

SECTION 8

Biological Opinion



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Colorado Field Office
755 Parfet Street, Suite 361
Lakewood, Colorado 80215

IN REPLY REFER TO:

ES/LK-6-CO-03-F-021
Mail Stop 65412

AUG 4 2003

William C. Jones, Division Administrator
Colorado Federal Aid Division
U.S. Department of Transportation
Federal Highway Administration
555 Zang Street, Room 250
Lakewood, Colorado 80228

Dear Mr. Jones:

In accordance with section 7 of the Endangered Species Act (Act) as amended (16 U.S.C. 1531 et seq.) and the Interagency Cooperative Regulations (50 CFR 402), this is the U.S. Fish and Wildlife Service's (Service) final biological opinion on impacts to federally-listed endangered and threatened species associated with Federal Highway Administration (FHWA) funding of three projects in El Paso County, Colorado. The three project areas are Interstate 25 (I-25) north of Colorado Springs, Powers Boulevard between State Highway 83 (SH83) and I-25, and the Shoup Road/SH83 intersection reconstruction.

This biological opinion is based on the proposal as described in the February 12, 2003, report by Ensign Technical Services, Inc. (Ensign) entitled "Programmatic Biological Assessment: Interstate 25 Corridor, Powers Boulevard North, and Shoup Road Projects in El Paso County, Colorado" (Biological Assessment). The Service received the Biological Assessment on March 10, 2003. The Service concurs with the FHWA's determination that the proposed projects are likely to adversely affect the threatened Preble's meadow jumping mouse, *Zapus hudsonius preblei* (Preble's).

CONFERENCE/CONSULTATION HISTORY

On May 13, 1998, Preble's was listed as threatened under the Act. Full protection for Preble's became effective on June 12, 1998. Several drainages in the project areas containing riparian and wetland habitat suitable to Preble's will be affected by the three proposed projects. Trapping surveys for Preble's have been conducted on all but two of these drainages, and presence confirmed. Drainages affected by the proposed projects are Pine Creek, Kettle Creek, Black Squirrel Creek South, Black Squirrel Creek North, Monument Branch, Smith Creek, Black Forest Tributary (not trapped), Jackson Creek, and Teachout Creek (not trapped).

On July 17, 2002, critical habitat for Preble's was proposed. In El Paso County, critical habitat was proposed on Teachout Creek, Jackson Creek, Black Forest Tributary, Smith Creek, Monument Branch, and Black Squirrel Creek. On June 23, 2003, critical habitat was finalized and did not include any of the drainages proposed in El Paso County.

A chronology of the consultation follows:

June 29, 2000, August 8, 2000, November 15, 2000. Meetings of Panel of Preble's experts convened by FHWA/CDOT to discuss impacts due to reconstruction of I-25 and related conservation measures.

May 14, 2001. Submittal of the Panel report entitled, "Preble's Meadow Jumping Mouse Issues Within the I-25 Project Area in Northern El Paso County, Colorado."

February 27, 2002. Meeting to discuss the I-25 Environmental Assessment and taking a programmatic approach to the section 7 consultation. CDOT, FHWA, Service, Ensight, and Wilson & Company (Wilson) representatives were present.

August 2, 2002. Field meeting to discuss and review habitat areas on the U.S. Air Force Academy (USAFA) property and other I-25 project areas with Ensight, CDOT environmental and engineering staff, design engineers from Wilson and PBS&J, the Service, and the USAFA in attendance.

November 13, 2002. Meeting to further discuss programmatic approach to the section 7 consultation. FHWA/CDOT proposed to add the Shoup Road/SH83 intersection reconstruction and the Powers Boulevard North construction to the process. Conservation strategies were discussed. Ensight, CDOT environmental and engineering staff, design engineers from Wilson and PBS&J, the Service, and the USAFA representatives attended.

December 5, 2002, January 13, 2003. Met to continue discussion of conservation strategies, success criteria, and project and consultation schedules. Made determination that programmatic approach would include an "umbrella" Biological Assessment describing the worst-case scenario of impacts due to all three projects and the conservation strategies, an "umbrella" biological opinion, and site-specific consultation documents on each project as their construction details are refined. Ensight, CDOT environmental and engineering staff, design engineers from Wilson and PBS&J, the Service, and the USAFA representatives attended.

January 21, 2003. Field meeting between Ensight and the Service to visit Shoup Road and Powers North sites containing potential Preble's habitat that will be impacted by the project.

March 10, 2003. Final Programmatic Biological Assessment received by the Service.

BIOLOGICAL OPINION

Description of the Proposed Action

Three projects are addressed in this programmatic consultation: 29 miles of I-25 reconstruction in northern El Paso County; reconstruction of the Shoup Road/SH83 intersection; and extension of Powers Boulevard from SH83 to its northern terminus at I-25 (Figure 1).

I-25 Reconstruction

The proposed action for improving I-25 capacity will take place in El Paso County along a 29-mile stretch of I-25 between the SH16 and Monument interchanges (Figure 1). Construction impacts will fall into two general categories: roadway widening and interchange reconstruction.

Some safety improvement projects on I-25 have already begun including the Circle Drive/Lake Avenue interchange, the Nevada Avenue/Tejon Street interchange, Bijou Street to Fillmore Street (including the Uintah Street interchange and the Fontanero Street interchange), the Woodmen Road interchange, and the North Academy Boulevard interchange. All of these projects, with the exception of the Monument and North Academy interchanges, are located outside of the area occupied by the mouse. Some of these drainages were formerly occupied, but

the Service has issued block clearances based on numerous negative trapping surveys. For the reconstruction of the Monument interchange, which is located within mouse habitat, a separate Biological Assessment was prepared by FHWA and CDOT, and a biological opinion was issued in August 2000. The North Academy interchange was under construction at the time Preble's was listed (May 1998), and FHWA/CDOT conducted a section 7 conference with the Service for that project.

It is anticipated that the I-25 project will be constructed in three phases. Phase I of the project will add one lane in each direction, resulting in three through-lanes per direction between South Circle Drive and Briargate Parkway. Phase II of the project will add one lane in each direction between Briargate Parkway and the Monument Interchange. Phase III, the final configuration of I-25 through northern El Paso County, would add one high occupancy vehicle (HOV) lane in each direction between Briargate Parkway and the Martin Luther King bypass, and one general purpose traffic lane in each direction between the Circle/Lake interchange and South Academy Boulevard. All lanes south of the Interquest Parkway interchange will be added in the median between the existing northbound and southbound lanes of the interstate. For lanes north of Interquest Parkway, the median is either not wide enough to accommodate the new lanes, or the median has Preble's habitat. Lanes in this area will be added to the outside of the existing pavement.

Proposed construction will affect a 20-foot (6.1-meter) wide area within the median and 20 feet (6.1 meters) in each direction outside the existing roadway. The average right-of-way (ROW) width is 300 feet (91.5 meters), which includes all paved lanes and shoulders. Most of the roadway widening will take place within the ROW. Much of this ROW area is either non-habitat (because of paving or mowing), or moderate to poor-quality habitat.

The proposed action also includes six major interchange reconstruction projects:

1. Baptist Road interchange, Exit 158;
2. Northgate/Powers interchange, Exit 156;
3. North Nevada Avenue/Rockrimmon interchange, Exit 148;
4. Fillmore Avenue interchange, Exit 145;
5. Bijou Street interchange, Exit 142; and
6. Cimarron (US Highway 24) interchange, Exit 141.

Of the interchanges listed above, Baptist and Northgate/Powers are located in areas with known Preble's habitat; the Nevada/Rockrimmon interchange is located at the northern edge of the Colorado Springs Preble's block clearance zone; and the Fillmore, Bijou and Cimarron interchanges are located in the center of the Colorado Springs Preble's block clearance zone.

The Baptist, Northgate/Powers and Nevada/Rockrimmon interchanges at areas of Preble's habitat are described below.

The Baptist Road interchange, at I-25's Exit 158, exists as an unsignalized diamond interchange where a bridge carries a two-lane cross-street over the four-lane freeway. FHWA/CDOT are proposing to replace the existing facility with a diamond interchange configuration. The reconstructed interchange will have an expanded bridge to carry more lanes of Baptist Road traffic over more lanes of I-25 traffic. Local business access and frontage roads will also be redesigned. The existing frontage road in the southeast quadrant of the interchange crosses Jackson Creek and adjacent Preble's meadow jumping mouse habitat. CDOT has purchased 65 acres here for conservation purposes. Under the proposed action, the existing frontage road will be removed and located on the east boundary of the conservation area.

The existing Northgate interchange, at I-25's Exit 156, provides access for Northgate Road, the main visitor entrance to the USAFA. South of the interchange, free-flow ramps are planned for a system-to-system interchange connecting I-25 and the planned Powers Boulevard. The entire interchange complex, including the I-25 mainline, is situated on USAFA property. CDOT

coordinated with USAFA to develop a proposed action. Preble's habitat is found along Smith Creek (immediately south of the Northgate interchange) and also in the Monument Branch tributaries at the south end of the proposed Powers Boulevard ramps. Replacement of substandard loop ramps at Northgate Road with a diamond interchange configuration may allow for restoration of upland habitat for the mouse. Minimization of adverse impacts to Preble's habitat was an important factor in the concept design process.

Under the proposed action, substandard ramps at I-25's Exits 147 (Rockrimmon Boulevard), 148A (North Nevada Avenue), and 148B (Corporate Center Drive) will be replaced with a consolidated split-diamond interchange configuration, improving capacity and safety for all roadways involved. Monument Creek flows southward under the I-25 bridges here. Due to the complexities of the local roadway system here, ten interchange concepts were developed for consideration. The concept design process attempted to minimize impacts to wetlands, riparian areas and floodplains. These efforts will prove beneficial if Preble's is able to recolonize this northernmost reach of the Colorado Springs block clearance zone.

Storm drainage improvements north of the North Academy Boulevard interchange, which is primarily in a rural setting, will consist of roadside and median grass-lined swales and buffer strips, and cross-culverts and bridges. South of the North Academy Boulevard interchange the interstate passes through a highly urbanized area of Colorado Springs. Storm drainage in this area will predominantly consist of storm sewer systems, pipes, bridges and other structures and devices common to urban storm drainage. Temporary erosion and sedimentation control improvements for construction activities will be included in all projects. Permanent detention/stormwater quality ponds will be constructed in interchange infield and other open areas where feasible. Other permanent stormwater quality Best Management Practices (BMPs) will be constructed for all drainage discharge locations, as practical.

Descriptions of reconstruction on I-25 at specific areas of Preble's habitat follows.

Pine Creek

Between North Academy and Briargate, the new east edge of pavement will generally match the existing edge of pavement along the southerly half of this reach of highway. The new pavement edge will be about 5 feet to the west of the existing edge of pavement along the northerly half of this reach. Construction will be done in two stages. First, all traffic will be shifted to one side of the existing highway, either northbound or southbound, while the other side is being fully constructed. When construction is finished on the first side, all traffic will be shifted to that side and the construction of the other side will be completed. It is possible this staged construction will be completed as two separate construction projects.

Kettle Creek

Highway reconstruction in the Kettle Creek area includes one additional lane in each direction with shoulders constructed within the existing open median and minor shoulder widening on the east side. The highway embankment side slopes will also be reconstructed for safety. Construction will be completed in two main stages, as described for Pine Creek. A new culvert to connect habitat on opposite sides of I-25 may be installed, depending on the outcome of feasibility studies and discussions with the USAFA, who owns part of the property.

Black Squirrel Creek South

Black Squirrel Creek South crosses I-25 approximately 3,850 feet north of Interquest Parkway through a divided median. The existing crossing is a separate 3-span bridge for both the northbound and southbound roadways, each having a total span length of about 105 feet and a clearance of 15 feet. The existing median opening is approximately 24 feet.

Highway reconstruction in this reach includes one additional lane in each direction with shoulders constructed on the outside of both the northbound and southbound roadways. The existing open median will remain. The highway embankment side slopes will also be improved for safety. Separate new bridges will be constructed for both the northbound and southbound roadways. The new bridges will likely be multi-span that have a total span length of about 120 feet and will maintain the existing clearance of about 15 feet. The bridges will be about 63 feet wide with an approximate 24-foot-wide median opening. Construction will be done in two main stages, as described for Pine and Kettle Creeks.

Black Squirrel Creek North

I-25 will be widened from two lanes to three lanes in each direction, with construction to the outside of the existing pavement (to protect habitat in the median). The new construction will occur at the existing I-25 grade (elevation) and location. Additional widening will be required for the Powers Boulevard northbound to southbound I-25 ramp connection. This ramp connection requires an acceleration lane that will add 12 to 24 feet of widening to the southbound I-25 lanes. An additional 12 feet of widening on the northbound I-25 lanes for the ramp from I-25 northbound to Powers Boulevard southbound is also required.

In addition to pavement reconstruction and widening, hydraulic structures will be replaced or extended. Some of these structures are located within mouse habitat areas. There are two existing 12 foot by 10 foot concrete box culverts (CBCs) just north of Black Squirrel Creek. These structures will require significant extensions and some rehabilitation work on both sides of the structure.

Monument Branch

The limits of work in this area are from south of Monument Branch extending north to south of Smith Creek. I-25 will be widened from two lanes to three lanes in each direction. In addition to the new lanes, there will be additional lanes required to accommodate acceleration and deceleration lanes for the entrance and exit ramps to I-25 from the Powers Boulevard interchange.

Powers Boulevard is a major north-south highway that runs along the eastern edge of Colorado Springs, Colorado. Powers Boulevard is planned to intersect I-25 approximately one-half mile south of the existing Northgate interchange. Powers Boulevard will connect to I-25 through a series of direct connecting ramps. In addition, there will be direct access from Powers Boulevard to Northgate Boulevard. The interchange will be constructed below existing I-25 grade, resulting in cuts into the existing terrain.

New ramps will be constructed for the development of the interchange. The area on the east side of the northbound I-25 pavement will be impacted due to I-25 pavement widening and reconstruction, and construction of the new northbound I-25 to southbound Powers Boulevard ramp. Pavement widening of I-25 will be to the outside of the existing northbound and southbound I-25 lanes to reduce impacts to median habitat.

At northbound I-25 at Monument Branch there are two existing 10 foot by 12 foot CBCs. These structures will be extended on the east end to accommodate the pavement widening in this area.

There are two existing 10 foot by 12 foot CBCs at southbound I-25 at Monument Branch. These structures will be extended on the west end to accommodate pavement widening in this area. There will also be rehabilitation work on the existing wing walls on the east side of the structures.

There is an existing 6 foot by 7 foot CBC at northbound I-25 approximately 1,050 feet north of Monument Branch. This structure will be extended on the east side and will affect habitat.

Smith Creek

Smith Creek is located approximately 900 feet south of Northgate Boulevard. The limits of work in this area include the widening and reconstruction of I-25 and reconstruction and reconfiguration of the existing Northgate Boulevard and I-25 interchange to accommodate the Powers Boulevard connection. Additionally, southbound I-25 will be widened to the outside in this area. The I-25 median area will be impacted on the west side in order to construct the fill slopes for southbound I-25.

The area to the east of the I-25 northbound lanes will also be impacted. These impacts are a result of the new interchange ramps for Northgate Boulevard and Powers Boulevard. The new ramp from northbound Powers Boulevard to the Northgate Boulevard ramp will bisect the existing loop ramp for Northgate Boulevard to northbound I-25. There will also be a new ramp from northbound Powers Boulevard to northbound I-25 that will parallel northbound I-25 and connect to I-25 north of Northgate Boulevard. Finally, there will be a new ramp from northbound-I-25 to Northgate Boulevard.

There are two large CBCs located at Smith Creek under the existing I-25 lanes. These structures will be extended to accommodate the roadway widening in these areas. In addition to the existing CBCs, new CBCs will be constructed to accommodate the stream flows under the new interchange ramps.

Black Forest Tributary

The limits of work in this area are from north of Northgate Boulevard extending north to Black Forest Tributary.

I-25 will be widened from two to three lanes in both directions. The widening of I-25 will occur to the outside of the existing pavement and the existing pavement will be reconstructed (there is no room to widen to the inside). The new construction will occur at the existing I-25 grade (elevation) and location. Additional widening will be required for the Northgate Boulevard ramps to I-25.

There are two existing 10 foot x 10 foot CBCs at Black Forest Tributary. These structures will require significant extensions on both sides.

Baptist Road and Jackson Creek

The limits of work in this area are from north of the Black Forest Tributary to Baptist Road.

I-25 will be widened and reconstructed from two lanes to three lanes in each direction including improved shoulders. The widening will be to the outside of the existing lanes in this area (there is no room to widen to the inside). Baptist Road will be reconstructed to six lanes with raised median and curb, gutter, and sidewalk beyond the roadway edges. The Baptist Road / I-25 interchange will be reconstructed with new ramps. There is an existing two-lane frontage road on the east side of I-25, which will be removed. A new frontage road will be constructed that will intersect Baptist Road at Jackson Creek Parkway. The new frontage road will extend south and connect with the existing frontage road, south of Jackson Creek.

The Jackson Creek floodplain currently crosses both Baptist Road and I-25. The crossing structure at I-25 is a 29 by 18 foot CBC with a natural bottom. This structure will be extended on both sides to accommodate roadway widening in this location. Two 36-inch corrugated metal pipes cross under the existing frontage road to carry water to this structure. There is evidence that the flow from Jackson Creek is currently overtopping the frontage road during significant rainfall events. The frontage road will be removed in this location. There will be channel improvements made to Jackson Creek upstream of the 29 foot by 18 foot CBC. These

improvements will allow for improved habitat conditions and will facilitate wildlife crossing of I-25 in this location.

At the Baptist Road crossing, the roadway will be widened and a new hydraulic structure placed under the road, affecting habitat. FHWA/CDOT are considering a drainage detention structure on the upstream side (north) of Baptist Road to help control the significant erosion problem that has resulted from private development and construction up-gradient of the CDOT conservation area.

Teachout Creek

Teachout Creek crosses I-25 about 5,900 feet north of Baptist Road. The existing crossing is a double 10-foot wide by 10-foot high concrete box culvert that passes under the northbound and southbound roadways and the open median, and has a total length of about 125 feet.

Highway reconstruction in this reach includes additional lanes and shoulders constructed on both the east and west sides, and some minor shoulder widening in the existing median (non-habitat area). The open median will remain. The highway embankment side slopes will also be improved for safety. The existing culvert will be extended about 35 feet to the west and about 40 feet to the east, for a total completed length of about 200 feet.

Construction will be done in two main stages as described before.

North Powers Boulevard

Powers Boulevard has been constructed between Woodmen Road and Research Parkway. Construction of Powers between Research and SH83 is currently underway. Powers Boulevard will ultimately be extended from SH83 north to I-25. The configuration of the new roadway ultimately will be a freeway with grade-separated interchanges. New sections of roadway will be initially constructed as a four-lane expressway with at-grade intersections controlled by stop signs or traffic signals. In the ultimate configuration, interchanges are planned at eight major crossroads. A minimum 210-foot ROW width is required. Where interchanges would be built (which require more land than an at-grade intersection), a ROW "footprint" area was determined that is large enough to contain the entire future interchange.

Powers Boulevard will cross Black Squirrel Creek approximately 0.30 miles north of the proposed interchange with SH83 (Figure 2). The crossing will allow for construction access from both sides of the creek to minimize channel disturbance.

The design includes a multiple bridge structure over Black Squirrel Creek. A 3-span girder bridge design will probably be required and it is estimated that bridge clearance will range from 20 to 70 feet above the stream. Bridge abutments were placed to limit the impacts to habitat. The placement also reduces the height of the fill sections. Currently the south banks of the channel have steep vertical cuts which will be graded to gentler slopes to facilitate revegetation.

Drainage will be designed in accordance with CDOT standards. The resulting drainage flow volumes that reach the creek will have controlled outlets and will not have a significant impact to the area.

The initial construction will require access from both the north and south ends of the bridge. Access to the south side will be from SH83. Access to the north side will be from the Powers ROW, or easements obtained from the developer. Crane pads and the access road for delivery of the girders will have impacts within riparian habitat. The access road and pads are required for placement of the girders, construction of the piers, and concrete pump trucks.

Shoup Road

SH83 will be realigned from the planned Powers interchange to a point north of the Shoup Road intersection. SH83 reconstruction will include the crossing of Black Squirrel Creek and alterations in the drainage structure at that location (Figure 2).

The existing drainage structure is a 15-foot-diameter metal pipe that may be replaced, or an additional pipe may be constructed parallel to the existing one to accommodate flows under SH83. Drainage will be directed under SH83 using a series of culvert pipes or a single-span bridge to keep the flows in the channel of Black Squirrel Creek instead of topping the roadway.

SH83 crosses Black Squirrel Creek approximately 0.75 miles north of Powers Boulevard. The structure selection is not final, but if the structure is a bridge, it will be a single-span structure that will extend approximately 80 feet across the creek and will accommodate 5 12-foot travel lanes with 10-foot outside shoulders for the SH83 improvements. Minimal impacts to the main channel will be necessary to construct the abutments and fill sections. Additional impacts will occur should the structure include adding pipes or a box culvert structure. El Paso County is planning on routing a recreational trail under SH83 adjacent to Black Squirrel Creek, and the trail will be within the footprint of the bridge or culvert. Trail impacts are not part of this project.

Schedule

Construction schedules are contingent on funding, which is unknown at this time. It is anticipated that construction for all projects will begin in the spring of 2004, and last 4 - 10 years, finishing in 2014. More time however, may be needed.

Conservation Measures

As part of this project, the following conservation measures were proposed in the Biological Assessment to reduce potential for impacts to Preble's:

- Project boundaries will be controlled with chain link or orange plastic fencing to keep heavy equipment within proposed work zones.
- Disturbance areas within hibernation habitat will be cleared of shrubs and other woody vegetation by August 15 to discourage Preble's from hibernating in these areas prior to construction.
- Widening of I-25 will be to the inside (where median areas are non-habitat) when possible to avoid impacts to habitat on road edges.
- Powers Boulevard's crossing over Black Squirrel Creek was located in an area with degraded Preble's habitat.
- Impacts to Black Squirrel Creek at the Shoup Road intersection were shifted to the west side of the road where the habitat is of lesser quality.
- Design for all three projects is currently at approximately 30 percent. Impact minimization efforts will continue through final design phases.
- Smith Creek, Monument Branch, and North and South Black Squirrel Creeks are in close proximity to each other along I-25 south of the Northgate interchange. Preble's may move into the I-25 median from any of these creeks and could even move between the creeks from within the median. Impacts in this area are being minimized by maintaining at least one of these four creeks as a movement corridor at all times, including during construction. Such a movement corridor will either be undisturbed or will be a disturbed area that is fully restored, or has been restored to the extent that animal mobility will not be affected. In the latter case,

artificial cover and other means may be necessary to provide adequate cover for movement. Also in this area, no more than 50 percent of the projected impact area (for all four of these drainages) will be disturbed at any one time.

- Highway construction in habitat areas will be scheduled during Preble's hibernation season (November 1 to April 30).
- Native seed mixes will be used in all revegetation efforts, and the site will be promptly revegetated.
- Noxious weeds will be controlled.
- When practical, construction of minor drainage culverts and other roadway appurtenances will be done from the roadway itself.
- Riprap will be covered with soil and revegetated where possible.
- Maximum slope grades will be used to decrease impacts in habitat areas including the use of guardrail where appropriate.
- In most areas where work on CBCs will be necessary, existing culverts will be lengthened rather than replaced.
- Some culverts under I-25 may have lighting shafts constructed to allow some daylight to enter the culvert.
- Construction access will utilize existing pathways to the extent possible.
- Placement of bridge girders and related work will take place from existing roadway pavement (from above) to the extent possible.
- Mowing along the new highway will be limited to one mower width in most cases, and the remainder of the toe slopes will be left unmowed. Mowing will be consistent with the Memorandum of Understanding between CDOT, CDOW, and the Service. Signage will be provided to delineate mowing limits for CDOT maintenance personnel.
- CDOT and FHWA will continue to explore ways to avoid or minimize impacts to Preble's during the remainder of project development and construction.
- In order to offset the temporary and permanent loss of habitat due to the proposed actions, FHWA/CDOT have devised a four-point program which includes conducting onsite restoration and enhancement actions such as revegetating all temporarily disturbed areas with native plant species; conducting offsite mitigation projects that will promote Preble's recovery in the Monument Creek drainage; monitoring; and research. These measures focus on creating, restoring, or enhancing habitat linkages.

1. Onsite Actions

On-site actions include all steps that will be taken to avoid and minimize impacts, as well as to enhance, restore, and create habitat within or near project areas. Actions to enhance, restore, and create habitat linkages will be given the highest priority. At this time, a minimum of 3.8 acres of habitat will be enhanced, restored, or created at the Pine Creek, Baptist Road, and SH83 locations, including restoration after temporary impacts.

2. Offsite Actions

Off-site actions are conservation measures that will be taken to enhance, restore, or create habitat linkages, as well as the purchase of properties that are needed to create habitat corridors.

A. Enhance, restore, or create habitat linkages. FHWA/CDOT have identified five locations where habitat linkages can be restored in northern El Paso County, and are committed to the reestablishment of at least two of these linkages. Details of these and additional options are provided in Appendix D of the Biological Assessment. A summary of the five known options is provided here. Restoring these linkages will lead to improved (or restored) mouse mobility, but may also provide the habitat elements that will allow establishment of a resident population, if the linkage is large enough. The length and condition of the linkage will determine the eventual benefits of restoration or enhancement actions. If expected restoration outcomes are not achieved, corrective measures will be taken and the success of these measures will be monitored.

(i.) The lower Monument Creek to upper Monument Creek linkage would involve the restoration of approximately 1.2 miles of Monument Creek located on private property. A trapping survey has shown that Preble's occurs on adjacent properties, but the subject property is too degraded to support habitat. The site has been grazed for many years and has little to no shrub or grass cover along the creek. Willows are present, but are cropped low by cattle. It is likely that Preble's are also unable to move through the property, and that the populations north and south of the property are separate. Reconnecting Monument Creek through this area would connect the approximately 211 stream miles of lower Monument Creek to the 64 stream miles of upper Monument Creek. The landowner is interested in working with CDOT, and test grazing exclusion plots have been established on the property. This option would also restore the area of the Beaver Creek/Monument Creek confluence.

(ii.) Linking Kettle Creek to Monument Creek across I-25 will involve constructing a land bridge and/or culvert system. Currently, Kettle Creek crosses under I-25 through a siphon pipe approximately ½ mile long and there is a large dam on the upstream (east) side of I-25. Both of these structures prevent mice from moving downstream along Kettle Creek to Monument Creek. A Preble's was observed in the area between the dam and I-25 in 2001. The most likely route the mouse took to this location adjacent to I-25 was over the north side of the dam on the east side of I-25. The creek is occupied on both sides of I-25, and upstream of I-25, Preble's have been found up to 1.5 miles away from I-25. Downstream of I-25, Preble's have been captured to the confluence with Monument Creek. Kettle Creek is one of Monument Creek's longest tributaries. FHWA/CDOT are proposing to construct a "green bridge" over the north side of the dam using existing habitat features such as topography and vegetation to enhance movement, and installing a culvert under I-25, connecting both sides of Kettle Creek. Because I-25 runs through USAFA property at Kettle Creek, any work here will require USAFA approval. Reconnecting Kettle Creek across I-25 would link approximately 67 stream miles of Kettle Creek to the approximately 211 stream miles of lower Monument Creek.

(iii.) The confluence of Hay and Beaver Creeks is upstream of option 1 above, and this option would involve restoring approximately ½ mile of Monument Creek that is degraded by grazing. Hay Creek flows into Beaver Creek about ¼ mile west of Monument Creek and the Beaver Creek/Monument Creek confluence area has been trapped and Preble's were not found. Preble's have been found upstream on Beaver Creek. Beaver and Hay Creeks contain approximately 34 stream miles.

(iv.) Downstream movement of the Preble's population at FHWA/CDOT's mitigation site on Jackson Creek at I-25 and Baptist Road is inhibited by two small culverts under the frontage road on the east side of I-25, the frontage road, and a large CBC under I-25. The

culverts and the frontage road will be removed, and the CBC improved by installing a natural bottom and improving habitat at its portals, thereby re-establishing the connection across I-25. Jackson Creek is occupied by Preble's both upstream and downstream of I-25. The confluence of Jackson Creek and Monument Creek is also occupied by Preble's. Jackson Creek contains approximately 10 stream miles though not all of the creek contains good habitat.

(v.) Restore the confluence of Teachout Creek and Monument Creek. This area is on private property just north of and contiguous with option 1 above. Teachout Creek is a small ephemeral drainage that flows through a residential area near the active railroad track, becomes a grazed, grassy swale, then flows into a terminal pond approximately 1/4 mile from Monument Creek; it truly never conflues with Monument Creek. Any Preble's along Teachout Creek are probably isolated from Monument Creek. The area to be restored includes a reach of Monument Creek approximately 1 mile long and varying in width from about 100 to 300 feet. The length of the area to be restored along Teachout Creek is approximately 1/3 mile, and of varying width. Currently, this area is degraded by grazing. There was a Preble's capture in 1997 near the confluence of Teachout and Monument, at a wastewater treatment plant.

B. Protect, enhance, or restore habitat corridors. Conservation at the small watershed scale will help to ensure desirable population size, genetic diversity, and protection against catastrophic events and future fragmentation.

FHWA/CDOT have made considerable progress toward reconnecting habitat corridors on two streams in northern El Paso County through preservation and enhancement. Efforts have been focused on Dirty Woman and Jackson Creeks in northern El Paso County (including the area of the confluence of Dirty Woman and Monument Creeks). Both of these streams are occupied by Preble's and support the most important Monument Creek tributary populations north of the USAFA.

Dirty Woman Creek is the location of the I-25/SH105 Monument interchange, where construction began in fall 2002 (Ensign 2000, 2002). CDOT began a program of property and conservation easement purchase in 2000, and much of the known Preble's habitat on this stream is now in permanent protection through CDOT efforts. Conservation easements to date have been used to offset project impacts at the Monument interchange project (DeFelice, Shingledecker, and Lovato easements). CDOT also owns the area between SH105 and I-25, and the area west of I-25 for approximately 0.3 miles. CDOT will continue to pursue the remaining parcels that are needed to complete this corridor, and is committed to habitat protection, enhancement, and restoration, as needed.

CDOT has also purchased a 65-acre conservation property on Jackson Creek east of I-25, to fulfill conservation needs for the Monument interchange and Powers Boulevard projects. This property was scheduled for development before CDOT intervened and purchased it in 2001. Several habitat improvements will occur on this property in the coming years, including conversion of dense cattail stands to shrub islands (scheduled for winter 2003-04), the removal of a frontage road and a long culvert, and improvements to the I-25 culvert structure. CDOT is actively negotiating for additional habitat purchases on the west side of I-25 that will complete this important habitat corridor. CDOT will also purchase either conservation easements or through fee title an additional 50 acres of habitat along Dirty Woman, Monument, Jackson Creeks, or other areas of Preble's habitat. Habitat restoration, enhancement, or creation will be conducted on these lands as appropriate.

C. Coordinate conservation actions and information with other agencies and landowners. Recovery can best be achieved through coordinated efforts and CDOT is working closely with El Paso County and the USAFA, and these agencies will likely conduct actions that will contribute towards recovery. The cooperation of developers and private landowners will also be essential for success, and CDOT will share conservation information and cooperate with other such interested parties.

3. Monitoring

The proposed monitoring program will have two major elements: effectiveness monitoring for success standards, and monitoring for special project information.

Effectiveness monitoring determines if the anticipated impacts stated in the Biological Assessment and permitted in the biological opinion are exceeded, and if progress is being made toward the biological goals and objectives of this Biological Assessment. This will generally include a determination of disturbed area (tracked in a project database), and an accounting of revegetation activities. Revegetation monitoring includes management of the revegetation contract, selecting appropriate plant materials, ensuring proper planting techniques, and implementing appropriate BMPs. Revegetation areas are then surveyed following planting until the success standards stated in the site-specific consultation documents are met. These monitoring actions will be reported to the Service in an annual report.

Preble's populations will be monitored at sites where habitat linkages will be created or improved. Although the general value of habitat linkages for the persistence of small populations is recognized, there is relatively little specific scientific information on linkage value to small mammals. Collecting these data would serve to gauge the success of the planned linkages, and provide valuable information for the Preble's Recovery Team. FHWA/CDOT will work with the Service to develop success standards appropriate for selected linkages.

4. Research

CDOT will fund a research project on Preble's use of culverts with small mammal ledges. This work is guided by similar work that was conducted in Montana, where small mammal ledges were shown to enhance movement through culverts (Foresman, 2001). This work would have wide applicability in all areas of the Preble's range. CDOT and FHWA are committed to completing this research and applying the results.

Details of the above conservation measures are outlined in the Biological Assessment.

Proposed Best Management Practices

This section presents the Best Management Practices (BMPs) recommended by CDOT and FHWA to avoid potential impacts to listed species. They are intended to avoid and reduce potential impacts to Preble's populations and habitat. BMPs may be superseded by more stringent or general conditions that are established in project-specific consultation documents. Minimization of adverse effects will be accomplished by implementing the following steps: -

1. Each construction project will have an erosion control plan with permanent and temporary measures (BMPs) that will minimize adverse effects to water quality.
2. Identify and prioritize habitat areas that are subject to disturbance. For example, large willow patches or prime hibernation areas shall be avoided if possible. Explore various options with project designers and stretch design flexibility to the greatest extent possible if these discussions result in reduced or avoided site impacts.
3. Vegetation that has to be removed may be salvaged for replanting, or may have other on-site uses (brush piles for mouse cover). Consult with the project biologist.
4. Engineers and construction staff shall consult with the project biologist if there are any changes in plans or if there are any questions regarding proposed activities within Preble's habitat.
5. Limit equipment entrance/exit areas to a single location if possible. Construction access routes shall overlap with permanently disturbed areas to the greatest extent possible.

3. Monitoring

The proposed monitoring program will have two major elements: effectiveness monitoring for success standards, and monitoring for special project information.

Effectiveness monitoring determines if the anticipated impacts stated in the Biological Assessment and permitted in the biological opinion are exceeded, and if progress is being made toward the biological goals and objectives of this Biological Assessment. This will generally include a determination of disturbed area (tracked in a project database), and an accounting of revegetation activities. Revegetation monitoring includes management of the revegetation contract, selecting appropriate plant materials, ensuring proper planting techniques, and implementing appropriate BMPs. Revegetation areas are then surveyed following planting until the success standards stated in the site-specific consultation documents are met. These monitoring actions will be reported to the Service in an annual report.

Preble's populations will be monitored at sites where habitat linkages will be created or improved. Although the general value of habitat linkages for the persistence of small populations is recognized, there is relatively little specific scientific information on linkage value to small mammals. Collecting these data would serve to gauge the success of the planned linkages, and provide valuable information for the Preble's Recovery Team. FHWA/CDOT will work with the Service to develop success standards appropriate for selected linkages.

4. Research

CDOT will fund a research project on Preble's use of culverts with small mammal ledges. This work is guided by similar work that was conducted in Montana, where small mammal ledges were shown to enhance movement through culverts (Foresman, 2001). This work would have wide applicability in all areas of the Preble's range. CDOT and FHWA are committed to completing this research and applying the results.

Details of the above conservation measures are outlined in the Biological Assessment.

Proposed Best Management Practices

This section presents the Best Management Practices (BMPs) recommended by CDOT and FHWA to avoid potential impacts to listed species. They are intended to avoid and reduce potential impacts to Preble's populations and habitat. BMPs may be superseded by more stringent or general conditions that are established in project-specific consultation documents. Minimization of adverse effects will

be accomplished by implementing the following steps:

1. Each construction project will have an erosion control plan with permanent and temporary measures (BMPs) that will minimize adverse effects to water quality.
2. Identify and prioritize habitat areas that are subject to disturbance. For example, large willow patches or prime hibernation areas shall be avoided if possible. Explore various options with project designers and stretch design flexibility to the greatest extent possible if these discussions result in reduced or avoided site impacts.
3. Vegetation that has to be removed may be salvaged for replanting, or may have other on-site uses (brush piles for mouse cover). Consult with the project biologist.
4. Engineers and construction staff shall consult with the project biologist if there are any changes in plans or if there are any questions regarding proposed activities within Preble's habitat.

5. Limit equipment entrance/exit areas to a single location if possible. Construction access routes shall overlap with permanently disturbed areas to the greatest extent possible.
6. Minimize Preble's habitat impacts by coordination with equipment operators to find out specifically where they will drive. There are often last-minute changes that can lead to further reduction in site impacts.
7. Minimize impacts to vegetation. This might mean pruning trees rather than tree removals, or cutting shrub stems and allowing sprout re-growth, rather than grubbing out an entire root system.
8. Minimize time periods with bare soil. Vegetation cover is not only beneficial for Preble's but affords the site better resistance to invasion from non-native weeds and reduces erosion.
9. Weed control measures shall be consistent with guidelines established by state, local and federal governments.
10. Installation of chain-link or plastic (orange) fencing to establish no-work zones as early in the project as possible.
11. Schedule project construction and other habitat disturbances during the dormant season if possible. Most plants are more resilient to disturbances when they are dormant than when they are actively growing. This timing also coincides with Preble's hibernation season, and feeding, movement, and reproduction will not be affected.
12. Select native plant species for revegetation, and local varieties if available. All revegetation plans shall be consistent with revegetation and monitoring guidelines established in the pertinent site-specific consultation document.
13. Stockpile soil from disturbed natural areas; it can often be used as a seed bank to re-establish native plant species.
14. The project biologist shall assess the presence of bullfrogs in the project areas, and consider implementing control measures for this introduced species that preys on Preble's meadow jumping mouse.
15. Take precautions in removal of any beaver dams. Beaver dams are likely to improve habitat for jumping mice by creating wider riparian corridors and encouraging willow growth. Prior to removal of any beaver dam, a careful evaluation and assessment of the impact of this action on the entire drainage, especially the effects of flooding and scouring that may result, will take place.
16. Consider mitigation for altered hydrology due to upstream development. This might include detention basins or channel stabilization actions.
17. Consider impacts to upland habitat. Establish shrubs suitable for day nests and hibernacula, and try to get easements in order to extend buffers where good upland habitat is present.
18. Revegetate exposed sand bars and bank margins as quickly as possible after project completion to minimize erosion.
19. Avoid introduction or excess application of chemicals into aquatic ecosystems. Limit soil stabilizers, sterilants, growth inhibitors, de-icing salts, etc.
20. Prevent spilled fuels, lubricants, or other related materials from entering Preble's habitat.

21. Any project-related construction trash (e.g., cement blocks, asphalt piles, cans, bottles, scrap lumber, etc.) will be removed from habitat areas at project completion.
22. Vehicle traffic in riparian areas will be minimized to the extent practicable.
23. Equipment staging areas in Preble's habitat are prohibited.
24. Use directional drilling/boring if possible when relocating utility lines in all habitat areas.
25. ~~Night-time work will not be allowed in the active season unless specifically permitted in the project-specific consultation document.~~

Procedure for Changing Future Actions

FHWA/CDOT will notify the Service when proposing any site-specific construction activities by submitting a site-specific Biological Assessment. The Service will review the site-specific Biological Assessment and make a determination whether:

1. the effects of the action described in the site-specific Biological Assessment were sufficiently addressed in this biological opinion;
2. the project description in this biological opinion needs to be amended but there is no change in effects, or;
3. consultation needs to be reinitiated for one of the following reasons:
 - a. Incidental take is above the amount identified in this opinion. Incidental take is defined as harm, harassment, pursuit, hunting, shooting, wounding, killing, trapping, capture, or collection of wildlife or removal, damage, or destruction of plants of an endangered species.
 - b. Activities are outside of the scope of this biological opinion.

The Service will review the site-specific documents and, if they are complete, respond within 30 days.

Status of the Preble's meadow jumping mouse

Preble's is a small rodent in the family Zapodidae and is 1 of 12 recognized subspecies of the species *Z. hudsonius*, the meadow jumping mouse. Preble's is native only to the Rocky Mountains-Great Plains interface of eastern Colorado and southeastern Wyoming. This shy, largely nocturnal mouse lives in moist lowlands with dense vegetation. It is 8 to 9 inches long (its tail accounts for 60 percent of its length) with hind feet adapted for jumping. Preble's hibernates underground from September to May.

Records for Preble's meadow jumping mouse define a range including Adams, Arapahoe, Boulder, Denver, Douglas, El Paso, Elbert, Jefferson, Larimer, and Weld counties in Colorado; and Albany, Laramie, Platte, Goshen, and Converse counties in Wyoming (Kruttsch 1954, Compton and Hugie 1993). Armstrong, *et al.* (1997, p. 77) described typical Preble's meadow jumping mouse habitat as "well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity." Also noted was a preference for "dense herbaceous vegetation consisting of a variety of grasses, forbs and thick shrubs."

Preble's has undergone a decline in range; populations within its remaining range have been lost. Habitat loss and fragmentation resulting from human land uses have adversely impacted Preble's populations. David Armstrong (University of Colorado, pers. com. 1998) concluded that the meadow jumping mouse, in this region as elsewhere, is a habitat specialist, and that its specialized habitat is declining.

Compton and Hugie (1993, 1994) cited human activities that have adversely impacted Preble's meadow jumping mouse including: conversion of grasslands to farms; livestock grazing; water development and management practices; and, residential and commercial development. Shenk (1998) linked potential threats to ecological requirements of Preble's meadow jumping mouse and suggested that factors impacting vegetation composition and structure, riparian hydrology, habitat structure, distribution, geomorphology, and animal community composition must be addressed in any conservation strategy.

Residential and commercial development, accompanied by highway and bridge construction, and instream alterations to implement flood control, directly remove Preble's meadow jumping mouse habitat, or reduce, alter, fragment, and isolate habitat to the point where Preble's meadow jumping mouse can no longer persist. Corn *et al.* (1995) proposed that a 100 meter (328 foot) buffer of unaltered habitat be established to protect the floodplain of Monument Creek from a range of human activities that might adversely affect Preble's or its habitat. Roads, trails, or other linear development through Preble's habitat may act as movement barriers or filters. Shenk (1998) suggested that on a landscape scale, maintenance of acceptable dispersal corridors linking patches of Preble's habitat may be critical to its conservation.

Further information about the biology and status of Preble's can be found in the "Conservation Assessment and Preliminary Conservation Strategy for Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*)" (Shenk, 1998, available on request).

Environmental Baseline

Many of the drainages in El Paso County have been trapped and Preble's has been found to occupy portions of Monument Creek, Jackson Creek, Beaver Creek, Lehman's Run, Dirty Woman Creek, Smith Creek, Pine Creek, Cottonwood Creek, Black Squirrel Creek, Kettle Creek, as well as smaller tributaries to these creeks.

Many of the occupied streams have suitable riparian vegetation at their confluences with Monument Creek and for 1 to 3 miles upstream. Most streams affected by the projects have headwaters in the Black Forest east of Monument Creek, where ponderosa pine (*Pinus ponderosa*) is the primary cover type. Although Preble's have been captured in ponderosa pine communities, it is likely that mouse distribution is patchier and densities are lower in these forest types, which do not support the dense understory cover found in riparian communities.

The project areas are within the Monument Creek watershed in El Paso County, itself a part of the larger Arkansas River watershed. All of the drainages within the three project areas are positioned on the south side of the Palmer Divide, a watershed divide that separates the South Platte and Arkansas watersheds. I-25 is located east of Monument Creek, at a distance of 0.8 miles at the northern end, to 0.1 miles at the southern end. Tributaries of Monument Creek include several first-order streams and ephemeral drainages. The smaller drainages in the corridor are barely more than wet swales that support patches of wetland vegetation, and have poorly-defined channel cross-sections. Flow is intermittent during the growing season. Black Forest Tributary and Teachout Creeks typify these conditions.

Moderately sized creeks within the corridor include Monument Branch, Smith, Jackson, and Dirty Woman Creeks. Flow is permanent, but may be reduced to a trickle during the latter part of the growing season. Channel width varies from less than 3 feet to greater than 33 feet, and channel depth is generally moderate (less than 1.5 feet), but may include sections that are more deeply incised. These creeks have floodplains that are usually less than 160 feet wide, but may extend to almost 328 feet.

Cottonwood, Pine, Kettle, and Black Squirrel Creeks are the larger drainages in the project areas. All have well-defined channels that are generally less than 33 feet wide, but can exceed 100 feet in places. Some of the upper stretches of Black Squirrel Creek are primarily dry gulches with upland shrub cover. Most of these creeks also have deeply incised sections, which are probably due to both

naturally erosive soils and increased flow from urbanizing influences in their watersheds. Pine, Cottonwood, and Kettle Creeks all have sections where the channel depth exceeds 66 feet.

Preble's habitat and populations are not distributed continuously on Monument Creek and its tributaries. Estimates of Preble's densities also vary considerably between sites and within sites in different years. Habitat is fragmented by urban, suburban, and commercial development, as well as by agricultural activities, primarily grazing.

Conditions along the I-25 corridor differ from conditions along the proposed Powers Boulevard corridor and at the Shoup Road/SH83 intersection. The I-25 corridor near Pine Creek is commercially developed, and in some places Pine Creek is confined within a concrete channel. A large energy-dissipation structure was constructed on the creek in 1996 at Academy Boulevard. This structure effectively splits Pine Creek's Preble's population. Northward of Pine Creek, the corridor becomes less commercially developed, but housing becomes more common. Drainages are mostly undeveloped along I-25 where it crosses the USAFA. Preble's habitat at Kettle Creek is truncated by a large dam/pipe combination at I-25. The creek is funneled through a siphon approximately 0.5 mile long under I-25 and emerges on the west side of I-25 on USAFA property. The dam and siphon are likely barriers to Preble's movement across I-25, although the creek on both sides of the highway is occupied. Both branches of Black Squirrel Creek are occupied by Preble's on both sides of I-25. At Monument Branch, I-25's northbound and southbound lanes are split by a wide median. This median is occupied by Preble's, as are both sides of the highway. A large housing development to the east of the highway is a potential threat to Preble's in the area. Smith Creek is also occupied on both sides of I-25 and is threatened by housing. Middle Black Forest Creek is also occupied. Jackson Creek is occupied on both sides of I-25 and FHWA/CDOT has purchased 65 acres of Jackson Creek and its floodplain on the east side of I-25 and has plans to enhance Preble's habitat at the site. Development is a potential threat along Jackson Creek on both sides of the highway. The northernmost drainage affected by this project is Teachout Creek which has good Preble's habitat west of I-25, though the east side is developed.

The Powers Boulevard extension alignment is currently undeveloped and is open, native, grazed rangeland. The new corridor is slated for development including residential and commercial development as well as a golf course. The new highway will cross Black Squirrel Creek in an area that is highly eroded and steep, though still occupied by Preble's.

The Shoup Road/SH83 intersection site has well-developed Preble's habitat on the east side where the banks are steep but the floodplain is wide enough to support good habitat. The east side has been trapped and is occupied. The west side however, is highly eroded, has few shrubs, and steep banks. The uplands surrounding the site have been grazed in the past but are currently owned by a developer.

Effects of Action

The proposed projects will affect almost every drainage occupied by Preble's in northern El Paso County. Areas of Preble's habitat affected by the proposed projects include the floodplains as well as adjacent side slopes and uplands. At the time that FHWA/CDOT calculated the action's impacts, critical habitat was proposed by the Service and was defined as those areas within 360 feet of the edge of the stream. Typically however, habitat has been defined as those areas within 300 feet of the 100-year floodplain. Most of the creeks in the project area had reaches that were proposed as critical habitat, but all have been removed from the final designation. Most of the creeks that will be impacted by the proposed action have narrow floodplains and using the critical habitat definition to determine impacts to Preble's habitat is more conservative and results in a higher number of impacted acres than using the typical definition of 300 feet from the 100-year floodplain.

Direct impacts include paving, fill slopes, vehicle access roads, crane pads, mowing along highway rights-of-way, and areas covered by new bridges and culvert extensions. Incidental take of Preble's during both the active and hibernation periods is possible and disturbance of both of those habitat types is assured. Temporary impacts include the temporary loss of both riparian and upland habitat areas during construction and recovery, and alteration of the stream channels during construction.

Indirect impacts include a temporary increase in sedimentation in the affected creeks during construction as well as the potential of an increased amount of road traction substances such as sand and de-icers, into the surface water, due to a wider road surface (and, in the case of Powers Boulevard, a new roadway), and an increase in noise, traffic, and pollutants.

Most of the appropriate habitat in the project areas are likely inhabited by Preble's year-round. The project could directly impact Preble's through temporary or permanent loss of habitats regularly occupied by Preble's. Additional effects of the proposed work include temporary disturbance to potential movement corridors, and increased noise, vibration, and human presence during construction. The majority of work is scheduled to occur during the period when Preble's is hibernating.

A description of site-by-site impacts follows.

I-25

Pine Creek

Habitat along Pine Creek was calculated as 300 feet from the 100-year floodplain on each side of Pine Creek, because it was not proposed as critical habitat. The habitat ends at the 15-foot-wide mowing strip adjacent to the east edge of pavement of the existing highway. The area of permanent impact to the habitat is the area between the east edge of the mowing strip of the existing highway and the east edge of the 15-foot-wide mowing strip next to the new highway. Widening here is estimate to increase the habitat area 0.2 acre (gain of 0.2 acre), because the east edge of pavement of the new highway will be constructed either at the existing edge of pavement or shifted to the west, and a small area that is currently paved will be torn up and revegetated. The remainder of the disturbance area was designated as temporary impact, because it will be revegetated with native plantings and maintained in a natural condition. Temporary impacts are estimated to be 3.3 acres.

Kettle Creek

Habitat was calculated as 300 feet from the 100-year floodplain on each side of Kettle Creek, because this section of the creek was not proposed as critical habitat. The habitat ends on both sides of the existing highway at the 15-foot-wide mowing strip adjacent to the edges of pavement. The area of permanent impact to the habitat is the area between the edges of the mowing strips of the existing highway and the edges of the 15-foot-wide mowing strips next to the new highway. The remainder of the disturbed habitat will have temporary impacts. Permanent impact at Kettle Creek and I-25 is estimated to reduce the habitat area by 0.1 acre, and there will be approximately 0.4 acre of temporary impact. Kettle Creek currently crosses under I-25 in a 9-foot diameter reinforced concrete pipe that is 2,600 feet long. This crossing design will not change.

Black Squirrel Creek South

Because Black Squirrel Creek was proposed critical habitat, impact was calculated as those affected areas within 360 feet of each side of the creek. The habitat ends on both sides of the existing highway at the 15-foot-wide mowing strip adjacent to the edges of pavement. The area of permanent impact to the habitat is the area between the edges of the mowing strips of the existing highway and the edges of the 15-foot-wide mowing strips next to the new highway. The remainder of the disturbed habitat will be considered a temporary impact area because it will be revegetated with native plants, and then maintained in a natural condition. The permanent impact at Black Squirrel Creek South will be approximately 1.2 acres. The temporary impact is estimated to be 2.1 acres. I-25 currently crosses over this drainage on 15-foot high bridges. Post-construction, the height will not change but the bridge span will increase from 105 feet to 120 feet.

Black Squirrel Creek North

The total permanent impact area at Black Squirrel Creek North is from pavement and CBC widening and is approximately 1.0 acre, with a temporary impact of approximately 3.1 acres. Portions of this creek were proposed critical habitat and impacts were calculated as those areas within 360 feet of each side of the creek. For those portions that were not proposed critical habitat, impacts were calculated as 300 feet from the 100 year floodplain. The water in this drainage is currently conveyed under I-25 through two 12 x 10 CBCs approximately 210 feet long. These CBCs will increase in length to 235 feet.

Monument Branch

Habitat impacts from the construction of the Powers/I-25 interchange are due to cuts, fills, pavement widening, and reconstruction. Impacts will occur to an unnamed drainage approximately 600 feet north of the edge of Monument Branch on the east side of I-25, and to habitat within the median. The area on the east side of the northbound I-25 pavement will be impacted due to I-25 pavement widening and reconstruction, and construction of the new northbound I-25 to southbound Powers Boulevard ramp. The habitat area in the existing I-25 median will be impacted primarily because of the new northbound Powers Boulevard to southbound I-25 ramp. Pavement widening of I-25 will be to the outside of the existing northbound and southbound I-25 lanes to reduce impacts to median habitat.

Permanent impacts to habitat due to pavement widening, new ramp construction, roadway cuts and fills, and structure widening for the Monument Branch area will affect approximately 3.5 acres. The area of temporary impacts will account for approximately 6.1 acres. There may be an opportunity to enhance the median area of I-25 south to connect to the Monument Branch habitat area as mitigation for the impacts in this area. This will be further evaluated during final design. Portions of this creek were proposed critical habitat and impacts were calculated as those areas within 360 feet of each side of the creek. For those portions that were not proposed critical habitat, impacts were calculated as 300 feet from the 100 year floodplain. There is a median between the northbound and southbound lanes of I-25 where it crosses over Monument Branch. Two 12 x 10 CBCs convey water under each set of lanes and the current culvert length in the northbound direction is 180 feet and the length in the southbound direction is 91 feet. These lengths are projected to increase to 282 and 202 feet, respectively.

Smith Creek

The impacts to habitat are due to I-25 widening and reconstruction and the construction of new ramps for the Northgate Boulevard and I-25 interchange. The habitat area between the Santa Fe Trail and the southbound I-25 lanes will be affected due to construction of new ramps for Northgate Boulevard to southbound I-25 and from Northgate Boulevard to the southbound I-25 to southbound Powers Boulevard ramps. Additionally, southbound I-25 will be widened to the outside in this area. The I-25 median area will be impacted on the west side in order to construct the fill slopes for southbound I-25.

The permanent impact area due to pavement widening, new ramp construction, roadway cuts and fills, and structure widening for the Smith Creek area is estimated to be 6.2 acres. The temporary impact area is approximately 4.0 acres. The area of the existing loop ramp on the southeast quadrant of the existing Northgate interchange may be a possible location for habitat mitigation. This will be further evaluated during final design. Portions of this creek were proposed critical habitat and impacts were calculated as those areas within 360 feet of each side of the creek. For those portions that were not proposed critical habitat, impacts were calculated as 300 feet from the 100 year floodplain.

Like Monument Branch, there is a median where Smith Creek flows under I-25, and it flows under I-

single culvert 480 feet long under southbound I-25 and the new Northgate and Powers Boulevard ramps. This length is based on conceptual design and grading, and represents the worst-case scenario. FHWA/CDOT will pursue a concept that keeps a portion of Smith Creek approximately 50 – 55 feet in length intact. In this scenario, the culverts under the southbound mainline would be approximately 225 feet long, and the culverts under the ramps would be approximately 145 feet long.

Black Forest Tributary

The permanent impact area due to pavement widening, roadway cuts and fills, and structure widening for the Black Forest Tributary area is approximately 0.3 acres. The temporary impact area is approximately 1.0 acre. Portions of this creek were proposed critical habitat and impacts were calculated as those areas within 360 feet of each side of the creek. For those portions that were not proposed critical habitat, impacts were calculated as 300 feet from the 100 year floodplain. Black Forest Tributary is currently conveyed under I-25 in two 10 x 10 CBCs 142 feet long. These CBCs will be extended to 285 feet.

Baptist Road and Jackson Creek

Permanent habitat impacts due to pavement widening, new roadway construction, roadway cuts and fills, and structure widening for the Jackson Creek area amount to approximately 7.7 acres, and the temporary impact area is estimated to be 4.6 acres. The temporary areas impacted will be re-vegetated after completion of the roadway construction. The area of the existing frontage road that will be removed may then be used for potential habitat mitigation and the area could be enhanced. This created/restored/enhanced habitat area is estimated at 3.6 acres. Portions of this creek were proposed critical habitat and impacts were calculated as those areas within 360 feet of each side of the creek. For those portions that were not proposed critical habitat, impacts were calculated as 300 feet from the 100 year floodplain. The existing 29 x 18-foot natural bottomed CBC under I-25 will be extended from 105 feet to 292 feet.

Teachout Creek

The habitat areas were calculated as 360 feet on each side of Teachout Creek (the proposed critical habitat width). The habitat ends on both sides of the existing highway at the 15-foot-wide mowing strips adjacent to the edges of pavement. The area of permanent impact to the habitat is the area between the edges of the mowing strips of the existing highway and the edges of the 15 feet wide mowing strips next to the new highway, and the area to be covered by the culvert extensions. The permanent impact at Teachout Creek will be approximately 1.1 acres, and the temporary impact approximately 1.4 acres. Portions of this creek were proposed critical habitat and impacts were calculated as those areas within 360 feet of each side of the creek. For those portions that were not proposed critical habitat, impacts were calculated as 300 feet from the 100 year floodplain. Teachout Creek flows under I-25 in two 10 x 10 CBCs that are currently 125 feet long that will be extended to 200 feet in length.

North Powers Boulevard

Temporary impacts due to the construction of Powers Boulevard at Black Squirrel Creek have been minimized. The impact areas were measured within the 360-foot-wide habitat area, measured from the bank of the normal flow channel. The impacts will include the placement of the roadway fill, work area needed for construction, access road and crane pads for placement of the steel girders. The temporary disturbance area is estimated at 6.36 acres.

Permanent impact areas due to the proposed Black Squirrel Creek bridge include the permanent roadway fills within the 360-foot-wide habitat area. In addition, pier and wall structures were tallied as permanent impact areas. The permanent disturbance area is estimated at 2.25 acres. The new bridge will be three spans totaling approximately 400 feet in length.

single culvert 480 feet long under southbound I-25 and the new Northgate and Powers Boulevard ramps. This length is based on conceptual design and grading, and represents the worst-case scenario. FHWA/CDOT will pursue a concept that keeps a portion of Smith Creek approximately 50 – 55 feet in length intact. In this scenario, the culverts under the southbound mainline would be approximately 225 feet long, and the culverts under the ramps would be approximately 145 feet long.

Black Forest Tributary

The permanent impact area due to pavement widening, roadway cuts and fills, and structure widening for the Black Forest Tributary area is approximately 0.3 acres. The temporary impact area is approximately 1.0 acre. Portions of this creek were proposed critical habitat and impacts were calculated as those areas within 360 feet of each side of the creek. For those portions that were not proposed critical habitat, impacts were calculated as 300 feet from the 100 year floodplain. Black Forest Tributary is currently conveyed under I-25 in two 10 x 10 CBCs 142 feet long. These CBCs will be extended to 285 feet.

Baptist Road and Jackson Creek

Permanent habitat impacts due to pavement widening, new roadway construction, roadway cuts and fills, and structure widening for the Jackson Creek area amount to approximately 7.7 acres, and the temporary impact area is estimated to be 4.6 acres. The temporary areas impacted will be re-vegetated after completion of the roadway construction. The area of the existing frontage road that will be removed may then be used for potential habitat mitigation and the area could be enhanced. This created/restored/enhanced habitat area is estimated at 3.6 acres. Portions of this creek were proposed critical habitat and impacts were calculated as those areas within 360 feet of each side of the creek. For those portions that were not proposed critical habitat, impacts were calculated as 300 feet from the 100 year floodplain. The existing 29 x 18-foot natural bottomed CBC under I-25 will be extended from 105 feet to 292 feet.

Teachout Creek

The habitat areas were calculated as 360 feet on each side of Teachout Creek (the proposed critical habitat width). The habitat ends on both sides of the existing highway at the 15-foot-wide mowing strips adjacent to the edges of pavement. The area of permanent impact to the habitat is the area between the edges of the mowing strips of the existing highway and the edges of the 15 feet wide mowing strips next to the new highway, and the area to be covered by the culvert extensions. The permanent impact at Teachout Creek will be approximately 1.1 acres, and the temporary impact approximately 1.4 acres. Portions of this creek were proposed critical habitat and impacts were calculated as those areas within 360 feet of each side of the creek. For those portions that were not proposed critical habitat, impacts were calculated as 300 feet from the 100 year floodplain. Teachout Creek flows under I-25 in two 10 x 10 CBCs that are currently 125 feet long that will be extended to 200 feet in length.

North Powers Boulevard

Temporary impacts due to the construction of Powers Boulevard at Black Squirrel Creek have been minimized. The impact areas were measured within the 360-foot-wide habitat area, measured from the bank of the normal flow channel. The impacts will include the placement of the roadway fill, work area needed for construction, access road and crane pads for placement of the steel girders. The temporary disturbance area is estimated at 6.36 acres.

Permanent impact areas due to the proposed Black Squirrel Creek bridge include the permanent roadway fills within the 360-foot-wide habitat area. In addition, pier and wall structures were tallied as permanent impact areas. The permanent disturbance area is estimated at 2.25 acres. The new bridge will be three spans totaling approximately 400 feet in length.

Shoup Road

Temporary impacts to Black Squirrel Creek due to the reconstruction of the Shoup Road/SH 83 intersection will be minimized to the extent possible. Construction will be accomplished from the existing roadway and will occur west of the existing alignment. Grading and access roads will have a temporary impact to the habitat area. The temporary disturbance area is estimated at 3.84 acres. All temporary impact areas will be revegetated.

Permanent impacts will include the placement of additional roadway fill and pavement, construction of any channel structure, walls and rock riprap. Current roadway, drainage structures and mowed areas next to the existing roadway were subtracted from the totals as an existing impact area. The permanent impact areas due to the proposed roadway and drainage structure improvements were quantified for the area within 360 feet of either side of the channel bank normal flow line. The permanent disturbance area is approximately 2.35 acres. Impacts described here are for the pipe or box structure and may be reduced during the final design once a structure is selected. It is more likely that a 142-foot single span bridge approximately 40 feet high will be constructed. At its lowest point, the height of this bridge is expected to be approximately 32 feet high.

Non-Habitat Areas

Several areas within the corridor were classified in the Biological Assessment as non-habitat. These areas are:

- All highway shoulders along I-25 within 15 feet of pavement (these grassy strips are regularly mowed);
- All paved or dirt roads;
- Most highway medians that clearly did not contain Preble's habitat (the area around Northgate was an exception);
- All currently paved areas within potential habitat;
- The Colorado Springs block exclusion area. This is a 9.34-mile stretch of Monument and Fountain Creeks, beginning in the north from the I-25 crossing of Monument Creek, continuing southward to the Monument/Fountain Creek confluence, and continuing south to the wastewater treatment plant, about one mile south of the Nevada Avenue bridge over Fountain Creek;
- The Cottonwood Creek block exclusion area;
- Areas on North Powers Boulevard, with the exception of the Black Squirrel Creek bridge crossing. These areas were field reviewed by Ensign and the Service on January 21, 2003. There was concern about one potential habitat area on Powers Boulevard about 0.25 miles east of the Voyager Parkway crossing of Monument Branch. Although there was no suitable habitat at the crossing, there was potential habitat just downstream of the project area. Although no impacts are anticipated at this location, FHWA/CDOT will consult with the Service on the status of this area during construction planning if FHWA/CDOT build this section of roadway. If there are future impacts to habitat and they fall within the limited take amount permitted in the biological opinion, no additional conservation measures would be required; and
- An area on Monument Creek just north of the I-25 bridge in Colorado Springs. There will be improvements to the Rockrimmon interchange and frontage road, and this area is just north of the Colorado Springs block exclusion area. This channelized section of Monument Creek is being monitored for Preble's as a condition of the Colorado Springs block clearance. FHWA/CDOT will consult with the Service on the habitat status of this area during construction planning. If there are future impacts to habitat and they fall within the limited take amount permitted in the biological opinion, no additional conservation measures would be required.

The total area of impact as calculated by Ensign is 61.9 acres (Table 1). Temporary impacts account for 36.2 acres, and permanent impacts for 25.7 acres. The majority (86 percent) of the total disturbance will be associated with improvements to existing roadway, through adding highway

lanes, extending culverts and rebuilding existing interchanges. North Powers Boulevard however, is a new roadway. All three projects will result in alteration of Preble's habitat, however, following construction and revegetation, the site should return to functioning Preble's habitat.

Effects to habitat will be primarily due to reduction in habitat areas, but fragmentation will also occur. Fragmentation usually refers to a reduction in habitat areas as well as a reduction in animal mobility between habitat patches. Preble's mobility will be affected to some extent by lengthening of culverts under I-25, but this effect is expected to be temporary, and last only during construction and habitat recovery. It is anticipated that culvert lengths will not exceed 300 feet, which is close to the maximum known distance that Preble's have dispersed through a culvert (305 feet at Dirty Woman Creek) (Table 2). As Table 2 shows, of the fourteen drainage crossings affected, nine are CBCs that will be lengthened anywhere from 25 – 350 feet; six of the crossings will be more than 100 feet longer after construction than they currently are. These numbers are based on the worst-case scenario for Smith Creek as described above, where a single crossing of 480 feet will be used under the southbound lanes of I-25 and the new Powers Boulevard/Northgate ramps. In the more likely scenario, there will be a new 140-foot long CBC installed at Smith Creek for the new ramps, and a separate 225-foot long crossing for southbound I-25, leaving approximately 55 feet of Smith Creek between the mainline and the new ramps. The I-25 crossing of Kettle Creek will not change, and the new Powers Boulevard crossing of Black Squirrel Creek will be a span bridge ranging from 20 –70 feet high which should not present a barrier to wildlife movement. One crossing, Black Squirrel Creek at Shoup Road, is currently a CBC that will be replaced with a span bridge a minimum of 32 feet high, making the road more permeable to wildlife at that location. Mobility will also be better than it currently is at Jackson Creek because of habitat improvements and removal of the frontage road and the culverts beneath it.

Small mammal ledges may be used in new culverts to enhance mouse mobility pending research results. Although longer culverts may affect Preble's dispersal under road surfaces, dispersal should not be affected to the point where movement is impossible, with subsequent isolation of populations. All project areas should allow for dispersal rates that support both genetic mixing and maintenance of current population sizes. Post-project dispersal rates should be comparable to pre-project dispersal rates, or in some cases, better. Pre- and post-project monitoring will be conducted at some sites.

Project impacts will cause a loss of habitat area. There will be a permanent loss of approximately 25.7 acres from the three projects, and approximately 36.20 acres of temporary loss. Some of these areas include breeding, feeding, nesting, and potential hibernation habitat. The majority of habitat impact (86 percent) will occur adjacent to existing roads, in areas not considered high quality habitat. The new Powers Boulevard project, with approximately 8.61 acres of disturbance, will include disturbances to poor quality riparian habitat, within a severely downcut stream channel.

Impacts at the three project areas will not occur simultaneously, allowing for some habitat and Preble's population recovery between impacts. In addition, efforts to reconnect corridors through land purchase and habitat improvement are ongoing, and some of these efforts will be complete and successful prior to project impacts, thus reducing the effects of the projects to Preble's on a landscape scale. The construction and habitat protection schedules combined should help protect populations throughout the project areas from the effects of natural stochastic events, such as flood, fire, or drought because habitat and populations should have time to recover in some areas before they are affected in others.

Most work will be done during the hibernation period and hibernating Preble's individuals could be directly killed during construction by being crushed by construction equipment, or through increased exposure to predators or the elements due to lack of cover. Preble's behavior will also be affected during project construction. Areas where vegetation has been cleared but not yet recovered, could deter dispersal of breeding individuals or of young. Clearing may also reduce hibernation habitat. Silt fences could also have the effect of preventing mice from moving through or to areas that otherwise would be accessible. Lack of escape cover and the presence of silt fencing could also increase Preble's susceptibility to predation. Such effects are difficult to quantify, but were

Table 1. Summary of Impacts by Site.

Site	Permanent Impact (acres)	Temporary Impact (acres)	Activities
Pine Creek	0.0 (0.2 recovered)	3.3	New lane, east side of I-25, minor drainage culverts, construction access.
Kettle Creek	0.1	0.4	New lanes both sides, construction access.
Black Squirrel Creek South	1.2	2.1	New lanes both sides, new multi-span bridges to replace two existing bridges, construction access.
Black Squirrel Creek North	1.0	3.1	New lanes both sides, extend existing side-by-side CBCs, construction access.
Monument Branch	3.5	6.1	New lanes both sides, auxiliary lanes for Powers, extension of separate culverts on east and west sides of I-25, and on east side of I-25 north of Monument Branch, construction access.
Smith Creek	6.2	4.0	New lanes both sides, new ramps, extend existing side-by-side CBCs on east and west sides of I-25, new CBCs under new ramps, detention pond in median, construction access.
Black Forest Tributary	0.3	1.0	New lanes both sides, extend existing side-by-side CBCs on east and west sides of I-25, construction access.
Jackson Creek and Baptist Road	7.7 (up to 3.6 recovered)	4.6	New lanes both sides of I-25, extend existing CBC. Baptist Road will be widened to six lanes with a new culvert at Jackson Creek. Existing frontage road will be eliminated, replaced by new Jackson Creek Parkway on east side of the 65-acre CDOT property.
Teachout Creek	1.1	1.4	Additional lanes, lengthen CBC.

Table 1. Summary of Impacts by Site.

Site	Permanent Impact (acres)	Temporary Impact (acres)	Activities
Pine Creek	0.0 (0.2 recovered)	3.3	New lane, east side of I-25, minor drainage culverts, construction access.
Kettle Creek	0.1	0.4	New lanes both sides, construction access.
Black Squirrel Creek South	1.2	2.1	New lanes both sides, new multi-span bridges to replace two existing bridges, construction access.
Black Squirrel Creek North	1.0	3.1	New lanes both sides, extend existing side-by-side CBCs, construction access.
Monument Branch	3.5	6.1	New lanes both sides, auxiliary lanes for Powers, extension of separate culverts on east and west sides of I-25, and on east side of I-25 north of Monument Branch, construction access.
Smith Creek	6.2	4.0	New lanes both sides, new ramps, extend existing side-by-side CBCs on east and west sides of I-25, new CBCs under new ramps, detention pond in median, construction access.
Black Forest Tributary	0.3	1.0	New lanes both sides, extend existing side-by-side CBCs on east and west sides of I-25, construction access.
Jackson Creek and Baptist Road	7.7 (up to 3.6 recovered)	4.6	New lanes both sides of I-25, extend existing CBC. Baptist Road will be widened to six lanes with a new culvert at Jackson Creek. Existing frontage road will be eliminated, replaced by new Jackson Creek Parkway on east side of the 65-acre CDOT property.
Teachout Creek	1.1	1.4	Additional lanes, lengthen CBC.

Site	Permanent Impact (acres)	Temporary Impact (acres)	Activities
Powers Boulevard North	2.25	6.36	New highway over Black Squirrel Creek with multiple bridge structures, disturbed uplands, construction access.
Shoup Road/SH83	2.35	3.84	Relocation and widening of SH83, new culvert or bridge, construction access.
TOTALS	25.70	36.20	

BMPs such as leaving brush piles in areas where vegetation has been removed to provide thermal and escape cover while habitat recovers, controlling vehicle access, minimizing time periods and areas with bare soil, doing the majority of work during the hibernation period, or clearing disturbance areas within hibernation habitat of shrubs and other woody vegetation prior to the hibernation period to discourage hibernation (and thus decrease the chance of potentially killing a hibernating mouse).

Although the projects will result in alteration and loss of habitat, given the proposed conservation measures, the projects should not cause permanent habitat fragmentation and loss of connectivity within and between populations in the project areas. Habitat connectivity and mouse mobility could improve at the project sites where culvert and bridge designs are improved, and where actions designed to remove obstacles to movement are implemented. One culvert will be replaced with a bridge which will improve permeability, but most culverts will be lengthened anywhere from 25 feet to 350 feet. Most of the project actions will occur within habitat that supports low density Preble's populations. The nature of the impacts and subsequent restoration actions will allow for recovery of populations in project areas.

Based on the amount and nature of project impacts, the project will have temporary but not significant long term effects on the ability of Preble's to travel upstream or downstream along the riparian corridors within the project areas, or on the creeks' hydrologic regimes, including their ability to support riparian vegetation. Given the conservation measures proposed, over time temporarily disturbed Preble's habitat should return to a condition as good as that which is currently present. Monitoring and success standards described in the project-specific consultation documents as well as in the Terms and Conditions below, will assure that the temporarily impacts areas are maintained as good habitat.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

El Paso County is one of the fastest growing counties in the nation with substantial residential, urban and commercial development occurring. According to the Biological Assessment, in 2000, the county's population was approximately 517,000, but that number is expected to increase to 746,000 by 2025. It is very likely that Preble's upland and riparian habitats will be affected by this development. Such changes in land use could have potential direct or secondary impacts on Preble's and its habitat in the area. Secondary effects include an increase in impervious surfaces and subsequent changes in the hydrology of Monument Creek and its tributaries potentially leading to

Table 2. Comparison of Existing and New Crossings at All Sites

Crossing	Crossing type	Current length	Post-construction type	Post-construction length
Kettle Creek	9-foot Reinforced Concrete pipe	2600 feet	Existing 9-foot RCP	Same as existing
Black Squirrel Creek South	15-foot high bridges	105-foot spans	15-foot high new bridges	120-foot spans
Black Squirrel Creek North	2 12 x 10-foot Concrete Box Culvert (CBC)	210 feet	2 12 x 10 foot CBC extension	235 feet
Monument Branch	2 21 x 10-foot CBC in each direction	180 feet northbound	extension	282 feet
		91 feet southbound	extension	202 feet
N of Monument Branch	6 x 7-foot CBC northbound only	78 feet	2 10x6-foot CBC northbound only	130 feet
Smith Creek (worst-case scenario)	2 10 x 10-foot CBC northbound	114 ft northbound	extension northbound	250 feet northbound
	2 10 x 10-foot CBC southbound	130 ft southbound	extension southbound	480 feet southbound
Smith Creek (most likely scenario)	2 10 x 10-foot CBC northbound	114 ft northbound	extension northbound	250 feet northbound
	2 10 x 10-foot CBC southbound	130 ft southbound	extension southbound 2 10x10-foot CBCs for new ramps	225 feet southbound 145 feet
Black Forest Tributary	2 10 x 10-foot CBC	142 feet	extension	285 feet
I-25 at Jackson Creek	29x18-foot CBC natural bottom	105 feet	extension	292 feet
Baptist Road at Jackson Creek	48-inch corrugated metal pipe	50 feet	will be removed	
Teachout Creek	double 10x10-foot CBC	125 feet	extension	200 feet
Black Squirrel Creek at Powers Boulevard	none	none	3 span bridge 20-70 feet high	400 feet
Black Squirrel Creek at Shoup Road	15-foot diameter pipe	130 ft	single span 32-40 feet high	142 feet

Table 2. Comparison of Existing and New Crossings at All Sites

Crossing	Crossing type	Current length	Post-construction type	Post-construction length
Kettle Creek	9-foot Reinforced Concrete pipe	2600 feet	Existing 9-foot RCP	Same as existing
Black Squirrel Creek South	15-foot high bridges	105-foot spans	15-foot high new bridges	120-foot spans
Black Squirrel Creek North	2 12 x 10-foot Concrete Box Culvert (CBC)	210 feet	2 12 x 10 foot CBC extension	235 feet
Monument Branch	2 21 x 10-foot CBC in each direction	180 feet northbound	extension	282 feet
		91 feet southbound	extension	202 feet
		78 feet		
N of Monument Branch	6 x 7-foot CBC northbound only		2 10x6-foot CBC northbound only	130 feet
(worst-case scenario)	2 10 x 10-foot CBC northbound	114 ft northbound	extension northbound	250 feet northbound
		130 ft southbound	extension southbound	480 feet southbound
Smith Creek (most likely scenario)	2 10 x 10-foot CBC northbound	114 ft northbound	extension northbound	250 feet northbound
		130 ft southbound	extension southbound	225 feet southbound
			2 10x10-foot CBCs for new ramps	145 feet
Black Forest Tributary	2 10 x 10-foot CBC	142 feet	extension	285 feet
I-25 at Jackson Creek	29x18-foot CBC natural bottom	105 feet	extension	292 feet
Baptist Road at Jackson Creek	48-inch corrugated metal pipe	50 feet	will be removed	
Teachout Creek	double 10x10-foot CBC	125 feet	extension	200 feet
Black Squirrel Creek at Powers Boulevard	none	none	3 span bridge 20-70 feet high	400 feet
Black Squirrel Creek at Shoup Road	15-foot diameter pipe	130 ft	single span 32-40 feet high	142 feet

El Paso County is currently working on a county-wide Habitat Conservation Plan (HCP) in cooperation with the Service. This plan will address growth and other activities within the county.

Conclusion

After reviewing the current status of Preble's, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that neither the direct nor indirect effects of the proposed action (which includes the implementation of conservation measures agreed to during informal consultation and outlined in this biological opinion) nor the cumulative effects will jeopardize the continued existence of Preble's. A Panel of Preble's experts convened by FHWA/CDOT to discuss impacts due to reconstruction of I-25 and related conservation measures met three times during 2000. A report that identified and prioritized concerns was compiled and submitted to the Service in 2001. That report identified isolation of small populations as the greatest threat to long-term persistence of Preble's in the Monument Creek watershed. The Panel also identified general biological goals for maintaining a viable mouse population in the corridor. The top three goals are: 1) keep tributary populations whole; 2) maintain upland habitat, and; 3) maintain connectivity between populations. Through their conservation measures, FHWA/CDOT will be addressing the first and third goals by re-establishing at least two severed populations, as already discussed. They will also be maintaining connectivity along onsite drainages through habitat restoration activities. These activities are likely to improve connectivity in El Paso County, thereby increasing Preble's population sizes on some drainages, thus supporting recovery goals.

Although the project will adversely affect Preble's and its habitat in the Monument Creek drainage in the short term, the proposed action and conservation measures will avoid the likelihood of jeopardy to the species. In the long term, habitat linkages in some drainages will be greatly improved, maintained, and protected. Critical habitat was not designated in the project area, therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

This incidental take statement is based on full implementation of the proposed action as described in the Description of the Proposed Action section of this biological opinion, including conservation measures that were incorporated into the project design. Relevant aspects of the proposed action (including conservation measures) include, but are not limited to, the following:

1. Avoidance of impacts to Preble's habitat.

2. Minimization of impacts to Preble's habitat through implementation of BMPs and further refinement of project design.
3. Implementation of Conservation Program including onsite actions, offsite actions, monitoring and research commitments.

The measures described below are non-discretionary, and must be undertaken by the FHWA so that they become binding conditions of any project approval issued to CDOT for the exemption in section 7(o)(2) to apply. The FHWA has the continuing duty to regulate the activity covered by this incidental take statement. If the FHWA fails (1) to assume and implement the terms and conditions or (2) fails to require CDOT to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the project approval, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, CDOT must report the progress of the action or its impact on the species to the Service as specified in the incidental take statement.

This biological opinion allows for take of listed species. Site-specific consultations will allow for refinement of take when specific information on project design, timing, and amount of take anticipated are known.

Amount or Extent of Incidental Take

The Service anticipates incidental take of Preble's through direct killing will be difficult to detect due to their small size. However, the Service believes that the level of take can be anticipated by loss of food and cover, movement and dispersal corridors, and other essential habitat elements. The Service anticipates that the proposed action will result in incidental take of an undetermined number of Preble's through permanent and temporary loss of approximately 61.9 acres of Preble's habitat. Habitat in the project area is inhabited by Preble's year-round.

Incidental take may also occur through secondary impacts to Preble's and its habitat. Along the I-25 corridor and at the Shoup Road/SH83 intersection site, this take is not expected to be significant because the roads have impacted the area for many years, and only insignificant additional secondary threats to Preble's will be introduced through the completion of the projects. Powers Boulevard however, is a new roadway that will traverse areas previously impacted primarily only by grazing. The corridor has been slated for development for many years, and this development will introduce new threats to Preble's and their habitat including increased impervious surfaces, increase in road traction substances, noise, vibration, weeds, predators, and competitors. The project areas are occupied by Preble's and are also likely used as travel or dispersal corridors. Conservation measures will minimize take.

Effect of the Take

In this biological opinion, the Service determined that the level of anticipated take is not likely to result in jeopardy to the species. No critical habitat has been designated in the project area, therefore none will be affected.

Reasonable and Prudent Measures

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the effects of incidental take that might otherwise result from the proposed action.

The Service believes that the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of Preble's:

1. The FHWA will monitor the extent of habitat impacted to assure that it does not exceed the authorized area.
2. The FHWA will monitor all aspects of proposed onsite restoration and enhancement to assure project completion and success.
3. The FHWA will ensure that all offsite acreage conserved to offset the projects' impacts, including reestablished linkages, are maintained into perpetuity as Preble's habitat. These areas will be monitored to assure project completion and success.
4. The FHWA will ensure that BMPs designed to minimize take are implemented and successful.
5. The FHWA will ensure that site-specific biological assessments are submitted and approved by the Service prior to implementation of any specific action.
7. The FHWA will ensure that offsite fill material will not be obtained from nor disposed of in an area containing a listed species or its habitat without Service approval.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring. These terms and conditions are non-discretionary.

1. The following terms and conditions implement reasonable and prudent measure number 1. Work will be supervised, inspected, and monitored by an onsite individual from CDOT or by an authorized representative. Staging areas for equipment will be outside habitat areas or in permanently impacted areas.

2. The following terms and conditions implement reasonable and prudent measure number 2. The FHWA will include as a binding condition of project approval that CDOT conduct annual monitoring of onsite revegetation efforts and noxious weeds. Monitoring will extend for at least three growing seasons (or until such time as the FHWA and the Service determine that proposed revegetation has been successfully completed). Success criteria will be established during site-specific consultation.

CDOT shall forward monitoring reports to the FHWA and the Service after each growing season and prior to February 1. CDOT must also provide a report to the FHWA and the Service, which includes photographic documentation of site conditions within identified Preble's habitat prior to construction and at completion of construction.

4. The following terms and conditions implement reasonable and prudent measure number 3. FHWA and CDOT will purchase Preble's habitat or will enter into agreements with private property holders to maintain and manage their properties for the benefit of Preble's into perpetuity. This term and condition applies to FHWA/CDOT's commitments to reestablish at least two linkages, and to secure at least an additional 50 acres of Preble's habitat in the project area, as stated in the Biological Assessment. Success criteria will be established when these sites are chosen. CDOT shall forward monitoring reports to the FHWA and the Service after each growing season and prior to February 1.

4. The following terms and conditions implement reasonable and prudent measure number 4. An employee awareness training session will be held prior to construction. Meeting minutes and a list of attendees will be submitted to the Service. During this training, workers will be informed by CDOT

as to the reason for and importance of limiting impacts to vegetated habitat outside the fenced work area. BMPs will also be presented and discussed at this time.

5. The following terms and conditions implement reasonable and prudent measure number 5. Site specific biological assessments must contain a complete project description including the location of the actions covered and efforts taken to avoid and minimize project impacts. The project schedule will also be provided. Additionally, the biological assessment must determine whether this project fits into the programmatic consultation by showing the effects of the project. A precise estimate of the expected level of impact, the amount of take, and the amount of habitat affected or lost must be included.

6. The following terms and conditions implement reasonable and prudent measure number 6. CDOT will include in the project specifications that the contractor shall obtain prior written approval from the Service and/or CDOT's Threatened and Endangered Species staff specialist for all borrow or offsite material sources or for material disposal sites. The contractor and workers will be informed during training that they will be required to submit proof of compliance. This condition will assure that offsite indirect impacts of the project to listed species are minimized.

7. In the unlikely event that a Preble's mouse (dead, injured, or hibernating) is located during construction, the Colorado Field Office of the Service (303) 275-2370 or the Service's Law Enforcement Office (303) 274-3560 will be contacted immediately.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take (61.9 acres of Preble's habitat) is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Reporting Requirements

CDOT will maintain a database that will include project information for activities that are covered in the Biological Assessment. In addition, FHWA/CDOT will deliver an annual report to the Service that documents the status of all activities covered in the Biological Assessment.

If an emergency occurs within project area habitat, CDOT will notify the Service immediately and determine and implement actions that will correct the situation and minimize any necessary additional impacts. CDOT will submit a report to the Service describing any actions taken, additional impacts (if any), and an updated project database report, if applicable.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

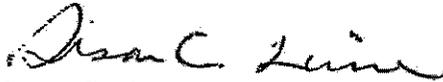
The Service has no conservation recommendations at this time relating to the proposed project.

REINITIATION NOTICE

This concludes formal consultation and conference on proposed Federal actions related to the proposed highway improvements. As required by 50 CFR 402.16, reinitiation of formal consultation is required if (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an adverse effect to the listed species or critical habitat that was not considered in this opinion, (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where incidental take exceeds the authorized, any operations causing such take must cease pending reinitiation. In addition, if any of the Terms and Conditions are not met, reinitiation of formal consultation will become necessary.

If the Service can be of further assistance, please contact Alison Deans Michael of my staff at (303) 275-2370.

Sincerely,



Susan C. Linner
Colorado Field Supervisor

pc: FWS/ES - GJ
FWS, RO (J. Mizzi)
CDOT, Denver, CO (R. Wostl)
Michael

Ref:Alison/CDOT2003/Reg2

LITERATURE CITED

Armstrong, D.M., M.E. Bakeman, A. Deans, C.A. Meaney, and T.R. Ryon. 1997. Report on habitat findings of the Preble's meadow jumping mouse. Boulder (CO); report to the U.S. Fish and Wildlife Service and Colorado Division of Wildlife. 91 pp.

Bakeman, M.E. Personal communication with A.D. Michael, March 14 and June 24, 2002.

Compton, S.A., and R.D. Hugie. 1993. Status report on *Zapus hudsonius preblei*, a candidate endangered subspecies. Logan (UT): Pioneer Environmental Consulting Services Inc.; under contract with the U.S. Fish and Wildlife Service. 32 pp.

Compton, S.A., and R.D. Hugie. 1994. Addendum to the status report on *Zapus hudsonius preblei*, a candidate subspecies. Logan (UT): Pioneer Environmental Services, Inc.; under contract with the U.S. Fish and Wildlife Service. 8 pp.

Corn, J.G., C.A. Pague, A.R. Ellingson, M. Sherman, T. Zwiejacz, G. Kittel, and C. Fleming. 1995. Final report on the geographic extent of the Preble's meadow jumping mouse population on the United States Air Force Academy. Ft. Collins (CO): Colorado Natural Heritage Program; under contract with the United States Air Force Academy. 40 pp.

CNHP (Colorado Natural Heritage Program). 1997a. Preble's meadow jumping mouse survey, Monument Creek, north of Woodmen Road, Colorado Springs, El Paso County, Colorado. Survey report submitted to City of Colorado Springs by the CNHP, 19 July 1997.

Ensign Technical Services, 1997. Presence or Absence survey for Preble's meadow jumping mouse at State Highway 105 at Monument, El Paso County, Colorado. Prepared for Colorado Department of Transportation.

Ensign Technical Services, 1999. Report on Preble's meadow jumping mouse movement assessment at Dirty Woman and Monument Creeks, El Paso County, Colorado. Submitted to Colorado Department of Transportation. February 26, 1999.

Foresman, K. 2001. Small Mammal Use of Modified Culverts on the Lolo South Project of Western Montana. Proceedings of the International Conference on Ecology and Transportation, September 24-28, 2001. Keystone, Colorado.

Krutzsch, P.H. 1954. North American jumping mice (genus *Zapus*). University of Kansas Publications, Museum of Natural History 7:349-472.

Meaney, C., A. Deans and N. Clippinger. 1997. Survey for Preble's meadow jumping mice, Academy Boulevard and Pine Creek, Colorado Springs, El Paso County, Colorado. Prepared for the Colorado Department of Transportation. 21 June 1997.

Meaney, C., A. Ruggles and A. Deans. 1998a. Survey for Preble's meadow jumping mice, lower Pine Creek, Colorado Springs, Colorado. Survey report submitted to the Colorado Department of Transportation. 7 September 1998.

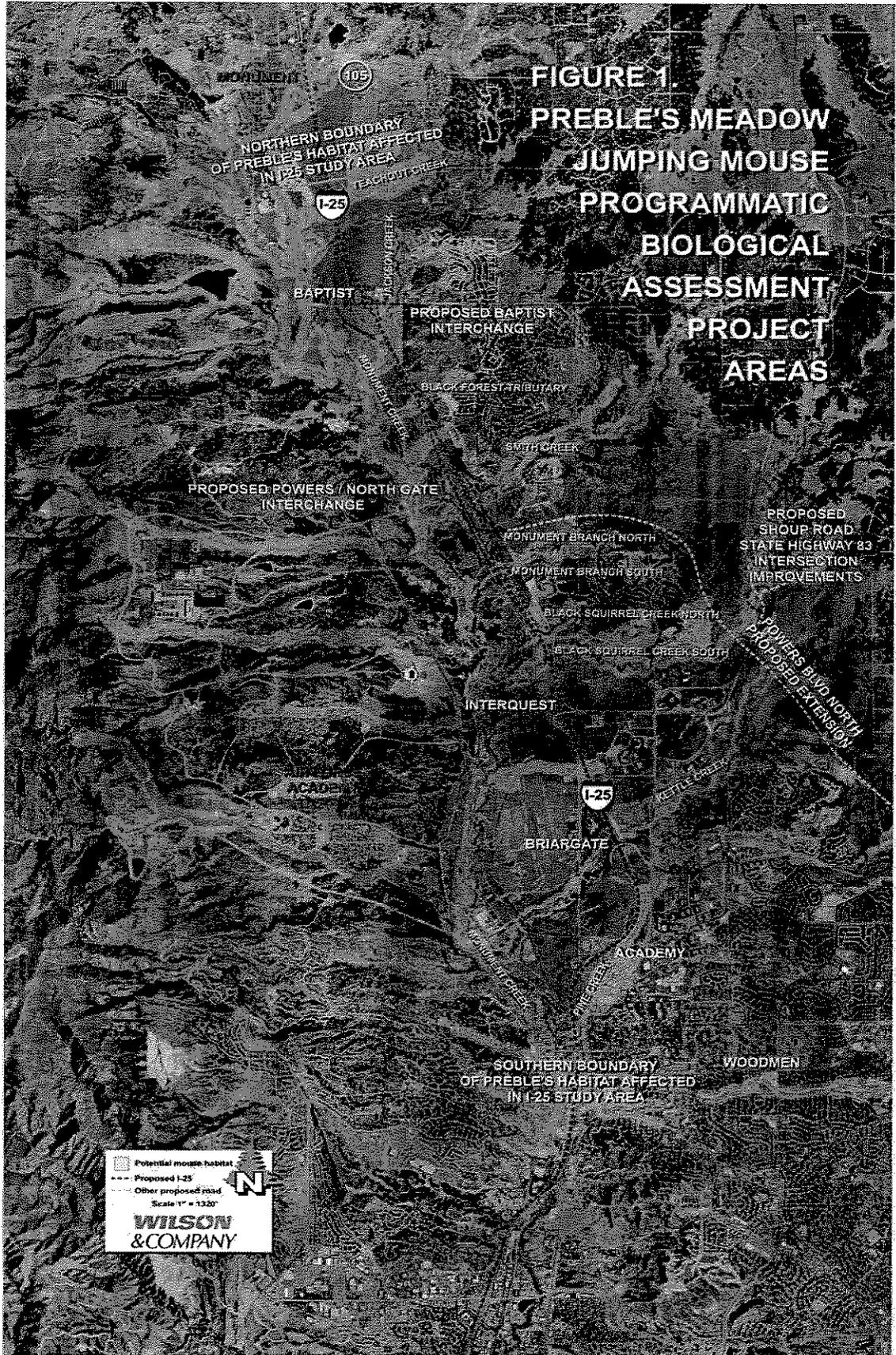
Meaney, C., A. Ruggles and A. Deans. 1998b. First year monitoring survey for Preble's meadow jumping mice on Pine Creek at Academy Boulevard, Colorado Springs, El Paso County, Colorado. Report submitted to the Colorado Department of Transportation. 26 October 1998.

Meaney, C., A. Ruggles and A. Deans. 1999. Second year monitoring survey for Preble's meadow jumping mice on Pine Creek at Academy Boulevard, Colorado Springs, El Paso County, Colorado. Report submitted to the Colorado Department of Transportation. 18 October 1999.

Meaney, C., A. Ruggles and A. Deans. 2000. Third year monitoring survey for Preble's meadow jumping mice on Pine Creek at Academy Boulevard, Colorado Springs, El Paso County, Colorado. Report submitted to the Colorado Department of Transportation. 30 October 2000.

Shenk, T. 1998. Conservation assessment and preliminary conservation strategy for Preble's meadow jumping mouse (*Zapus hudsonius preblei*). Fort Collins (CO): Colorado Division of Wildlife. 38 pp.

FIGURE 1.
PREBLE'S MEADOW
JUMPING MOUSE
PROGRAMMATIC
BIOLOGICAL
ASSESSMENT
PROJECT
AREAS



Potential mouse habitat
 Proposed I-25
 Other proposed road
 Scale: 1" = 1320'
WILSON & COMPANY

