitigation Measures for Westminster Hills Park, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-3: Mitigation Measures for Westminster Hills Park**

Use Type	Impacts Related to the Use	Mitigation Measure
Temporary Incorporation of Land	Disruption of use/enjoyment	<ul style="list-style-type: none"> <li>A public safety and security program will be developed and implemented for Westminster Hills Park with the City of Westminster, including access management, signage, and public information.</li> <li>BMPs will be used to avoid or minimize construction-related nuisances in affected areas from noise, dust, light/glare, etc.</li> </ul>
	Temporary removal or impacts to trail	<ul style="list-style-type: none"> <li>The trail will be replaced and improved after construction activities are completed.</li> <li>A trail detour will be provided during construction activities.</li> </ul>
Permanent Incorporation of Land	Removal of wall	<ul style="list-style-type: none"> <li>The existing barrier will be replaced with an improved concrete noise barrier that would be designed to minimize noise and visual impacts from the highway.</li> </ul>
	Property acquisition	<ul style="list-style-type: none"> <li>Westminster Hills Park or other parks owned by the City of Westminster will be enhanced to compensate for uses of Westminster Hills Park.</li> <li>The US 36 bikeway will be connected to Westminster Hills Park.</li> <li>Property acquisition will be completed under the Uniform Act.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Notes:

- BMP = best management practice
- US 36 = United States Highway 36
- Uniform Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970

### **Oakwood Park (Map Identification Number 554)**

#### **Description**

<i>Location</i>	8295 Oakwood Drive
<i>Size</i>	2.7 acres
<i>Type</i>	Neighborhood park
<i>Access</i>	Automobile/bicycle/pedestrian via Oakwood Drive
<i>Facilities/Amenities</i>	Open field, picnic table, dirt path
<i>Usage/Patronage</i>	Public, annual patronage unknown
<i>Relationship to Other Resources</i>	1 of 50 parks and recreation facilities in city
<i>Ownership/Jurisdiction</i>	City of Westminster
<i>Significance</i>	Comparing the availability and function of this resource with the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

#### **Uses of Oakwood Park by Package**

Package 2 Use	Package 4 Use	Combined Alternative (Preferred Alternative) Use
Permanent incorporation of 1.8 acres/direct use	Permanent incorporation of 1.5 acres/direct use	No use

Source: US 36 Mobility Partnership, 2009.

#### **Resource Description**

Oakwood Park is a linear park located along the north side of US 36, between US 36 and Oakwood Drive (see Figure 7.4-3, Uses of Oakwood Park [Map Identification Number 554], and Photograph 7.4-3). Park amenities include an open field, a picnic table, and a dirt path. Packages 2 and 4 would require the permanent acquisition of property from the south side of Oakwood Park. The acquisition would be necessary to accommodate the proposed widening of US 36 in this area.

#### **Section 4(f) Use**

The property to be acquired is an open field, a dirt path, and picnic area along Oakwood Drive, an area 900 feet long and 90 feet wide for Package 2, and 75 feet wide for Package 4. Packages 2 and 4 would use a substantial proportion of the total park acreage (i.e., about 56 to 66 percent). Additionally, the land to be acquired has the same function for both build packages. The acquisition of property from this public park would result in the direct use of a Section 4(f) resource. The use will not result in a change of functionality for the remainder of the park. There would be no use of Oakwood Park under the Combined Alternative Package (Preferred Alternative). The project would only require a temporary occupancy of 0.1 acre of the park during construction. A temporary occupancy, as defined under 23 CFR 774.13(d), would not adversely impact any active recreational features. The land would be fully restored upon completion of the project and the City of Westminster, the official with jurisdiction, has agreed to these conditions, as indicated in correspondence contained in Appendix B, Consultation and Coordination.

#### **Avoidance Alternative**

A shift in the proposed alignment of US 36 would further avoid or minimize harm to Oakwood Park, but this shift would cause severe community disruption and extraordinary costs. The accumulation of factors from this avoidance alternative would cause adverse impacts that would cumulatively reach an extraordinary magnitude. A 1-mile horizontal alignment shift would be required to avoid the 1.5 to 1.8 acres of Oakwood Park under Package 2 and Package 4. Thirty-four residences on the south side of US 36 would be acquired by an alignment shift of approximately 1 mile, at an approximate cost of \$8 to \$8.5 million. Shifting the alignment south to avoid Oakwood Park would require the acquisition of the

northern quarter of Westminster Hills Park. Specifically, the open field, playground equipment, tennis courts, and trail would be used. It is already anticipated that up to 0.5 acre of Westminster Hills Park, another Section 4(f) resource, will be acquired. Currently this use is recommended to be *de minimis* because only a grass field and landscaped slope is anticipated to be used. This would not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). This avoidance alternative would cause an adverse effect to Westminster Hills Park. The northern wing of Westminster Hills Elementary School, and the playground equipment and field behind the school, would also be acquired as part of this alignment shift. The school and park are critical parts of the neighborhood community and the impacts would cause severe community disruption. Property acquisitions of 34 residences would create additional construction costs of extraordinary magnitude. In addition, these individual impacts would create an accumulated severe impact of extraordinary magnitude to avoid the use of less than 2 acres of the park. For these reasons, an alignment shift to avoid Oakwood Park is not a prudent and feasible avoidance alternative.

The Combined Alternative Package (Preferred Alternative) also avoids Oakwood Park. All of the temporary occupancy requirements under 23 CFR 774.13(d) are met under the Combined Alternative Package (Preferred Alternative). There would only be a temporary occupancy of the park during construction, and the scope of work would be minor. No recreational activities or facilities would be impacted. Best management practices will be used to avoid or minimize construction-related nuisances in affected areas from noise, dust, light/glare, etc. The land will be fully restored and there will be no permanent adverse impacts to the park.

#### **All Possible Planning to Minimize Harm**

To minimize harm to Oakwood Park under Package 2 and Package 4, a retaining wall will be built on the south side of the park, along US 36, north of the current wall. The retaining wall will decrease the amount of land acquisition needed to widen US 36. In addition, a noise wall will be constructed to replace the existing wooden wall to mitigate noise and visual impacts associated with the highway. Coordination with the City of Westminster, the official with jurisdiction, has begun, and will continue after the publication of the FEIS.

As additional modifications are made during further engineering, it may be possible to further minimize harm to Oakwood Park. Since the Combined Alternative Package (Preferred Alternative) avoids a Section 4(f) use, no additional minimization would be necessary for this package.

As a mitigation measure for Package 2 and Package 4, a linear park, including picnic tables, will be created with the remaining parts of Oakwood Park and Rotary Park. A multi-use, linear trail through Oakwood and Rotary parks will be created to allow users to connect through the neighborhoods to the Westminster Center park-n-Ride.

Table 7.4-4, Mitigation Measures for Oakwood Park, shows the mitigation measures that will be taken under Package 2 and Package 4.

**Table 7.4-4: Mitigation Measures for Oakwood Park**

Use Type	Impacts Related to the Use	Mitigation Measures <sup>1</sup>
Permanent Incorporation of Land	Removal of wooden fence	<ul style="list-style-type: none"> <li>The existing wooden fence will be replaced with an improved concrete noise wall that would be designed to minimize noise and visual impacts from the highway.</li> </ul>
	Property acquisition	<ul style="list-style-type: none"> <li>Oakwood Park or other parks owned by the City of Westminster will be enhanced to compensate for uses to Oakwood Park.</li> <li>A linear park will be created with the remaining part of Oakwood Park and connect it to Rotary Park, include amenities such as a trail and picnic tables.</li> <li>A multi-use trail will be created through Oakwood Park and Rotary Park to provide street access to the Westminster Center park-n-Ride. The trail will also provide users access to cross 80<sup>th</sup> Avenue to connect to the US 36 bikeway. On-street improvements will not be part of this mitigation.</li> <li>Property acquisition will be completed under the Uniform Act.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Notes:

<sup>1</sup>These mitigation measures apply for Package 2 and Package 4.

Uniform Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970

### Rotary Park (Map Identification Number 123)

#### Description

<i>Location</i>	West 84 <sup>th</sup> Street and Wagner Drive
<i>Size</i>	6.0 acres
<i>Type</i>	Community park, active and passive recreational uses
<i>Access</i>	Automobile/bicycle/pedestrian via West 84 <sup>th</sup> Street/Wagner Drive
<i>Facilities/Amenities</i>	Baseball field, playground, open field
<i>Usage/Patronage</i>	Public, annual patronage unknown
<i>Relationship to Other Resources</i>	1 of 36 parks and recreation facilities in regional district
<i>Ownership/Jurisdiction</i>	Hyland Hills Park and Recreation District
<i>Significance</i>	Comparing the availability and function of this resource with the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

#### Uses of Rotary Park by Package

Package 2 Use	Package 4 Use	Combined Alternative Package (Preferred Alternative) Use
Permanent incorporation of 0.6 acre/direct use	Permanent incorporation of 0.5 acre/direct use	No use

Source: US 36 Mobility Partnership, 2009.

#### Resource Description

Rotary Park (see Figure 7.4-4, Uses of Rotary Park [Map Identification Number 123], and Photograph 7.4-4) is located on the north side of US 36. Amenities at the park include a baseball field, an open field, and a playground. The playground is located on the northern edge of the park, while the baseball field is located in the southern one third of the park. The other major function of the park is a drainage structure, maintained by Urban Drainage and Flood Control District. Rotary Park was at least partially funded with Land and Water Conservation Funds (LWCF). Any use of this land requires compliance with Section 6(f) of the 1965 LWCF Act (16 USC 460108[f]), as discussed in Section 4.9, Parks and Open Space. This process is commonly referred to as Section 6(f).

## Section 4(f) Use

Packages 2 and 4 would both require the permanent acquisition of property from the south side of Rotary Park along the US 36 ROW. The acquisition would be necessary to accommodate the proposed widening of US 36 in this area. The property to be acquired is an undeveloped portion of the park with a grassy area, but no recreational facilities. In both cases, the acquisition would be 440 feet long and 60 feet wide for Package 2, and 50 feet wide for Package 4. The grassy area steeply slopes from the US 36 fence to a drainage path and it is not suitable for recreational activities. A box culvert is located in the center of the slope. The area that would be used by either build package is similar in use. Although the area used under either of the build packages would be a relatively small proportion of the total park acreage (i.e., about 8 to 10 percent) and no facilities would be displaced, the acquisition of property from this public park would result in the direct use of a Section 4(f) resource. The use will not result in a change of functionality for the remainder of the park. Consultation with Hyland Hills Park and Recreation District has begun, and will continue after the publication of the FEIS. There would be no use under the Combined Alternative Package (Preferred Alternative).

### Avoidance Alternative

A shift in the proposed alignment of US 36 would further avoid or minimize harm to Rotary Park. However, this shift would cause severe community disruption, extraordinary construction costs, and an accumulation of factors that would cause adverse impacts of an extraordinary magnitude. A 1-mile alignment shift would be required to avoid the 0.5 to 0.6 acre of Rotary Park under Package 2 and Package 4. Thirty-four residences on the south side of US 36 would be acquired by an alignment shift, at an approximate cost of \$8 to \$8.5 million. Shifting the alignment south to avoid Oakwood Park would require the acquisition of the northern quarter of Westminster Hills Park. Specifically, the open field, playground equipment, tennis courts, and trail would be used. It is already anticipated that up to 0.5 acre of Westminster Hills Park, another Section 4(f) resource, will be acquired. Currently, it is not anticipated that there will be effects to the activities, features, and attributes that qualify the resource for protection under Section 4(f). This avoidance alternative would cause a more severe effect to Westminster Hills Park. The northern wing of Westminster Hills Elementary School, and the playground equipment and field behind the school, would also be acquired as part of this alignment shift. The school and park are critical parts of the neighborhood community and the impacts would cause severe community disruption. Property acquisitions of 34 residences, at a cost of \$8 to \$8.5 million, would create additional construction costs of extraordinary magnitude. In addition, these individual impacts would create an accumulated severe impact of extraordinary magnitude to avoid less than 1 acre of the park. For these reasons, an alignment shift to avoid Rotary Park is not a prudent and feasible avoidance alternative.

The Combined Alternative Package (Preferred Alternative) would also avoid a Section 4(f) use to Rotary Park.

### All Possible Planning to Minimize Harm

Since Rotary Park is also a Section 6(f) resource, the total amount of used property will be mitigated following the Section 6(f) legislation, as outlined in Section 4.9, Parks and Open Space. To minimize harm to Rotary Park under Package 2 and Package 4, a retaining wall will be built on the south side of the park, along US 36, north of the current wall. The retaining wall will decrease the amount of land acquisition needed to widen US 36. In addition a noise wall will be constructed to replace the existing wooden wall to mitigate noise and visual impacts associated with the highway. Coordination with Hyland Hills Park and Recreation District, the official with jurisdiction over the resource, has begun and will continue after the publication of the FEIS.

As additional modifications are made during further engineering, it may be possible to further minimize harm to Rotary Park. Since the Combined Alternative Package (Preferred Alternative) avoids a Section 4(f) use, no additional minimization would be necessary for this package.

As a mitigation measure for Package 2 and Package 4, a linear park, including picnic tables, will be created with the remaining parts of Rotary and Oakwood parks. A multi-use, linear trail through Rotary and Oakwood parks will be created to allow users to connect through the neighborhoods to the Westminster Center park-n-Ride.

Table 7.4-5, Mitigation Measures for Rotary Park, shows the mitigation measures that will be taken under Package 2 and Package 4.

**Table 7.4-5: Mitigation Measures for Rotary Park**

Use Type	Impacts Related to the Use	Mitigation Measures <sup>1</sup>
Temporary Incorporation of Land	Disruption of use/enjoyment	<ul style="list-style-type: none"> <li>A public safety and security program will be developed and implemented for Rotary Park with Hyland Hills Park and Recreation District, including access management, signage, and public information.</li> <li>BMPs will be used to avoid or minimize construction-related nuisances in affected areas from noise, dust, light/glare, etc.</li> </ul>
Permanent Incorporation of Land	Removal of wooden fence	<ul style="list-style-type: none"> <li>The existing wooden fence will be replaced with an improved concrete noise wall that will be designed to minimize noise and visual impacts from the highway.</li> </ul>
	Property acquisition	<ul style="list-style-type: none"> <li>Rotary Park or other parks owned by the Hyland Hills Park and Recreation District will be enhanced.</li> <li>Mitigation will be in compliance with Section 6(f) legislation.</li> <li>A linear park will be created with the remaining part of Oakwood Park and connected to Rotary Park, including amenities such as a trail and picnic tables.</li> <li>A multi-use trail will be created through Oakwood Park and Rotary Park to provide street access to the Westminster Center park-n-Ride. The trail will also provide users access to cross 80<sup>th</sup> Avenue to connect to the US 36 bikeway. On-street improvements will not be part of this mitigation.</li> <li>Property acquisition will be completed under the Uniform Act.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Notes:

<sup>1</sup>These mitigation measures apply for Package 2 and Package 4.

BMP = best management practice

US 36 = United States Highway 36

Uniform Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970

### **Big Dry Creek Trail Crossing (Map Identification Number Trail Crossing 2)**

#### **Description**

<i>Location</i>	US 36 south of West 104 <sup>th</sup> Avenue
<i>Size</i>	Less than 1 acre
<i>Type</i>	Trail
<i>Access</i>	Bicycle/Pedestrian via West 104 <sup>th</sup> Avenue and Church Ranch Boulevard
<i>Facilities/Amenities</i>	Trail, greenbelt
<i>Usage/Patronage</i>	Public, annual patronage unknown
<i>Relationship to Other Resources</i>	Approximate 100-foot section of a more than 10-mile long trail and greenbelt
<i>Ownership/Jurisdiction</i>	City of Westminster
<i>Significance</i>	Comparing the availability and function of this resource with the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

Note:

US 36 = United States Highway 36

## Resource Description

The Big Dry Creek Trail Crossing (Figure 7.4-5, Uses of Big Dry Creek Trail Crossing [Map Identification Number Trail Crossing 2], and Photograph 7.4-5) is a multi-use trail that follows the Big Dry Creek. The paved trail is used by cyclists, rollerbladers, runners, and walkers, and passes under US 36 through a box culvert. The trail meanders through neighborhood communities and is commonly used by families.

### Section 4(f) Use

All of the build packages would require that the underpass for this trail crossing be lengthened by about 50 feet on both sides of US 36. The trail would not be modified during construction activities. The longer undercrossing would be necessary in order to accommodate the proposed widening of US 36 in this area. The undercrossing is currently about 100 feet long. To construct the longer undercrossing, temporary incorporation of this portion of the trail would be necessary. Since a trail closure is necessary for the Big Dry Creek Trail Crossing, the requirements of a temporary occupancy, as outlined in Section 7.2, Application of Section 4(f), are not fulfilled; therefore, there is a temporary use of this resource.

The addition of 50 feet on both sides of this trail undercrossing would modify the visual experience of trail users by extending an enclosed tunnel; however, this slight change would not substantially diminish the overall aesthetic quality of the trail. The existing visual setting of trails in this area includes a built environment with urban elements (e.g., commercial and residential development, roadways, highways, etc.). Thus, in this context, trails such as this one cannot be said to have the same visual sensitivity as would be expected in less developed areas. Trail users would continue to be afforded a facility similar in visual quality as exists presently. The function and purpose of the trail would be unchanged.

Accordingly, the visual effects associated with a longer underpass would not likely result in the use of this Section 4(f) resource. Any other potential long-term disruption of the use and enjoyment of this resource associated with operation-related proximity impacts (i.e., noise, impaired aesthetic quality, restricted access, and/or ecological intrusion) would be avoided or minimized, and would, therefore, not substantially diminish the activities, features, or attributes that qualify the resource for protection under Section 4(f). None of the proposed build packages would permanently incorporate land from this Section 4(f) resource. The use would not result in a change or functionality for the trail crossing.

### Avoidance Alternatives

The trail is aligned southwest to northeast, perpendicular to US 36, which runs southeast to northwest. A shift in the alignment of US 36 east or west would not avoid the Big Dry Creek Trail, because the trail is a linear feature; therefore, there would still be a use. The trail extends 3 miles to the west, and to I-25 to the east, through highly urbanized neighborhoods. Although there would be no acquisition, the trail would be closed temporarily during construction, which would be a temporary interference with the purpose, and therefore, a temporary use. To avoid a temporary use of 100 feet, a 1.9-mile detour would have to be established. A potential detour could have trail users take Church Ranch Boulevard to Westcliff Parkway, to Westminster Boulevard, across US 36 to the Big Dry Creek Trail. Trail users would be required to cross four lanes of traffic to merge onto Westminster Boulevard, where there is no shoulder for trail users. In addition, automobiles are generally traveling at speeds of 40 miles per hour on Westminster Boulevard. For these reasons, this detour is not prudent and feasible because it causes severe impacts and extraordinary safety problems, especially for families using the trail. Current plans have been discussed with the City of Westminster, the official with jurisdiction over the resource, which has similar concerns with detours on major roads. Based on these reasons, a trail detour will not be used during construction activities, and the trail crossing will be temporarily closed.

## All Possible Planning to Minimize Harm

As the project proceeds through final engineering and design, the measures to minimize harm to the Big Dry Creek Trail Crossing will be re-examined and refined with the local officials having jurisdiction over the affected resource.

Uses of the trail crossing will be mitigated by enhancing lighting, adding a railing, widening the trail, and increasing the base height of the trail. Table 7.4-6, Mitigation Measures for the Big Dry Creek Trail Crossing, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-6: Mitigation Measures for the Big Dry Creek Trail Crossing**

Use Type	Impacts Related to the Use	Mitigation Measures
Temporary Incorporation of Land	Trail crossing closure	<ul style="list-style-type: none"> <li>Advanced notice and signage will be ensured.</li> <li>Return to existing or improved condition will be provided after construction.</li> </ul>
	Disruption of use/enjoyment	<ul style="list-style-type: none"> <li>A public safety and security program will be developed and maintained for affected areas with the City of Westminster, including access management, signage, and public information.</li> <li>A traffic management plan will be developed and implemented with local officials for automobiles, bicycles, and pedestrians.</li> <li>BMPs will be employed to avoid or minimize construction-related nuisances in affected areas from noise/vibration, dust, light/glare, etc.</li> <li>The trail underpass will be improved by adding lighting, adding a railing, widening the trail, and increasing the base height of the trail.</li> <li>The proposed bikeway will use the Big Dry Creek Trail Crossing and will increase accessibility to the trail systems for trail users.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Note:

BMP = best management practice

## East Interlocken Trail Crossing (Map Identification Number Trail Crossing 16)

### Description

<i>Location</i>	West of US 36/Interlocken Parkway
<i>Size</i>	Less than 1 acre
<i>Type</i>	Trail
<i>Access</i>	Bicycle/Pedestrian via Interlocken Parkway
<i>Facilities/Amenities</i>	Trail
<i>Usage/Patronage</i>	Public, annual patronage unknown
<i>Relationship to Other Resources</i>	1 of 50 parks and recreation facilities in city/county; adjacent to public/private Interlocken Owners Association parks, ball fields, trails, green space
<i>Ownership/Jurisdiction</i>	City and County of Broomfield
<i>Significance</i>	Comparing the availability and function of this resource with the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

Note:

US 36 = United States Highway 36

### Resource Description

The East Interlocken Trail Crossing is a multi-use, commuter and recreational trail used by pedestrians and bicyclists (see Figure 7.4-6, Uses of East Interlocken Trail Crossing [Map Identification Number Trail Crossing 16], and Photograph 7.4-6). The paved trail passes under US 36 in a box culvert.

## Section 4(f) Use

All of the build packages would require that the underpass for this trail crossing be lengthened by about 50 feet on both sides of US 36. The trail would need to be rebuilt during the expansion of US 36. The longer undercrossing would be necessary in order to accommodate the proposed widening of US 36 in this area. The undercrossing is currently about 100 feet long. To construct the longer undercrossing and to rebuild the trail, a temporary incorporation of this portion of the trail would be necessary. Since a trail closure is necessary for the East Interlocken Trail Crossing, the requirements of a temporary occupancy, as outlined in Section 7.2, Application of Section 4(f), are not fulfilled; therefore, there is a temporary use of this resource.

The addition of 50 feet on both sides of this trail undercrossing would modify the visual experience of trail users by extending an enclosed tunnel; however, this slight change would not substantially diminish the overall aesthetic quality of the trail. The existing visual setting of trails in this area includes a built environment with urban elements (e.g., commercial and residential development, roadways, highways, etc.). Thus, in this context, trails such as this do not have the same visual sensitivity as expected in less developed areas. Trail users would have a facility similar in visual quality. The function and purpose of the trail would be unchanged. Accordingly, the visual effects associated with a longer underpass would not likely result in the use of this Section 4(f) resource. Any other potential long-term disruption of the use and enjoyment of this resource associated with operation-related proximity impacts (i.e., noise, impaired aesthetic quality, restricted access, and/or ecological intrusion) would be avoided or minimized, and therefore would not substantially diminish the activities, features, or attributes that qualify the resource for protection under Section 4(f). None of the proposed build packages would permanently incorporate land from this Section 4(f) resource. The use would not result in a change or functionality for the trail crossing.

## Avoidance Alternatives

The trail is aligned southwest to northeast, perpendicular to US 36, which runs southeast to northwest. A shift in the alignment east would not avoid the East Interlocken Trail Crossing, because the trail is a linear feature; therefore, there would still be a use. A 1.5-mile alignment shift to the east, the acquisition of a dozen commercial properties, and the construction of a structure over railroad tracks would be required to avoid the temporary trail closure. Shifting the alignment to the west would avoid the trail crossing, but would cause additional uses to East Interlocken Park, another Section 4(f) resource. It is already anticipated that 1.0 acre for Package 2, 0.3 acre for Package 4, and 0.8 acre for the Combined Alternative Package (Preferred Alternative) would be acquired from this park. Currently, this use of the park is recommended to be *de minimis* because only a landscaped grassy area and part of a trail will be used. This will not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f). Shifting the alignment to avoid the trail crossing would result in an additional acquisition of 3.2 acres, causing an additional use to the resource. Specifically, a multi-use/soccer field and a frisbee golf course would be used, causing an adverse effect. These alignment shifts would be necessary to avoid a temporary trail closure.

Two potential detours were evaluated: one along Flatiron Circle and one on Wadsworth Boulevard. The first detour would have trail users take Interlocken Boulevard to Flatiron Circle, under US 36 to Industrial Lane, and back to the trail. The total distance of this detour is 3.25 miles. Flatiron Circle is a busy four-lane road with additional turning lanes and automobiles traveling at 35 miles per hour. Automobiles are moving at accelerated speeds entering and exiting US 36. Trail users would be required to cross major intersections at Interlocken Boulevard and Flatiron Circle, and at the on- and off-ramps of US 36. The potential detour lacks shoulders; therefore, trail users would be required to be mixed in with vehicle traffic. For these reasons, a trail detour on Flatiron Circle is not prudent and feasible because of severe and extraordinary safety concerns.

The second detour would have trail users follow Interlocken Parkway to 120<sup>th</sup> Avenue to Wadsworth Boulevard, across US 36, to Industrial Lane. This detour would be 3.6 miles on major roads. Wadsworth

Boulevard is a busy four-lane road with additional turning lanes. Automobiles entering and exiting US 36 are traveling at elevated speeds and traveling on Wadsworth Boulevard at 45 miles per hour. Trail users would have to cross four lanes of traffic twice, once from 120<sup>th</sup> Avenue onto Wadsworth Boulevard, and again across Wadsworth Boulevard onto Industrial Lane, both major intersections. Trail users would be mixed in with vehicle traffic because there are no shoulders along the detour. For these reasons, a detour on Wadsworth Boulevard is not prudent and feasible because of severe and extraordinary safety concerns.

Current plans have been discussed with the City and County of Broomfield, which has similar concerns with detours on a major road. Based on these reasons, a trail detour will not be used during construction activities and the trail crossing will be temporarily closed.

### All Possible Planning to Minimize Harm

As the project proceeds through final engineering and design, the measures to minimize harm to the East Interlocken Trail Crossing will be re-examined and refined with the local officials having jurisdiction over the affected resource.

Uses of the trail crossing will be mitigated by improving the trail underpass by adding lighting, improving the railing, and widening the trail.

Table 7.4-7, Mitigation Measures for the East Interlocken Trail Crossing, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-7: Mitigation Measures for the East Interlocken Trail Crossing**

Use Type	Impacts Related to the Use	Mitigation Measures
Temporary Incorporation of Land	Trail crossing closure	<ul style="list-style-type: none"> <li>Advanced notice and signage will be ensured for closure.</li> <li>Trail crossings will be returned to existing or improved condition after construction.</li> </ul>
	Disruption of use/enjoyment	<ul style="list-style-type: none"> <li>A public safety and security program will be developed and implemented for affected areas with local officials, including access management, signage, and public information.</li> <li>A traffic management plan will be developed and implemented with local officials for automobiles, bicycles, and pedestrians.</li> <li>BMPs will be used to avoid or minimize construction-related nuisances in affected areas from noise, dust, light/glare, etc.</li> <li>The trail underpass will be improved by adding lighting, improving the railing, and widening the trail.</li> <li>The proposed bikeway will intersect the East Interlocken Trail Crossing. This will allow trail users access to the trail system.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Note:

BMP = best management practice

**Coal Creek Trail Crossing (Map Identification Number Trail Crossing 5)**

**Description**

<i>Location</i>	US 36 south of McCaslin Boulevard
<i>Size</i>	Less than 1 acre
<i>Type</i>	Trail
<i>Access</i>	Bicycle/Pedestrian via McCaslin Boulevard and Dillon Road
<i>Facilities/Amenities</i>	Trail, greenbelt
<i>Usage/Patronage</i>	Public, annual patronage unknown
<i>Relationship to Other Resources</i>	Approximate 100-foot section of a 5-mile-long trail and greenbelt
<i>Ownership/Jurisdiction</i>	City of Louisville/Town of Superior
<i>Significance</i>	Comparing the availability and function of this resource with the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

Note:

US 36 = United States Highway 36

**Resource Description**

The Coal Creek Trail (see Figure 7.4-7, Uses of Coal Creek Trail Crossing [Map Identification Number Trail Crossing 5], and Photograph 7.4-7) is a multi-use commuter and recreational trail used by pedestrians and bicyclists. The visual setting of trails in this area includes a built environment with urban elements (e.g., commercial and residential development, roadways, highways, etc.). The existing US 36 undercrossing is approximately a 100-foot long bridge. The undercrossing and a portion of the trail are located within the construction footprint of the US 36 project.

**Section 4(f) Use**

During construction activities the trail underpass would be extended by approximately 50 feet on both sides of US 36 to accommodate the proposed widening of US 36 in this area. The uses would be the same for either of the proposed build packages. The trail will not be modified during the construction activities. The addition of 50 feet on both sides of this trail undercrossing would modify the visual experience of trail users by extending the existing bridge; however, this extension would not substantially diminish the overall aesthetic quality of the trail. During construction, heavy equipment would be situated in close proximity to the trail, causing a safety concern for trail users due to the risk of falling objects. To construct the longer undercrossing a temporary incorporation of this portion of the trail could be necessary in order to prevent unnecessary risk to trail users. Since a trail closure is necessary for the Coal Creek Trail Crossing, the requirements of a temporary occupancy, as outlined in Section 7.2, Application of Section 4(f), are not fulfilled; therefore, there is a temporary use of this resource. None of the proposed build packages would permanently incorporate land from this Section 4(f) resource. The use would not result in a change or functionality for the trail crossing.

**Avoidance Alternatives**

The trail is aligned southwest to northeast, perpendicular to US 36, which runs southeast to northwest. A shift in the alignment east or west would not avoid the Coal Creek Trail Crossing, because the trail is a linear feature; therefore, there will still be a use. An alignment shift of 5 miles to the west, and the acquisition of 35 residences, open space properties, and 20 commercial properties would be required to avoid a temporary trail closure. To the east, the trail extends to 120<sup>th</sup> Avenue, which is approximately 5 miles from the alignment.

A potential detour could have trail users take McCaslin Boulevard to Dillon Road. This detour would be 1.6 miles along busy roads. Trail users would be required to pass through four busy intersections along McCaslin Boulevard, which is a four-lane road with additional turning lanes. Automobiles are traveling at speeds of 35 miles per hour or more entering and exiting US 36. McCaslin Boulevard does not have a

shoulder for trail users; therefore, trail users would be required to mix with vehicle traffic. For these reasons, this detour is not prudent and feasible because it causes severe impacts and extraordinary safety problems, especially for families using the trail. Current plans have been discussed with the City of Louisville and the Town of Superior, the officials with jurisdiction over the resource, which has similar concerns with detours on major roads. Based on these reasons, a trail detour would not be used during construction activities and the trail crossing would be temporarily closed.

### All Possible Planning to Minimize Harm

As the project proceeds through final engineering and design, the measures to minimize harm to the Coal Creek Trail Crossing will be re-examined and refined with the local officials having jurisdiction over the affected resource.

Uses of the Coal Creek Trail Crossing will be mitigated by improving the trail underpass by adding lighting, improving the railing, and widening the trail. Table 7.4-8, Mitigation Measures for the Coal Creek Trail Crossing, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-8: Mitigation Measures for the Coal Creek Trail Crossing**

Use Type	Impacts Related to the Use	Mitigation Measures
Temporary Incorporation of Land	Trail crossing closure	<ul style="list-style-type: none"> <li>Advanced notice and signage will be provided for the closure.</li> <li>The trail will be returned to existing or improved condition after construction.</li> </ul>
	Disruption of use/enjoyment	<ul style="list-style-type: none"> <li>A public safety and security program will be developed and implemented for affected areas with the City of Louisville and the Town of Superior, including access management, signage, and public information.</li> <li>A traffic management plan will be developed and implemented with local officials for automobiles, bicycles, and pedestrians.</li> <li>BMPs will be used to avoid or minimize construction-related nuisances in affected areas from noise/vibration, dust, light/glare, etc.</li> <li>The trail underpass will be improved by adding lighting, improving the railing, and widening the trail.</li> <li>The proposed bikeway will intersect the Coal Creek Trail Crossing. This will allow trail users access to the trail system.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Note:

BMP = best management practice

### South Boulder Creek Trail Crossing (Map Identification Number Trail Crossing 12)

#### Description

<i>Location</i>	US 36 between Cherryvale Road and South Boulder Road
<i>Size</i>	Less than 1 acre
<i>Type</i>	Trail
<i>Access</i>	Bicycle/Pedestrian via South Boulder Road
<i>Facilities/Amenities</i>	Trail, greenbelt
<i>Usage/Patronage</i>	Public, annual patronage unknown
<i>Relationship to Other Resources</i>	Approximate 100-foot section of an 8-mile long trail and greenbelt
<i>Ownership/Jurisdiction</i>	City of Boulder
<i>Significance</i>	Comparing the availability and function of this resource with the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

Note:

US 36 = United States Highway 36

## Resource Description

The South Boulder Creek Trail Crossing is a multi-use commuter and recreational trail used by pedestrians and bicyclists, and it has high pedestrian traffic (see Figure 7.4-8, Uses of South Boulder Creek Trail Crossing [Map Identification Number Trail Crossing 12], and Photograph 7.4-8). The dirt trail follows South Boulder Creek and crosses under the US 36 bridge. The visual setting of trails in this area includes a built environment with natural elements (e.g., fields and open space, etc.). The existing US 36 undercrossing is an approximately 100 foot long bridge. The undercrossing and a portion of the trail are located within the construction footprint of the US 36 project for the Combined Alternative Package (Preferred Alternative), and Packages 2 and 4, Options A and B.

## Section 4(f) Use

During construction activities, the trail underpass would be extended by approximately 50 feet on both sides of US 36 to accommodate the proposed widening of US 36 in this area. The use would be the same for either build package. The trail itself would not be modified during the construction activities. The addition of 50 feet on both sides of this trail undercrossing would modify the visual experience of trail users by extending the existing bridge; however, this extension would not substantially diminish the overall aesthetic quality of the trail. During construction, heavy equipment would be situated in close proximity to the trail, causing a safety concern for trail users due to the risk of falling objects. To construct the longer undercrossing, a temporary incorporation of this portion of the trail would be necessary in order to prevent unnecessary risk to trail users. Since a trail closure is necessary for the South Boulder Creek Trail Crossing, the requirements of a temporary occupancy, as outlined in Section 7.2, Application of Section 4(f), are not fulfilled; therefore, there is a temporary use of this resource. None of the proposed build packages would permanently incorporate land from this Section 4(f) resource. The use would not result in a change or functionality for the trail crossing.

## Avoidance Alternatives

The trail is aligned southwest to northeast, perpendicular to US 36, which runs southeast to northwest. A shift in the alignment east or west would not avoid the South Boulder Creek Trail because the trail is a linear feature; therefore, there would still be a use. The trail extends approximately 2 miles to the west and east of the US 36 alignment. To avoid a temporary use of 100 feet, a 2-mile detour would have to be established.

Two potential trail detours were analyzed, one along Cherryvale Road and one along Table Mesa Drive. The first detour, along Cherryvale Road, takes trail users on Marshall Road to Cherryvale Road, over US 36, to South Boulder Road, and back to the South Boulder Creek Trail. This detour would be approximately 4.2 miles on busy roads. Cherryvale Road is a two-lane road, while South Boulder Road is a four-lane road with additional turning lanes. Vehicles travel at speeds of 40 miles per hour on both of these roads. Trail users would have to cross four lanes of traffic onto South Boulder Road at a busy intersection. For these reasons, this detour is not prudent and feasible, especially for pedestrian trail users, since it results in severe safety problems.

The second detour would be a 2.9-mile detour along Marshall Drive, to South Broadway, along Table Mesa Drive/South Boulder Road, and back to the South Boulder Creek Trail. Table Mesa Drive/South Boulder Road is a busy four-lane road with additional turning lanes and automobiles travel at 35 miles per hour. Around the intersection with US 36, automobiles are traveling at elevated speeds entering and exiting the highway. Trail users would be required to cross seven major intersections on Table Mesa Drive/South Boulder Road. For these reasons, this detour is not prudent and feasible for pedestrian trail users since it results in severe safety problems.

### All Possible Planning to Minimize Harm

A trail detour will not be used during construction activities and the trail crossing will be temporarily closed. Current plans have been discussed with the City of Boulder, the agency with jurisdiction over this resource.

As the project proceeds through final engineering and design, the measures to minimize harm to the South Boulder Creek Trail Crossing will be re-examined and refined with the City of Boulder.

Uses of the trail will be mitigated by improving the trail underpass by adding lighting, adding a railing, and widening the underpass. Table 7.4-9, Mitigation Measures for the South Boulder Creek Trail Crossing, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-9: Mitigation Measures for the South Boulder Creek Trail Crossing**

Use Type	Impacts Related to the Use	Mitigation Measures
Temporary Incorporation of Land	Trail crossing closure	<ul style="list-style-type: none"> <li>Advanced notice and signage will be ensured.</li> <li>The trail will be returned to existing or improved condition after construction.</li> </ul>
	Disruption of use/enjoyment	<ul style="list-style-type: none"> <li>A public safety and security program will be developed and implemented for affected areas with Boulder Parks and Open Space, including access management, signage, and public information.</li> <li>A traffic management plan will be developed and implemented with local officials for automobiles, bicycles, and pedestrians.</li> <li>BMPs will be used to avoid or minimize construction-related nuisances in affected areas from noise/vibration, dust, light/glare, etc.</li> <li>The trail underpass will be improved by adding lighting, adding a railing, and widening the trail.</li> <li>The proposed bikeway will use the South Boulder Creek Trail Crossing. This will allow trail users access to the trail system.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Note:

BMP = best management practice

## Uses of Historic Resources

Table 7.4-10, Uses of Historic Section 4(f) Resources by Segment, summarizes the uses on the individual historic Section 4(f) resources. Additionally, the table lists the type of Section 4(f) use of each resource. The *de minimis* use of historic resources is discussed later in this chapter.

**Table 7.4-10: Uses of Historic Section 4(f) Resources by Segment**

Map Number	Resource	Section 4(f) Use			Type of Use		
		Package 2 Impact	Package 4 Impact	Combined Alternative Package (Preferred Alternative) Impact			
<b>Adams Segment</b>							
5AM1132/ 5JF1762	Allen Ditch	Permanent acquisition of 2,730 linear feet/ Adverse Effect	Permanent acquisition of 2,610 linear feet/ Adverse Effect	Permanent acquisition of 1,520 linear feet/ Adverse Effect	Direct use		
<b>Broomfield Segment</b>							
5BF9	Residence (8375 West 120 <sup>th</sup> Avenue)	Permanent acquisition of 95% of resource, including structure Adverse Effect	Permanent acquisition of 92% of resource, including structure Adverse Effect	Permanent acquisition of 97% of resource, including structure Adverse Effect	Direct use		
5BF7.2	Dry Creek Valley Ditch	Permanent acquisition of 3,190 linear feet/ Adverse Effect	Permanent acquisition of 3,110 linear feet/ Adverse Effect	Permanent acquisition of 3,760 linear feet/ Adverse Effect	Direct use		
<b>Boulder Segment</b>							
Map Number	Resource	Package 2 Use		Package 4 Use		Combined Alternative Package (Preferred Alternative) Use	Type of Use
		Option A	Option B	Option A	Option B		
5BL7529.3	US 36	Permanent incorporation and destruction of historic resource/Adverse Effect	Permanent incorporation and destruction of historic resource/Adverse Effect	Permanent incorporation and destruction of historic resource/Adverse Effect	Permanent incorporation and destruction of historic resource/Adverse Effect	Permanent incorporation and destruction of historic resource/Adverse Effect	Direct use

Source: US 36 Mobility Partnership, 2009.

Notes:

% = percent

US 36 = United States Highway 36

**Allen Ditch (Map Identification Number 5AM1132 and 5JF1762)**

**Description**

<i>Location</i>	US 36 and Turnpike Drive, north of 80 <sup>th</sup> Avenue
<i>Size</i>	34,790 feet
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Significance</i>	Historic ditch, Criterion A

Source: US 36 Mobility Partnership, 2009.

Note:

US 36 = United States Highway 36

**Resource Description**

The parabola-shaped earthen ditch is approximately 10 feet wide at the top and 4 feet deep. The ditch passes under the roadway through a reinforced concrete box culvert that features elongated wing walls for scour protection (see Figure 7.4-9, Uses of Allen Ditch [Map Identification Numbers 5AM1132 and 5JF1762], and Photograph 7.4-9). The entire ditch measures approximately 34,790 feet long. Riparian vegetation is located along the banks of the ditch. The surrounding area is dense commercial and residential development.

**Eligibility and Effects Determination**

The Allen Ditch (5AM1132 and 5JF1762) is eligible for listing in the NRHP under Criterion A for its relation to the development of water rights and agriculture in Adams County and Jefferson County. Five segments were recorded in the project APE. Segments 5AM1132.3, 5AM1132.4, and 5JF1762.4 were found to retain sufficient integrity to support the overall eligibility of the ditch. Segments 5AM1132.1 and 5JF1762.1 do not support the overall eligibility of the entire ditch but impacts to these segments were assessed to determine if the proposed work would affect the overall resource (see Section 4.7, Historic and Archaeological Preservation). The Section 106 determination concluded that there would be an Adverse Effect under Package 2 and Package 4 and No Adverse Effect to the canal under all three build packages.

**Section 4(f) Use**

Refer to Table 7.4-11, Allen Ditch Uses, for the summary compared to existing conditions.

**Table 7.4-11: Allen Ditch Uses**

Package	Length of Additional Culvert/Pipe/ Lining Proposed as Part of the Project Action	Type of Use
2	2,730 feet (7.8% of entire resource)/Adverse Effect	Direct use
4	2,610 feet (7.5% of entire resource)/Adverse Effect	Direct use
Combined Alternative Package (Preferred Alternative)	1,520 feet (4.3% of entire resource)/No Adverse Effect	Direct use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

The resource would be impacted by the widening of US 36 in all three build packages. The use of the ditch involves extending existing culverts where the ditch has already been crossed by the highway.

The total increase in length of these types of alterations would be up to 2,730 feet or 7.8 percent of the 34,790-foot ditch under Package 2, and up to 2,610 feet or 7.5 percent of the entire 6.6-mile ditch under Package 4. The Combined Alternative Package (Preferred Alternative) would impact 1,520 feet of Allen

Ditch in four locations along the corridor. It would impact 4.3 percent of the entire linear resource. The use would not result in a change of functionality for the remainder of the resource.

### Avoidance Alternatives

The ditch is aligned southwest to northeast, perpendicular to US 36, which runs southeast to northwest. A shift in the alignment east or west would not avoid the Allen Ditch because the ditch is a linear feature; therefore, there would still be a use.

An east or west shift to avoid this resource would require the realignment of US 36 and would add 6 miles of out of direction travel in a highly urbanized area resulting in the acquisition of hundreds of residences, and dozens of commercial properties. In addition, the shifted alignment would be located in a different travelshed; therefore, it would not meet the project Purpose and Need. Another option to avoid Allen Ditch involves building bridges over the three crossings. This is not prudent and feasible because it would cost approximately \$62.4 million, a cost of extraordinary magnitude to avoid the use of 1,220 feet of ditch for the Combined Alternative Package (Preferred Alternative).

### All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to Allen Ditch.

Table 7.4-12, Mitigation Measures for Allen Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-12: Mitigation Measures for Allen Ditch**

Use Type	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

## 8375 West 120<sup>th</sup> Avenue (Map Identification Number 5BF9)

### Description

<i>Location</i>	8375 West 120 <sup>th</sup> Avenue
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to the NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

- NRHP = National Register of Historic Places  
 SHPO = State Historic Preservation Officer

### Resource Description

This structure is a single-story, hip-roofed residence with a hipped extension and shed-roofed additions on the rear (see Figure 7.4-10, Uses of 8375 West 120<sup>th</sup> Avenue [Map Identification Number 5BF9], and Photograph 7.4-10). The main body of the structure is built of rusticated concrete block, and additions are wood frame with horizontal wood lap siding. A full front porch has a hipped roof supported by milled wood posts. Windows are wood sash and double hung. The structure was built in either 1900 or 1909.

## Eligibility and Effects Determination

The property at 8375 West 120<sup>th</sup> Street (5BF9) is eligible for the NRHP under Criterion C as a good representative example of an increasingly rare type, the hipped-roof box. The total parcel is 0.66 acre. The Section 106 analysis concluded that there would be an Adverse Effect to the residence (see Section 4.7, Historic and Archaeological Preservation).

## Section 4(f) Use

Package 2 would require the permanent acquisition of 0.62 acre, while Package 4 would require the permanent acquisition of 0.61 acre. The Combined Alternative Package (Preferred Alternative) would require 0.64 acre. The majority of the lot will be used and the structure itself will be completely demolished as a result of the project action for all build packages. All alternatives would result in direct use.

## Avoidance Alternatives

Shifting the entire US 36 alignment to the south would avoid the use of the residence; however, this shift is not prudent and feasible because of extraordinary costs. The elevation of the Wadsworth Boulevard interchange is higher to the south requiring substantial earth removal to place the alignment. The construction cost for the section from 116<sup>th</sup> Avenue to west of Wadsworth Boulevard would be about three times more for earthwork. Currently earthwork costs are approximately \$15 million per mile, and shifting the alignment would add an additional \$30 million for earthwork. The alignment shift would use 3.0 acres of the new \$20 million Broomfield Event Center property. In addition, the newly relocated RTD Broomfield bus facility would need to be relocated. With a shift in the alignment to the south, new bridges at 120<sup>th</sup> Avenue and Wadsworth Boulevard would be 150 feet longer and would add about 50 percent to the costs of those bridges. For these reasons, a shift in the alignment south would not be prudent and feasible due to extraordinary costs.

## All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to the residence.

Table 7.4-13, Mitigation Measures for Residence (5BF9), shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-13: Mitigation Measures for Residence (5BF9)**

Use Type	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>• A Programmatic Agreement and appropriate mitigation will be completed.</li> <li>• The structure will be relocated, if possible.</li> <li>• Property acquisition will be completed under the Uniform Act.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Note:

Uniform Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970

**Dry Creek Valley Ditch (Map Identification Number 5BF7/5BF7.2)**

**Description**

<i>Location</i>	US 36 and 120 <sup>th</sup> Avenue
<i>Size</i>	36,960 feet
<i>Type</i>	Historic Resource
<i>Section 106 Determination</i>	Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

US 36 = United States Highway 36

**Resource Description**

This segment of the Dry Creek Valley Ditch generally runs parallel to US 36 and crosses under SH 121 (see Figure 7.4-11, Uses of Dry Creek Valley Ditch [Map Identification Number 5BF7.2], and Photograph 7.4-11). The parabola-shaped earthen ditch is approximately 20 feet in width at the top and approximately 10 feet in depth. The portion of the ditch that crosses under the highway was altered when the highway was constructed and includes a concrete box culvert. During the construction of US 36, the original alignment of the ditch was shifted to the south to remove the ditch from the highway’s ROW and the ROW of the Broomfield interchange. The entire ditch is approximately 36,960 feet long. Heavy riparian growth is located along either bank of the ditch in many areas. The surrounding area includes industrial and residential development.

**Eligibility and Effects Determination**

The Dry Creek Valley Ditch (5BF7.2) is eligible for listing in the NRHP under Criterion A for its relation to the development of water rights and agriculture in Broomfield County. The Section 106 analysis concluded that there would be an Adverse Effect to the ditch (see Section 4.7, Historic and Archaeological Preservation).

**Section 4(f) Use**

There would be a direct use to the resource from the widening of US 36 in all build packages. The primary impact to the ditch would be an increase in the length of culvert extension and piping associated with the highway. The total increase in length of these types of alterations would be 3,190 feet or 8.6 percent of the entire 36,960-foot ditch under Package 2, and 3,110 feet or 8.4 percent of the entire 36,960-foot ditch under Package 4. The Combined Alternative Package (Preferred Alternative) would use 3,760 linear feet or 10.2 percent.

Refer to Table 7.4-14, Dry Creek Valley Ditch Uses, for the use summary compared to existing conditions.

**Table 7.4-14: Dry Creek Valley Ditch Uses**

Package	Length of Additional Culvert/Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	3,190 feet (8.6% of entire resource)/Adverse Effect	Direct use
4	3,110 feet (8.4% of entire resource)/Adverse Effect	Direct use
Combined Alternative Package (Preferred Alternative)	3,760 feet (10.2% of entire resource)/Adverse Effect	Direct use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

## Avoidance Alternatives

The ditch is aligned southwest to northeast, perpendicular to US 36, which runs southeast to northwest. A shift in the alignment east or west would not avoid the Dry Creek Valley Ditch because the ditch is a linear feature; therefore, there would still be a use. An east or west shift to avoid this resource would require the realignment of US 36 and would add 2 miles of out of direction travel and the acquisition of a dozen residences and commercial properties. In addition, the shifted alignment would be located in a different travelshed; therefore, it would not meet the project Purpose and Need.

Another option to avoid Dry Creek Valley Ditch involves building bridges over the three crossings. This is not prudent and feasible because it would cost approximately \$7.5 million, a cost of extraordinary magnitude to avoid the use of between 2,960 and 3,760 feet of ditch.

## All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to Dry Creek Valley Ditch.

Table 7.4-15, Mitigation Measures for Dry Creek Valley Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-15: Mitigation Measures for Dry Creek Valley Ditch**

Use Type	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

## US 36, Mileposts 39.26 to 41.67 (Map Identification Number 5BL7529.3)

### Description

<i>Location</i>	US 36, Mileposts 39.26 to 41.67
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

- NRHP = National Register of Historic Places
- SHPO = State Historic Preservation Officer
- US 36 = United States Highway 36

### Resource Description

The US 36 corridor from Mileposts 39.26 to 41.67 is eligible for listing on the NRHP under Criterion A (see Figure 7.4-12, Uses of US 36 [Map Identification Number 5BL7529.3], and Photograph 7.4-12). The highway was opened in 1952 as a toll road. Toll facilities were removed in 1968 when the toll road bonds were paid off.

### Eligibility and Effects Determination

This resource has been determined eligible for the NRHP under Criterion A because it is a good representation of the type of limited-access roadway built in the 1950s. The Section 106 analysis concluded that there would be an Adverse Effect to the highway (see Section 4.7, Historic and Archaeological Preservation).

## Section 4(f) Use

All of the build packages would directly use US 36 because the highway would be rebuilt to accommodate the proposed widening of US 36. Impacts are the same for all build packages.

### Avoidance Alternatives

Shifting the alignment north or south would not be a prudent and feasible alternative because it would result in additional uses of Section 4(f) wildlife and waterfowl refuges, which surround US 36 throughout the Boulder Segment. A shifted alignment would completely avoid this eligible section of US 36 and the segment would be left in place and unused for highway traffic. Currently, between 14.4 and 25.3 acres of wildlife and waterfowl refuge, which are Section 4(f) resources, will be acquired. Shifting the alignment north or south to avoid US 36 would require the acquisition of 98 additional acres. This is approximately three times the current acquisition of land with the same value. The Section 4(f) resources along both sides of US 36 contain critical habitat for Preble’s meadow jumping mouse, Ute ladies’-tresses orchid, and other wildlife, as described in the Uses of Wildlife and Waterfowl Refuges section, below.

In order to avoid the existing US 36 alignment, a new highway would need to be relocated north or south through wildlife and waterfowl refuge parcels and into a highly urbanized area. The alignment would need to be shifted 1.5 miles north for a distance of 6 miles, and approximately 100 residences, multiple businesses, a school, and other refuge parcels would be acquired. Alternatively, a southern alignment shift could follow Marshall Drive to South Broadway Street. The alignment shift would be approximately 7 miles long, and 150 residences, a dozen commercial properties, and other refuge parcels would be acquired. This shifted alignment would cause severe environmental impacts and community disruption. This shifted alignment would also not meet the project Purpose and Need because it would not serve the targeted travelshed. For these reasons, this avoidance alternative would not be a prudent and feasible alternative.

### All Possible Planning to Minimize Harm

To minimize harm to the resource, the design of the expanded roadway will consider preserving the original grading as well as the design of the original major and minor structures. If possible, the scenic overlook that currently exists will be preserved. Table 7.4-16, Mitigation Measures for US 36 (5BL7529.3), shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-16: Mitigation Measures for US 36 (5BL7529.3)**

Use Type	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

## Uses of Wildlife and Waterfowl Refuges

Table 7.4-17, Uses of Wildlife and Waterfowl Refuge Section 4(f) Resources, summarizes the uses of the wildlife and waterfowl refuges Section 4(f) resources. The project requires the use of City of Boulder Open Space, a wildlife and waterfowl refuge. It is made up of four properties (Van Vleet Open Space, Short Open Space, Yunker Open Space, and Gallucci Open Space), totaling approximately 1,057 acres and split among nine parcels. As shown on Figure 7.3-5, Section 4(f) Resources in the Boulder Segment, the parcels surround US 36 and all are located in the Boulder Segment. They are continuously located on the north and south side of the alignment from the historic overlook to South Boulder Road, a length of approximately 2.7 miles (Figure 7.3-5). The refuges are up to 1 mile wide from the edge of the alignment. The parcels are discussed as a single Section 4(f) resource because of the following reasons:

- They have the same main function as a refuge
- They are managed under the same set of management plans
- They manage similar species
- The City of Boulder is the official with jurisdiction

**Table 7.4-17: Uses of Wildlife and Waterfowl Refuge Section 4(f) Resources**

Map Number	Resource	Permanent Incorporation of Land Related to Section 4(f) Uses					Type of Use
		Package 2		Package 4		Combined Alternative Package (Preferred Alternative)	
		Option A	Option B	Option A	Option B		
885, 886, and 887	Van Vleet Open Space	10.9 acres <sup>1</sup>	19.8 acres <sup>1</sup>	11.3 acres <sup>1</sup>	19.9 acres <sup>1</sup>	12.0 acres	Direct use
889	Short Open Space	0.0 acre	0.0 acre	0.3 acre	0.3 acre	0.1 acre	Direct use
892, 893, 897, and 898	Yunker Open Space	3.0 acres	3.0 acres	4.5 acres	4.5 acres	4.7 acres	Direct use
903	Gallucci Open Space	0.5 acre	0.5 acre	0.6 acre	0.6 acre	0.7 acre	Direct use
Total Use		14.4 acres	23.3 acres	16.7 acres	25.3 acres	17.5 acres	N/A

Source: US 36 Mobility Partnership, 2009.

Notes:

<sup>1</sup>The Cherryvale Road/South Boulder Road bikeway alternative would reduce uses to this open space area by 0.32 acre.

N/A = not applicable

The City of Boulder provided Section 4(f) eligibility recommendations to the US 36 Mobility Partnership in the US 36 Mobility Project, Section 4(f) Eligibility Recommendations document (City of Boulder OSMP n.d.). It states that "...properties along US 36 are eligible for Section 4(f) status because of their role as a significant wildlife refuge managed in consistency with a wide range of city, state, and federal policy guidance and approved management plans." (See Appendix B, Consultation and Coordination.)

Eight City and County of Boulder planning documents provide policy and operations guidance for the management of the four Wildlife and Waterfowl Refuge sites. These include the following plans:

- City of Boulder Charter Section 176-Open Space Purpose (City of Boulder 1986).
- *Open Space Long Range Management Policies* (City of Boulder OSMP 1995).
- *South Boulder Creek Area Articles of Designation* (City of Boulder OSMP 2000).
- *South Boulder Creek Area Management Plan* (City of Boulder OSMP 1998).
- *Tallgrass Prairie Natural Area Articles of Designation* (City of Boulder 1984).

- *Tallgrass Prairie Management Plan* (City of Boulder 2004).
- *City of Boulder Grassland Management: Black-Tailed Prairie Dog Habitat Conservation Plan* (City of Boulder 1996).
- *Open Space and Mountain Parks Visitor Master Plan* (City of Boulder OSMP 2005).

The first two plans establish the management and conservation of wildlife and habitat that are among the purpose and policies of the OSMP Department. The other plans discuss the management of specific areas or of specific species. The plans also document that the refuges are considered significant by the City of Boulder, the official with jurisdiction.

Specifically, the resources are managed for the following:

- Black-tailed prairie dogs
- Preble’s meadow jumping mouse
- Ute ladies’-tresses orchid
- Colorado tallgrass and wetlands

Additional elements of the resources include habitats for:

- Ground-nesting birds
- Imperiled butterflies
- American groundnut
- Boblink
- Floodplain wet meadow

The management practices of these wildlife and waterfowl refuges include grazing, irrigation, haying, fire, integrated pest management, restoration, monitoring, and mapping.

The specific features of the four properties are discussed below. Following the resource discussions, a general discussion of the use, avoidance alternatives, and planning to minimize harm is provided.

***Van Vleet Open Space (Map Identification Number 885, 886, and 887)***

**Description**

<i>Location</i>	US 36 and Cherryvale Road
<i>Size</i>	767.9 acres
<i>Type</i>	Refuge, open space, habitat conservation/management area
<i>Access</i>	Automobile/bicycle/pedestrian via South Boulder Road and Cherryvale Road
<i>Facilities/Amenities</i>	Open space, South Boulder Creek Natural Area, Colorado Tallgrass Prairie Natural Area, Preble’s meadow jumping mouse critical habitat, Habitat Conservation Area in Visitor Master Plan, Ute ladies’-tresses orchid habitat, wetlands, Habitat Conservation Area and Natural Area in Visitor Master Plan Primary purpose: refuge
<i>Usage/Patronage</i>	Public, more than 720,000 annual visits to South Boulder Creek area
<i>Relationship to Other Resources</i>	Portion of more than 43,000 acres of open space preserves
<i>Ownership/Jurisdiction</i>	City of Boulder Open Space and Mountain Parks
<i>Significance</i>	Comparing the availability and function of this resource with the refuge objectives of the community, the resource in question plays an important role in meeting those objectives

Source: US 36 Mobility Partnership, 2009.

Note:

US 36 = United States Highway 36

See Photograph 7.4-13, Van Vleet Open Space (Map Identification Number 885, 886, and 887).

### Management Plan(s)

Management plans for Van Vleet Open Space are summarized below.

- Charter of the City of Boulder, Article XII. Open Space (City of Boulder 1986).
- *Boulder Valley Comprehensive Plan* (City of Boulder 2002).
- *Open Space Long Range Management Policies* (City of Boulder OSMP 1995).
- *Open Space and Mountain Parks Visitor Master Plan* (City of Boulder OSMP 2005).
- *South Boulder Creek Area Articles of Designation* (City of Boulder OSMP 2000) and *South Boulder Creek Area Management Plan* (City of Boulder OSMP 1998).
- *Tallgrass Prairie Natural Area Articles of Designation* (City of Boulder 1984) and *Management Plan* (City of Boulder 1986).

See Figure 7.4-13, Uses of Van Vleet Open Space, Option A (Map Identification Number Trail Crossings 12, 885, 886, and 887), and Figure 7.4-14, Uses of Van Vleet Open Space, Option B (Map Identification Number Trail Crossings 12, 885, 886, and 887).

### Short Open Space (Map Identification Number 889)

#### Description

<i>Location</i>	North of US 36 and east of Cherryvale Road – City of Boulder
<i>Size</i>	50.7 acres
<i>Type</i>	Refuge, open space, habitat conservation/management area
<i>Access</i>	Pedestrian via Cherryvale Road, Mesa Drive
<i>Facilities/Amenities</i>	Open space, South Boulder Creek Natural Area, Habitat Conservation Area and Natural Area in Visitor Master Plan, Preble's meadow jumping mouse critical habitat Primary purpose: refuge
<i>Usage/Patronage</i>	Public, more than 720,000 annual visits to South Boulder Creek area
<i>Relationship to Other Resources</i>	Portion of more than 43,000 acres of open space preserves
<i>Ownership/Jurisdiction</i>	City of Boulder Open Space and Mountain Parks
<i>Significance</i>	Comparing the availability and function of this resource with the refuge objectives of the community, and the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

Note:

US 36 = United States Highway 36

### Management Plan(s)

Management plans for Short Open Space are summarized below.

- Charter of the City of Boulder, Article XII. Open Space (City of Boulder 1986).
- *Boulder Valley Comprehensive Plan* (City of Boulder 2002).
- *Open Space Long Range Management Policies* (City of Boulder OSMP 1995).
- *Open Space and Mountain Parks Visitor Master Plan* (City of Boulder OSMP 2005).
- *South Boulder Creek Area Articles of Designation* (City of Boulder OSMP 2000) and *South Boulder Creek Area Management Plan* (City of Boulder OSMP 1998).

See Figure 7.4-15, Uses of Yunker Open Space (Map Identification Numbers 889, 892, 893, 897, and 898).

**Yunker Open Space (Map Identification Number 892, 893, 897, and 898)**

**Description**

<i>Location</i>	US 36 and Cherryvale Road
<i>Size</i>	189.1 acres
<i>Type</i>	Refuge, open space, habitat conservation/management area
<i>Access</i>	Pedestrian via Cherryvale Road
<i>Facilities/Amenities</i>	Open space, South Boulder Creek Natural Area, Colorado Tallgrass Prairie Natural Area, Preble's meadow jumping mouse critical habitat, Habitat Conservation Area in Visitor Master Plan, Ute Ladies'-tresses orchid habitat, Black-tailed prairie dog habitat, wetlands Primary Purpose: refuge
<i>Usage/Patronage</i>	Public, more than 720,000 annual visits to South Boulder Creek area
<i>Relationship to Other Resources</i>	Portion of more than 43,000 acres of open space preserves
<i>Ownership/Jurisdiction</i>	City of Boulder Open Space and Mountain Parks
<i>Significance</i>	Comparing the availability and function of this resource with the refuge objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

Note: US 36 = United States Highway 36

**Management Plan(s)**

Management plans for Yunker Open Space are summarized below.

- Charter of the City of Boulder, Article XII. Open Space (City of Boulder 1986).
- *Boulder Valley Comprehensive Plan* (City of Boulder 2002).
- *Open Space Long Range Management Policies* (City of Boulder OSMP 1995).
- *Open Space and Mountain Parks Visitor Master Plan* (City of Boulder OSMP 2005).
- *Tallgrass Prairie Natural Area Articles of Designation* (City of Boulder 1984) and *Management Plan* (City of Boulder 1986).
- *South Boulder Creek Area Articles of Designation* (City of Boulder OSMP 2000) and *South Boulder Creek Area Management Plan* (City of Boulder OSMP 1998).
- *City of Boulder Grassland Management: Black-Tailed Prairie Dog Habitat Conservation Plan* (City of Boulder 1996).

See Figure 7.4-15, Uses of Yunker Open Space (Map Identification Numbers 889, 892, 893, 897, and 898).

### **Gallucci Open Space (Map Identification Number 903)**

#### **Description**

<i>Location</i>	North of US 36 and east of Cherryvale Road – City of Boulder
<i>Size</i>	49.0 acres
<i>Type</i>	Refuge, open space, habitat conservation/management area
<i>Access</i>	Pedestrian via Shalako Place
<i>Facilities/Amenities</i>	Open space, adjacent to scenic overlook in the Colorado Department of Transportation right-of-way, Black-tailed prairie dog habitat conservation area, Habitat Conservation Area in Visitor Master Plan Primary purpose: refuge
<i>Usage/Patronage</i>	Public, more than 720,000 annual visits to South Boulder Creek area
<i>Relationship to Other Resources</i>	Portion of more than 43,000 acres of open space preserves
<i>Ownership/Jurisdiction</i>	City of Boulder Open Space and Mountain Parks
<i>Significance</i>	Comparing the availability and function of this resource with the refuge objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

Note:

US 36 = United States Highway 36

#### **Management Plan(s)**

- Management plans for Gallucci Open Space are summarized below. Charter of the City of Boulder, Article XII. Open Space (City of Boulder 1986).
- *Boulder Valley Comprehensive Plan* (City of Boulder 2002).
- *Open Space Long Range Management Policies* (City of Boulder OSMP 1995).
- *Open Space and Mountain Parks Visitor Master Plan* (City of Boulder OSMP 2005).
- *City of Boulder Grassland Management: Black-Tailed Prairie Dog Habitat Conservation Plan* (City of Boulder 1996).

See Figure 7.4-16, Uses of Gallucci Open Space (Map Identification Number 903).

#### **Section 4(f) Use**

All of the build packages would require the permanent acquisition of property from either the north side or the south side of US 36. As shown on Table 7.4-17, Uses of Wildlife and Waterfowl Section 4(f) Resources, a total of 14.4 acres would be used by Package 2, Option A; 23.3 acres would be used by Package 2, Option B; 16.7 acres would be used by Package 4, Option A; 25.3 acres would be used by Package 4, Option B; and 17.5 acres would be used by the Combined Alternative Package (Preferred Alternative). The acquisition would be necessary to accommodate the proposed widening of US 36 in this area. The property to be acquired is undeveloped portions of moderate- and high-value habitat. No refuge facilities (i.e., shelters or buildings) would be used by the acquisition, but unspoiled habitat for Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and other wildlife would be acquired.

Although the area used under the build packages would be a relatively small proportion of the total waterfowl and wildlife refuge acreage (i.e., about 1 to 2 percent), and would be adjacent to the existing highway corridor, the acquisition of property from this resource would result in the direct use of a Section 4(f) resource. Consultation with the City and County of Boulder has begun and will continue after the publication of the FEIS.

## Avoidance Alternatives

These Section 4(f) resources surround US 36 throughout the Boulder Segment. Shifting the alignment to the north or south would result in the acquisition of additional Section 4(f) wildlife and waterfowl refuges. This is approximately three times the current acquisition to land with the same value. The Section 4(f) resources along both sides of US 36 contain critical habitat for Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and other wildlife as described above.

In order to avoid the Section 4(f) resources, US 36 would need to be relocated north or south through similar refuge parcels and into a highly urbanized area. The alignment would need to be shifted 6 miles north, and approximately 100 residences, multiple businesses, a school, and other refuge parcels would be acquired. Alternatively, a southern alignment shift could follow Marshall Drive to South Broadway Street. The alignment shift would be approximately 7 miles and 150 residences, a dozen commercial properties, and other refuge parcels would be acquired. This shifted alignment would cause severe environmental impacts and community disruption. This shifted alignment would also not meet the project Purpose and Need because it would not serve the targeted travelshed. For these reasons, this avoidance alternative would not be a prudent and feasible alternative.

## All Possible Planning to Minimize Harm

Several minimization measures will be taken to reduce the impact of the project to the Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and other wildlife habitat. Minimization measures include limiting construction, staging, and stockpiling to areas that do not qualify as habitat, and limiting the construction period to the fall and winter months when the ditch does not convey irrigation flows. In order to compensate for the effects of riparian habitat loss, equivalent areas of riparian habitat will be enhanced or restored. For a complete list of threatened and endangered species minimization and mitigation measures at this location, see Section 4.14, Biological Resources: Wildlife, Vegetation, and Threatened and Endangered Species.

Two design options, Options A and B, were designed for the west end termini under Packages 2 and 4. In Option A, the managed lanes would merge into the general-purpose lanes west of Cherryvale Road and continue on to 28<sup>th</sup> Street. In Option B, a bus-only lane would go directly to the Table Mesa Station while all other traffic in the special lanes would merge into the general-purpose lanes. Option A would minimize harm to the wildlife and waterfowl Section 4(f) resources by 8.9 acres for Package 2, and 8.3 acres for Package 4. This option would minimize harm to Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and other wildlife habitat, for which the open space and wildlife refuge property is managed. The Combined Alternative Package (Preferred Alternative) will incorporate design elements and minimization measures from Options A and B.

An off-street bikeway alternative was developed along Cherryvale Road and South Boulder Road for only Packages 2 and 4. It may reduce harm to the open space and wildlife refuge parcel. This alternative would use 0.41 acre of this wildlife refuge, rather than the 0.73 acre that would be used for the US 36 bikeway. However, it may also use portions of a historic farmstead (the Homestead Site) and two ditches. These uses may be considered *de minimis*, pending a final determination made upon receiving SHPO's written concurrence with the Determination of Effects. The Cherryvale Road and South Boulder Road bikeway alternative would also minimize harm to Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and other wildlife habitat for which the open space and wildlife refuge property is managed. A reduction in use of 0.32 acre to these habitats would result as compared to the US 36 bikeway option. Based on information provided by Boulder OSMP, the existing trail along South Boulder Road and part of Cherryvale Road is heavily used by bikers, equestrians, and walkers with their dogs. The frequent human use and multiple access point to the open space and wildlife refuge promote an element of human intrusion. This human intrusion is not currently a factor along the US 36 alignment because there is no easy access to the adjacent open space. This indirect impact is difficult to quantify but is considered in selection of the bikeway alignment. The indirect impact and potential use associated with this impact is greater with the US 36 bikeway than with the off-street Cherryvale Road and South Boulder Road

bikeway. After considering the public’s and the local agencies’ comments, the project team has selected the preferred bikeway alignment along the US 36 corridor. Section 7.5, Least Harm Analysis, demonstrates that this alignment would better meet the project’s Purpose and Need, would have greater stakeholder support, and therefore, would have no greater net overall harm when compared to all the bikeway alternatives considered.

Retaining walls to decrease the property acquisition have been proposed for resources 887, 893, and 898. Retaining walls could be used in other locations along both sides of US 36 to decrease uses to the wildlife and waterfowl refuges. At this time, no other retaining walls have been proposed for the other six resources; however, they will be considered based on input from the City of Boulder and the public.

As the project proceeds through final engineering and design, the measures to minimize harm to the refuges including additional retaining walls will be re-examined and refined with the local officials having jurisdiction over the affected resource.

Enhancements will be made to refuges owned by the City of Boulder to mitigate for property acquisitions. Table 7.4-18, Mitigation Measures for the Section 4(f) Resources, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-18: Mitigation Measures for the Section 4(f) Resources**

Use Type	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Loss of vegetation including sensitive habitats	<ul style="list-style-type: none"> <li>• During final design, the grading plan will minimize removal of riparian vegetation where possible.</li> <li>• During construction, vehicle operation will be limited to the designated construction area, and the limits of the construction area will be fenced where they are adjacent to sensitive habitats including prairie dog towns, riparian areas, wetlands, and upland trees and shrubs.</li> <li>• 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.</li> <li>• Graded areas within the right-of-way will be seeded with an appropriate mixture of native grasses and forbs; shrubs will be planted where appropriate.</li> <li>• Restoration of disturbed riparian habitat will include planting of native trees and shrubs, as well as seeding and regrading. Native grasses, forbs, and shrubs will also be seeded in riparian areas. SB 40 requires replacement of riparian trees at a 1:1 ratio, and shrubs on a square foot basis.</li> <li>• To compensate for the effects of riparian habitat loss, equivalent areas of riparian habitat will be enhanced or restored. This will consist of planting of native trees and shrubs, control of noxious weeds, seeding of native species, or establishment of conservation easements on riparian areas in the vicinity of the project.</li> <li>• All landscaping, such as trees, shrubs, lawn, perennials, and in some cases, native grasses, will be replaced where it was removed. CDOT tree replacement policy will be followed.</li> <li>• See also landscaping removal mitigation under Section 4.11, Visual and Aesthetic Resources.</li> <li>• Impacts to sensitive areas will be avoided or minimized during final design, including South Boulder Creek Natural Area, and Colorado Tallgrass Prairie PCA.</li> </ul>
	Loss of listed FT and FE species or their habitat	<ul style="list-style-type: none"> <li>• FHWA and FTA have initiated formal consultation with the USFWS. A PBA was released for public comment. Conservation measures for impacts to federally listed species are being developed as part of the PBA. During final design, mitigation measures related to threatened and endangered species will be finalized in consultation with USFWS.</li> </ul>

**Table 7.4-18: Mitigation Measures for the Section 4(f) Resources**

Use Type	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land (continued)	Property acquisition	<ul style="list-style-type: none"> <li>• Refuges owned by the City of Boulder will be enhanced.</li> <li>• Property acquisition will be completed under the Uniform Act.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Note:

BMP	=	best management practice
CDOT	=	Colorado Department of Transportation
FE	=	federally endangered
FHWA	=	Federal Highway Administration
FT	=	federally threatened
FTA	=	Federal Transit Administration
PBA	=	Programmatic Biological Assessment
PCA	=	Potent Conservation Area
Uniform Act	=	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970
USFWS	=	U.S. Fish and Wildlife Service

## ***De Minimis* Impacts**

Certain uses of Section 4(f) land may have a minimal or *de minimis* impact on the protected resource. When this is the case, FHWA can make a *de minimis* impact determination. Properties with a *de minimis* determination do not require an analysis of avoidance alternatives (23 CFR 774.17[5]). The complete requirements for *de minimis* impacts are included in the Section 4(f) final rule, found in 23 CFR 774.

The *de minimis* criteria and associated determinations are different for historic sites than for parks, recreation areas, and wildlife and waterfowl refuges.

- For publicly owned parks, recreation areas, and wildlife and waterfowl refuges, *de minimis* impacts are defined as those that do not “adversely affect the activities, features, and attributes” of the Section 4(f) resource. The public must be afforded an opportunity to review and comment on the findings.
- For historic sites, *de minimis* impacts are based on the determination that no historic property is affected by the project or that the project will have No Adverse Effect on the historic property in accordance with Section 106 of the National Preservation Act. FHWA must notify SHPO of its intent to make a *de minimis* finding.

## ***De Minimis* Impacts for Parks and Recreational Resources**

In order to be protected under Section 4(f), public parks and recreation facilities must be considered “significant,” as determined by the federal, state, or local officials having jurisdiction over them.

The Section 4(f) parks and recreational resources were identified based on the processes outlined in Section 7.3. A *de minimis* impact is recommended when the use of the resource is minimal or “trivial,” and does not adversely affect the activities, features, and attributes that qualify the resource for protection (23 CFR 774).

The finding of a *de minimis* impact on recreational and wildlife resources can be made when:

1. The transportation use of the Section 4(f) resource, together with any impact avoidance, minimization, and mitigation or enhancement measures incorporated into the project, does not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f);
2. The official(s) with jurisdiction over the property are informed of FHWA’s and FTA’s intent to make the *de minimis* impact finding based on their written concurrence that the project will not adversely affect the activities, features, and attributes that qualify the property for protection under Section 4(f); and

- The public has been afforded an opportunity to review and comment on the effects of the project on the protected activities, features, and attributes of the Section 4(f) resource.

There has been extensive agency coordination with the officials having jurisdiction over the property. Public input on the possible findings of *de minimis* occurred during the public and agency review period for the DEIS and the Section 4(f) evaluation. No comments were received on the *de minimis* resources described below. The officials with jurisdiction have provided written concurrence with the proposed FHWA finding of *de minimis*, found in Appendix B, Consultation and Coordination. This FEIS will serve as FHWA's *de minimis* finding, as long as SHPO concurs with the Section 106 effects determinations for the Combined Alternative Package (Preferred Alternative), and for the resources not addressed in the DEIS. SHPO already provided concurrence on the effects determination to Package 2 and Package 4 during the DEIS public review period.

Table 7.4-19, *De minimis* Uses of Section 4(f) Parks and Recreational Resources, indicates that the following Section 4(f) properties are recommended for *de minimis* determination.

**Table 7.4-19: *De minimis* Uses of Section 4(f) Parks and Recreational Resources**

Map Number	Resource	Impacts Related to Section 4(f) Use			Type of Use
		Package 2	Package 4	Combined Alternative Package (Preferred Alternative)	
<b>Broomfield Segment</b>					
308	East Interlocken Park	Permanent incorporation of 1.0 acre	Permanent incorporation of 0.3 acre	Permanent incorporation of 0.8 acre	<i>De minimis</i>
<b>Superior/Louisville Segment</b>					
380	Frank Varra Park	Permanent incorporation of 0.6 acre	Permanent incorporation of 0.3 acre	Permanent incorporation of 0.3 acre	<i>De minimis</i>

Source: US 36 Mobility Partnership, 2009.

### **East Interlocken Park (Map Identification Number 308)**

#### **Description**

<i>Location</i>	West of US 36/Interlocken Parkway
<i>Size</i>	12.9 acres
<i>Type</i>	Community park
<i>Access</i>	Automobile/bicycle/pedestrian via Interlocken Parkway
<i>Facilities/Amenities</i>	Multi-purpose fields, trails, picnic tables/shelter, greenbelt
<i>Usage/Patronage</i>	Public, annual patronage unknown
<i>Relationship to Other Resources</i>	1 of 50 parks and recreation facilities in city/county; adjacent to public/private Interlocken Owners Association parks, ball fields, trails, green space
<i>Ownership/Jurisdiction</i>	City and County of Broomfield
<i>Significance</i>	Comparing the availability and function of this resource with the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

Note:

US 36 = United States Highway 36

### Uses of Interlocken Park by Package

Package 2 Use	Package 4 Use	Combined Alternative Package (Preferred Alternative) Use
Permanent incorporation of 1.0 acre/ <i>De minimis</i>	Permanent incorporation of 0.3 acre/ <i>De minimis</i>	Permanent incorporation of 0.8 acre/ <i>De minimis</i>

Source: US 36 Mobility Partnership, 2009.

### Resource Description

East Interlocken Park is a multi-use community park located on the south side of US 36 (see Figure 7.4-17, Uses of East Interlocken Park [Map Identification Number 308], and Photograph 7.4-14). Park amenities include multi-purpose fields, trails, picnic tables, and a shelter. A small pond is also located on the north side of the park.

### Section 4(f) Use

All of the build packages would require the permanent acquisition of property from the north side of the East Interlocken Park along the US 36 ROW. The acquisition would be necessary to accommodate the proposed widening of US 36 in this area. The property to be acquired is a landscaped grassy area and a section of paved trail within the US 36 ROW. Part of the trail would need to be closed during construction activities and a safe detour around the south side of the park would be provided. The trail closure would not adversely affect any trail users. The trail would be replaced in approximately its current location and the trail would be enhanced as part of the US 36 bikeway project. The trail will be widened to 10 feet and would be part of the US 36 bikeway. This would allow trail users to access the full trail system. The largest area of use would be the “hook area” in the northeast corner of the site. This area is a landscaped area and is not used as a park resource. No other park facilities would be used by the acquisition. Although the area used under any of the build packages would be a relatively small proportion of the total park acreage (i.e., about 2 to 8 percent) and only minor relocation of a trail segment would be necessary, the acquisition of property from this public park would result in the direct use of a Section 4(f) resource. It is recommended that this use be considered *de minimis*. The use would not result in a change of functionality for the remainder of the park and will not impact the activities, features, and attributes that qualify the resource for protection under Section 4(f). Although acreage uses between the three packages are different, the use is the same. The public had an opportunity to comment on the use during the DEIS public comment period. No comments were received. The City and County of Broomfield has provided written concurrence (found in Appendix B, Consultation and Coordination) that the use does not adversely affect the activities, features, and attributes of the resource. Consultation with the City and County of Broomfield has begun and will continue after the publication of the FEIS.

### All Possible Planning to Minimize Harm

To minimize harm to East Interlocken Park, a retaining wall will be built along the north side of the park. The retaining wall will decrease the amount of property acquisition required for the widening of US 36. The design team evaluated shifting the alignment to minimize the use of the park, but shifting the alignment would require the acquisition of prime and unique farmlands to the west. In addition, a large commercial building on the east side of US 36 will need to be acquired. A trail detour around the south side of the park will be provided during construction activities.

As additional modifications are made during further engineering, it may be possible to further minimize harm to East Interlocken Park.

To mitigate for property acquisitions to East Interlocken Park, enhancements will be made to East Interlocken Park, or other parks owned by the City and County of Broomfield. Table 7.4-20, Mitigation

Measures for East Interlocken Park, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-20: Mitigation Measures for East Interlocken Park**

Type of Use	Impacts Related to the Use	Mitigation Measures
Temporary Incorporation of Land	Disruption of use/enjoyment	<ul style="list-style-type: none"> <li>• A public safety and security program will be developed and implemented for East Interlocken Park with the City and County of Broomfield, including access management, signage, and public information.</li> <li>• BMPs will be used to avoid or minimize construction-related nuisances in affected areas from noise/vibration, dust, light/glare, etc.</li> </ul>
	Temporary removal of trail	<ul style="list-style-type: none"> <li>• The trail will be replaced and enhanced after construction activities are completed.</li> <li>• A trail detour will be provided during construction activities.</li> </ul>
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>• East Interlocken Park or other parks owned by Broomfield Parks and Open Space will be enhanced.</li> <li>• The proposed bikeway will be located on the edge of East Interlocken Park. This will give park users access to the trail system.</li> <li>• Property acquisition will be completed under the Uniform Act.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Notes:

BMP = best management practice

Uniform Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970

### Frank Varra Park (Map Identification Number 380)

#### Description

<i>Location</i>	West of US 36/West Flatiron Circle
<i>Size</i>	16.9 acres
<i>Type</i>	Fields, trails
<i>Access</i>	Automobile/bicycle/pedestrian via West Flatiron Circle
<i>Facilities/Amenities</i>	Open space, trails
<i>Usage/Patronage</i>	Public, annual patronage unknown
<i>Relationship to Other Resources</i>	1 of 50 parks and recreation facilities in city/county
<i>Ownership/Jurisdiction</i>	City and County of Broomfield
<i>Significance</i>	Comparing the availability and function of this resource with the park and recreation objectives of the community, the resource in question plays an important role in meeting those objectives.

Source: US 36 Mobility Partnership, 2009.

Note:

US 36 = United States Highway 36

#### Uses of Frank Varra Park by Package

Package 2 Use	Package 4 Use	Combined Alternative Package (Preferred Alternative) Use
Permanent incorporation of 0.6 acre/ <i>De minimis</i>	Permanent incorporation of 0.3 acre/ <i>De minimis</i>	Permanent incorporation of 0.3 acre/ <i>De minimis</i>

Source: US 36 Mobility Partnership, 2009.

#### Resource Description

Frank Varra Park is located along US 36, between the highway and FlatIron Crossing Mall (see Figure 7.4-18, Uses of Frank Varra Park [Map Identification Number 380], and Photograph 7.4-15). It is a passive park with a multi-use trail. The eastern side of the park, where a large portion of the acquisition occurs, is not used by park visitors. The park does not have a parking lot and users generally

run/walk/bike/rollerblade through the park on the trail. The City and County of Broomfield concurs that this portion of the park is a passive area. All of the build packages would require the permanent acquisition of property from the north and east side of Frank Varra Park. The acquisition would be necessary to accommodate the proposed widening of US 36 in this area.

### Section 4(f) Use

The property to be acquired is a landscaped grassy area and a paved trail. The paved trail is located in the northeast corner of the park. Currently, this part of the trail is blocked off with a wooden barrier to prevent use because the trail ends. The barrier will be removed once the US 36 bikeway project is implemented. A detour around the south side of the park would be provided during construction activities. No other park facilities would be used by the acquisition. Although the area used under the build packages would be a relatively modest portion of the total park acreage (i.e., about 2 to 4 percent), and no park facilities would be displaced, the acquisition of property from this public park would result in the direct use of a Section 4(f) resource. It is recommended that this use be considered *de minimis*. The use would not result in a change of functionality for the remainder of the park and will not impact the activities, features, and attributes that qualify the resource for protection under Section 4(f). The public had an opportunity to comment on the use during the DEIS public comment period. No comments were received. The City and County of Broomfield has provided written concurrence (found in Appendix B, Consultation and Coordination) that the use does not adversely affect the activities, features, and attributes of the resource. Consultation with the City and County of Broomfield has begun and will continue after the publication of the FEIS.

### All Possible Planning to Minimize Harm

The amount of property acquisition required for this resource has been minimized. Initially, the conceptual design included a new crossing to increase drainage and grading of a large section of the park. However, to minimize the use of the park, the design was modified so that a minimal area of the park would be used. Additionally, the trail through the park will not be rebuilt as part of the US 36 bikeway, but will be left as is (10 feet wide), to avoid additional property acquisitions to the park. During construction activities, a bike detour around the south side of the park will be provided.

Proposed drainage improvements and the presence of adjacent wetlands constrain any further reduction in property acquisition. The use of the east side of the park is necessary to meet drainage requirements.

As additional modifications are made during further engineering, it may be possible to further minimize harm to Frank Varra Park.

Property uses of Frank Varra Park will be mitigated through enhancing Frank Varra Park or other City and County of Broomfield parks. Table 7.4-21, Mitigation Measures for Frank Varra Park, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-21: Mitigation Measures for Frank Varra Park**

Type of Use	Impacts Related to the Use	Mitigation Measures
Temporary Incorporation of Land	Disruption of use/enjoyment	<ul style="list-style-type: none"> <li>A public safety and security program will be developed and implemented for Frank Varra Park with the City and County of Broomfield, including access management, signage, and public information.</li> <li>BMPs will be used to avoid or minimize construction-related nuisances in affected areas from noise, dust, light/glare, etc.</li> </ul>
	Temporary uses of the trail	<ul style="list-style-type: none"> <li>The trail will be replaced and enhanced after construction activities are completed.</li> <li>Provide a trail detour around the south side of the park.</li> </ul>

**Table 7.4-21: Mitigation Measures for Frank Varra Park**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>Frank Varra Park or other parks owned by the City and County of Broomfield will be enhanced.</li> <li>The proposed bikeway will use the current path in Frank Varra Park. This will allow park users access to the trail system.</li> <li>Property acquisition will be completed under the Uniform Act.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Notes:

BMP = best management practice

Uniform Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970

## ***De Minimis* Impacts of Historic Resources**

Historic sites qualifying for Section 4(f) protection must be officially listed on or eligible for inclusion in the NRHP, or contribute to a historic district that is eligible for or listed on the NRHP. The NRHP eligibility is established through the Section 106 process.

The finding of a *de minimis* impact on a historic site can be made when:

1. The Section 106 process results in the determination of “No Adverse Effect” or “No Historic Properties Affected” with the concurrence of SHPO;
2. The SHPO is informed of FHWA’s and FTA’s intent to make a *de minimis* impact finding based on their written concurrence in the Section 106 determination; and
3. FHWA and FTA have considered the views of any consulting parties participating in the Section 106 consultation.

The following Section 4(f) properties are recommended for *de minimis* determination. These properties are shown on Figures 7.4-19 through 7.4-35, and in Photographs 7.4-16 through 7.4-30. Impacts to the properties have been evaluated, based on current engineering design. The Section 106 process being conducted for this project is a “document substitution” which means that SHPO and consulting parties are reviewing the proposed determinations of effect during the public and agency review process for this FEIS. SHPO was initially informed of FHWA’s and FTA’s intent to make a *de minimis* finding in correspondence dated August 2, 2007. SHPO provided concurrence on the effects determination to Package 2 and Package 4 during the DEIS public review period. It has not yet concurred on the effects determinations for the Combined Alternative Package (Preferred Alternative) or on the historic resources not addressed in the DEIS. SHPO will provide its concurrence as a part of its review of the FEIS. This FEIS will serve as FHWA’s *de minimis* finding, as long as SHPO concurs with the Section 106 effects determinations for the Combined Alternative Package (Preferred Alternative) and for resources not addressed in the DEIS.

## ***Historic Resources***

Table 7.4-22, *De minimis* Uses of Section 4(f) Historic Resources by Segment, summarizes the effects on the individual historic properties identified as Section 4(f) resources. Additionally the table lists the type of Section 4(f) use of each resource.

**Table 7.4-22: De minimis Uses of Section 4(f) Historic Resources by Segment**

Map Number	Resource	Impacts Related to Section 4(f) Use					Effects Determination
		Package 2		Package 4	Combined Alternative Package (Preferred Alternative)		
<b>Westminster Segment</b>							
5JF3787.2	Niver Canal	Permanent acquisition of 340 linear feet		Permanent acquisition of 230 linear feet	Permanent acquisition of 190 linear feet		No Adverse Effect
5JF250.4	Farmers Highline Canal	Permanent acquisition of 340 linear feet		Permanent acquisition of 280 linear feet	Permanent acquisition of 280 linear feet		No Adverse Effect
<b>Broomfield Segment</b>							
5BF109	Residence (11415 Wadsworth Boulevard)	Permanent acquisition of 17%, excluding structure		Permanent acquisition of 17%, excluding structure	None		No Adverse Effect (Package 2 and Package 4)/ No Historic Properties Affected (Combined Alternative Package [Preferred Alternative])
5BL5664.33	Coal Creek Ditch	Pipe structure replacement		Pipe structure replacement	Pipe structure replacement		No Adverse Effect
5BF67/5BF67.5	Community Ditch	Permanent acquisition of 390 linear feet		Permanent acquisition of 260 linear feet	Permanent acquisition of 310 linear feet		No Adverse Effect
5BF98.1/5JF3752.1	Equity Ditch	Permanent acquisition of 620 linear feet		Permanent acquisition of 620 linear feet	Permanent acquisition of 840 linear feet		No Adverse Effect
Map Number	Resource	Impacts Related to Section 4(f) Uses					Effects Determination
		Package 2		Package 4		Combined Alternative Package (Preferred Alternative)	
		Option A	Option B	Option A	Option B		
<b>Boulder Segment</b>							
5BL750.51	South Boulder Canyon Ditch	Permanent acquisition of 250 linear feet	Permanent acquisition of 250 linear feet	Permanent acquisition of 220 linear feet	Permanent acquisition of 220 linear feet	Permanent acquisition of 190 linear feet	No Adverse Effect
5BL2719.38	Goodhue Ditch	Permanent acquisition of 110 linear feet	Permanent acquisition of 110 linear feet	Permanent acquisition of 170 linear feet	Permanent acquisition of 170 linear feet	Permanent acquisition of 110 linear feet	No Adverse Effect
5BL9577.1	Louisville Reservoir Inlet	Permanent acquisition of 170 linear feet	Permanent acquisition of 170 linear feet	Permanent acquisition of 180 linear feet	Permanent acquisition of 180 linear feet	Permanent acquisition of 130 linear feet	No Adverse Effect
5BL5040	Shearer Ditch	Permanent acquisition of 400 linear feet	Permanent acquisition of 400 linear feet	Permanent acquisition of 370 linear feet	Permanent acquisition of 370 linear feet	Permanent acquisition of 420 linear feet	No Adverse Effect

**Table 7.4-22: De minimis Uses of Section 4(f) Historic Resources by Segment**

Boulder Segment (continued)							
Map Number	Resource	Impacts Related to Section 4(f) Uses					Effects Determination
		Package 2		Package 4		Combined Alternative Package (Preferred Alternative)	
		Option A	Option B	Option A	Option B		
5BL453.2	Davidson Ditch	Permanent acquisition of 290 linear feet	Permanent acquisition of 290 linear feet	Permanent acquisition of 300 linear feet	Permanent acquisition of 300 linear feet	Permanent acquisition of 330 linear feet	No Adverse Effect
5BL4165.1	McGinn Ditch	Permanent acquisition of 10 linear feet	Permanent acquisition of 0 linear feet	No Adverse Effect			
5BL5036	Viele Homestead	Permanent acquisition of 300 linear feet	None	No Adverse Effect (Package 2 and Package 4)/ No Historic Properties Affected (Combined Alternative Package [Preferred Alternative])			
5BL5042.1	Marshallville Ditch	Permanent acquisition of 185 linear feet	Permanent acquisition of 560 linear feet	No Adverse Effect			
5BL3935.35	Anderson Extension Ditch	Permanent acquisition of 1,550 linear feet	No Adverse Effect				

Source: US 36 Mobility Partnership, 2009.

Notes:

% = percent  
 < = less than

**Niver Canal (Map Identification Number 5JF3787/5JF3787.2)**

**Description**

<i>Location</i>	US 36 and Sheridan Boulevard
<i>Size</i>	180,000 feet
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places  
 SHPO = State Historic Preservation Officer  
 US 36 = United States Highway 36

## Resource Description

This segment of the Niver Canal passes under US 36 in a general west-to-east direction. The parabola-shaped earthen canal is approximately 40 feet wide at the top and 15 feet deep (see Figure 7.4-19, Uses of Niver Canal [Map Identification Number 5JF3787 for the Entire Resource, and 5JF3787.2 for the US 36 Crossing], and Photograph 7.4-16). It is approximately 180 feet south of and parallel to the Farmers Highline Canal (5JF250). It passes under the roadway through a reinforced concrete box culvert. The surrounding area is commercial and residential. Heavy riparian growth surrounds the canal in this segment. During the initial construction of US 36, a 120-foot concrete box culvert was constructed to convey the ditch under the highway.

## Eligibility and Effects Determination

The entire Niver Canal (5JF3787) is eligible for the NRHP under Criterion A due to its association with the development of water rights in Jefferson County. The Section 106 analysis concluded that there will be No Adverse Effects to the canal (see Section 4.7, Historic and Archaeological Preservation).

## Section 4(f) Use

The resource would be affected by the widening of US 36 for all build packages. The primary use would be culvert extensions and piping associated with the highway. The total increase in length of these types of alterations would be 340 feet or 0.3 percent of the entire 180,000 foot long ditch under Package 2, and 230 feet or 0.2 percent of the entire 180,000 foot long ditch under Package 4. The Combined Alternative Package (Preferred Alternative) would extend the culvert 190 feet (0.2 percent).

Refer to Table 7.4-23, Niver Canal Uses, for the use summary compared to existing conditions.

**Table 7.4-23: Niver Canal Uses**

Package	Length of Additional Culvert/Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	Permanent incorporation of 340 feet (0.3% of entire resource)/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 230 feet (0.2% of entire resource)/No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 190 feet (0.2% of entire resource)/No Adverse Effect	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all build packages and is considered *de minimis*. The use would not result in a change of functionality for the remainder of the canal.

## All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to Niver Canal.

Table 7.4-24, Mitigation Measures for Niver Canal, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-24: Mitigation Measures for Niver Canal**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

**Farmers Highline Canal (Map Identification Number 5JF250/5JF250.4)**

**Description**

<i>Location</i>	US 36 and Westminster Boulevard
<i>Size</i>	180,000 feet
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

US 36 = United States Highway 36

**Resource Description**

This segment of the Farmers Highline Canal passes under US 36 in a general west-to-east direction. The parabola-shaped earthen ditch is approximately 40 feet wide at the top and 15 feet deep (see Figure 7.4-20, Uses of Farmers Highline Canal [Map Identification Number 5JF250 for the Entire Segment, and 5JF250.4 for the US 36 Crossing], and Photograph 7.4-17). It is approximately 180 feet north of the Niver Canal (5JF3787). The ditch passes under the roadway through a reinforced concrete box culvert. The surrounding area is commercial and residential. Heavy riparian growth surrounds the canal in this segment. During the construction of US 36, a 140-foot concrete box culvert was constructed to convey the ditch under the highway. The original alignment remains unchanged.

**Eligibility and Effects Determination**

The entire Farmers Highline Canal (5JF250) is eligible for the NRHP under Criterion A due to its association with the development of water rights in Jefferson County. The Section 106 analysis concluded that there will be No Adverse Effect to the ditch (see Section 4.7, Historic and Archaeological Preservation).

**Section 4(f) Use**

The resource will be affected by the widening of US 36 in all build packages. The primary use of the ditch would be an increase in the length of culvert extensions and piping associated with the highway. The total increase in length of these types of alterations would be 340 feet or 0.3 percent of the entire 180,000 foot long ditch under Package 2, and 280 feet or approximately 0.2 percent of the entire 180,000 foot long ditch under Package 4. The Combined Alternative Package (Preferred Alternative) would extend the culvert 280 feet (0.2 percent).

Refer to Table 7.4-25, Farmers Highline Canal Uses, for the use summary compared to existing conditions.

**Table 7.4-25: Farmers Highline Canal Uses**

Package	Length of Additional Culvert/Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	Permanent incorporation of 340 feet (0.3% of entire resource)/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 280 feet (0.2% of entire resource) /No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 280 feet (0.2% of entire resource) /No Adverse Effect	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all of the build packages and it is recommended that this use be considered *de minimis*. The use would not result in a change of functionality for the remainder of the ditch.

### All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to Farmers Highline Canal.

Table 7.4-26, Mitigation Measures for Farmers Highline Canal, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-26: Mitigation Measures for Farmers Highline Canal**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

### Residence (Map Identification Number 5BF109)

#### Description

<i>Location</i>	11415 Wadsworth Boulevard
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

### Uses of 5BF109 by Package

Package 2 Use	Package 4 Use	Combined Alternative Package (Preferred Alternative) Use
Property acquisition, 20%, excluding structure/ No Adverse Effect	Property acquisition, 20%, excluding structure/No Adverse Effect	None

Source: US 36 Mobility Partnership, 2007.

Note:

% = percent

### Resource Description

This one-story, Craftsman-style dwelling, was constructed in 1943. The floor plan of the building is generally irregular in shape. The roof is cross-gabled and clad in composition shingles. The exterior walls are clad in ship lap vinyl siding. There is a detached garage and a shed at the rear of the parcel. The remaining landscape is populated with mature trees and shrubs, and the lawn is enclosed by a fence. The dimensions of the site on which the building sits is roughly 355 feet by 150 feet (about 1.22 acres) and is more than twice as deep as it is wide. The structures on the site are located on the eastern edge of the property within the half of the property furthest from the highway. See Figure 7.4-21, Uses of Residence (Map Identification Number 5BF109), and Photograph 7.4-18.

### Eligibility Determination

This building is a good example of a Craftsman-style single-family dwelling, which is an increasingly rare building type in the Broomfield area and is eligible for the NRHP at the local level of significance under Criterion C. The Section 106 analysis concluded that there will be no adverse effect to the residence (see Section 4.7, Historic and Archaeological Preservation).

### Section 4(f) Use

There would be no use under the Combined Alternative Package (Preferred Alternative). However, a 142-foot by 63-foot parcel along the west side of the lot would be acquired and used as a result of the project action under Package 2 and Package 4. This constitutes about 17 percent of the entire lot, or 0.21 acre. No physical damage to the structures would result from any of the build packages; the main house and other features (e.g., sheds) on the property will remain in place. This main house faces east to Wadsworth Boulevard. Because of the large size of the current lot, the loss of the parcel in the rear yard is unlikely to prevent the structure from being used as a residence. The current distance between the buildings and the highway is about 180 feet; the project will bring the highway ROW 60 feet closer to the structures on the property. Noise analysis indicates that there would be an increase of approximately 2.1 decibels between Packages 1, 2 and 4. This increase is not great enough to prevent the site from conveying its significance or from being used for its current purpose.

A direct use of this Section 4(f) resource would result from implementation of Package 2 and Package 4. The use would not result in a change of functionality for the remainder of the residence.

### All Possible Planning to Minimize Harm

A retaining wall will be built along US 36 to minimize property acquisitions to this parcel under Package 2 and Package 4.

As additional modifications are made during further engineering, it may be possible to further minimize harm to the residence.

Table 7.4-27, Mitigation Measures for Residence (5BF109), shows the mitigation measures that will be taken under Package 2 and Package 4.

**Table 7.4-27: Mitigation Measures for Residence (5BF109)**

Impacts Related to the Use	Mitigation Measures <sup>1</sup>
Construction	<ul style="list-style-type: none"> <li>• Precautionary measures, such as temporary shields, to reduce impacts of dust.</li> <li>• Contractor training to prevent flying debris effects.</li> <li>• Plan construction staging to avoid uses of the residence.</li> <li>• Signage to avoid uses of the residence.</li> </ul>
Property Acquisition	<ul style="list-style-type: none"> <li>• Conformance with the Uniform Act</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Notes:

<sup>1</sup>These mitigation measures apply to Package 2 and Package 4.

Uniform Act = Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended

### **Community Ditch (Map Identification Number 5BF67/5BF67.5)**

#### **Description**

<i>Location</i>	Community Ditch, Broomfield and US 36 Interchange
<i>Size</i>	190,044 feet
<i>Type</i>	Historic resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

US 36 = United States Highway 36

#### **Resource Description**

This segment of Community Ditch crosses US 36 near the Interlocken development on the west and an industrial complex on the east (see Figure 7.4-22, Uses of Community Ditch [Map Identification Number 5BF67 for the Entire Resource, and 5BF67.5 for the US 36 Crossing], and Photograph 7.4-19, Community Ditch Crossing [Map Identification Number 5BF67.5]). A portion of the ditch crosses under the highway through a 140 foot long concrete box culvert. During the construction of US 36, the original alignment of the ditch was shifted slightly to the north. The entire ditch is approximately 190,044 feet long. The documented segment in the project APE (5BF67.5) is 295 feet long. The surrounding area includes industrial and residential development.

#### **Eligibility and Effects Determination**

For the purposes of the FEIS, this resource is being treated as eligible for the NRHP under Criterion A for its association with the development of water rights in Broomfield County. The Section 106 analysis concluded that there would be No Adverse Effect to the resource (see Section 4.7, Historic and Archaeological Preservation).

#### **Section 4(f) Use**

The resource would be affected by the widening of US 36 in all three build packages. The primary use of the ditch would be culvert extension and piping associated with the highway. The total increase in length of these types of alterations would be 390 feet or 0.3 percent of the entire 190,044 foot long ditch under Package 2, and 260 feet or 0.2 percent of the entire 190,044 foot long ditch under Package 4. The

Combined Alternative Package (Preferred Alternative) would impact 310 linear feet (0.2 percent). For this ditch, the impact is equally split, extending on either side of the existing culvert.

Refer to Table 7.4-28, Community Ditch Uses, for the use summary compared to existing conditions.

**Table 7.4-28: Community Ditch Uses**

Package	Length of Additional Culvert/Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	Permanent incorporation of 390 feet (0.3% of entire resource)/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 260 feet (0.2% of entire resource)/No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 310 feet (0.2% of entire resource)/No Adverse Effect	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all build packages and is considered *de minimis*. The use would not result in a change of functionality for the remainder of the canal.

### All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to Community Ditch.

Table 7.4-29, Mitigation Measures for Community Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-29: Mitigation Measures for Community Ditch**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

### Equity Ditch (Map Identification Number 5JF3752.1/5BF98.1)

#### Description

<i>Location</i>	Near Old Wadsworth Boulevard in Broomfield
<i>Size</i>	58,480 feet
<i>Type</i>	Historic resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

#### Resource Description

The site is an abandoned ditch measuring 10 feet wide and 5 feet deep, on average. In Jefferson County, the ditch segment (5JF3752.1) is curved and crosses under the Frontage Road (Old Wadsworth

Boulevard) of US 36 twice (see Figure 7.4-23, Uses of Equity Ditch [Map Identification Number 5BF98 for the Entire Resource, and 5BF981.1 for the US 36 Crossing], Figure 7.4-24, Uses of Equity Ditch [Map Identification Number 5JF3752 for the Entire Resource, and 5JF3752.1 for the US 36 Crossing], and Photograph 7.4-20, Equity Ditch Crossing [Map Identification Number 5BF98.1]). Each crossing has a 6-foot diameter corrugated metal pipe that is buttressed by pieces of concrete. The segment in Jefferson County is about 1,000 feet in length on the west side of US 36. There are two diversion features in this segment.

The ditch continues north into Broomfield County and has been recorded as 5BF98.1. It crosses US 36 in a concrete box culvert built in 1951 during the Denver to Boulder Turnpike construction and continues north. Just west of the US 36 crossing, it crosses under Old Wadsworth Boulevard in a 6-foot diameter corrugated metal pipe buttressed by stacked pieces of concrete slab. The recorded segment length is 3,000 feet in Broomfield County.

### Eligibility and Effects Determination

The entire Equity Ditch (5JF3752 and 5BF98) is eligible for the NRHP under Criterion A for its association with the development of water rights and agriculture in Jefferson and Broomfield counties. It is also eligible under Criterion C for its engineering association as a good representative example of a ditch in this region. The Section 106 analysis concluded that there would be No Adverse Effect to the resource (see Section 4.7, Historic and Archaeological Preservation).

### Section 4(f) Use

The resource would be slightly affected by the widening of US 36 in all three build packages. The primary impact to the ditch would be an increase in the length of culvert extensions and piping associated with the highway. The total increase in length of these types of alterations would be 620 feet or 1.2 percent of the entire 58,480 foot long ditch under Packages 2 and 4. The Combined Alternative Package (Preferred Alternative) would impact 840 linear feet (1.4 percent) of the linear resource. Refer to Table 7.4-30, Equity Ditch Uses, for the use summary compared to existing conditions.

**Table 7.4-30: Equity Ditch Uses**

Package	Length of Additional Culvert/Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	Permanent incorporation of 620 feet (1.2% of entire resource)/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 620 feet (1.2% of entire resource)/No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 840 feet (2.9% of entire resource)/No Adverse Effect	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all build packages and is considered *de minimis*. The use would not result in a change of functionality for the remainder of the canal.

### All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to Equity Ditch. Table 7.4-31, Mitigation Measures for Equity Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-31: Mitigation Measures for Equity Ditch**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>• A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

### **Coal Creek Ditch (5BL5664/5BL5664.33)**

#### **Description**

<i>Location</i>	US 36 East of McCaslin Boulevard
<i>Size</i>	28,000 feet
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Historic Properties Effected
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible for NRHP

Source: US 36 Mobility Partnership, 2009.

#### Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

#### **Resource Description**

This resource consists of three parallel pipes that were constructed to convey water from three laterals of the Coal Creek Ditch over US 36 (see Figure 7.4-25, Uses of Coal Creek Ditch [Map Identification Number 5BL5664 for the Entire Ditch, and 5BL5664.33 for the US 36 Crossing], and Photograph 7.4-21). The pipes are supported by three support columns located within the US 36 highway ROW and are anchored by concrete foundation features on either side of the highway. The entire structure is identified as E-16-FT.

#### **Eligibility and Effects Determination**

The eligibility determination for the Coal Creek Ditch (5BL5664) requires additional documentation to be sent from CDOT to SHPO for official concurrence on the entire resource. The pipe structure (5BL5664.33) was built in 1951 when US 36 was constructed. It conveys water for three irrigation laterals associated with the Coal Creek Ditch. For the purposes of the FEIS, the entire ditch is considered eligible for the NRHP under Criterion A for its association with the development of water rights in Boulder County. The Section 106 analysis concluded that the action would result in No Adverse Effect (see Section 4.7, Historic and Archaeological Preservation).

#### **Section 4(f) Use**

The project involves the replacement of the pipe structure over US 36 and excavating and realigning the laterals. Pending SHPO concurrence with the No Adverse Effect finding under Section 106, this is considered a *de minimis* use.

A direct use of this Section 4(f) resource would result from implementation of all three build packages and is considered *de minimis*. The use would not result in a change of functionality for the remainder of the ditch.

#### **All Possible Planning to Minimize Harm**

As additional modifications are made during further engineering, it may be possible to further minimize harm to the Coal Creek Ditch.

Table 7.4-32, Mitigation Measures for Coal Creek Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-32: Mitigation Measures for Coal Creek Ditch**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Construction	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

### **South Boulder Canyon Ditch (Map Identification Number 5BL750/5BL750.51)**

#### **Description**

<i>Location</i>	US 36 and South Boulder Creek
<i>Size</i>	67,056 feet
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

#### Notes:

- NRHP = National Register of Historic Places
- SHPO = State Historic Preservation Officer
- US 36 = United States Highway 36

#### **Resource Description**

This segment of the South Boulder Canyon Ditch passes under US 36 in a southwest-to-northeast direction (see Figure 7.4-26, Uses of South Boulder Canyon Ditch [Map Identification Number 5BL750 for the Entire Ditch, and 5BL750.51 for the US 36 Crossing], and Photograph 7.4-22). The U-shaped earthen ditch is approximately 8 feet wide at the top and 10 feet deep. The entire ditch measures approximately 67,056 feet long. The ditch passes under the roadway for 100 feet through a siphon fronted in board-formed concrete. Substantial riparian growth is located along either bank of the ditch. The surrounding area is characterized as semi-rural with some new residential development.

#### **Eligibility and Effects Determination**

The entire South Boulder Canyon Ditch (5BL750.51) is eligible for the NRHP under Criterion A for its association with the development of water rights and agriculture in Boulder County in the latter half of the 19<sup>th</sup> century. The Section 106 analysis concluded that there will be No Adverse Effect to the ditch (see Section 4.7, Historic and Archaeological Preservation).

#### **Section 4(f) Use**

The resource will be affected by the widening of US 36 in all build packages. The primary impact to the ditch involves culvert extension and piping associated with the highway. The total increase in length of alterations would be 250 feet or 0.6 percent of the entire 67,056 foot long ditch under Package 2, and 220 feet or 0.6 percent of the entire 67,056 foot long ditch under Package 4. The Combined Alternative Package (Preferred Alternative) would affect 190 feet (0.5 percent) of the linear resource.

Table 7.4-33, South Boulder Canyon Ditch Uses, summarizes uses compared to existing conditions.

**Table 7.4-33: South Boulder Canyon Ditch Uses**

Package	Length of Additional Culvert/Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	Permanent incorporation of 250 feet (0.6% of entire resource)/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 220 feet (0.6% of entire resource)/No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 190 feet (0.5% of entire resource)/No Adverse Effect	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all three build packages. The use would not result in a change of functionality for the remainder of the ditch.

### All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to the South Boulder Canyon Ditch.

Table 7.4-34, Mitigation Measures for South Boulder Canyon Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-34: Mitigation Measures for South Boulder Canyon Ditch**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

### Goodhue Ditch (Map Identification Number 5BL2719/5BL2719.38)

#### Description

<i>Location</i>	US 36 and Cherryvale Road
<i>Size</i>	61,776 feet
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

US 36 = United States Highway 36

#### Resource Description

The Goodhue Ditch is within the US 36 project area. It originates on South Boulder Creek downstream of Dillon Road, and diverts water to the south and east for about 15,840 feet (3 miles) to Rock Creek Farm (see Figure 7.4-27, Uses of Goodhue Ditch [Map Identification Number 5BL2719 for the Entire Ditch, and 5BL2719.38 for the US 36 Crossing], and Photograph 7.4-23). There is 160 feet of the ditch culverted and piped under US 36. The ditch traverses the southeastern segment of Boulder County. It was originally designed to provide water for Stearns Dairy Farm, which is located in the Rock Creek Basin.

## Eligibility and Effects Determination

The entire Goodhue Ditch (5BL2719) is eligible for the NRHP under Criterion A for its association with the development of water rights and agriculture in Boulder County in the latter half of the 19<sup>th</sup> century. The Section 106 analysis concluded that there will be No Adverse Effect to the ditch (see Section 4.7, Historic and Archaeological Preservation).

### Section 4(f) Use

The resource would be affected by the widening of US 36 in all build packages. The primary use of the ditch would be an increase in the length of culvert and piping associated with the highway. The maximum increase in length of alterations would be 170 feet or 0.5 percent of the entire 61,776 foot ditch under Package 4, with 110 feet or 0.4 percent of the entire 61.776-foot ditch under Package 2. The Combined Alternative Package (Preferred Alternative) would also affect 110 feet (0.4 percent) of the linear resource.

Refer to Table 7.4-35, Goodhue Ditch Uses, for the use summary, compared to existing conditions.

**Table 7.4-35: Goodhue Ditch Uses**

Package	Length of Additional Culvert/Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	Permanent incorporation of 110 feet (0.4% of entire resource)/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 170 feet (0.5% of entire resource) /No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 110 feet (0.4% of entire resource) /No Adverse Effect	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all three build packages and is considered *de minimis*. The use would not result in a change of functionality for the remainder of the ditch.

### All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to the Goodhue Ditch.

Table 7.4-36, Mitigation Measures for Goodhue Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-36: Mitigation Measures for Goodhue Ditch**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

**Louisville Reservoir Inlet (Map Identification Number 5BL9577/5BL9577.1)**

**Description**

<i>Location</i>	US 36 and Marshall Drive
<i>Size</i>	16,368 feet
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

US 36 = United States Highway 36

**Resource Description**

This segment of the Louisville Reservoir Inlet passes under US 36 in a northeasterly direction (see Figure 7.4-28, Uses of Louisville Reservoir Inlet [Map Identification Number 5BL9577 for the Entire Inlet, and 5BL9577.1 for the US 36 Crossing], and Photograph 7.4-24). The parabola-shaped inlet is approximately 10 feet wide at the top and 8 feet deep. Portions of the segment are carried through concrete box culverts with steel gates and turnouts. During the construction of US 36, the inlets alignment was unchanged, but a 166-foot concrete box culvert was constructed to convey the inlet under the railroad. The concrete diversion box on the south side of the road was removed and a new concrete diversion box was constructed on the north side of the road. The entire inlet measures approximately 16,368 (3.1 miles). Riparian growth is located along either bank of the inlet. The surrounding area is a developing urban area.

**Eligibility and Effects Determination**

The entire Louisville Reservoir Inlet (5BL9577) is eligible in the NRHP under Criterion A due to its association with the development of water rights and agriculture in Boulder County in the latter half of the 19<sup>th</sup> century. The Section 106 analysis concluded that there will be No Adverse Effect to the inlet (see Section 4.7, Historic and Archaeological Preservation).

**Section 4(f) Use**

The resource would be affected by the widening of US 36 for all build packages. The primary impact to the inlet would be an increase in the length of culvert and piping associated with the highway. The total increase in length of the proposed alterations would be 170 feet or 2.1 percent of the entire 16,368 foot inlet under Package 2, and 180 feet or approximately 2.1 percent of the entire 16,368 foot inlet under Package 4. The Combined Alternative Package (Preferred Alternative) would affect 130 feet (1.8 percent) of the linear resource.

Refer to Table 7.4-37, Louisville Reservoir Inlet Uses, for the use summary, compared to existing conditions.

**Table 7.4-37: Louisville Reservoir Inlet Uses**

Package	Length of Additional Culvert/ Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	Permanent incorporation of 170 feet (2.1% of entire resource)/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 180 feet (2.1% of entire resource) /No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 130 feet (1.8% of entire resource) /No Adverse Effect	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all three build packages and is considered a *de minimis* use. The use would not result in a change of functionality for the remainder of the inlet.

### All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to the Louisville Reservoir Inlet.

Table 7.4-38, Mitigation Measures for Louisville Reservoir Inlet, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-38: Mitigation Measures for Louisville Reservoir Inlet**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

### Shearer Ditch (Map Identification Number 5BL5040/5BL5040.1)

#### Description

<i>Location</i>	US 36 and Cherryvale Road
<i>Size</i>	10,727 feet
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

US 36 = United States Highway 36

#### Resource Description

The Shearer Ditch flows out of South Boulder Creek (see Figure 7.4-29, Uses of Shearer Ditch [Map Identification Number 5BL5040 for the Entire Ditch, and 5BL5040.1 for the US 36 Crossing], and Photograph 7.4-25). The ditch is within the US 36 project area, which includes the US 36 ROW (with a 400-foot buffer on each side), and the BNSF Railway ROW (with a 200-foot buffer on each side). The original alignment of the ditch was moved to the south and oriented approximately north 45 degrees east,

during the construction of US 36, such that it is perpendicular to the roadway. There is 100 feet of ditch culverted under US 36. The entire ditch is approximately 10,727 feet long.

### Eligibility and Effects Determination

The Shearer Ditch (5BL5040) is eligible for the NRHP under Criterion A for its role in the development of water rights and agriculture in Boulder County (1858 to 1910). The Section 106 analysis concluded that there will be No Adverse Effect to the ditch (see Section 4.7, Historic and Archaeological Preservation).

### Section 4(f) Use

The resource would be affected by the widening of US 36 in all build packages. The primary impact to the ditch would be culvert extensions and piping associated with the highway. The total increase in length of these types of alterations would be 400 feet or 4.7 percent of the entire 10,727 foot long ditch under Package 2, and 370 feet or 4.4 percent under Package 4. The Combined Alternative Package (Preferred Alternative) would affect 420 feet (4.8 percent) of the linear resource.

Table 7.4-39, Shearer Ditch Uses, summarizes uses compared to existing conditions.

**Table 7.4-39: Shearer Ditch Uses**

Package	Length of Additional Culvert/Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	Permanent incorporation of 400 feet (4.7% of entire resource)	<i>De minimis</i> use
4	Permanent incorporation of 370 feet (4.4% of entire resource)	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 420 feet (4.8% of entire resource)	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all three build packages and is considered *de minimis*. The use would not result in a change of functionality for the remainder of the ditch.

### All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to the Shearer Ditch.

Table 7.4-40, Mitigation Measures for Shearer Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-40: Mitigation Measures for Uses of Shearer Ditch**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

**Davidson Ditch (Map Identification Number 5BL453.2)**

**Description**

<i>Location</i>	US 36 between Cherryvale Road and Marshall Drive
<i>Size</i>	53,328 feet
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible for NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

- NRHP = National Register of Historic Places
- SHPO = State Historic Preservation Officer
- US 36 = United States Highway 36

**Resource Description**

This segment of the Davidson Ditch passes under US 36 in a west-to-east direction (see Figure 7.4-30, Uses of Davidson Ditch [Map Identification Number 5BL453 for the Entire Ditch, and 5BL453.2 for the US 36 Crossing], and Photograph 7.4-26). The parabola-shaped earthen irrigation ditch is approximately 36 feet wide at the top and 10 feet deep. The entire ditch is approximately 53,328 feet (10.1 miles) long. The ditch passes under US 36 through a reinforced concrete box culvert approximately 110 feet long. Some riparian growth is located along either bank of the ditch. Semi-rural fallow fields and several large modern housing developments characterize the area surrounding the ditch. The ditch has been placed in a culvert or is piped intermittently to run under other road crossings.

**Eligibility and Effects Determination**

Davidson Ditch (5BL453.2) is eligible for the NRHP under Criterion A for its relation to the development of water rights and agriculture in Boulder County (1850 to 1910). The Section 106 analysis concluded that there will be No Adverse Effect to the ditch (see Section 4.7, Historic and Archaeological Preservation).

**Section 4(f) Use**

The resource will be affected by the widening of US 36 in all build packages. The primary impact will involve culvert extensions and piping associated with the highway. The total increase in length of these types of alterations would be 290 feet or 0.8 percent of the entire 53,328 foot ditch under Package 2, and 300 feet or 0.8 percent of the entire 53,328 foot ditch under Package 4. The Combined Alternative Package (Preferred Alternative) would affect 330 feet (0.8 percent) of the linear resource. Refer to Table 7.4-41, Davidson Ditch Uses, for the use summary, compared to existing conditions.

**Table 7.4-41: Davidson Ditch Uses**

Package	Length of Additional Culvert/Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	Permanent incorporation of 290 feet (0.8% of entire resource)/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 300 feet (0.8% of entire resource)/No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 330 feet (0.8% of entire resource)/No Adverse Effect	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all three build packages and is considered *de minimis*. The use would not result in a change of functionality for the remainder of the ditch.

### All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to the Davidson Ditch.

Table 7.4-42, Mitigation Measures for Davidson Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-42: Mitigation Measures for Davidson Ditch**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

### Marshallville Ditch (Map Identification Number 5BL5042.1)

#### Description

<i>Location</i>	East of Cherryvale Road
<i>Size</i>	33,950 feet long
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible to NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

#### Resource Description

This segment of the Marshallville Ditch passes under US 36 in a west-to-east direction approximately 1,200 feet west of Goodhue Ditch (see Figure 7.4-31, Uses of Marshallville Ditch [Map Identification Number 5BL5042 for the Entire Resource, and 5BL5042.1 for the US 36 Crossing], and Photograph 7.4-27, Marshallville Ditch Crossing [Map Identification Number 5BL5042.1]). The documented segment (5BL5042.1) in the project APE measures 29,500 feet long. During construction of US 36, the ditch's original alignment was moved to the south so that it is perpendicular to the highway. To convey the ditch under the highway, a 150-foot long concrete box culvert was constructed. The entire ditch is approximately 33,950 feet (6.4 miles) long.

#### Eligibility Determination

The entire Marshallville Ditch (5BL5042) is eligible for the NRHP under Criterion A due to its association with the development of water rights and agriculture in Boulder County in the latter half of the 19<sup>th</sup> century. The Section 106 analysis concluded that there would be No Adverse Effect to the ditch (see Section 4.7, Historic and Archaeological Preservation).

#### Section 4(f) Use

Package 2 and Package 4 would impact the Marshallville Ditch by extending the culvert extension approximately 185 feet. The Combined Alternative Package (Preferred Alternative) would use an additional 380 feet on the south where the ditch runs parallel to US 36. However, the impact this action

would have to the overall ditch would be very minor. For Package 2 and Package 4, the use would affect less than 1 percent of the entire resource. For the Combined Alternative Package (Preferred Alternative), the use would affect 2.1 percent of the entire resource. Refer to Table 7.4-43, Marshallville Ditch Uses, for the use summary compared to existing conditions.

**Table 7.4-43: Marshallville Ditch Uses**

Package	Length of Additional Culvert/Pipe/Lining Proposed as Part of the Project Action	Type of Use
2	Permanent incorporation of 185 feet (0.5% of entire resource)/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 185 feet (0.5% of entire resource)/No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 560 feet (2.1% of entire resource)/No Adverse Effect	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all build packages and is considered *de minimis*. The use would not result in a change of functionality for the remainder of the ditch.

### All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to Marshallville Ditch. Table 7.4-44, Mitigation Measures for Marshallville Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-44: Mitigation Measures for Marshallville Ditch**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

### McGinn Ditch (5BL4165/5BL4165.1)

#### Description

<i>Location</i>	South Boulder Road and Cherryvale Road
<i>Size</i>	26,400 feet
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible for NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

## Resource Description

The Cherryvale Road/South Boulder Road bikeway alignment alternative would cross over a section of this ditch just south of South Boulder Road (see Figure 7.4-32, Uses of McGinn Ditch [Map Identification Number 5BL4165.1], and Photograph 7.4-28). This section of McGinn Ditch is in a box culvert which conveys irrigation water under South Boulder Road in a northeasterly direction. The ditch begins at the South Boulder Creek drainage northeast of the US 36 alignment. The entire ditch is 26,400 feet (5 miles) long; the ditch segment (5BL4165.1) measures approximately 4,265 feet. Riparian and wetland growth is located along either bank of the ditch.

## Eligibility and Effects Determination

The entire McGinn Ditch (5BL4165) is eligible for the NRHP under Criterion A as one of the oldest irrigation features in Boulder County, dating from the 1860s, and because it is associated with the development of water rights and agriculture in Boulder County in the latter half of the 19<sup>th</sup> century. The Section 106 analysis concluded that there will be No Adverse Effect to the ditch (see Section 4.7, Historic and Archaeological Preservation).

## Section 4(f) Use

Under Package 2 and Package 4, the primary use of the ditch would be culvert extension and piping associated with the Cherryvale Road/South Boulder Road bikeway alternative. The total increase in length of this alteration would be 10 feet or 0.04 percent of the entire 26,400-foot ditch under the bikeway alternatives in Packages 2 and 4. The bikeway consists of a new paved path that would require the extension of the existing McGinn Ditch culvert.

Under the Combined Alternative Package (Preferred Alternative), the bikeway was moved from the Cherryvale Road/South Boulder Road alignment to follow the US 36 corridor. As a result, the ditch would not be impacted at South Boulder Road. The ditch would not be impacted by the expansion of US 36 because it ends northeast of the highway alignment. A 21-foot-wide bridge will be built to span the ditch for the bikeway on the north side of the highway, but there will be no use of the ditch for this action. The total length of impacts per package is compared in Table 7.4-45, McGinn Ditch Uses.

**Table 7.4-45: McGinn Ditch Uses**

Package	Length of Proposed Culvert/Pipe/Lining Extension for Paved Bikeway	Type of Use
2	Permanent incorporation of 10 feet/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 10 feet/No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	None	No use

Source: US 36 Mobility Partnership, 2009.

The use is considered *de minimis* under Package 2 and Package 4. The use would not result in a change of functionality for the remainder of the ditch. Package 2 and Package 4 have similar uses.

## All Possible Planning to Minimize Harm

Initially, a 30-foot wide footprint was proposed for the bikeway along South Boulder Road. This footprint included the bikeway as well as V-shaped ditches along each side of the facility. Although the proposed ditches would serve a valuable drainage purpose, the wider footprint would result in greater uses to the McGinn Ditch. Design revisions narrowed the footprint to a 12-foot typical section to minimize harm to these resources.

This segment of the McGinn Ditch is also located within Preble's meadow jumping mouse and Ute ladies'-tresses orchid habitat (both listed as threatened under the Endangered Species Act). Several

measures were taken to minimize the use of the project to these threatened and endangered species. Two of these minimization measures include limiting construction, staging, and stockpiling to areas that do not qualify as habitat, and limiting the construction period to the fall and winter months when the ditch does not convey irrigation flows. For a complete list of threatened and endangered species minimization and mitigation measures, see Section 4.14, Biological Resources: Wildlife, Vegetation, and Threatened and Endangered Species.

As additional modifications are made during further engineering, it may be possible to further minimize harm to the ditch.

Table 7.4-46, Mitigation Measures for McGinn Ditch, shows the proposed mitigation measures under the bikeway alignment for Package 2 and Package 4.

**Table 7.4-46: Mitigation Measures for McGinn Ditch**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Construction	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

### ***Viele Homestead (Map Identification Number 5BL5036)***

#### **Description**

<i>Location</i>	South Boulder Road and Cherryvale Road
<i>Size</i>	16 structures
<i>Type</i>	Historic Resource
<i>Section 106 Effect Determination</i>	No Adverse Effect (Packages 2 and 4), No Historic Properties Affected (Combined Alternative Package [Preferred Alternative])
<i>Official with Jurisdiction</i>	SHPO
<i>Significance</i>	Eligible for NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places

SHPO = State Historic Preservation Officer

#### **Resource Description**

This homestead was constructed in the 1880s or 1890s. It is located at the intersection of South Boulder Road and Cherryvale Road (see Figure 7.4-33, Uses of Viele Homestead [Map Identification Number 5BL5036], and Photograph 7.4-29). The homestead consists of 16 contributing and non-contributing structures, a house, barns, and equipment storage. The main house is a two-story vernacular dating from the 1880s.

#### **Eligibility and Effects Determination**

Based on its association with 19<sup>th</sup> century Boulder County agriculture and the overall integrity of the farm structures built during the period of significance (1880s to 1940s), this homestead is eligible under National Register Criteria A and C. The Section 106 analysis concluded that there will be No Adverse Effect for Packages 2 and 4 to the residence and No Historic Properties Affected for the Combined Alternative Package (Preferred Alternative) (see Section 4.7, Historic and Archaeological Preservation).

#### **Section 4(f) Use**

A new concrete bikeway measuring 8 to 12 feet wide would replace the existing dirt path. In front of the Viele Homestead, the existing path is between the shoulder of Cherryvale Road and along the property's eastern boundary. The existing path is located in a permanent transportation easement from the City of

Boulder for transportation purposes of the multi-use path and abuts an existing contributing feature to the Viele Homestead. The new path would be located within 2 to 4 feet of this contributing feature. Construction would require removal of a wooden fence to the east of the structure and parallel to Cherryvale Road. The fence dates to when the City of Boulder OSMP obtained the property during the 1980s and was not recorded as part of the eligibility determination. CDOT would also install a stop sign and/or a pole with an attached mirror near the southeast corner of the contributing out-building within the easement. The sign and mirror would serve as a safety measure to avoid collisions between bicyclists, pedestrians, and heavy farm equipment.

A direct use of this Section 4(f) resource would result from implementation of the South Boulder Road/Cherryvale Road bikeway alignment under either Packages 2 or 4. This use is considered *de minimis*. The use would not result in a change of functionality for the remainder of the homestead. There would be no use under the Combined Alternative Package.

### All Possible Planning to Minimize Harm

The proposed bikeway would be paved along the same alignment as the existing dirt path, reducing the use of the homestead.

A 30-foot wide footprint was originally proposed for the bikeway along South Boulder Road. This footprint included the bikeway as well as V-shaped ditches along each side of the facility. Although the proposed ditches would serve a valuable drainage purpose, the wider footprint would result in demolition of several structures within the Viele Homestead. Design revisions narrowed the footprint to a 12 foot typical section to minimize harm to this resource.

As additional modifications are made during further engineering, it may be possible to further minimize harm to the homestead.

Table 7.4-47, Mitigation Measures for Viele Homestead, shows the proposed mitigation measures under the bikeway alignment for Package 2 and Package 4.

**Table 7.4-47: Mitigation Measures for Viele Homestead**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Note:

<sup>1</sup>These mitigation measures apply for Package 2 and Package 4, Options A and B.

### Anderson Extension Ditch (Map Identification Number 5BL3935.35)

#### Description

Location	US 36 at Foothills Parkway and South Boulder Road
Size	28,000 feet
Type	Historic Resource
Section 106 Effect Determination	No Adverse Effect
Official with Jurisdiction	SHPO
Significance	Eligible for NRHP

Source: US 36 Mobility Partnership, 2009.

Notes:

NRHP = National Register of Historic Places  
 SHPO = State Historic Preservation Officer  
 US 36 = United States Highway

## Resource Description

During the initial construction of US 36, an 8-foot by 4-foot by 185-foot concrete box culvert was added to convey the Anderson Extension Ditch under the highway (see Figure 7.4-34, Uses of Anderson Extension Ditch [Map Identification Number 5BL3935.34], Figure 7.4-34, Uses of Anderson Extension Ditch [Map Identification Number 5BL3935.35], and Photograph 7.4-30). The alignment was unchanged. A wooden bridge (10 feet by 12 feet) that spanned the ditch on the north side of the highway was removed. Riparian vegetation can be found along the ditch, as well as cottonwood and willow trees.

## Eligibility and Effects Determination

The Anderson Extension Ditch (5BL3935.5) dates back to the late 19<sup>th</sup> century and was determined eligible for the NRHP in 1993 under Criterion A. Under Criterion C, the ditch maintains segments of earthen ditch channel in their original condition. The Section 106 analysis concluded that the action would result in No Adverse Effect (see Section 4.7, Historic and Archaeological Preservation).

## Section 4(f) Use

The resource would be affected by the widening of US 36 in all build packages. The primary impact would involve culvert extensions and piping associated with the roadway improvements. The total increase in length of these types of alterations would be 1,550 feet, or 5.5 percent of the entire 28,000-foot ditch under Packages 2 and 4 and the Combined Alternative Package (Preferred Alternative). Refer to Table 7.4-48, Anderson Extension Ditch Uses, for the use summary, compared to existing conditions.

**Table 7.4-48: Anderson Extension Ditch Uses**

Package	Length of Proposed Culvert/Pipe/Lining Extension for Paved Bikeway	Type of Use
2	Permanent incorporation of 1,550 feet (5.5% of entire resource)/No Adverse Effect	<i>De minimis</i> use
4	Permanent incorporation of 1,550 feet (5.5% of entire resource)/No Adverse Effect	<i>De minimis</i> use
Combined Alternative Package (Preferred Alternative)	Permanent incorporation of 1,550 feet (5.5% of entire resource)/No Adverse Effect	<i>De minimis</i> use

Source: US 36 Mobility Partnership, 2009.

Note:

% = percent

A direct use of this Section 4(f) resource would result from implementation of all three build packages and is considered *de minimis*. The use would not result in a change of functionality for the remainder of the ditch.

## All Possible Planning to Minimize Harm

As additional modifications are made during further engineering, it may be possible to further minimize harm to Anderson Extension Ditch.

Table 7.4-49, Mitigation Measures for Anderson Extension Ditch, shows the mitigation measures that will be taken under all of the build packages.

**Table 7.4-49: Mitigation Measures for Anderson Extension Ditch**

Type of Use	Impacts Related to the Use	Mitigation Measures
Permanent Incorporation of Land	Property acquisition	<ul style="list-style-type: none"> <li>A Programmatic Agreement and appropriate mitigation will be completed.</li> </ul>

Source: US 36 Mobility Partnership, 2009.



## 7.5 LEAST HARM ANALYSIS

Since all prudent and feasible alternatives (Packages 2 and 4 and the Combined Alternative Package [Preferred Alternative]) use land from Section 4(f) resources, an analysis must be performed to determine which alternative results in the least overall harm in light of the preservationist purpose of Section 4(f). This also includes a comparison of the design options for the west-end termini; and the two west-end bikeway alignments along US 36 and Cherryvale Road/South Boulder Road.

Seven factors, listed under 23 CFR 774.3(c)(1), shape this comparison:

1. The ability to mitigate adverse impacts to the Section 4(f) property (including measures that result in benefits to the property).
2. The relative severity of the remaining impacts (after mitigation) to the protected activities, attributes, or features that qualify the property for Section 4(f) protection.
3. The relative significance of the Section 4(f) properties being used.
4. The views of the official(s) with jurisdiction over the Section 4(f) property.
5. The degree to which each package meets the project Purpose and Need.
6. The impacts to non-Section 4(f) resources after reasonable mitigation.
7. Substantial differences in cost between alternatives.

In most cases the differences between the three packages are subtle. Package 2 would use a total of 30 Section 4(f) resources, Package 4 would use 29 resources, and the Combined Alternative Package (Preferred Alternative) would use a total of 26 resources. (Photos and aerials of resources can be found in Section 7.7, Photographs.)

Seventeen of the resources used by any of the three packages are recommended for *de minimis* determination. By definition, *de minimis* impacts have no adverse effect to the activities, features, and attributes of the park, as described in Section 7.4, Uses of Section 4(f) Resources. Mitigation and enhancement measures have also been considered with the intention to make such a finding. Since the recommended *de minimis* uses are minor by nature, a comparison of these resources does not contribute to a difference in harm between the alternatives. Package 2 and Package 4 would require a *de minimis* impact to two Section 4(f) resources (11415 Wadsworth Boulevard and Viele Homestead) that would be avoided by the Combined Alternative Package (Preferred Alternative).

There has been an opportunity to comment on parks, recreational, and refuge *de minimis* resources during the DEIS public review period. No comments were received. Officials with jurisdiction have submitted their written concurrence that there are no adverse effects to these resources. Final determinations regarding *de minimis* park resources will be made in the FEIS. Final determinations for historic *de minimis* resources will be made as part of the FEIS, as long as SHPO concurs with the effects determination for the Combined Alternative Package (Preferred Alternative) and for resources not addressed in the DEIS.

The following six resources, listed in Table 7.5-1, Section 4(f) Resources — Identical Uses for the Three Build Packages, have the identical uses in intensity and value for all packages.

**Table 7.5-1: Section 4(f) Resources — Identical Uses for the Three Build Packages**

Figure (ID Number)	Resource	Identical Impacts In Value and Intensity under All Build Packages	Identical Uses under All Build Packages
Figure 7.3-2 (TC2)	Big Dry Creek Trail Crossing	Temporary trail closure without detour	Temporary incorporation of land
Figure 7.3-3 (TC16)	East Interlocken Trail Crossing	Temporary trail closure without detour	Temporary incorporation of land
Figure 7.3-3 (5BF9)	Residence (8375 West 120 <sup>th</sup> Avenue)	Destruction of historical residence/Adverse Effect	Permanent incorporation of land
Figure 7.3-4 (TC5)	Coal Creek Trail Crossing	Temporary trail closure without detour	Temporary incorporation of land
Figure 7.3-5 (TC12)	South Boulder Creek Trail Crossing	Temporary trail closure without detour	Temporary incorporation of land
Figure 7.3-5 (5BL7529.3)	US 36, Mileposts 39.26 to 41.67	Rebuild and widen highway/Adverse Effect	Permanent incorporation of land

Source: US 36 Mobility Partnership, 2009.

The six resources listed above do not contribute to any differentiation or least harm conclusion for the three build packages.

There are six resources with different uses between the three packages: three parks and recreational resources, two historic resources, and one wildlife and waterfowl refuge resource. The uses for each resource are discussed below

## Parks and Recreation Resources

There are three parks and recreational resources with different uses between the three packages: Commissioners Park, Oakwood Park, and Rotary Park. The difference between the packages is subtle as it relates to the three resources. There would be a use of Commissioners Park under Package 2 and the Combined Alternative Package (Preferred Alternative) but not under Package 4. There would be a use of Rotary Park and Oakwood Park under Package 2 and Package 4, but not under the Combined Alternative Package (Preferred Alternative).

Package 2 and the Combined Alternative Package (Preferred Alternative) require the permanent incorporation of a 30-foot-wide by 230-foot-long area of Commissioners Park. There is no use associated with Package 4. As discussed in the Commissioners Park description, a landscaped area, a trail, and a picnic tables will be shifted north as a result of the impacts from Package 2 and the Combined Alternative Package (Preferred Alternative). This use and mitigation measures have been discussed with Hyland Hills Park and Recreation District, the official with jurisdiction. These measures are described in further detail in the Commissioners Park discussion. CDOT will continue to work with Hyland Hills Park and Recreation District, and the local community to evaluate additional ways to enhance Commissioners Park. See also, Table 7.5-2, Parks and Recreation Resource Mitigation Measures for Commissioners Park.

**Table 7.5-2: Parks and Recreation Resource Mitigation Measures for Commissioners Park**

Resource	Impacts and Mitigation under Package 2 and the Combined Alternative Package (Preferred Alternative)	Impacts and Mitigation under Package 4
Commissioners Park	<ul style="list-style-type: none"> <li>• Permanent incorporation of 30-foot-wide by 255-foot-long parcel, including removal of an existing noise wall, a landscaped area, and a trail</li> <li>• Noise wall will be replaced with concrete noise barrier</li> <li>• Picnic table will be shifted</li> <li>• Trail will be detoured during construction and realigned within the park</li> </ul>	None

Source: US 36 Mobility Partnership, 2009.

The impact of Oakwood Park for Package 2 is 0.3 acre more than for Package 4. Transitions required for access to the managed lanes account for the additional impact. The park is 2.7 acres. Mitigation measures include creating a linear park between Oakwood Park and Rotary Park that would include a trail and picnic tables. This would enhance the parks because it would establish active recreation features, which currently do not exist. In addition, the current wooden wall will be enhanced with a concrete noise wall that will be designed to mitigate for noise impacts. The direct use and mitigation measures have been discussed with the City of Westminster, the official with jurisdiction. These measures are described in further detail in the Oakwood Park discussion.

There would be no use of Oakwood Park under the Combined Alternative Package (Preferred Alternative). The project would only require a temporary occupancy of 0.1 acre of the park during construction. A temporary occupancy, as defined under 23 CFR 774.13(d), would not adversely impact any active recreational features. The land would be fully restored upon completion of the project and the official with jurisdiction has agreed to these conditions in Appendix B, Consultation and Coordination. See also, Table 7.5-3, Parks and Recreation Resource Mitigation Measures for Oakwood Park.

**Table 7.5-3: Parks and Recreation Resource Mitigation Measures for Oakwood Park**

Resource	Impacts and Mitigation under Package 2	Impacts and Mitigation under Package 4	Impacts and Mitigation under the Combined Alternative Package (Preferred Alternative)
Oakwood Park	<ul style="list-style-type: none"> <li>Permanent incorporation of 1.8 acres, including removal of wooden fence, acquisition of open field, dirt path, and picnic area</li> <li>Wooden fence will be replaced with noise wall</li> <li>A multi-use trail will be created through Oakwood Park and Rotary Park providing access to the nearby park-n-Ride</li> </ul>	<ul style="list-style-type: none"> <li>Permanent incorporation of 1.5 acres, including removal of wooden fence, acquisition of open field, dirt path, and picnic area</li> <li>Wooden fence will be replaced with noise wall</li> <li>A multi-use trail will be created through Oakwood Park and Rotary Park providing access to the nearby park-n-Ride</li> </ul>	None

Source: US 36 Mobility Partnership, 2009.

The impact to Rotary Park for Package 2 is 0.1 acre more than for Package 4. Transitions required for access to the managed lanes account for the additional use. The park itself is 6 acres. Since Rotary Park is also a Section 6(f) resource, the total amount of impacted property will be mitigated following the Section 6(f) legislation, as discussed in Section 4.9, Parks and Open Space. In addition, the current wooden wall will be enhanced with a concrete noise wall that will be designed to mitigate for noise impacts. These impacts and mitigation measures have been discussed with Hyland Hills Park and Recreation District, the official with jurisdiction. These measures are described in further detail in the Rotary Park discussion.

There would be no use to Rotary Park under the Combined Alternative Package (Preferred Alternative). Conversely, there would be no enhancements or mitigation to the park or to the Hyland Hills Park and Recreation District, including the creation of a multi-use trail. See also, Table 7.5-4, Parks and Recreation Resource Mitigation Measures for Rotary Park.

**Table 7.5-4: Parks and Recreation Resource Mitigation Measures for Rotary Park**

Resource	Impacts and Mitigation under Package 2	Impacts and Mitigation under Package 4	Impact and Mitigation under the Combined Alternative Package (Preferred Alternative)
Rotary Park	<ul style="list-style-type: none"> <li>Permanent incorporation of 0.6 acre of undeveloped grassy sloped area</li> <li>Wooden fence will be replaced</li> <li>A multi-use trail will be created through Oakwood Park and Rotary Park providing to access to the nearby park-n-Ride</li> </ul>	<ul style="list-style-type: none"> <li>Permanent incorporation of 0.5 acre of undeveloped grassy sloped area</li> <li>Wooden fence will be replaced</li> <li>A multi-use trail will be created through Oakwood Park and Rotary Park providing to access to nearby park-n-Ride</li> </ul>	None

Source: US 36 Mobility Partnership, 2009.

## Historic Resources

There are two historic resources with different uses between the three packages, Allen Ditch and Dry Creek Valley Ditch.

At Allen Ditch, Package 2 would require the permanent incorporation of an additional 120 linear feet compared to Package 4, and an additional 910 linear feet compared to the Combined Alternative Package (Preferred Alternative). Although the impact would be slightly greater for Package 2 than for Package 4 and the Combined Alternative Package (Preferred Alternative), the overall severity would be the same. The culverts would be extended to accommodate for the widening of US 36. Coordination with the SHPO, the official with jurisdiction, will continue through the NEPA process. These measures, as described in further detail in the property discussion, mitigate for the use of the ditch for all three build packages. For all three build packages, the use has been determined to be an Adverse Effect. See Table 7.5-5, Historic Resource Mitigation Measures for Allen Ditch.

**Table 7.5-5: Historic Resource Mitigation Measures for Allen Ditch**

Resource	Impacts and Mitigation under Package 2	Impacts and Mitigation under Package 4	Impacts and Mitigation under the Combined Alternative Package (Preferred Alternative)
Allen Ditch	<ul style="list-style-type: none"> <li>Permanent incorporation of 2,730 linear feet, or 7.8% of total ditch length</li> <li>Extend culvert and piping</li> <li>A Programmatic Agreement will incorporate mitigation, such as an educational publication describing the historic significance of irrigation ditches to the US 36 corridor</li> </ul>	<ul style="list-style-type: none"> <li>Permanent incorporation of 2,610 linear feet, or 7.5% of total ditch length</li> <li>Extend culvert and piping</li> <li>A Programmatic Agreement will incorporate mitigation, such as an educational publication describing the historic significance of irrigation ditches to the US 36 corridor</li> </ul>	<ul style="list-style-type: none"> <li>Permanent incorporation of 1,520 linear feet, or 4.3% of total ditch length</li> <li>Extend culvert and piping</li> <li>A Programmatic Agreement will incorporate mitigation, such as an educational publication describing the historic significance of irrigation ditches to the US 36 corridor</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Notes:

% = percent

US 36 = United States Highway 36

At Dry Creek Valley Ditch, Package 2 would require the permanent incorporation of an additional 80 linear feet compared to Package 4 but 630 less linear feet compared to the Combined Alternative Package (Preferred Alternative). Although the impact length differs slightly between the three packages, the overall severity is the same. For all three packages, there would be an Adverse Effect as well as a direct use. The culvert would extend to accommodate for the widening of US 36. Coordination with SHPO, the official with jurisdiction, will continue through the NEPA process. These measures, as described in

further detail in the property discussion, mitigate for the use of the ditch for all build packages. See also Table 7.5-6, Historic Resource Mitigation Measures for Dry Creek Valley Ditch.

**Table 7.5-6: Historic Resource Mitigation Measures for Dry Creek Valley Ditch**

Resource	Impacts and Mitigation under Package 2	Impacts and Mitigation under Package 4	Impacts and Mitigation under the Combined Alternative Package (Preferred Alternative)
Dry Creek Valley Ditch	<ul style="list-style-type: none"> <li>• Permanent incorporation of 3,190 linear feet, or 8.6% of ditch length</li> <li>• Extend culvert and piping</li> <li>• A Programmatic Agreement will incorporate mitigation, such as an educational publication describing the historic significance of irrigation ditches to the US 36 corridor</li> </ul>	<ul style="list-style-type: none"> <li>• Permanent incorporation of 3,110 linear feet, or 8.4% of ditch length</li> <li>• Extend culvert and piping</li> <li>• A Programmatic Agreement will incorporate mitigation, such as an educational publication describing the historic significance of irrigation ditches to the US 36 corridor</li> </ul>	<ul style="list-style-type: none"> <li>• Permanent incorporation of 3,760 linear feet, or 10.2% of ditch length</li> <li>• Extend culvert and piping</li> <li>• A Programmatic Agreement will incorporate mitigation, such as an educational publication describing the historic significance of irrigation ditches to the US 36 corridor</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Notes:

% = percent

US 36 = United States Highway 36

## Wildlife and Waterfowl Refuge

As discussed earlier, the three packages require use of City of Boulder Open Space. It is made up of four properties (Van Vleet Open Space, Short Open Space, Yunker Open Space, and Gallucci Open Space), totaling approximately 1,057 acres and split among nine parcels. They surround US 36 on both sides throughout the Boulder Segment. The refuge properties are discussed as a single Section 4(f) resource for purposes of least harm analysis. It has a main function as a wildlife refuge, it is managed under the same set of management plans, manages similar species, and has one official with jurisdiction, the City of Boulder.

The difference between the three packages is subtle as it relates to the refuge. The impacted acreage is similar between packages. The permanent incorporation of refuge land for Package 2 ranges from 14.4 acres (1.4 percent of total refuge land affected by the project) to 23.3 acres (2.2 percent). Package 4 would impact 16.7 acres (1.6 percent of total refuge land affected by the project) to 25.3 acres (2.4 percent of total refuge land). Design Options A and B, as discussed below, would add 8.3 and 8.6 acres to Package 2 and Package 4, respectively. The Combined Alternative Package (Preferred Alternative) would incorporate design features from Packages 2 and 4, as well as both Options A and B. It would impact a total of 17.5 acres (1.7 percent) of total refuge land.

All packages require a direct use of same attributes and features. Each requires acquisition of sensitive habitat of Colorado tallgrass prairie, the Preble's meadow jumping mouse, and Ute ladies'-tresses orchid, as well as other wildlife. The difference in impacted attributes between packages is slight in relation to the entire corridor. For example, Package 2 would require less than an acre of additional riparian habitat when compared to Package 4. All three packages will have identical use of medium and high quality sensitive wildlife habitat within this managed refuge (see Table 4.14-13, Direct Impacts to Sensitive Wildlife Habitats). The permanent incorporation of land would generally be in linear areas adjacent to the existing highway. The value of impacted refuge land is similar in these areas.

All three build packages will be mitigated by enhancing wildlife and waterfowl refuges owned by the City of Boulder. For example, the habitat of the Preble's meadow jumping mouse and Ute ladies'-tresses orchid to be used for the project will be replaced through creation, restoration, or enhancement of suitable habitat for both packages. Property will be acquired for three packages in accordance with the Uniform

Relocation Assistance and Real Property Acquisition Policies Act of 1970. Coordination with the City of Boulder, the official with jurisdiction, has begun and will continue through the NEPA process. These measures mitigate for the use of the resource for all build packages. See also Table 7.5-7, Wildlife and Waterfowl Resource Mitigation Measures for City of Boulder Open Space.

**Table 7.5-7: Wildlife and Waterfowl Resource Mitigation Measures for City of Boulder Open Space**

Resource	Impacts and Mitigation under Package 2	Impacts and Mitigation under Package 4	Impacts and Mitigation under the Combined Alternative Package (Preferred Alternative)
City Of Boulder Open Space	<ul style="list-style-type: none"> <li>Permanent incorporation of 14.4 acres (1.4% of total open space effected by the project) for Option A, to 23.3 acres (2.2%) for Option B</li> <li>Acquisition of sensitive habitat of Colorado tallgrass prairie, Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and other wildlife</li> <li>To compensate for the effects of habitat loss, equivalent areas will be created, enhanced, or restored</li> <li>Provide travel passage for small mammal movement by installing high water shelves in culverts under US 36</li> </ul>	<ul style="list-style-type: none"> <li>Permanent incorporation of 16.7 acres (1.6% of total refuge effect by the project) for Option A, to 25.3 acres (2.4%) for Option B</li> <li>Acquisition of sensitive habitat of Colorado tallgrass prairie, Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and other wildlife</li> <li>To compensate for the effects of habitat loss, equivalent areas will be created, enhanced, or restored</li> <li>Provide travel passage for small mammal movement by installing high water shelves in culverts under US 36</li> </ul>	<ul style="list-style-type: none"> <li>Permanent incorporation of 17.5 acres (1.7% of total refuge effect by the project)</li> <li>Acquisition of sensitive habitat of Colorado tallgrass prairie, Preble's meadow jumping mouse, Ute ladies'-tresses orchid, and other wildlife</li> <li>To compensate for the effects of habitat loss, equivalent areas will be created, enhanced, or restored</li> <li>Provide travel passage for small mammal movement by installing high water shelves in culverts under US 36</li> </ul>

Source: US 36 Mobility Partnership, 2009.

Notes:

% = percent

US 36 = United States Highway 36

## Comparison of Design Options

### West-end Design Options

Two design options, Options A and B, were developed for Package 2 and Package 4 at the west-end termini. Option A would impact between 8.3 acres (Package 2) and 8.6 acres (Package 4) less of wildlife and waterfowl refuge, as compared to Option B. Option A would minimize harm to sensitive habitat of Preble's meadow jumping mouse habitat and Ute ladies'-tresses orchid, for which the wildlife refuge is managed. In addition, the use of wetlands and Colorado tallgrass prairie habitat would be minimized.

The Combined Alternative Package (Preferred Alternative) incorporates features from both Options A and B. It includes a transition of the managed lane to a general-purpose lane at a point west of Cherryvale Road. This would require only a one-lane change to access the westbound US 36 BRT side-platform ramp. It would also require westbound buses traveling from the McCaslin Station to the Table Mesa Station to make no lane changes other than the merge at the end of the climbing lane. The Combined Alternative Package (Preferred Alternative) would impact 17.5 acres of wildlife and waterfowl refuge within the west-end termini area. By comparison, this would be up to 7 acres less than Option B, but up to 4 acres more than Option A.

The Combined Alternative Package (Preferred Alternative), as well as Options A and B, meet the project Purpose and Need. The Combined Alternative Package (Preferred Alternative) and Option B are more responsive to elements of the Purpose and Need consisting of expanded modes of travel option and providing efficient transit service. This is because they would provide a direct, bus-only connection to the Table Mesa park-n-Ride, eliminating the need for buses to merge into the general-purpose lanes to access

the transit station. Therefore, while Option A minimizes harm to sensitive resources, Option B and the Combined Alternative Package (Preferred Alternative) are more responsive to Purpose and Need.

These factors were balanced in concluding that there are no substantial differences in net harm between Option A, Option B, and the Combined Alternative Package (Preferred Alternative). Based on the above trade-offs, any of the three are reasonably justifiable. Ultimately, it is the Combined Alternative Package (Preferred Alternative) that best meets the Purpose and Need of the project. Because there is no net overall harm between the three packages, the Combined Alternative Package (Preferred Alternative) has been identified as the Preferred Alternative for the west-end termini.

### **US 36 Bikeway Alternatives**

An off-street bikeway alternative was developed under Package 2 and Package 4 along Cherryvale Road and South Boulder Road which would result in less impact to the wildlife refuge parcel. This alternative would impact 0.41 acre of this wildlife refuge, rather than the 0.73 acre that would be incorporated for the US 36 bikeway. However, it would also impact portions of a historic farmstead (the Homestead Site) and two ditches. These uses are considered *de minimis*.

The Cherryvale Road/South Boulder Road bikeway alternative would also minimize harm to habitat for Preble's meadow jumping mouse habitat and Ute ladies'-tresses orchid, for which the wildlife refuge property is managed. The US 36 bikeway option would impact 0.32 acre more of this habitat than this alignment. Based on information provided by Boulder OSMP, the existing trail along South Boulder Road and part of Cherryvale Road is heavily used by bikers, equestrians, and walkers with their dogs. The frequent human use and multiple access point to the wildlife refuge promote an element of human intrusion and may affect the overall quality of the adjacent wildlife refuge area. This human intrusion is not currently a factor along the US 36 alignment because there is no easy access to the adjacent open space. The lack of human intrusion here results in a higher quality overall habitat when compared to the habitat directly adjacent to the South Boulder Road and Cherryvale Road bikeway. The indirect impact, its potential effect to the overall quality of the habitat, and the potential use associated with this impact would be greater with the US 36 bikeway than with the off-street Cherryvale Road and South Boulder Road bikeway.

The Cherryvale Road/South Boulder Road bikeway alternative would also result in fewer impacts to wetlands. Approximately 0.28 acre fewer wetlands would be impacted with the Cherryvale Road/South Boulder Road bikeway compared to the US 36 bikeway.

To summarize, the US 36 bikeway option, under the Combined Alternative Package (Preferred Alternative), would result in a greater harm to the wildlife refuge, greater wetland impacts, greater impacts to potentially higher quality Preble's meadow jumping mouse habitat and Ute ladies'-tresses orchid habitat, and greater potential for indirect use associated with human intrusion. The advantages of this option are that it would avoid the use of three historic properties, and that it would more directly tie into the Table Mesa park-n-Ride, and thus would be more responsive to that element of the project Purpose and Need.

The Cherryvale Road/South Boulder Road bikeway option would use portions of three historic properties, would not directly tie into the Table Mesa park-n-Ride, and would result in slightly longer travel times for bicyclists coming from Table Mesa Drive or the Table Mesa park-n-Ride. It could also result in compromised bicyclist safety west of Manhattan Drive. Its advantages include less overall use of the wildlife refuge, fewer impacts to wetlands, and less potential impact as a result of human intrusion.

Since the individual and cumulative differences between the US 36 bikeway option and the Cherryvale Road/South Boulder Road bikeway option are subtle, neither can be considered to cause greater net harm. Based on the above trade-offs, either alternative is reasonably justifiable. Ultimately, it is the Combined Alternative Package (Preferred Alternative) and its US 36 bikeway alignment that best meets the project Purpose and Need. Because there is no net overall harm between the two options, the US 36 alignment has been identified as the preferred bikeway alignment.

## Summary

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There are differences between packages in the intensity and value of uses of the resources. By balancing the following seven factors, it can be concluded that the Combined Alternative Package (Preferred Alternative) is the least harm alternative.

### **1. The ability to mitigate adverse impacts to the Section 4(f) property (including measures that result in benefits to the property).**

Up to 12 resources would be adversely affected by any of the alternatives. Six resources have the identical use in intensity and value. Since the intensity and value of the use of these resources is identical, no least harm alternative can be identified from that comparison.

The remaining six resources anticipate an adverse impact as a result of the project. As previously discussed, an area 30 feet by 255 feet of Commissioners Park would be permanently incorporated under Package 2 and the Combined Alternative Package (Preferred Alternative), but not under Package 4. Mitigation measures include the replacement of the noise wall, shifting the picnic table and trail north, and future enhancements to the park based on input from the local community and the Hyland Hills Park and Recreation District. No use would occur under Package 4.

Packages 2 and 4 would have greater effects to Rotary Park and Oakwood Park than the Combined Alternative Package (Preferred Alternative). The requirements from Section 6(f) of the 1965 LWCF Act prescribe a process for providing mitigation for properties where LWCFs were used. These requirements require a lot more coordination and stringent requirements for replacement lands. Section 6(f) requires that the project find replacement land of equal value, location, and usefulness for the impact to Rotary Park. The Combined Alternative Package (Preferred Alternative) would avoid Rotary Park and Oakwood Park. Conversely, Packages 2 and 4 would also have greater mitigation and enhancement measures to the parks, including the creation of the multi-use trail connecting the two adjacent resources. This mitigation could be viewed as a net benefit to the two parks.

The Dry Creek Valley Ditch would have slightly more impacts under Package 2 than under Package 4 and the Combined Alternative Package (Preferred Alternative). However, all three packages would have an Adverse Effect to the ditch. The additional length needed to pipe under the highway is a fraction of the entire linear resources. Similar mitigation is proscribed for all three packages. The additional linear feet of culvert would not alter the resource settings or how it would be able to convey its significance.

All three build packages would have an Adverse Effect to Allen Ditch. Similar mitigation is proscribed for all three packages. Although the amount of linear feet of culvert incorporated into the transportation facility varies within the packages, the difference is relatively minor and does vary with how the Allen Ditch's setting is affected or how the ditch is able to convey its significance.

The difference between the three packages is subtle as it relates to the project's ability to mitigate refuge impacts. Package 4 would permanently incorporate approximately 2 acres more of the wildlife and waterfowl refuges than Package 2, and 1 less acre than the Combined Alternative Package (Preferred Alternative). This difference is just a fraction of the approximately 1,057 acres of refuge property affected by the project. All three packages would impact the resource in the same intensity. Permanent incorporation of land would generally be in linear areas adjacent to the existing highway. The quality and value of impacted refuge land is similar in these areas impacted for all packages. All three build packages proscribe identical mitigation measures for these impacts. They include creating, enhancing, and restoring habitat; installing high water shelves in culverts for mammal crossings; and acquiring additional sensitive habitat for tallgrass prairie, Preble's meadow jumping mouse, and Ute ladies'-tresses orchid. The amount of mitigation provided is related to the amount and value of the land incorporated into the transportation facility.

**2. The relative severity of the remaining impacts (after mitigation) to the protected activities, attributes, or features that qualify the property for Section 4(f) protection.**

Impacts to 11415 Wadsworth Boulevard would be completely avoided under the Combined Alternative Package (Preferred Alternative). Package 2 and Package 4 would require permanent acquisition of 0.21 acre, or 17 percent of this historic resource. Impacts under Package 2 and Package 4 are not considered to be adverse.

There are four additional resources recommended for *de minimis* determination that are used by all three packages. Mitigation and enhancement measures have already been considered with the intention to make such a finding. Since the impacts are trivial by nature, a comparison of the resources does not contribute to a difference in harm between the alternatives. These are all considered equal in severity.

Impacts to the other historic resources are also equal in severity between packages. For example, the historic residence at 8375 West 120<sup>th</sup> Avenue would be destroyed under all three packages. The mitigation measures for all three packages include a Programmatic Agreement, attempting to relocate the structure, and following the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 during property acquisition. However, under all of these packages, the impacts are so severe that the property would no longer be eligible and able to convey its significance.

All three packages would have relatively similar impacts to the refuge properties on the west end of the corridor. Under these packages, similar mitigation measures would be applied (those discussed above), yet similar harm would still result to medium- and high-value habitat. There would be a loss of habitat resulting from the permanent incorporation of land in the linear areas adjacent to the existing highway. Mitigating habitat may be difficult, but land is available for replacing the acreage. Over time, rehabilitating land to provide similar functions as the land incorporated into the transportation facility at a new location or in existing areas is possible and can be done.

**3. The relative significance of the Section 4(f) properties being used.**

All build packages would require use of several significant Section 4(f) properties. There are historic ditches, wildlife and waterfowl refuges, and community parks that are adjacent to the existing highway corridor. All are considered significant by each resource's official with jurisdiction. For example, SHPO has gone to great lengths to protect the integrity of the irrigation ditches along the corridor. The City and County of Boulder has gone to great lengths to protect its open space and habitat. The Boulder City Charter, the Boulder Valley Comprehensive Plan, the OSMP Visitor Master Plan, and the City of Boulder Grassland Management Plan are all examples that document the significance of these resources. The creation of the Hyland Hills Park and Recreation District is another example of the emphasis the community places on recreation along the US 36 corridor. As a result, it is difficult to balance the various types of resources.

In this case, balancing the relative significance of the historic, recreational, and refuge resources is not appropriate for the least harm analysis. For example, the comparison among the packages does not require a choice between impacting a historic or recreational Section 4(f) resource. It is a case of impacting one or another habitat, impacting habitat versus greater habitat, or impacting one or another recreational resource.

#### **4. The views of the official(s) with jurisdiction over the Section 4(f) property.**

As stated above, the Officials with Jurisdiction have place great significance on the resources with the project area. The project team has coordinated with the Officials with Jurisdiction throughout the NEPA process to identify all possible planning to minimize harm. It also has developed mitigation measures for impacted Section 4(f) resources. The project has incorporated these measures and will continue to work with the Officials with Jurisdiction to minimize harm to Section 4(f) resources. Letters of concurrence from Officials with Jurisdiction have been included in Appendix B, Consultation and Coordination, which show support for the project's efforts to minimize harm to the significant resources.

#### **5. The degree to which each package meets the project Purpose and Need.**

The three build packages have different configurations of highway lanes, which would result in different travel advantages. A summary of some of the transportation performance and impacts for these packages is included below. See Chapter 3, Transportation Impacts and Mitigation, for a complete description how each package meets the project Purpose and Need.

- All build packages increase trip capacity. Package 4 would provide the highest person-trip capacity, followed by the Combined Alternative Package (Preferred Alternative), and then Package 2.
- All build packages are forecasted to serve notable more traffic volumes on US 36 than Package 1. Package 4 and the Combined Alternative Package (Preferred Alternative) would have consistently higher general-purpose lane volumes than Package 2, because either general-purpose lanes or auxiliary lanes would be added with these packages.
- All build packages would expand access by providing improvements to US 36 interchanges. Package 2 would provide two access points to the managed lanes in the form of drop-ramps that would relieve some congestion at the existing Wadsworth Parkway and Sheridan Boulevard interchanges.
- All build packages would offer expanded bus service and would experience a similar total ridership increase over Package 1.
- All build packages would improve overall vehicle safety because highway facilities would be upgraded to current standards. Package 2 is predicted to provide better safety performance and fewer serious crashes than Package 4 and the Combined Alternative Package (Preferred Alternative) because it would have fewer conflict points, due to the barrier separation of managed lanes from general-purpose lanes.

#### **6. The impacts to non-Section 4(f) resources after reasonable mitigation.**

None of the three packages would have an impact for which mitigation is not reasonable. There are several resources that are harmed less by the Combined Alternative Package (Preferred Alternative). For a complete discussion of impacts and mitigation to non-Section 4(f) resources, see Chapter 4, Affected Environment and Environmental Consequences.

- There would be at least 323 less acres of land acquired under the Combined Alternative Package (Preferred Alternative) when compared to Package 2 and Package 4. The Combined Alternative Package (Preferred Alternative) would also fully acquire at least 30 less residential parcels and at least 24 less business parcels than Package 2 and Package 4.
- The Combined Alternative Package (Preferred Alternative) would provide the most linear feet (46,700 feet) of noise wall mitigation along the corridor. Compared to Package 2 (46,100 feet), and Package 4 (44,300 feet), it would also offer the most noise mitigation benefit to single and multi-family homes than the other design packages considered.

- The Combined Alternative Package (Preferred Alternative) footprint has fewer high ranking hazardous material sites within the proposed footprint locations than Package 2 and Package 4.
- The Combined Alternative Package (Preferred Alternative) would also consume 0.3 percent less energy than Package 2, and 1.7 percent less energy than Package 4.

**7. Substantial differences in cost between alternatives.**

The total project cost for Package 2 is estimated at \$1.8 billion. The cost for Package 4 is estimated at \$1.6 billion. The cost for the Combined Alternative Package (Preferred Alternative) is estimated at \$1.3 billion.

Based on these factors, the Combined Alternative Package (Preferred Alternative) has the least harm in intensity and value of uses between the Section 4(f) resources used when compared to Package 2 and Package 4. This package avoids four more Section 4(f) resources than Package 2, and avoids three more than Package 4. The Combined Alternative Package (Preferred Alternative) was shown during the collaborative process to best meet the project Purpose and Need. It also would have significantly less ROW acquisitions to residents and businesses. It is the least expensive package and has the most support of the stakeholders. These factors support the identification of the Combined Alternative Package (Preferred Alternative).



## **7.6 FIGURES**

Section 7.6, Figures, contains all Chapter 7, Final Section 4(f) Evaluation, related figures.



Figure 7.2-1: Project Area

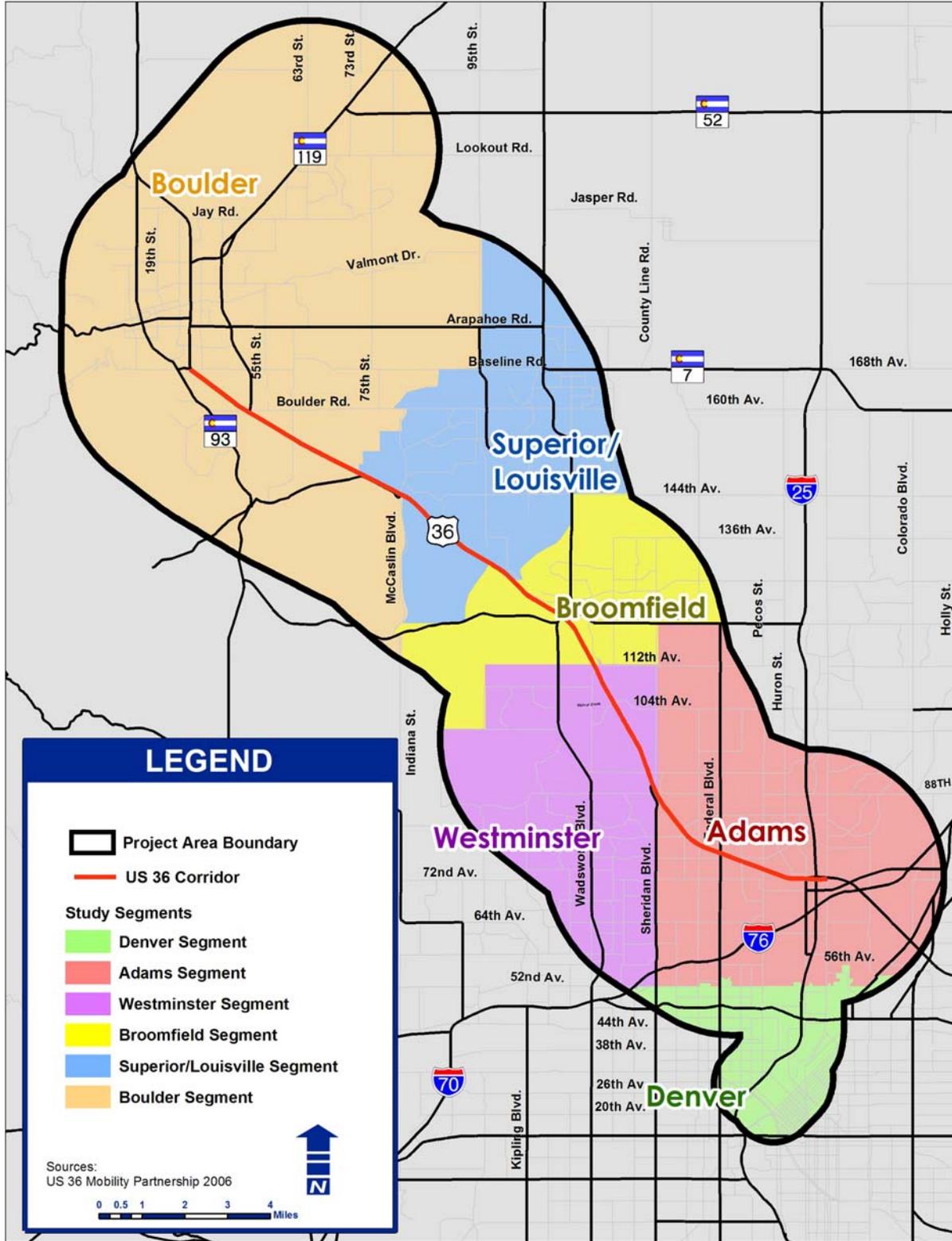
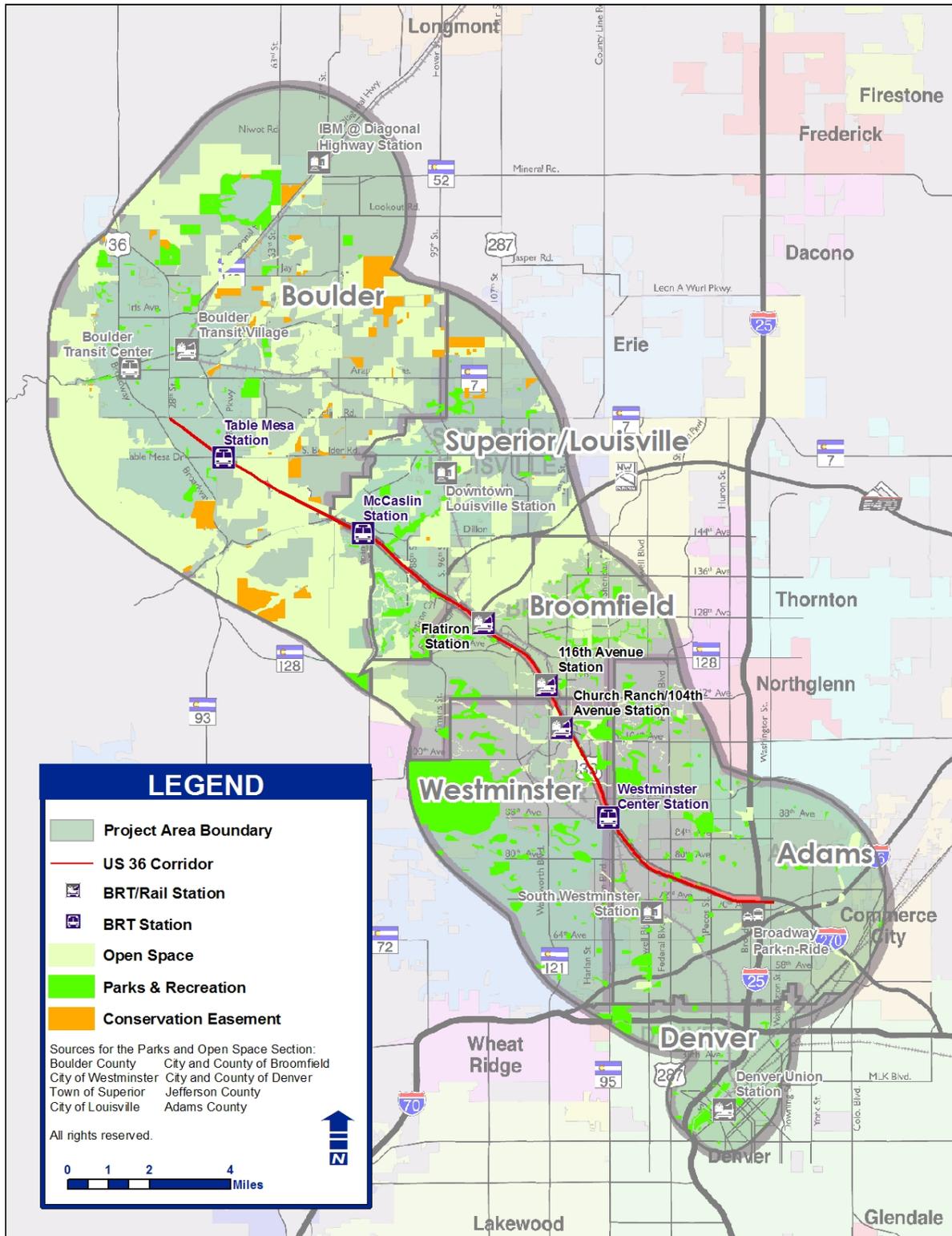


Figure 7.2-2: Section 4(f) Resources Within the Project Area



Note: The 116<sup>th</sup> Avenue Rail Station is not a part of the 2004 FasTracks Program. Additional stations were added in the early planning stages of the US 36 Environmental Impact Statement. Exact rail station locations and additional stations may be reconsidered in the U.S. Army Corps of Engineers/Regional Transportation District Northwest Rail Environmental Assessment/Environmental Evaluation.

Figure 7.3-1: Section 4(f) Resources in the Adams Segment

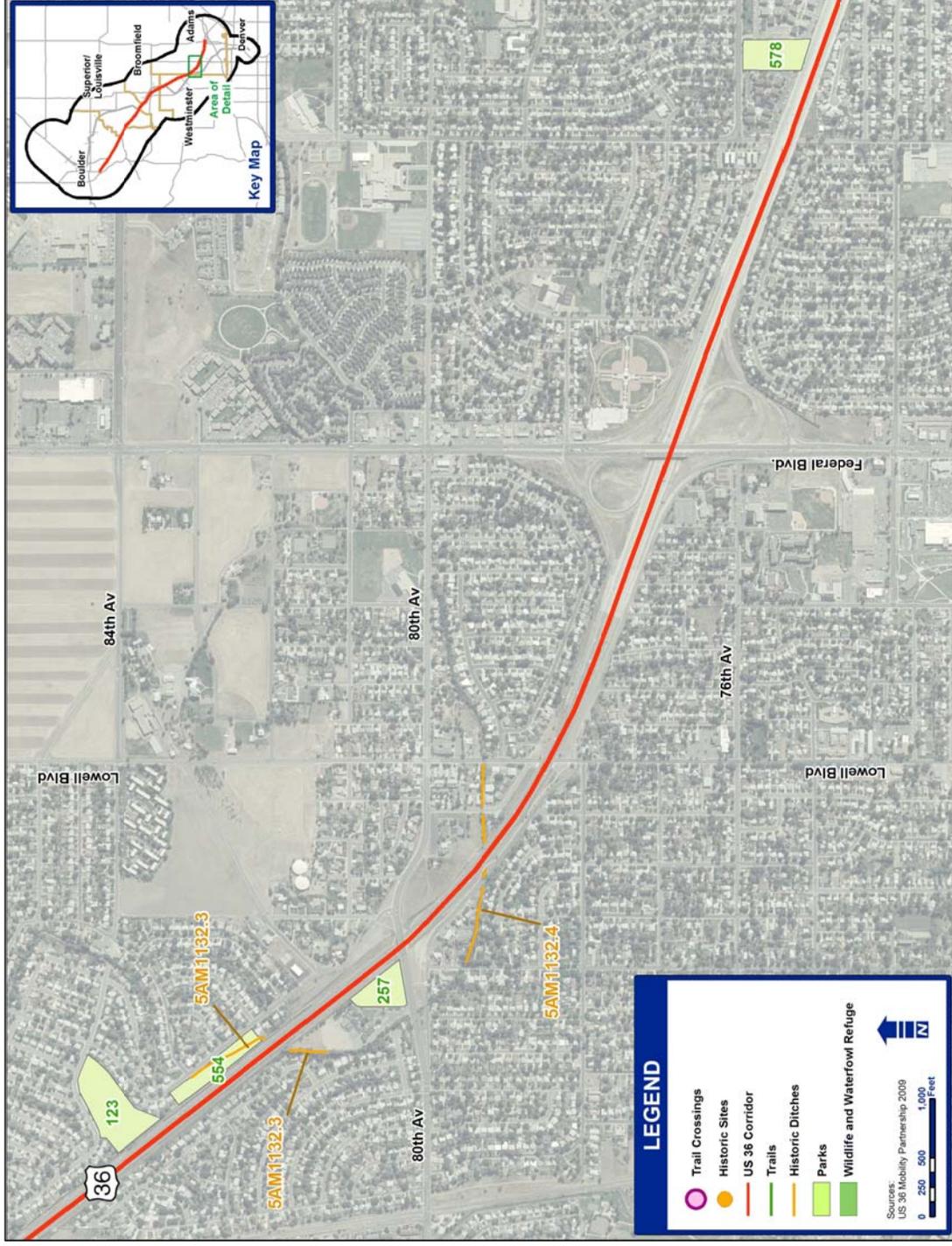


Figure 7.3-2: Section 4(f) Resources in the Westminster Segment

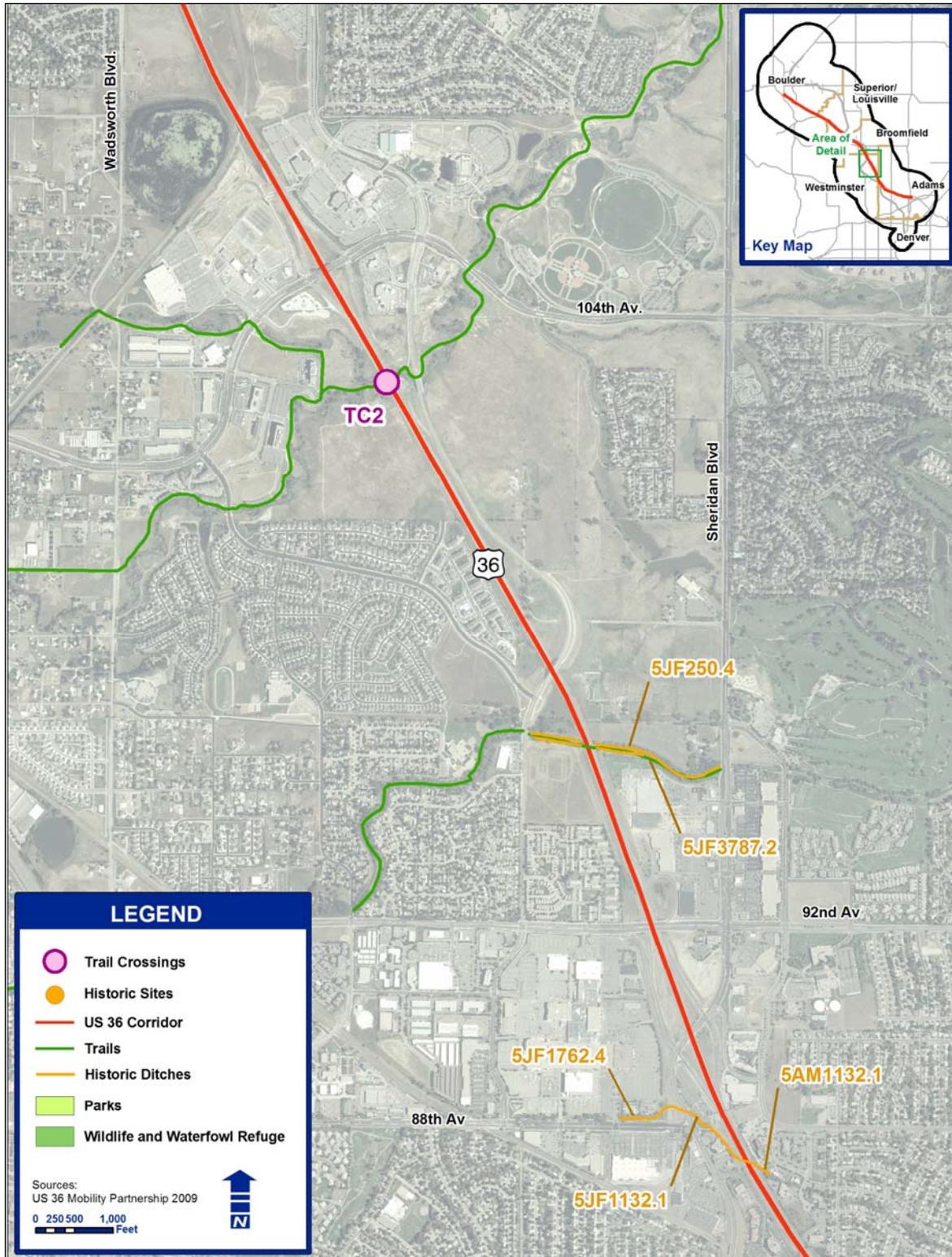


Figure 7.3-3: Section 4(f) Resources in the Broomfield Segment

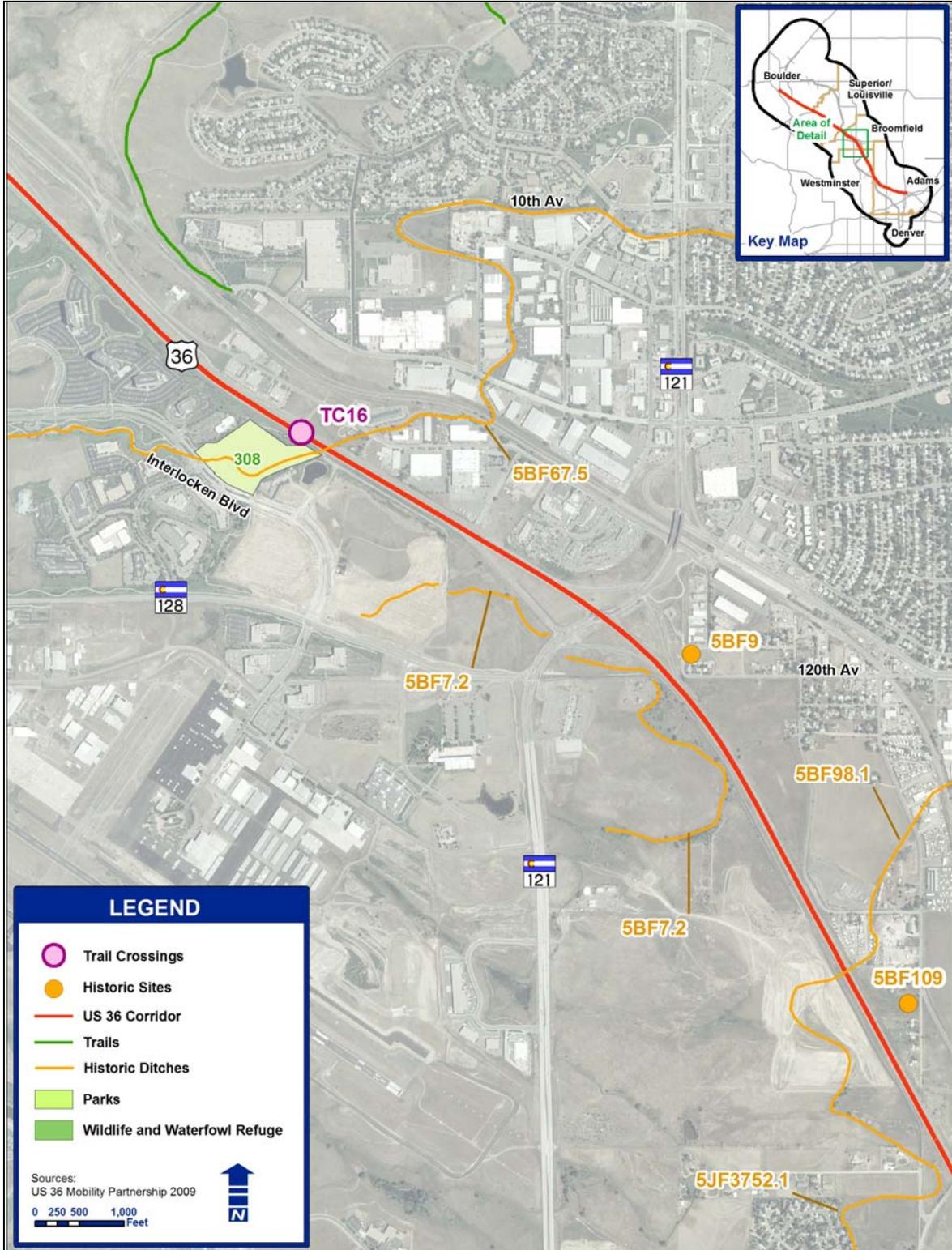


Figure 7.3-4: Section 4(f) Resources in the Superior/Louisville Segment

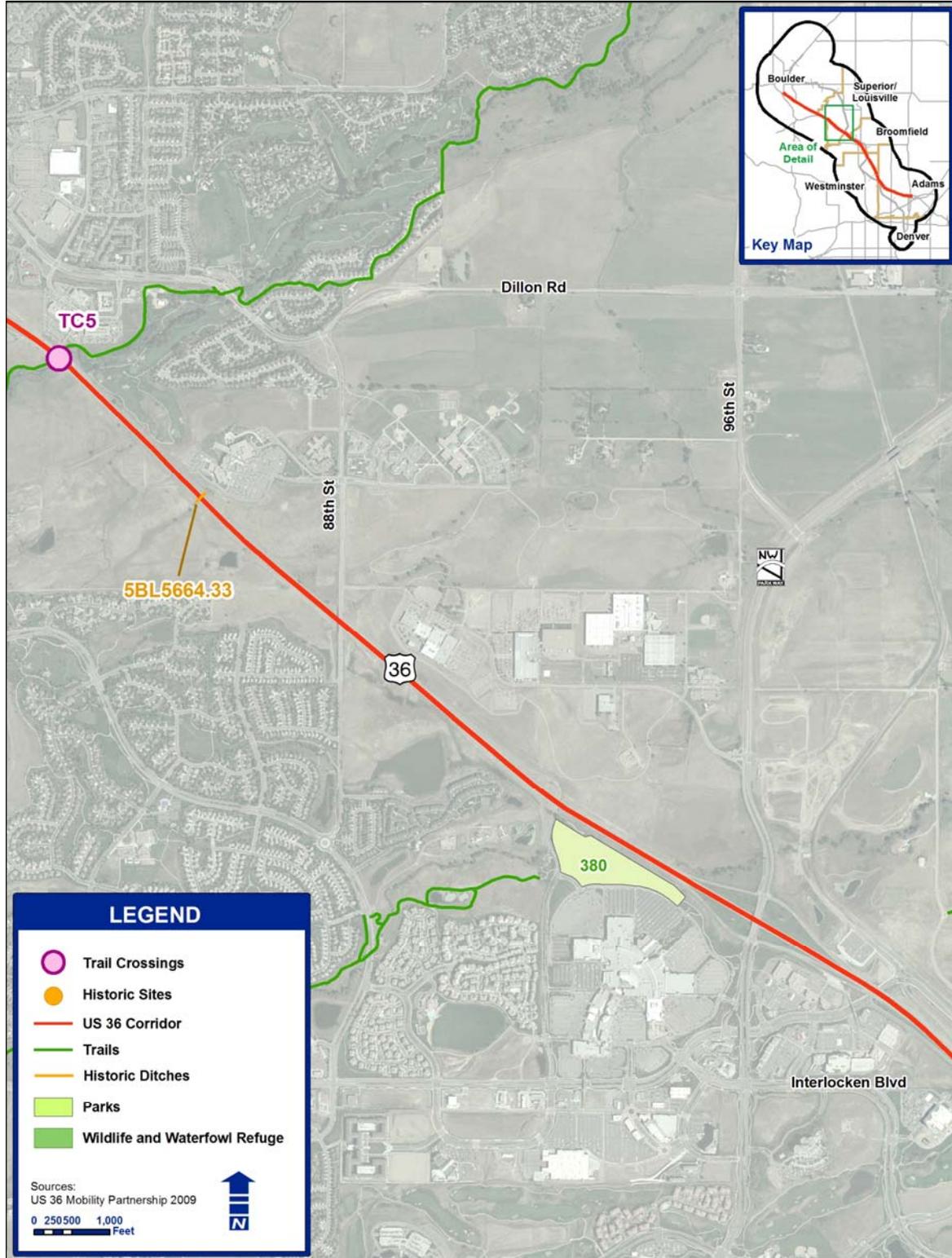


Figure 7.3-5: Section 4(f) Resources in the Boulder Segment

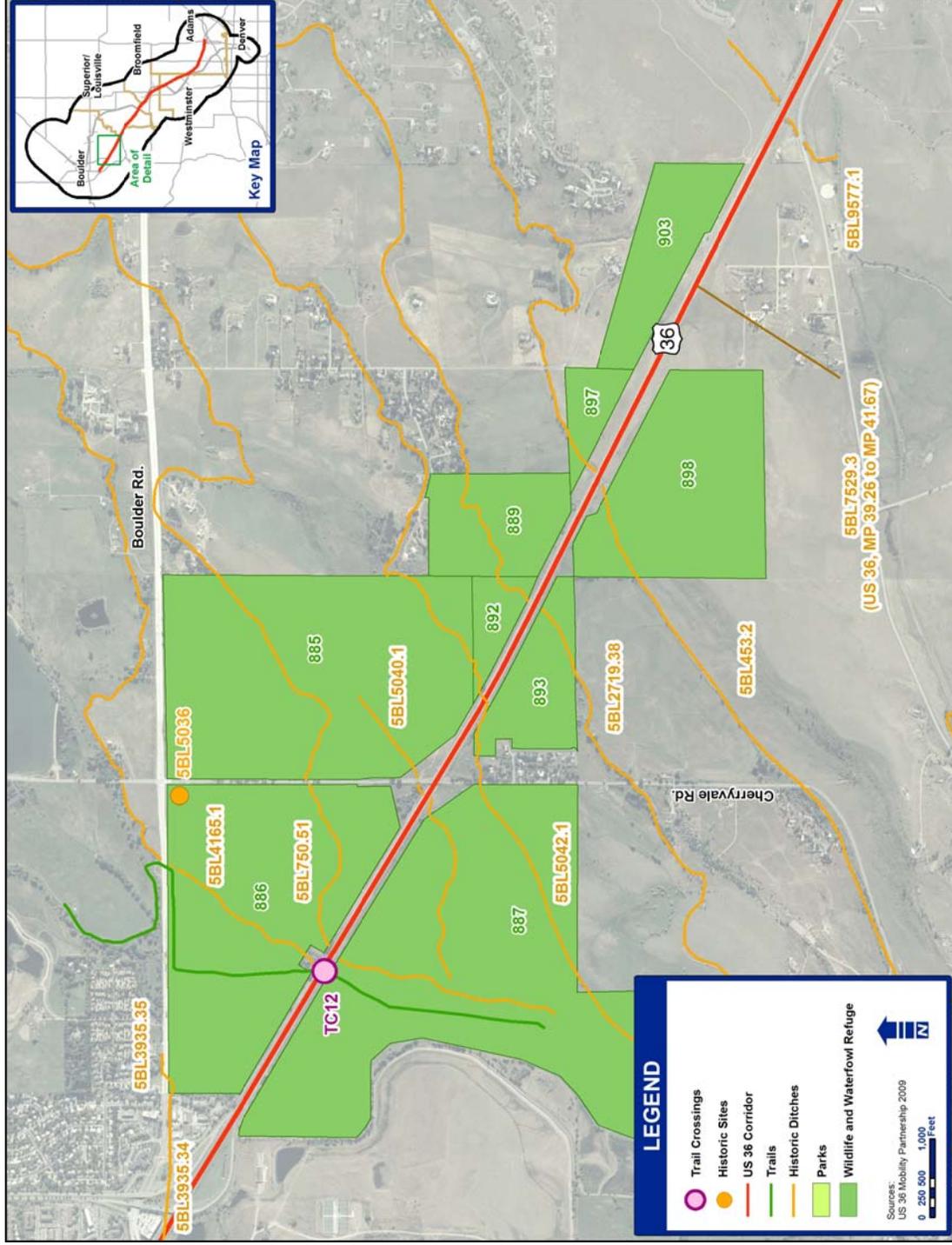


Figure 7.4-1: Uses of Commissioners Park  
 (Map Identification Number 578)



Figure 7.4-2: Uses of Westminster Hills Park  
 (Map Identification Number 257)



Figure 7.4-3: Uses of Oakwood Park  
 (Map Identification Number 554)



Figure 7.4-4: Uses of Rotary Park  
 (Map Identification Number 123)



Figure 7.4-5: Uses of Big Dry Creek Trail Crossing  
 (Map Identification Number Trail Crossing 2)



Figure 7.4-6: Uses of East Interlocken Trail Crossing  
(Map Identification Number Trail Crossing 16)

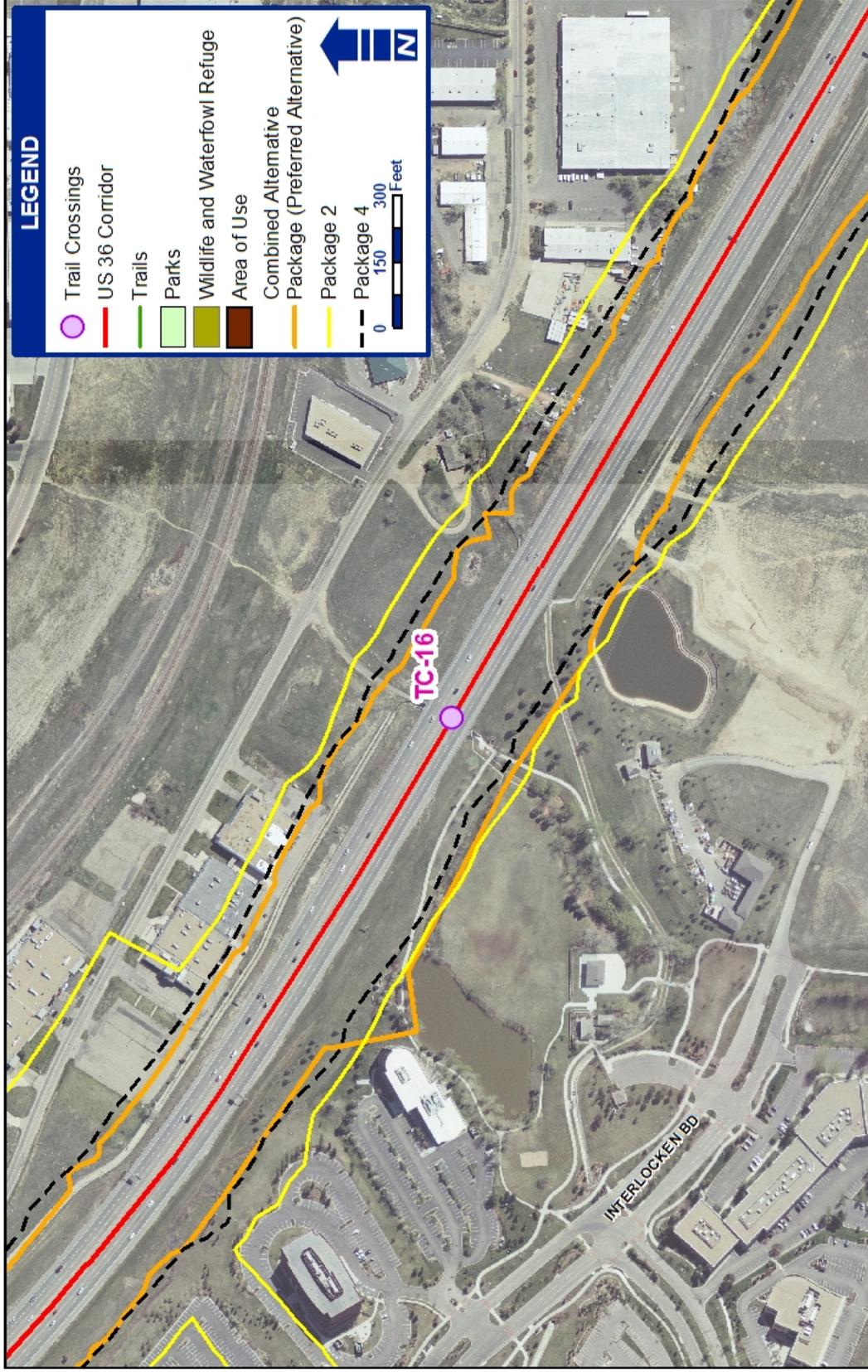
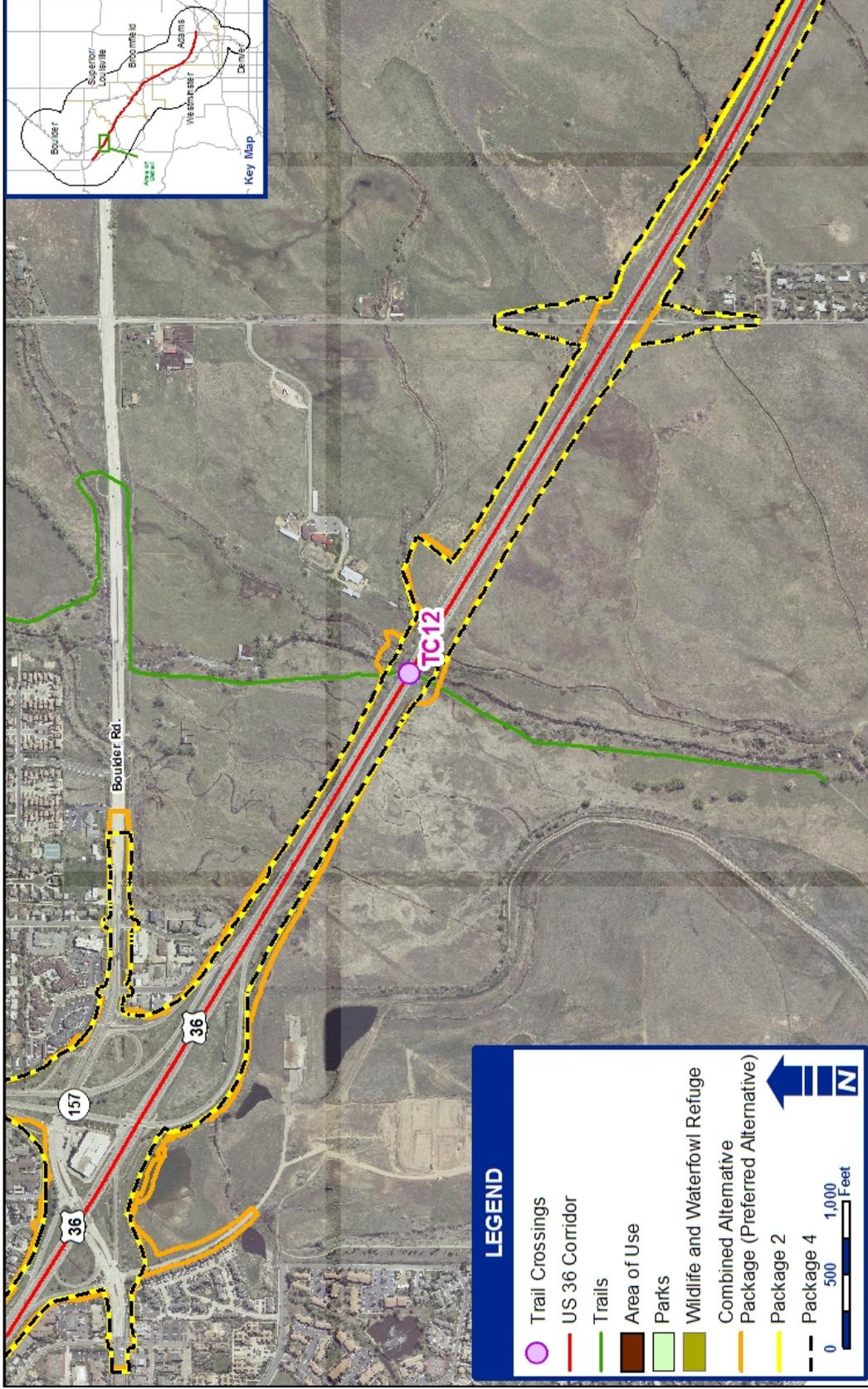


Figure 7.4-7: Uses of Coal Creek Trail Crossing  
 (Map Identification Number Trail Crossing 5)



Figure 7.4-8: Uses of South Boulder Creek Trail Crossing  
 (Map Identification Number Trail Crossing 12)



**Figure 7.4-9: Uses of Allen Ditch**  
 (Map Identification Numbers 5AM1132 and 5JF1762)



Figure 7.4-10: Uses of 8375 West 120<sup>th</sup> Avenue  
(Map Identification Number 5BF9)



Figure 7.4-11: Uses of Dry Creek Valley Ditch  
(Map Identification Number 5BF7.2)



Figure 7.4-12: Uses of US 36  
(Map Identification Number 5BL7529.3)

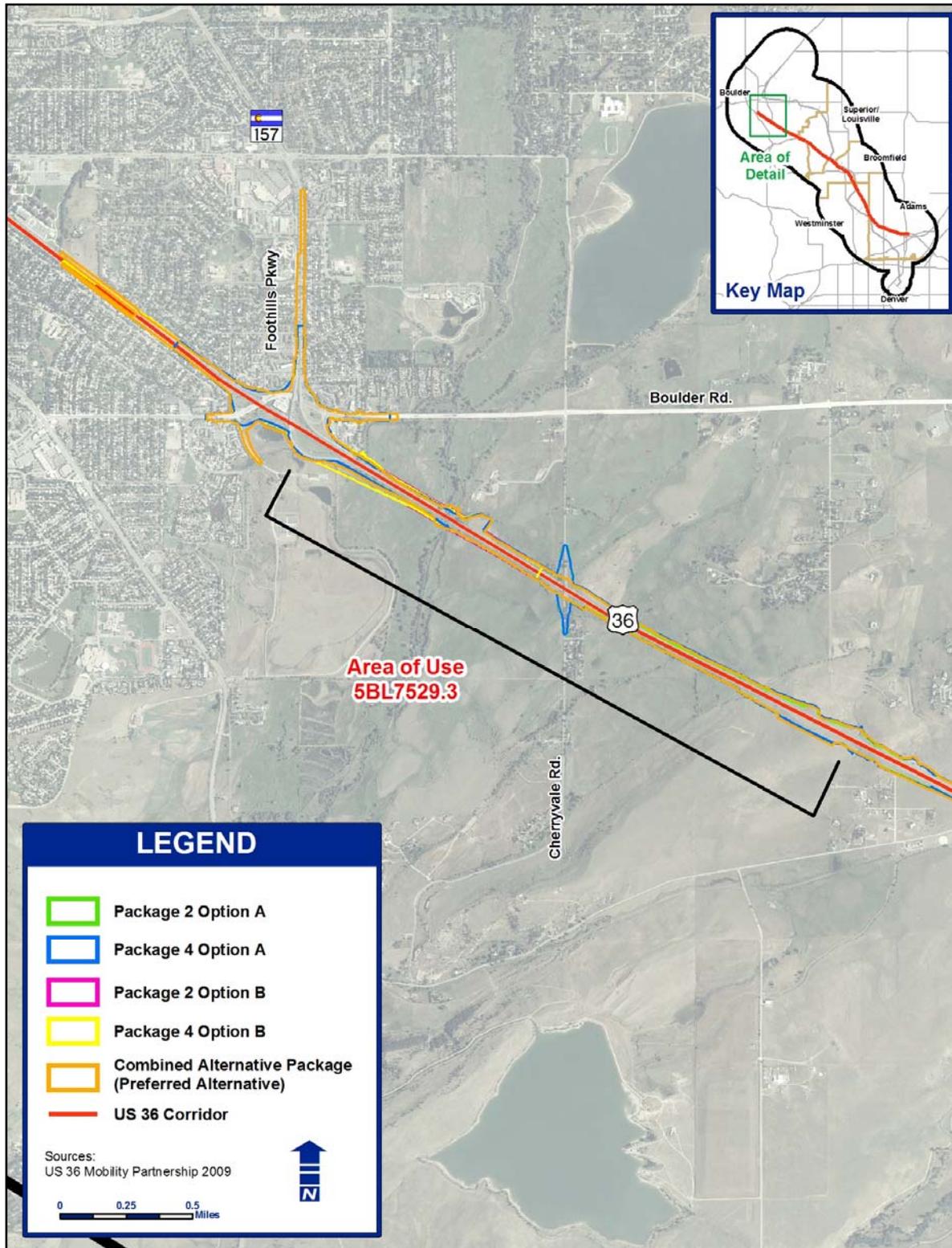


Figure 7.4-13: Uses of Van Vleet Open Space, Option A  
 (Map Identification Number Trail Crossings 12, 885, 886, and 887)



Figure 7.4-14: Uses of Van Vleet Open Space, Option B  
 (Map Identification Number Trail Crossings 12, 885, 886, and 887)



Figure 7.4-15: Uses of Yunker Open Space  
(Map Identification Numbers 889, 892, 893, 897, 898, and 899)



Figure 7.4-16: Uses of Gallucci Open Space  
 (Map Identification Number 903)

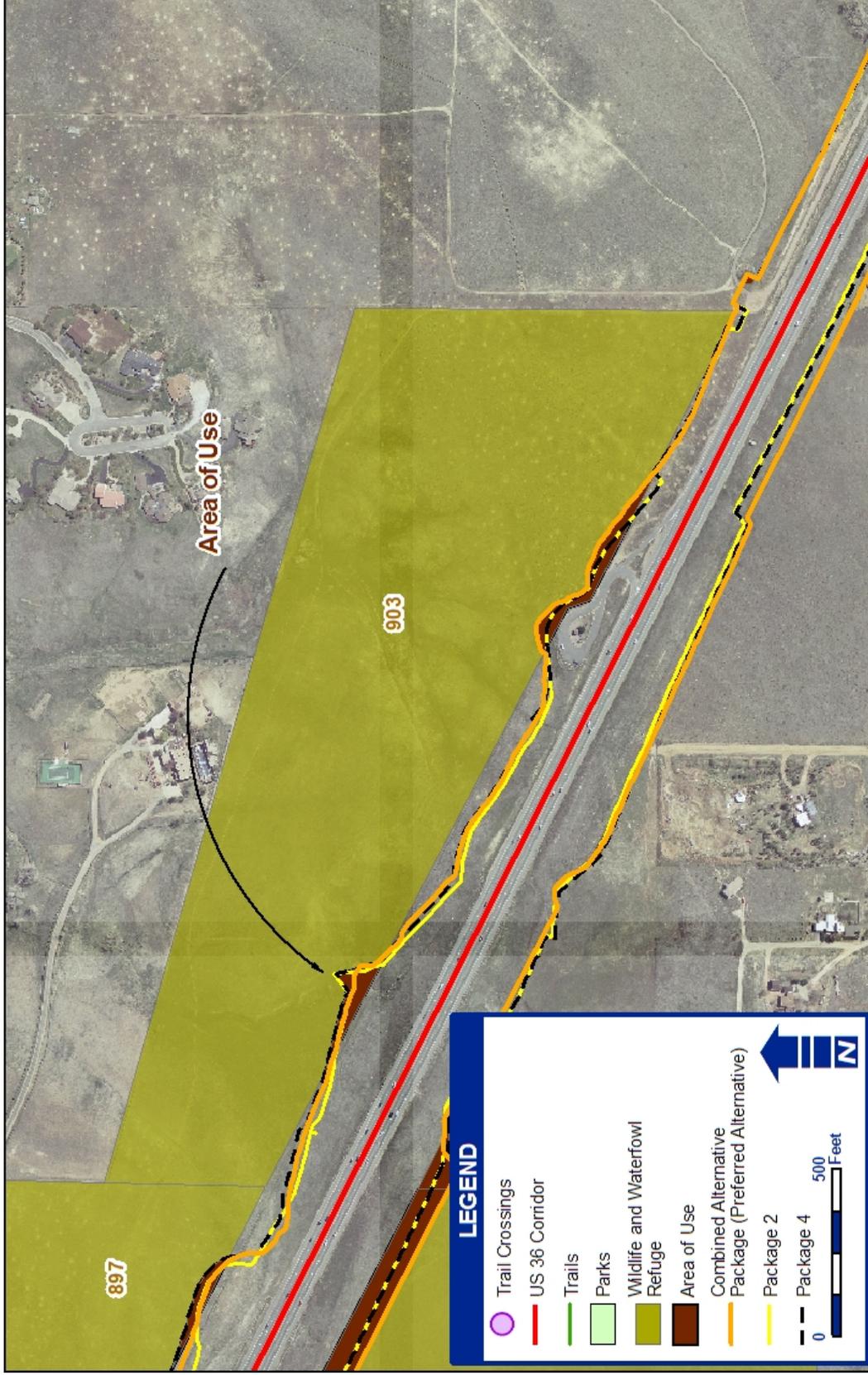


Figure 7.4-17: Uses of East Interlocken Park  
 (Map Identification Number 308)

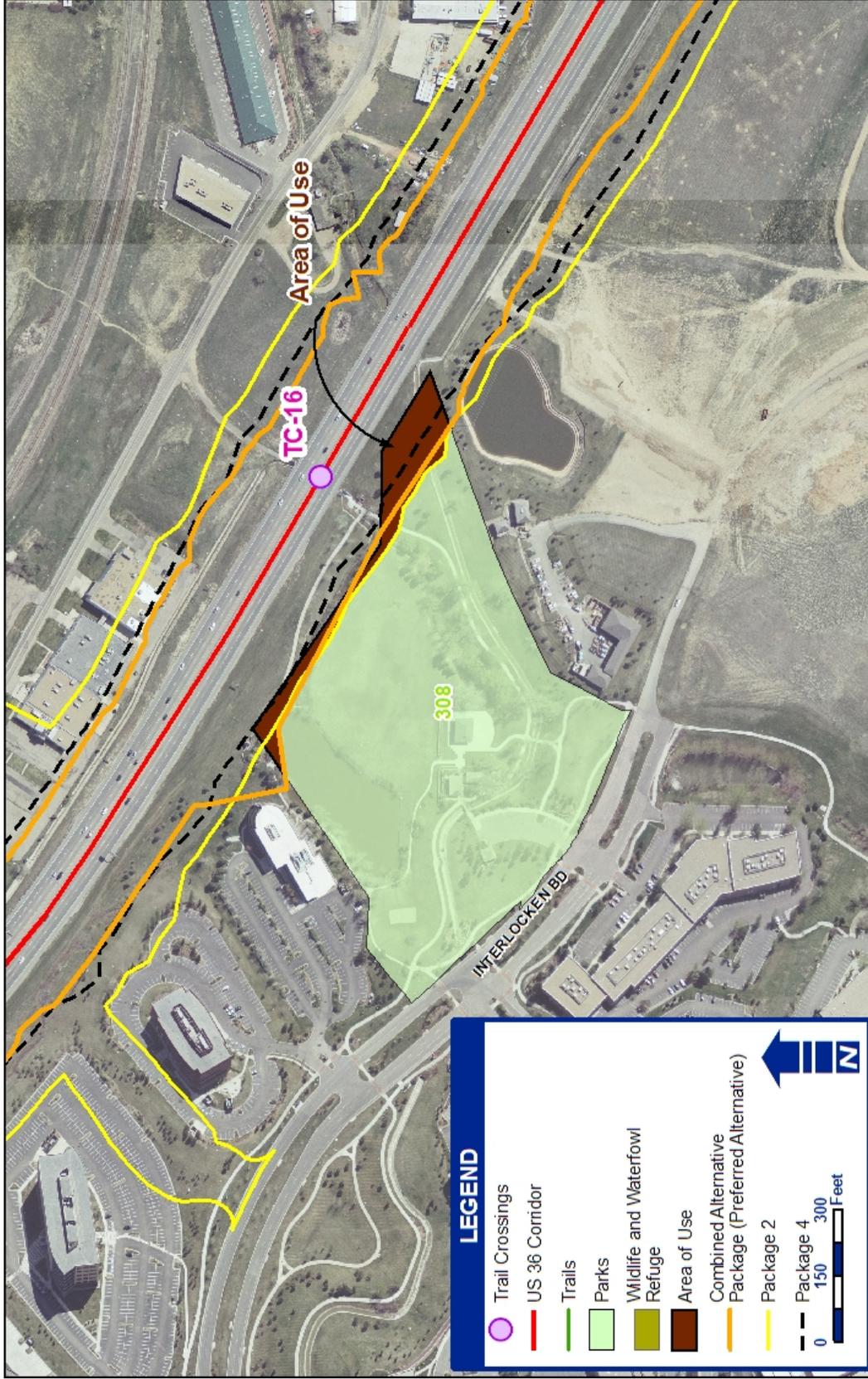


Figure 7.4-18: Uses of Frank Varra Park  
(Map Identification Number 380)

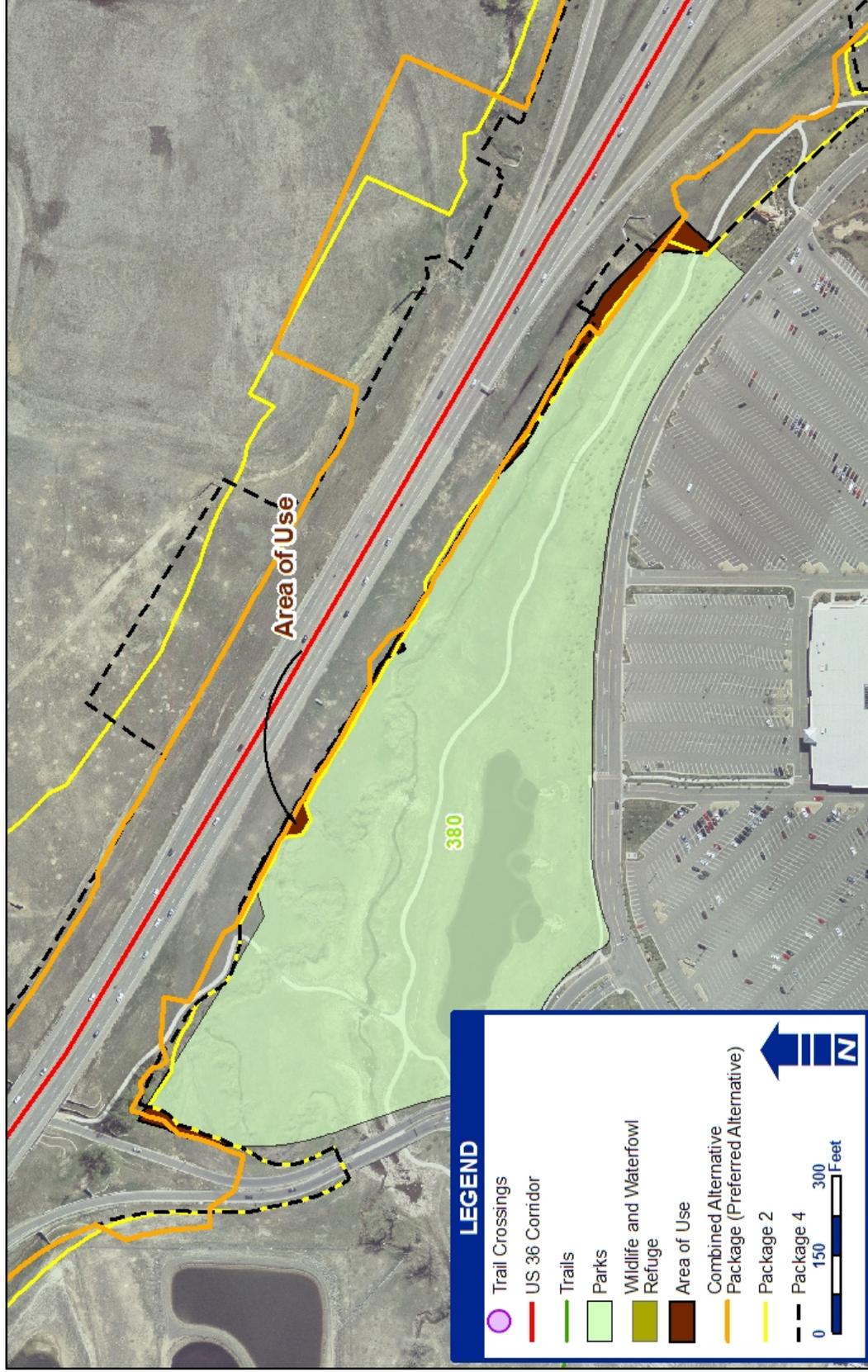
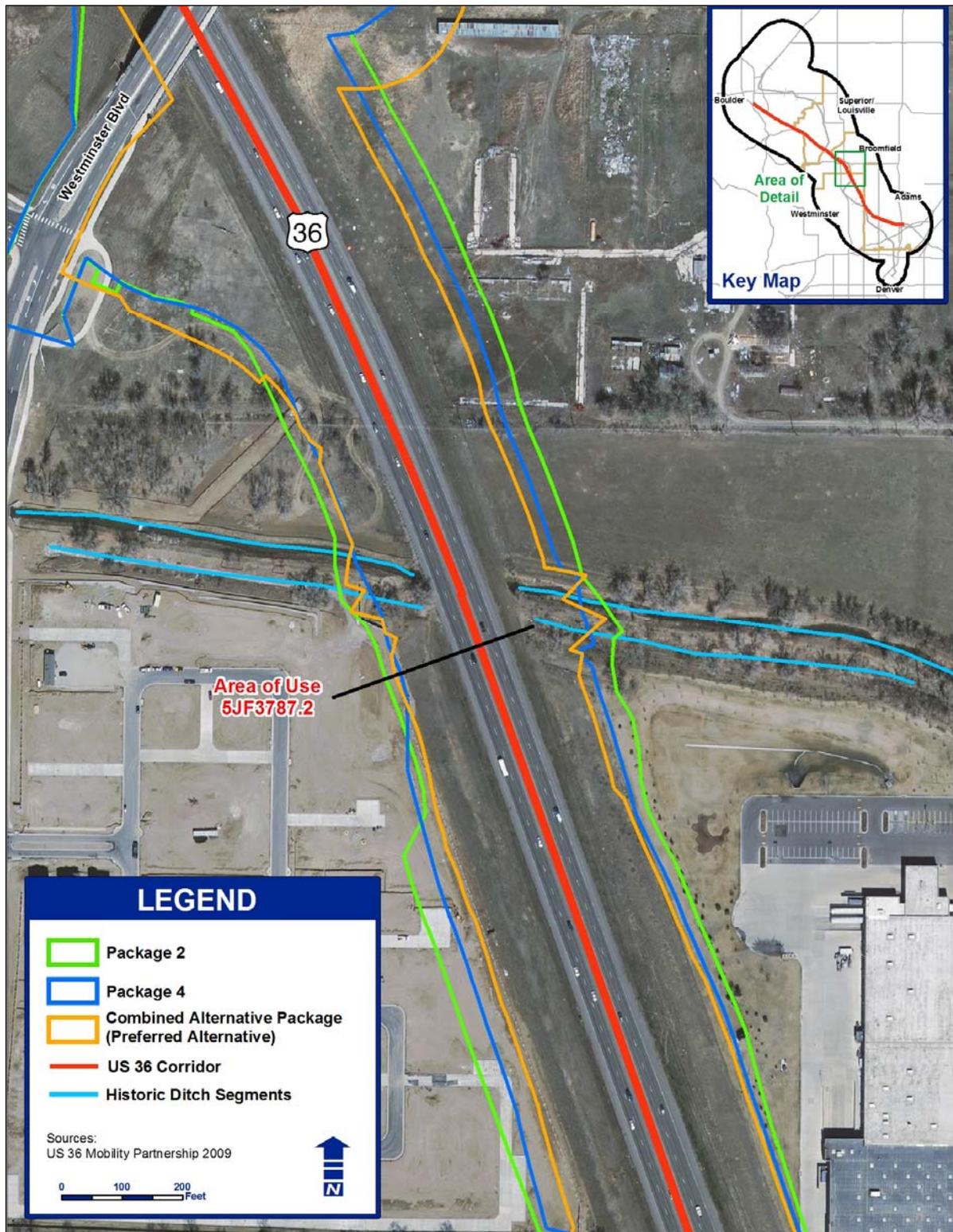


Figure 7.4-19: Uses of Niver Canal (Map Identification Number 5JF3787 for the Entire Resource, and 5JF3787.2 for the US 36 Crossing)



**Figure 7.4-20: Uses of Farmers Highline Canal**  
(Map Identification Number 5JF250 for the Entire Segment, and 5JF250.4 for the US 36 Crossing)

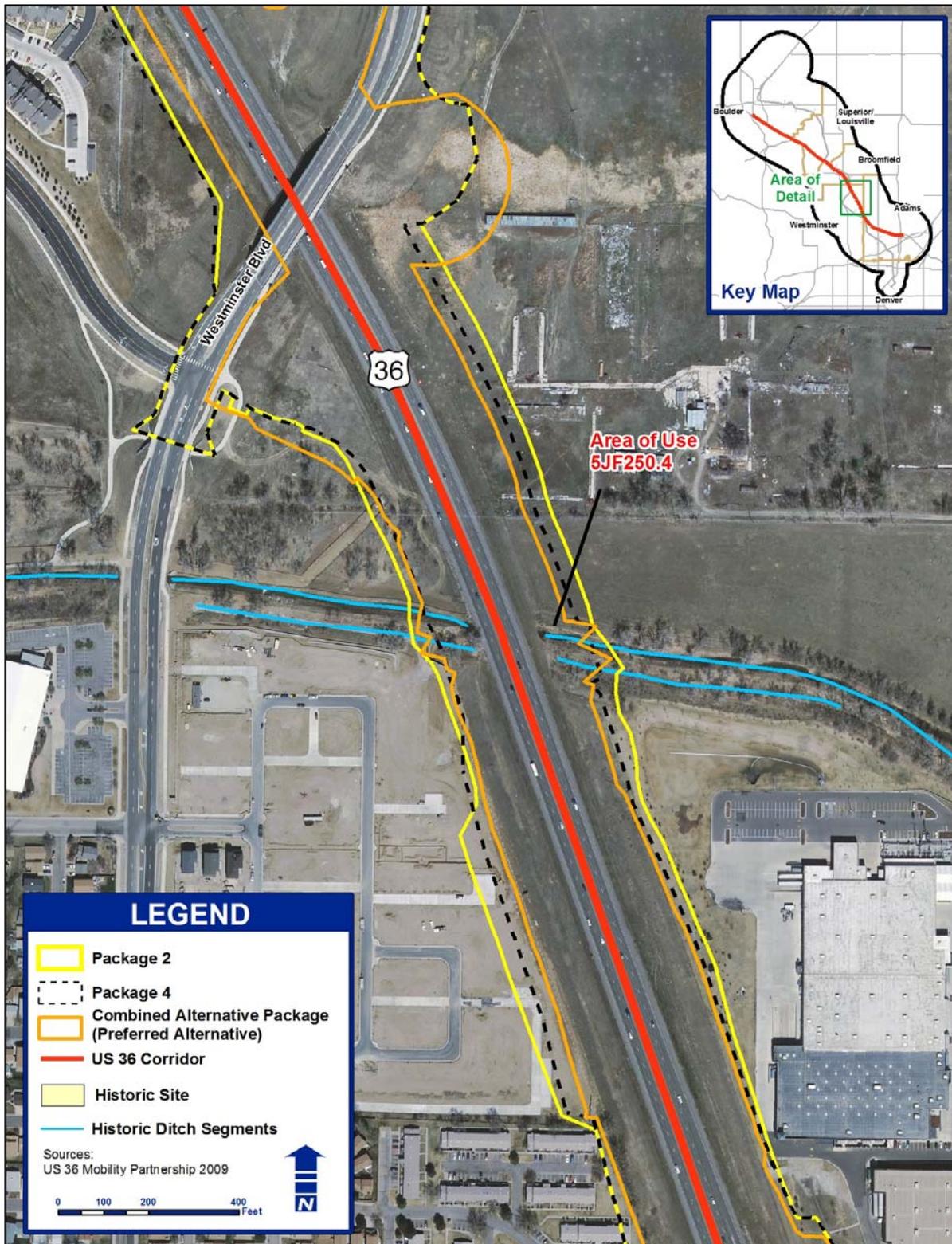


Figure 7.4-21: Uses of Residence  
(Map Identification Number 5BF109)



**Figure 7.4-22: Uses of Community Ditch  
(Map Identification Number 5BF67 for the Entire Resource,  
and 5BF67.5 for the US 36 Crossing)**

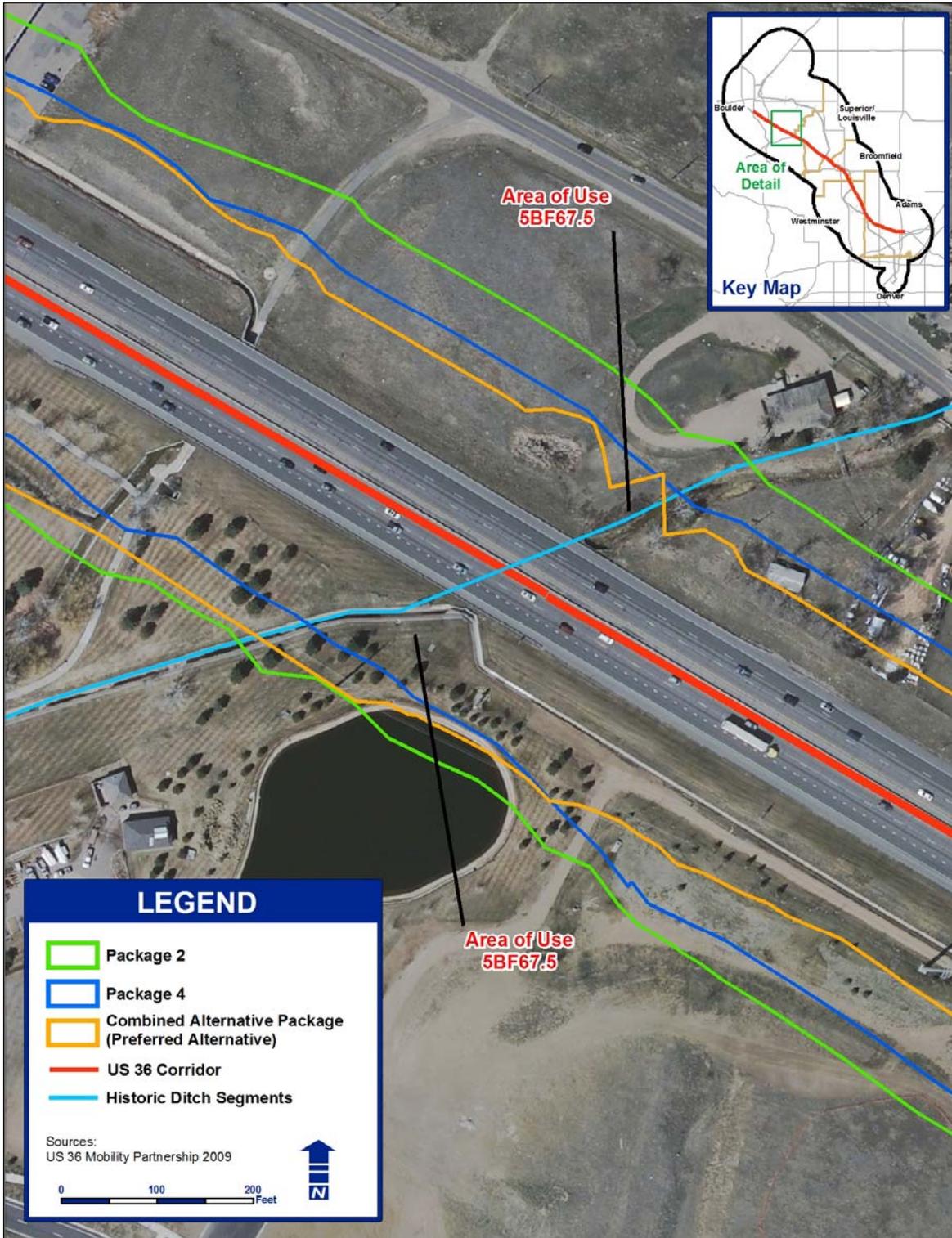
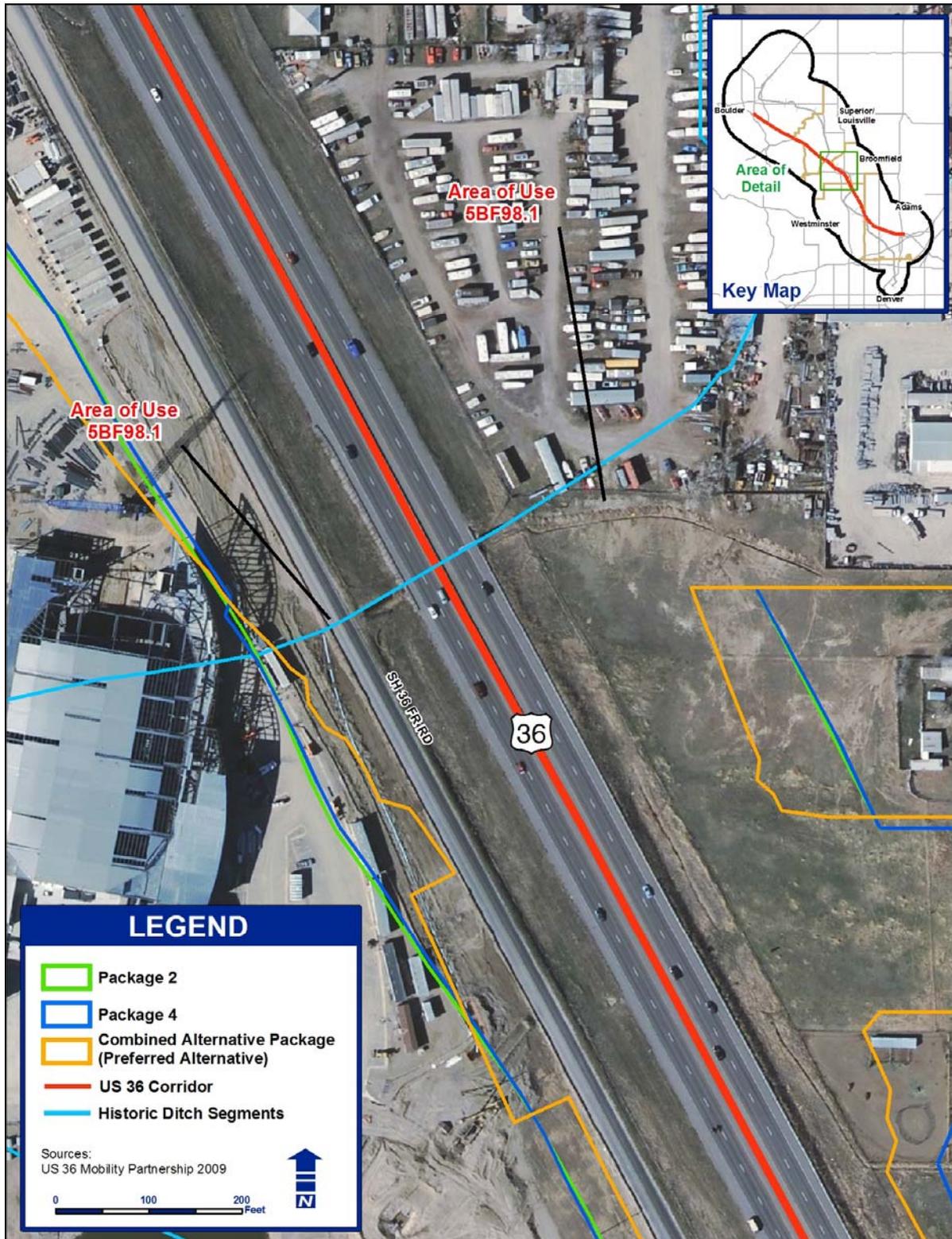
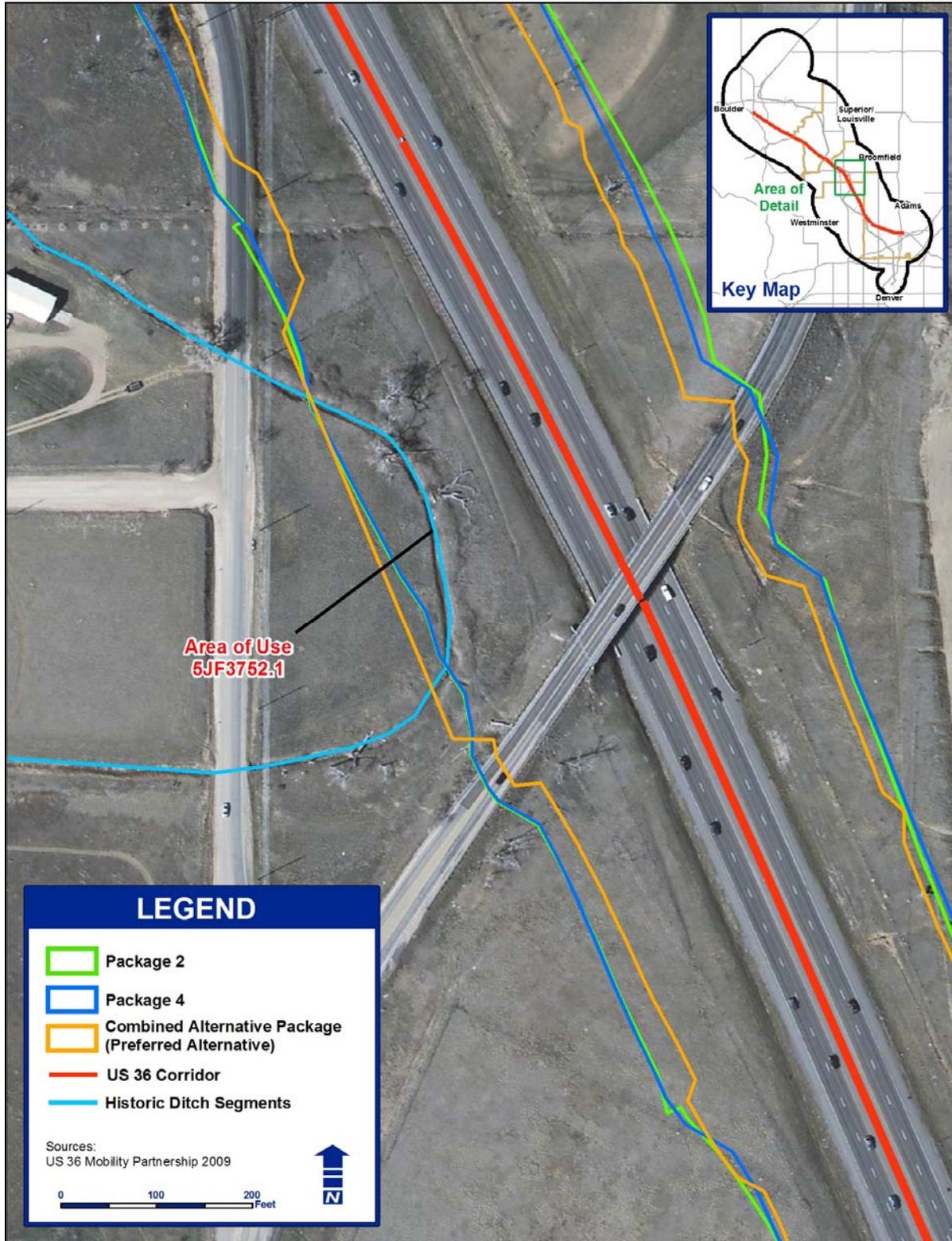


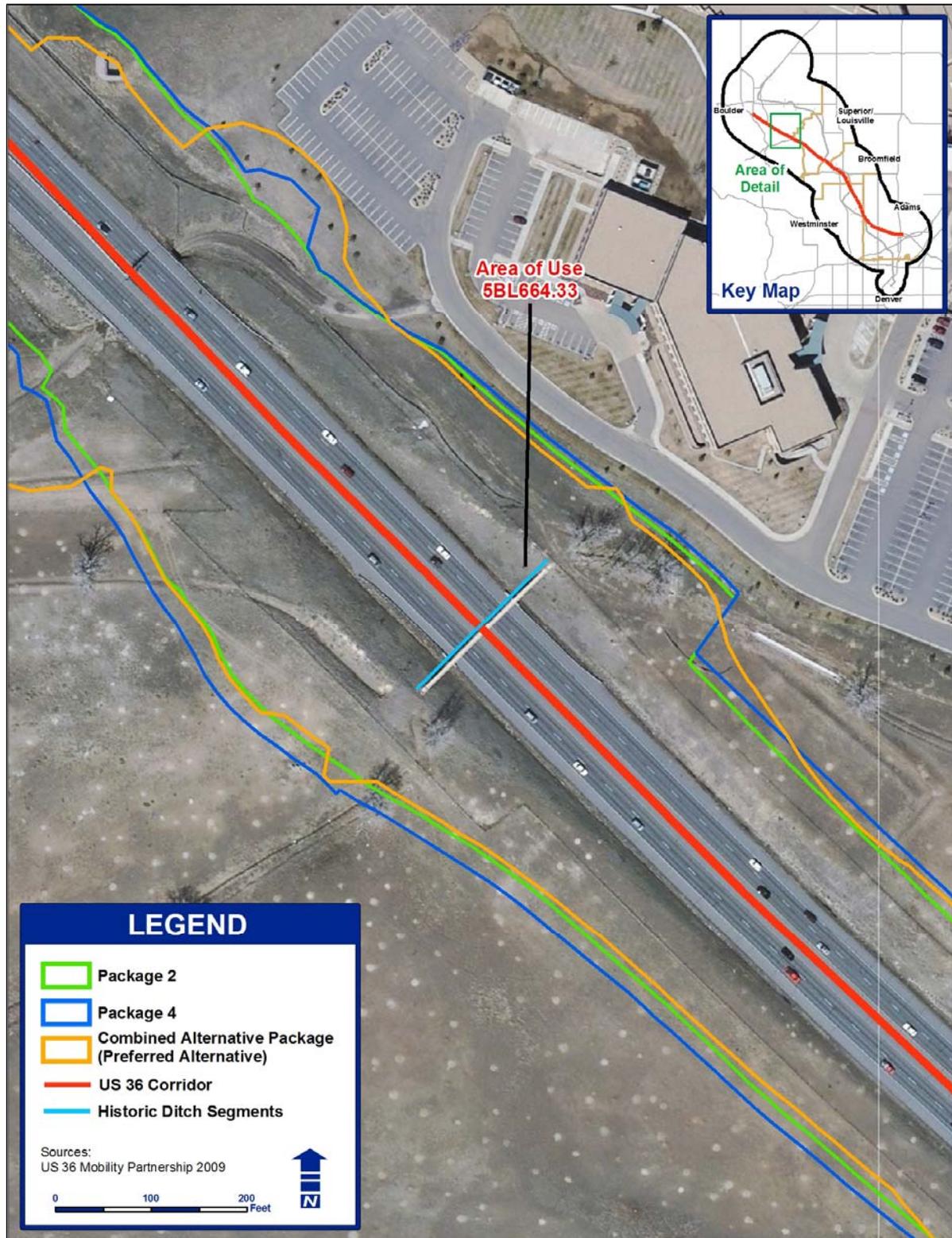
Figure 7.4-23: Uses of Equity Ditch  
(Map Identification Number 5BF98 for the Entire Resource,  
and 5BF98.1 for the US 36 Crossing)



**Figure 7.4-24: Uses of Equity Ditch  
(Map Identification Number 5JF3752 for the Entire Resource,  
and 5JF3752.1 for the US 36 Crossing)**



**Figure 7.4-25: Uses of Coal Creek Ditch**  
(Map Identification Number 5BL664 for the Entire Ditch, and 5BL664.33 for the US 36 Crossing)



**Figure 7.4-26: Uses of South Boulder Canyon Ditch**  
(Map Identification Number 5BL750 for the Entire Ditch, and 5BL750.51 for the US 36 Crossing)

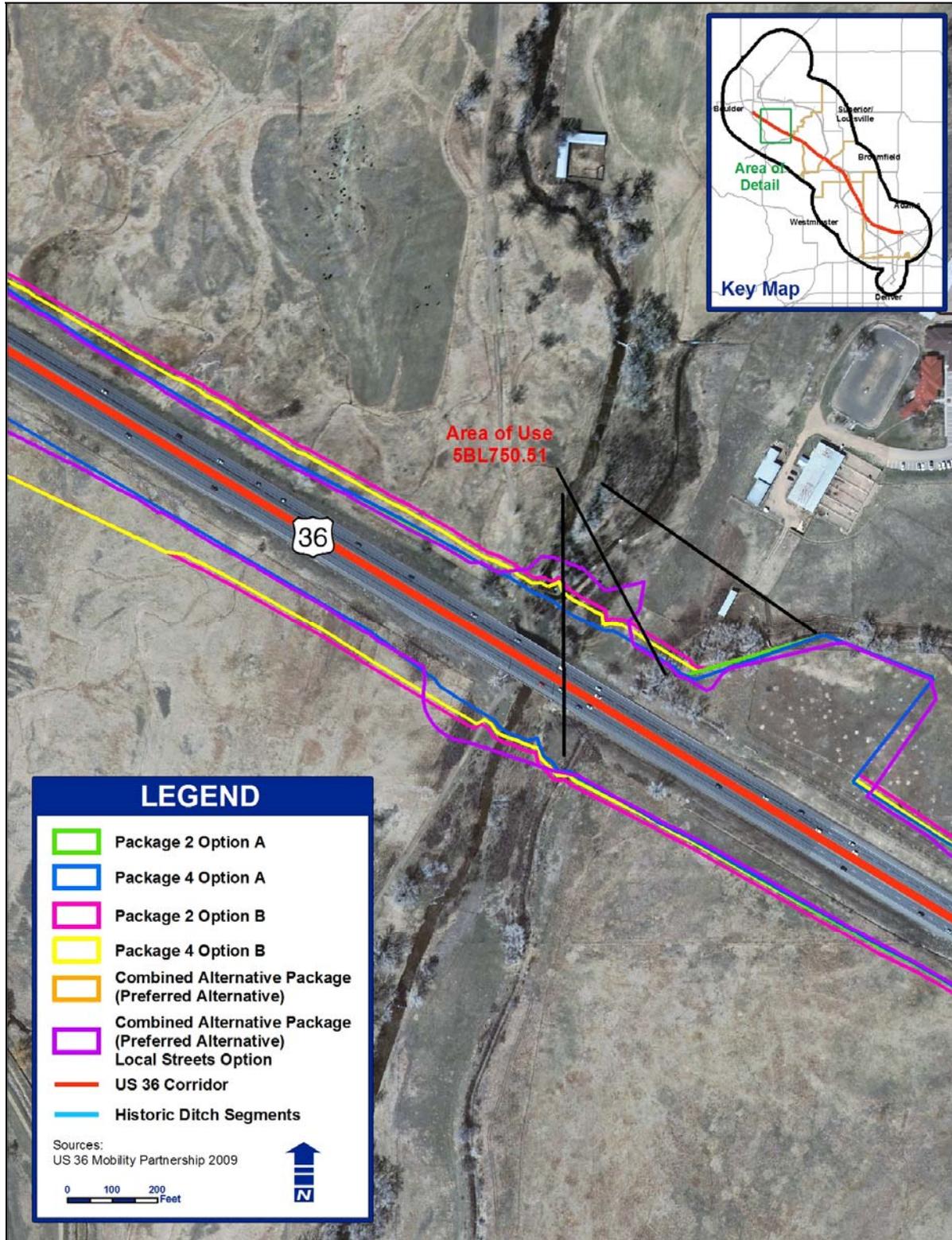


Figure 7.4-27: Uses of Goodhue Ditch (Map Identification Number 5BL2719 for the Entire Ditch, and 5BL2719.38 for the US 36 Crossing)

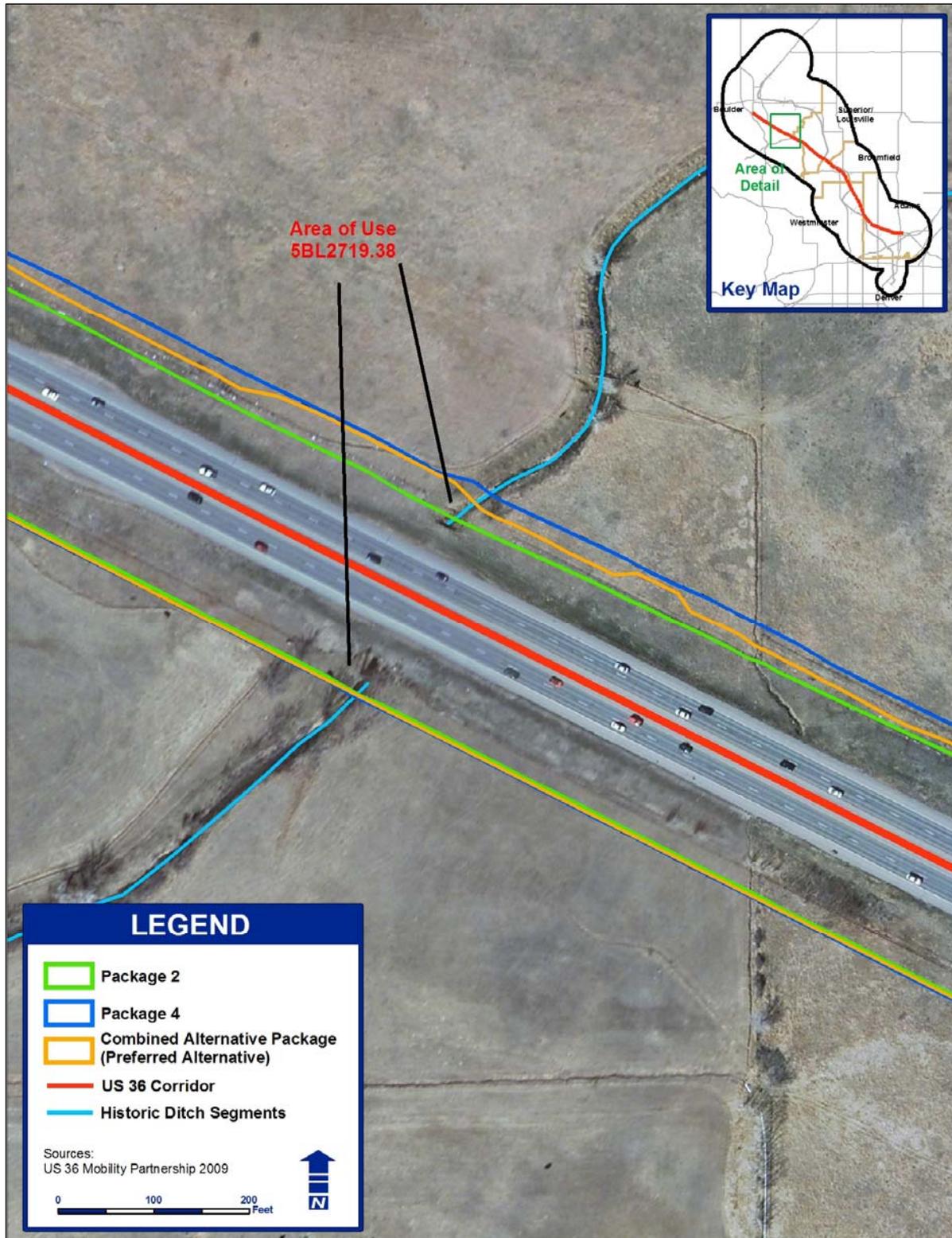
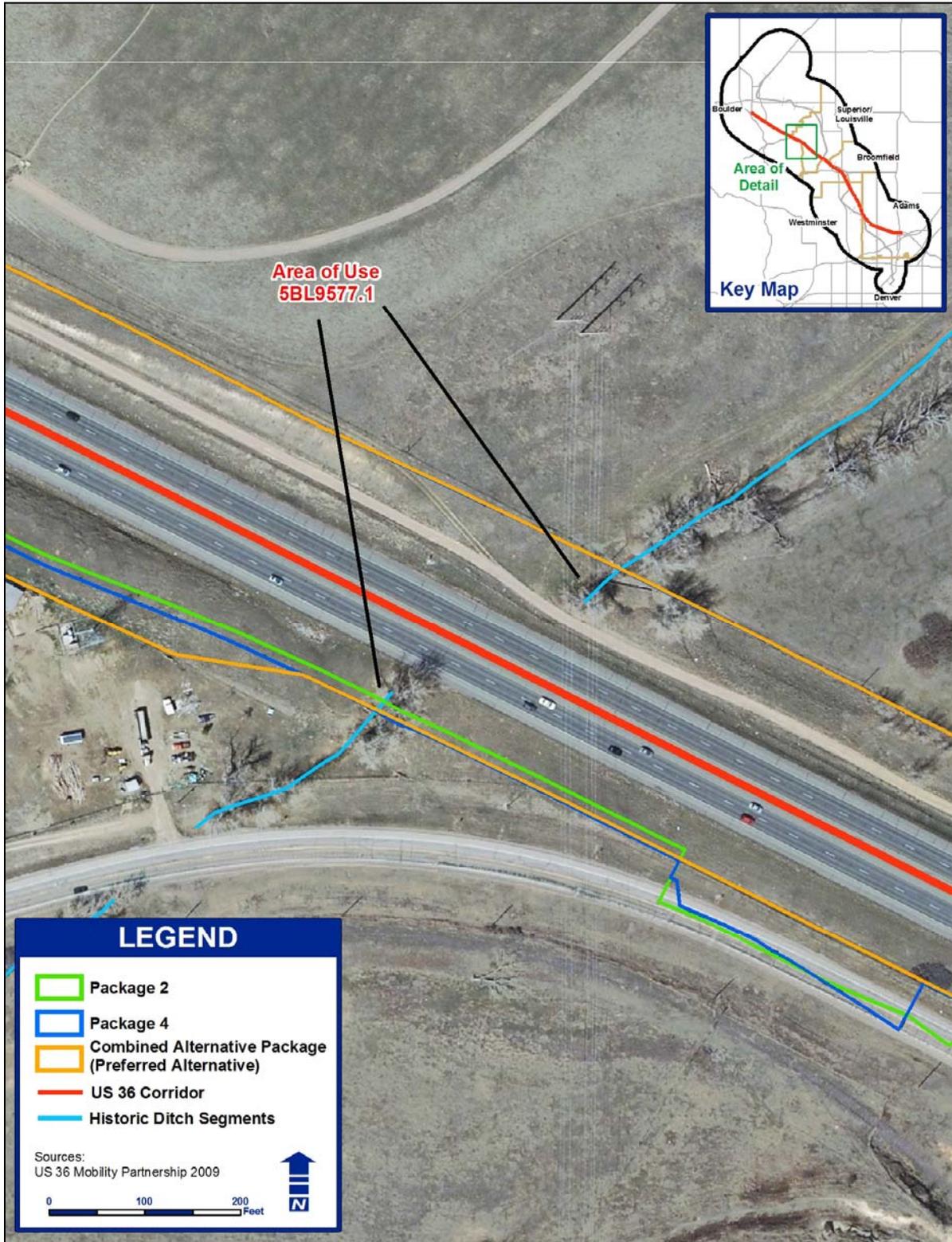
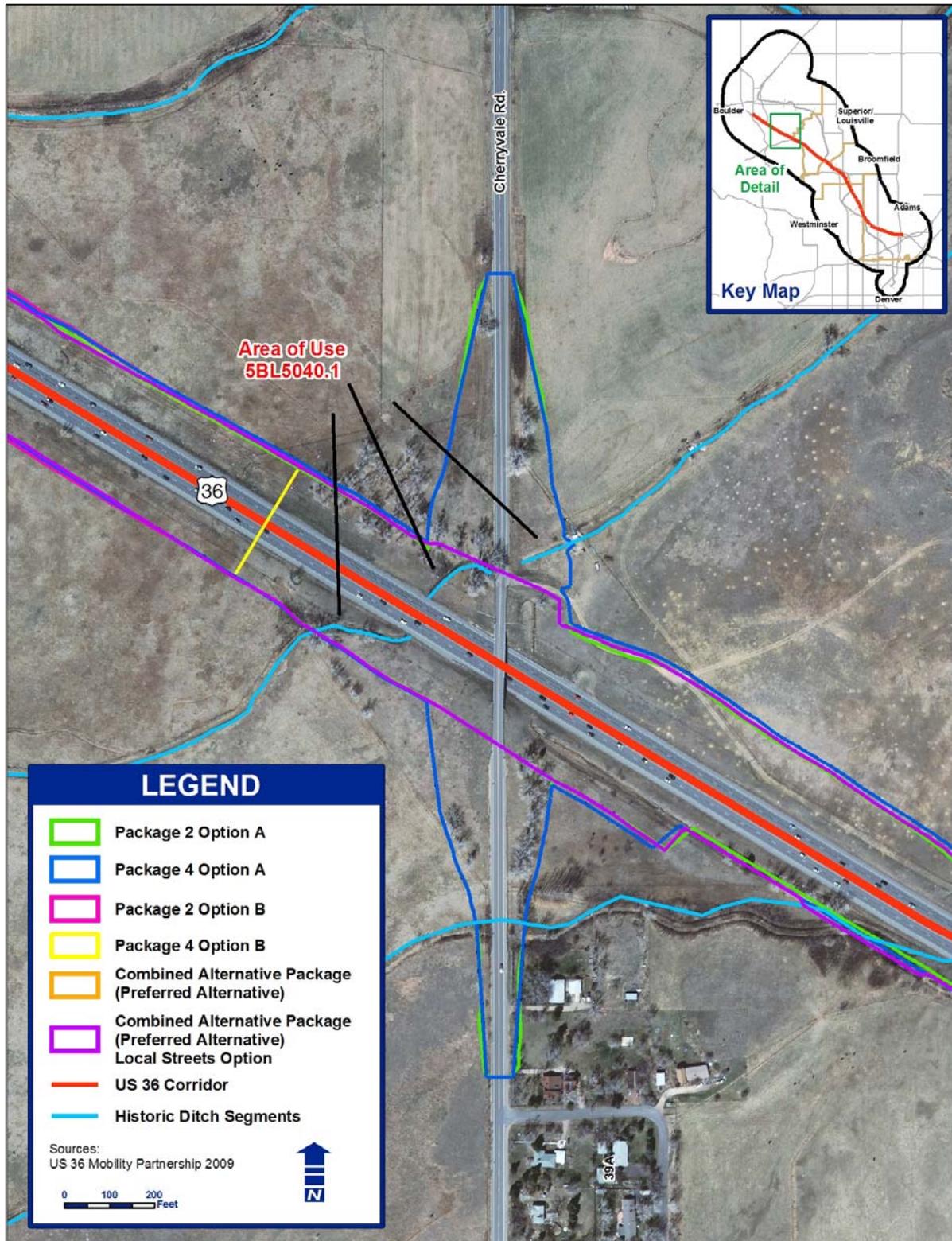


Figure 7.4-28: Uses of Louisville Reservoir Inlet (Map Identification Number 5BL9577 for the Entire Inlet, and 5BL9577.1 for the US 36 Crossing)



**Figure 7.4-29: Uses of Shearer Ditch**  
(Map Identification Number 5BL5040 for the Entire Ditch, and 5BL5040.1 for the US 36 Crossing)



**Figure 7.4-30: Uses of Davidson Ditch**  
(Map Identification Number 5BL453 for the Entire Ditch, and 5BL453.2 for the US 36 Crossing)

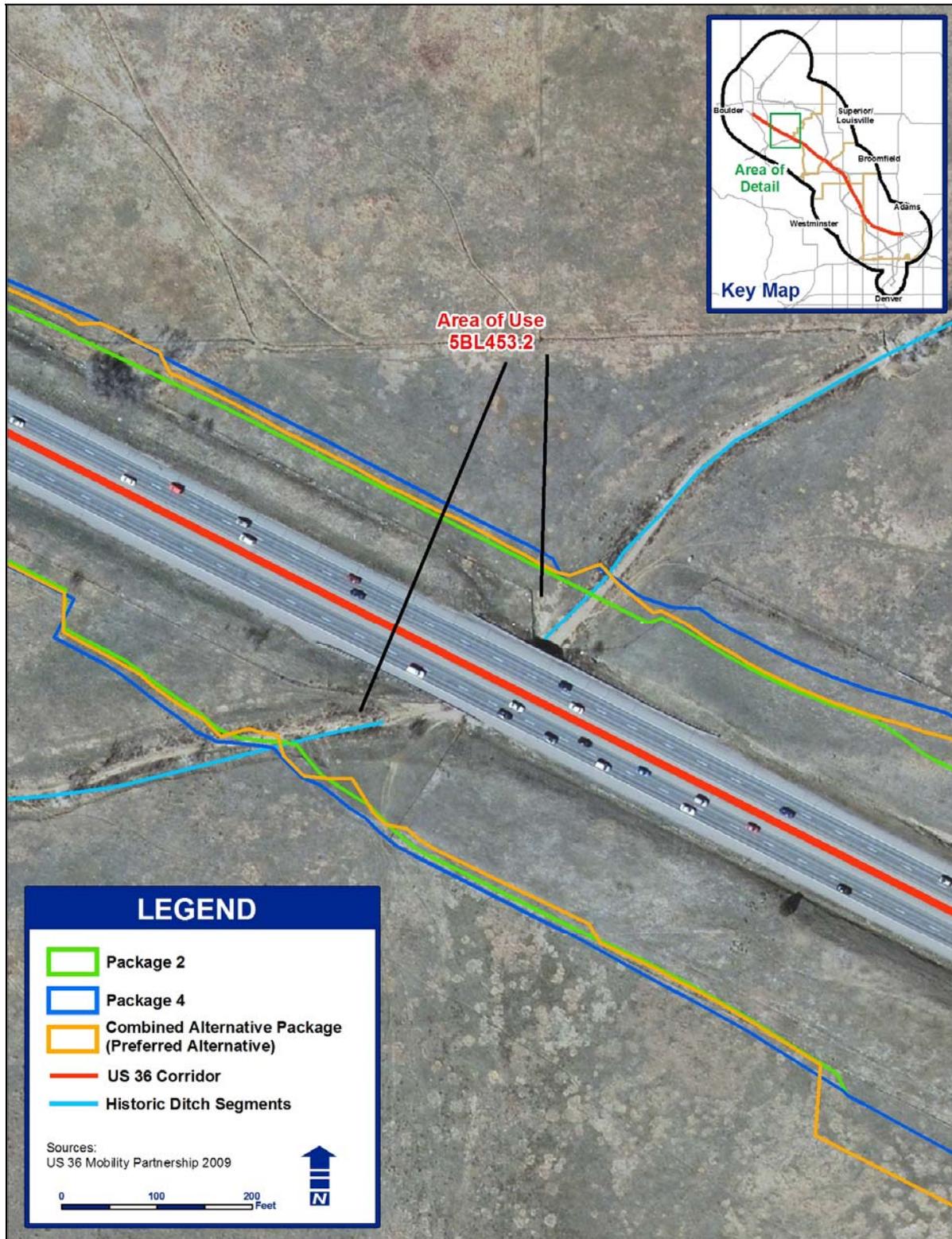


Figure 7.4-31: Uses of Marshallville Ditch  
(Map Identification Number 5BL5042 for the Entire Resource,  
and 5BL5042.1 for the US 36 Crossing)

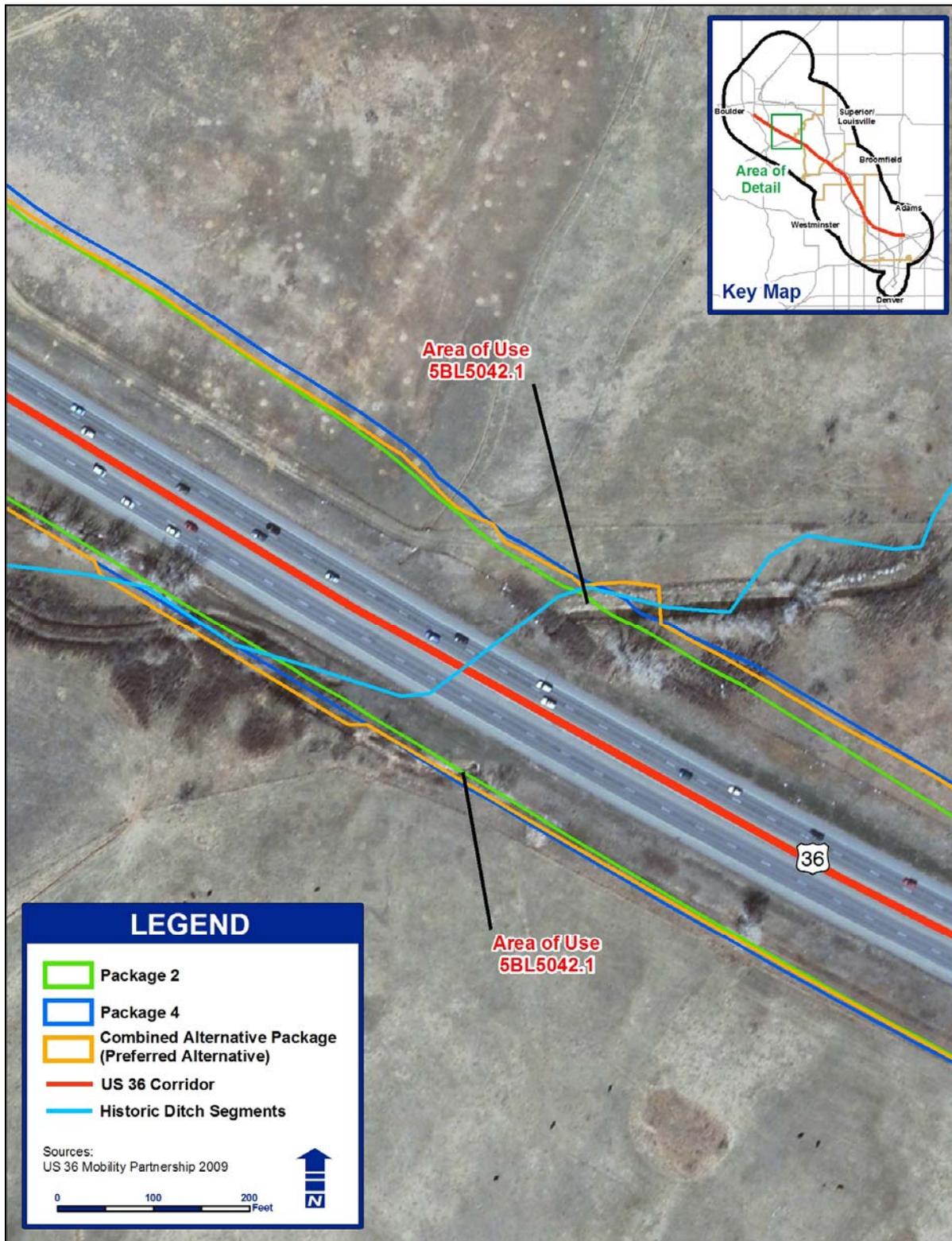


Figure 7.4-32: Uses of McGinn Ditch  
(Map Identification Number 5BL4165.1)

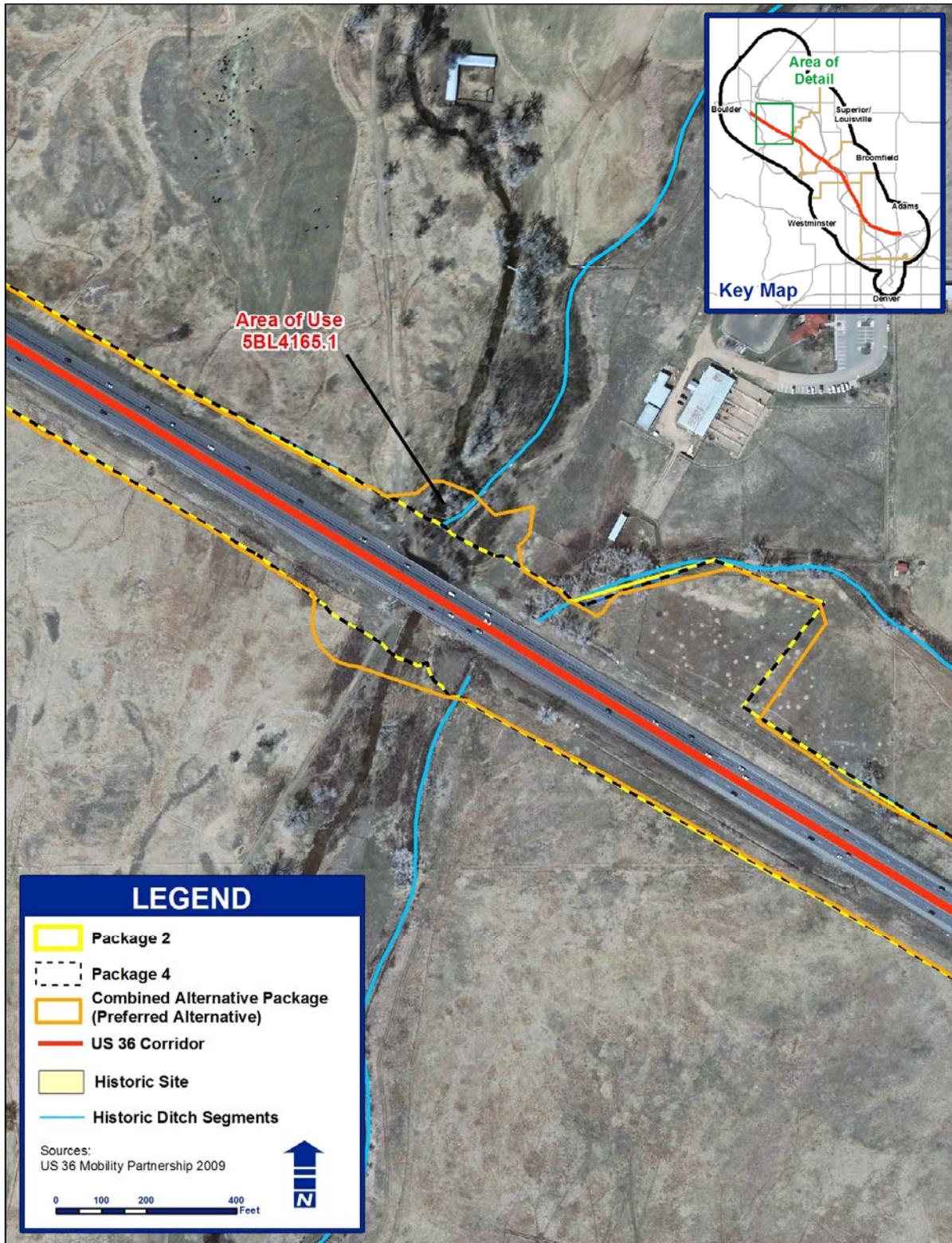


Figure 7.4-33: Uses of Viele Homestead  
(Map Identification Number 5BL5036)

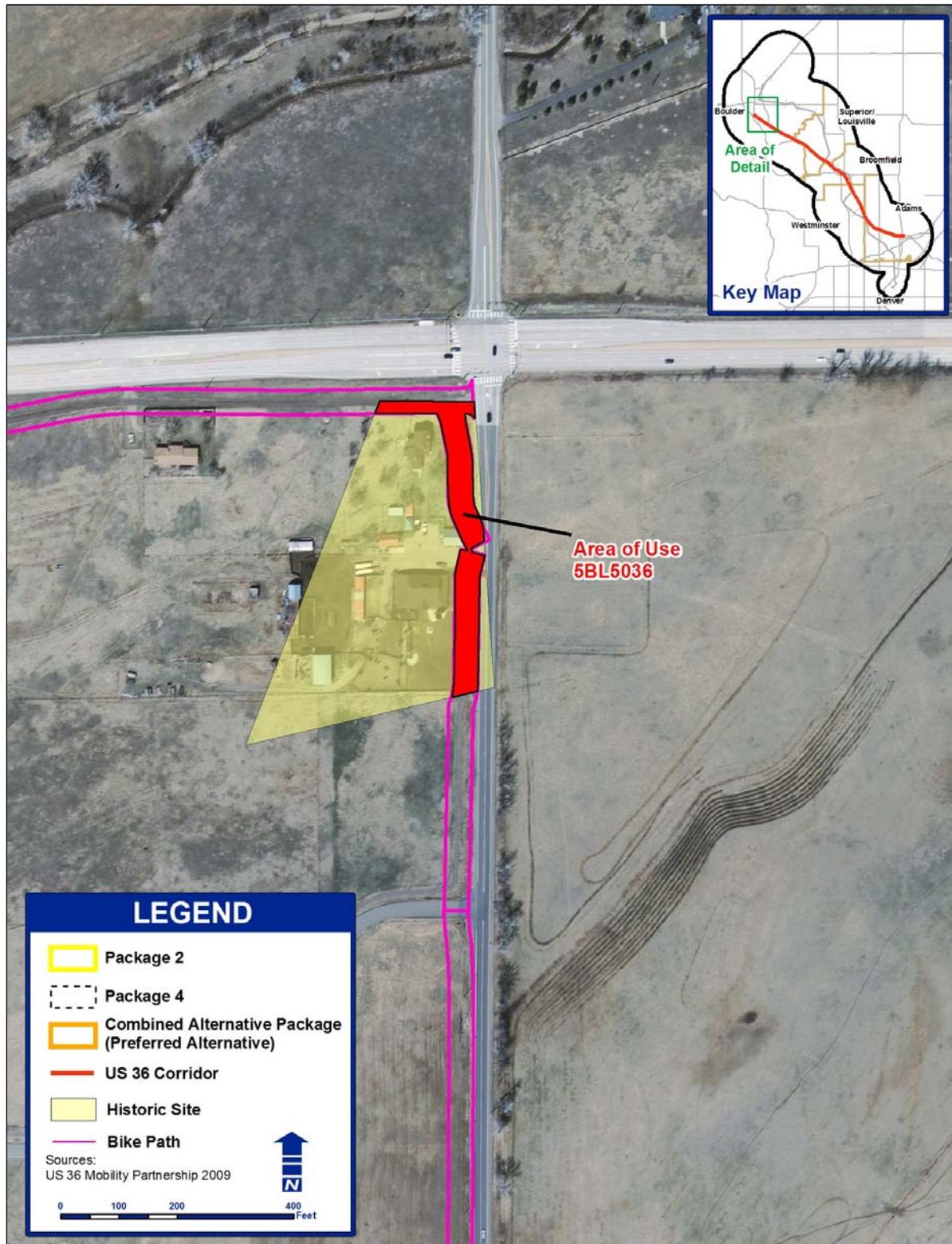


Figure 7.4-34: Uses of Anderson Extension Ditch  
(Map Identification Number 5BL3935.34)

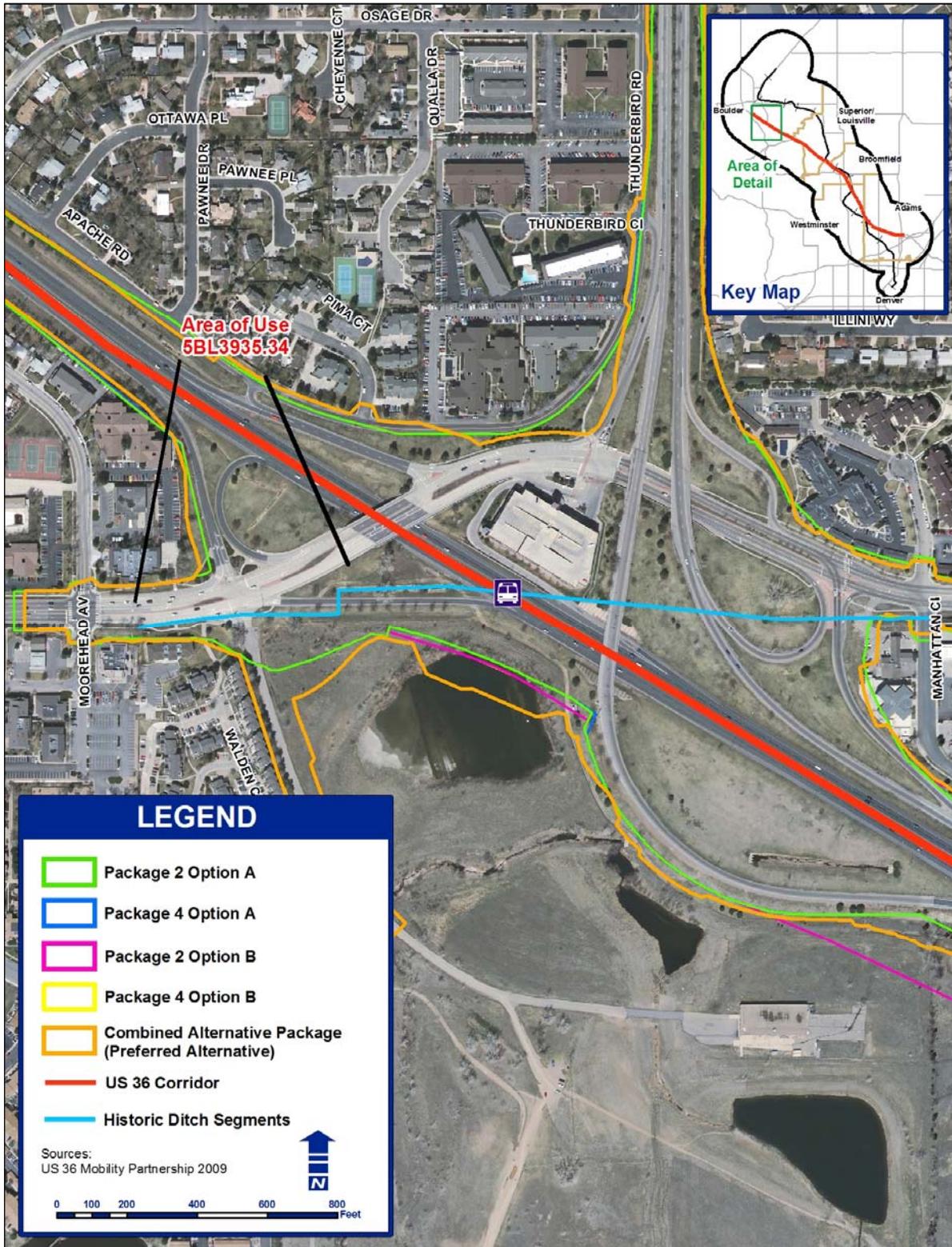


Figure 7.4-35: Uses of Anderson Extension Ditch  
 (Map Identification Number 5BL3935.35)



## **7.7 PHOTOGRAPHS**

Section 7.7, Photographs, contains all Chapter 7, Final Section 4(f) Evaluation, related photographs.



**Photograph 7.4-1: Commissioners Park  
(Map Identification Number 578)**



**Photograph 7.4-2: Westminster Hills Park  
(Map Identification Number 257)**



**Photograph 7.4-3: Oakwood Park  
(Map Identification Number 554)**



**Photograph 7.4-4: Rotary Park  
(Map Identification Number 123)**



**Photograph 7.4-5: Big Dry Creek Trail Crossing  
(Map Identification Number Trail Crossing 2)**



**Photograph 7.4-6: East Interlocken Trail Crossing  
(Map Identification Number Trail Crossing 16)**



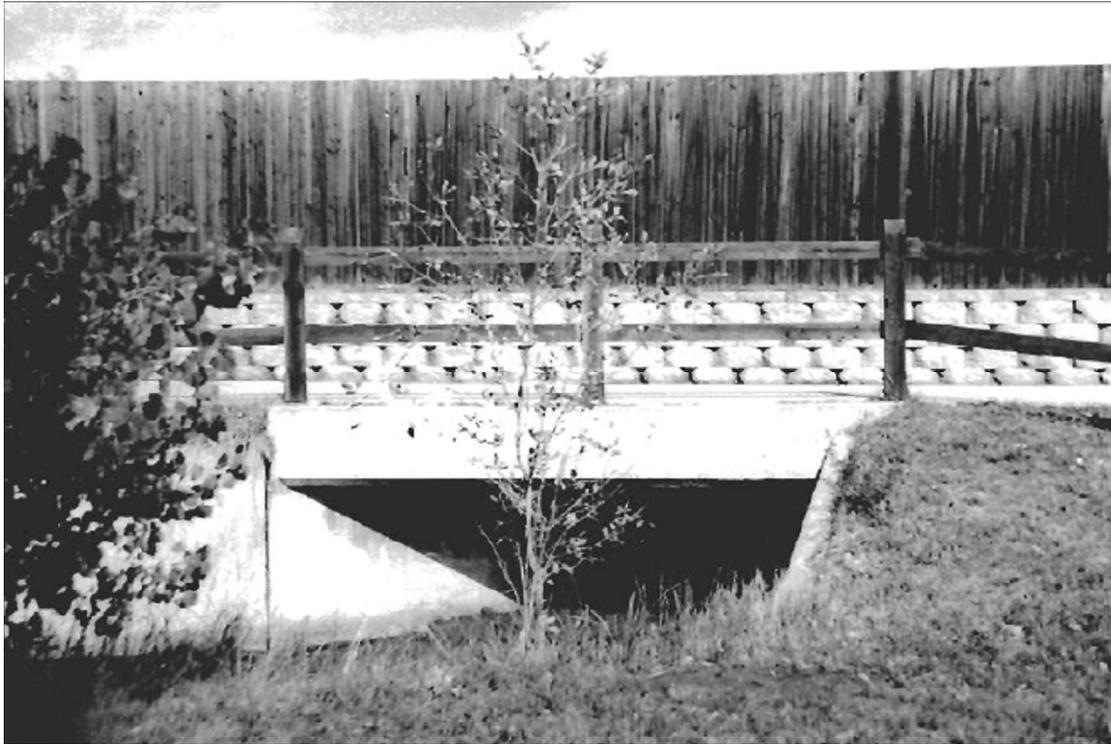
**Photograph 7.4-7: Coal Creek Trail Crossing  
(Map Identification Number Trail Crossing 5)**



**Photograph 7.4-8: South Boulder Creek Trail Crossing  
(Map Identification Number Trail Crossing 12)**



**Photograph 7.4-9: Allen Ditch  
(Map Identification Numbers 5AM1132 and 5JF1762)**



**Photograph 7.4-10: 8375 West 120<sup>th</sup> Avenue  
(Map Identification Number 5BF9)**



**Photograph 7.4-11: Dry Creek Valley Ditch  
(Map Identification Number 5BF7.2)**



**Photograph 7.4-12: US 36 Mileposts 39.26 to 41.67  
(Map Identification Number 5BL7529.3)**



**Photograph 7.4-13: Van Vleet Open Space  
(Map Identification Number 885, 886, and 887)**



**Photograph 7.4-14: East Interlocken Park  
(Map Identification Number 308)**



**Photograph 7.4-15: Frank Varra Park  
(Map Identification Number 380)**



**Photograph 7.4-16: Niver Canal  
(Map Identification Number 5JF3787.2)**



**Photograph 7.4-17: Farmers Highline Canal  
(Map Identification Number 5JF250.4)**



**Photograph 7.4-18: Residence  
(Map Identification Number 5BF109)**



**Photograph 7.4-19: Community Ditch Crossing  
(Map Identification Number 5BF67.5)**



**Photograph 7.4-20: Equity Ditch Crossing  
(Map Identification Number 5BF98.1)**



**Photograph 7.4-21: Coal Creek Ditch  
(Map Identification Number 5BL664.1)**



**Photograph 7.4-22: South Boulder Canyon Ditch  
(Map Identification Number 5BL750.51)**



**Photograph 7.4-23: Goodhue Ditch  
(Map Identification Number 5BL2719.38)**



**Photograph 7.4-24: Louisville Reservoir Inlet  
(Map Identification Number 5BL9577.1)**



**Photograph 7.4-25: Shearer Ditch  
(Map Identification Number 5BL5040.1)**



**Photograph 7.4-26: Davidson Ditch  
(Map Identification Number 5BL453.2)**



**Photograph 7.4-27: Marshallville Ditch Crossing  
(Map Identification Number 5BL5042.1)**



**Photograph 7.4-28: McGinn Ditch  
(Map Identification Number 5BL4165.1)**



**Photograph 7.4-29: Viele Homestead  
(Map Identification Number 5BL5036)**



**Photograph 7.4-30: Anderson Extension Ditch  
(Map Identification Number 5BL3935)**

