

Topical Response 12: Wildlife Habitat Connectivity, Corridors, and Crossings

Subsection 4.5.5.2.4 of the Draft EIS/EIR presented an analysis of how implementation of the proposed Project and alternatives affects the ability of plants and wildlife to disperse, forage, or move on a local and landscape scale and how these factors are influenced depending on the life history of the individual species. In order to evaluate how the proposed Project would affect the movement of these species, the Draft EIS/EIR analyzed wildlife habitat connectivity and wildlife corridors at three separate scales. This included landscape habitat linkages, local wildlife corridors, and site-specific wildlife crossings.

In order to evaluate potential Project effects to wildlife movement, the Draft EIS/EIR considered how different species respond to potentially constrained linkages, corridors, or crossings based on the behavior and ecology of the animal. As part of the analysis, the Draft EIS/EIR assigned species to different guilds based on their similar abilities to move across the landscape, both on a micro- and macroscale. For example, coyotes, mountain lions, and deer are highly mobile species that occupy large areas and can move quickly through marginal habitat. While the ecology of these species differs in many ways, they share common movement requirements. Because of this fact, these species were included in the High Mobility guild. Conversely, most small rodents and reptiles that occur within the Project area are primarily low-mobility species that are more often confined to smaller home territories supporting suitable habitat. While the Draft EIS/EIR considered the individual life history characteristics of the species, as a group they were considered a Low Mobility guild. In the case of Low Mobility guild, degraded habitat or physical barriers (*i.e.*, roads, curbs, and structures) can result in effective barriers to dispersal. The species included in these guilds and their ability to move through landscapes are discussed in detail in **Subsection 4.5.5.2.4.1** on pages 4.5-261 through 4.5-271 of the Draft EIS/EIR.

As described above, the Draft EIS/EIR analyzed the effects of the proposed Project to wildlife habitat connectivity and wildlife corridors at three separate scales. The potential impacts of the proposed Project at each of these scales are discussed separately below.

Wildlife Landscape Habitat Linkages

Wildlife landscape habitat linkages are generally defined in **Subsection 4.5.3.4.7.1** of the Draft EIS/EIR as relatively large open space areas that contain natural habitat and provide connection between at least two larger adjacent open spaces that can provide for both diffusion and dispersal of many species. In addition, these areas are typically large, open space areas that are large enough to support at least a natural habitat mosaic and viable populations of smaller terrestrial species, such as rodents, smaller carnivores (raccoons, skunks, foxes, and weasels), passerine birds, amphibians, reptiles, and invertebrates.

The Draft EIS/EIR identified three primary wildlife linkages in the Project area. These include the River Corridor Special Management Area (SMA), High Country SMA, and Salt Creek area. The High Country SMA and Salt Creek area within the Project area comprise an important part of the "least cost" path linkage design identified by Penrod *et al.* (2006). These areas provide a key part of the east-west linkage that crosses I-5 and connects to the Angeles National Forest in the San Gabriel Mountains to the east and to Ventura County "SOAR" open space to the southwest.¹ They also provide a significant part of the

¹ Save Open-Space and Agricultural Resources (SOAR) is a non-profit organization that seeks to maintain agricultural, open space, and rural lands within Ventura County and surrounding regions. Development activities within the SOAR boundaries are limited by County Ordinance.

north-south linkage between the Santa Susana Mountains and the "Fillmore Greenbelt" to the northwest that further links to the Los Padres National Forest and the Angeles National Forest to the north.

A fourth connection that provides additional landscape-level connectivity is the Castaic/Hasley corridor shown in **Figure 4.5-40** of the Draft EIS/EIR. This corridor was not identified by Penrod *et al.* (2006) as a regional linkage, but its direct connection to the River Corridor SMA may provide for movement of many species such as coyote, deer, and possibly mountain lion and bobcat between the River Corridor SMA and upland habitats to the northeast and the Angeles National Forest, as illustrated in **Figure 4.5-22** of the Draft EIS/EIR.

The Draft EIS/EIR analyzed the potential impacts of the proposed Project (Alternative 2) on wildlife landscape habitat linkages in **Subsection 4.5.5.2.4.2** on pages 4.5-574 through 4.5-576. Implementation of the proposed Project would constrain the movement of wildlife in the Project area. However, as shown in **Figure 4.5-40** of the Draft EIS/EIR, the landscape habitat linkages that would remain functional after implementation of the RMDP and SCP and build-out of the Specific Plan, Valencia Commerce Center (VCC), and Entrada planning areas under Alternative 2 are the High Country SMA, Salt Creek area, and River Corridor SMA. These contiguous areas are required open space elements of the proposed Project and combined total approximately 6,300 acres and provide both internal connectivity and connections to habitat areas beyond the Project area.

The Draft EIS/EIR also determined that the post-development widths of the River Corridor SMA floodplain would be approximately 700 feet at its minimum point, to 2,000 feet wide, with most areas ranging from 1,000 to 2,000 feet wide. Approximately 300 feet of adjacent upland open space, including some natural open space, particularly at the mouth of tributaries, would provide lateral buffer for the east-west habitat linkage. The 300 foot adjacent buffer area would include a bike trail, however, species that are less sensitive to human disturbance would use this area for foraging and movement. The adjacent upland open space would provide a buffer for species and river habitat areas that are sensitive to other human disturbances, such as night lighting. The Draft EIS/EIR also considered how the mosaic of habitats within the river corridor (*i.e.*, open sand, early seral stages of riparian scrub, riparian woodland and other communities) contribute to the functional value of the river corridor for wildlife movement. Because the river corridor is rarely flooded to bankfull width for extended periods of time wildlife have the ability to move through this mosaic of habitats. In addition, the Draft EIS/EIR found that, while some constraints would occur, there would be no significant impacts of the proposed Project on water flows, velocities, depth, sedimentation or floodplain, and channel conditions within or downstream of the Project area (see **Section 4.2**, Geomorphology and Riparian Resources, of the Draft EIS/EIR and PACE 2009). (See also revised **Section 4.2** of the Final EIS/EIR.) Natural fluvial processes and the mosaic of aquatic and riparian habitats within the floodplain would be retained over the long term. Because of the broad dimensions of the River Corridor SMA combined with adjacent upland open space, and because current aquatic and riparian communities would persist, the River Corridor SMA would provide support for the life history needs of the bobcat, coyote, and mule deer, and many smaller and less mobile species, and function as dispersal habitat for the mountain lion and black bear.

The combined High Country SMA and Salt Creek area provide a direct connection between the River Corridor SMA and large uplands areas south of the River (Draft EIS/EIR **Figure 4.5-22**) and are part of the eastern arm of the conceptual linkage design identified by Penrod *et al.* (2006). This area would provide for landscape-scale habitat connectivity between the Santa Susana Mountains to the south and the Los Padres National Forest to the north. Penrod *et al.* (2006) considered the High Country SMA and Salt

Creek area, along with regional open space conservation areas, and initiatives such as SOAR, in recommending a linkage design that would connect the Santa Monica Mountains, San Gabriel Mountains, and the Sierra Madre Mountains. This linkage design was also based on a "least cost" analysis that quantitatively models the most efficient routes that target animals could take to travel between these open space areas (see page 4.5-271 of the Draft EIS/EIR for a discussion of the least cost analysis). Although the development of Potrero Village would impact the eastern edge of the conceptual linkage and would limit the future use of this small part of the conceptual linkage by wildlife, the Draft EIS/EIR determined that the combined 5,220-acre High Country SMA and Salt Creek area is large enough to provide both buffer and core habitat to allow wildlife to use this landscape linkage without necessarily having to come into close contact with urban development, except at highway crossings discussed below. The conceptual linkage identified by Penrod *et al.* (2006) in this area is about 4.5 miles (23,760 feet) wide, with the narrowest portion of the High Country SMA and Salt Creek area approximately 4,000 feet wide (Draft EIS/EIR **Figure 4.5-22**). Post-development, this minimum 4,000-foot-wide zone would provide adequate buffer and core habitat for the Mammal -- High Mobility guild species. This habitat linkage would remain intact after implementation of the proposed Project and is expected to provide linkage for wildlife.

The Castaic/Hasley Corridor would also remain intact as Open Space/Open Area following implementation of the proposed Project, but with a narrowing of the corridor that passes between the VCC and Entrada planning areas. This corridor, however, would still allow for movement of Mammal -- High Mobility species and could function as live-in and movement habitat for species in other guilds, although aquatic habitat for fish is limited to periods when Castaic Creek is flowing (ENTRIX 2006B).

Because the three main wildlife landscape habitat linkages -- High Country SMA, River Corridor SMA, and Salt Creek area -- would remain intact and functional following implementation of the proposed Project, the Draft EIS/EIR concluded that impacts to wildlife landscape habitat linkages would be adverse but not significant under the proposed Project (Alternative 2).

The potential impacts to wildlife landscape habitat linkages were also analyzed for Alternatives 3 through 7 in the Draft EIS/EIR. Alternative 3 would result in similar impacts to wildlife landscape habitat linkages compared to Alternative 2. Alternatives 4, 5, 6, and 7 would result in similar impacts to wildlife landscape habitat linkages compared to Alternative 2, with the exception of the Castaic/Hasley Corridor, which would not be impacted under these alternatives because VCC would not be constructed. Therefore, the Draft EIS/EIR concluded that impacts to wildlife landscape habitat linkages would be adverse but not significant under Alternatives 3 through 7. For further responsive information, please see the U.S. Army Corps of Engineers' (Corps) draft 404(b)(1) alternatives analysis, which identified the draft "least environmentally damaging practicable alternative" (Draft LEDPA). In this analysis, which is found in **Appendix F1.0** of the Final EIS/EIR, the Corps evaluated the biological characteristics of the Draft LEDPA. The Draft LEDPA further reduces impacts to wildlife habitat connectivity, corridors, and crossings.

Local Wildlife Corridors

Local wildlife corridors have more limited function than landscape linkages. They are generally defined in the Draft EIS/EIR in **Subsection 4.5.3.4.7.1** as linear landscape elements that provide for species movement and dispersal between two or more habitats, but do not necessarily contain sufficient habitat for all life history requirements of a species, particularly reproduction (Rosenberg *et al.* 1995, 1997). For

this reason, while corridors may provide for dispersal of most species, they may not provide for diffusion of populations over a longer time scale.

The Draft EIS/EIR identified 13 potential wildlife corridors within the Project area (see Draft EIS/EIR **Figure 4.5-31**). These corridors provide habitat connections between the High Country SMA, Salt Creek area, and River Corridor SMA. These connections also provide connections to habitat areas beyond the Project area, as discussed above in the context of the regional landscape-level habitat connections.

Subsection 4.5.5.2.4.3 (pages 4.5-580 through 4.5-585) of the Draft EIS/EIR concluded that build-out of the proposed Project would result in the loss or degradation of several existing corridors. In addition, some of the existing wildlife corridors would be constrained after implementation of the proposed Project. **Figure 4.5-40** of the Draft EIS/EIR shows the potential wildlife corridors in the Project area that would be developed or would become dead-ends for wildlife after implementation of the Project. The Draft EIS/EIR concluded that the constrained corridors, while providing for some level of wildlife movement through the Project area, would not effectively contribute to long-term habitat connectivity function in the Project area (Draft EIS/EIR, pages 4.5-579 to 4.5-585). In addition to physical constraints (*i.e.*, passage size, vegetation, or topographical constraints) on movement, these constrained corridors would also introduce secondary effects that make them less suitable for wildlife, including increased lighting; noise; increased human activity; pet, stray, and feral cats and dogs; other mesopredators; and invasive species.

The Draft EIS/EIR also concluded that several of the existing wildlife corridors in the Project area would remain functional after implementation of the Project. These corridors serve as habitat linkages, as described above, and include the Santa Clara River Corridor; the Salt Creek Confluence; the Salt Creek-High Country; and the East Fork Salt Creek Corridor. These corridors would provide habitat connections among the protected open space areas such as the High Country SMA, Salt Creek area, and River Corridor SMA and would provide connections to habitat areas beyond the Project area, as discussed above in **Subsection 4.5.5.2.4.2**. The Castaic/Hasley Corridor would also remain functional, but would be somewhat constrained by VCC, as discussed in **Subsection 4.5.5.2.4**.

The analysis in the Draft EIS/EIR concluded that impacts to wildlife corridors would be significant absent mitigation because several of the wildlife guilds would be substantially affected under the proposed Project (Alternative 2) where existing potential corridors would be developed, become dead-ends, or become constrained.

The potential impacts to wildlife corridors were also analyzed for Alternatives 3 through 7 in the Draft EIS/EIR. These alternatives generally would result in less overall development and generally more bridge crossings instead of culverts over the tributary drainages. For example, Alternative 3 differs from Alternative 2 in that Potrero Canyon would have three road crossing culverts and two bridges instead of the five culverts in Alternative 2. Alternative 6 would have five bridge crossings in Potrero Canyon. Although Alternatives 3 through 7 generally would provide for better movement through the tributary drainages, the wildlife corridors would still be constrained by urban development under all of the alternatives and thus would not effectively contribute to long-term habitat connectivity function in the Project area after build-out. Therefore, the Draft EIS/EIS concluded that impacts to wildlife corridors would be significant absent mitigation for Alternatives 3 through 7.

Mitigation to reduce these significant impacts to wildlife corridors to a level less than significant is discussed below.

Wildlife Crossings

Wildlife crossings are generally defined in **Subsection 4.5.3.4.7.1** of the Draft EIS/EIR as locations where wildlife must pass through physically constrained environments (*e.g.*, roads, development) during movement within home ranges or during dispersal or migration between core areas of suitable habitat. Typical wildlife crossings are bridges or culverts at roadway locations where at-grade crossings may expose wildlife to high risks of injury or mortality. In the analysis of wildlife crossings, the Draft EIS/EIR considered recommended crossing structure types (*e.g.*, culverts, bridges, arches, overpasses) and structure dimensions (height, length, width) in relation to species expected to use such structures (see **Table 4.5-22** on page 4.5-275 of the Draft EIS/EIR). A literature review of these structural considerations is provided on pages 4.5-275 through 4.5-277 of the Draft EIS/EIR. This discussion included the topic of the "openness factor," which is a structural variable used in the measurement of ambient light in a structure. Openness is calculated as width times height divided by length (in meters) (Reed *et al.* 1975). Deer, for example, are sensitive to openness factors less than 0.25.

Subsection 4.5.3.4.7.1 of the Draft EIS/EIR (pages 4.5-277 and 4.5-278) describes the existing man-made wildlife crossings points in the Project area. These are primarily located under SR-126, which, with high current traffic volume, is the main existing impediment to wildlife movement in the Project area. These crossings were analyzed because they provide the most likely crossings for wildlife after build-out of the proposed Project. While many potential crossing areas would remain within the development footprint, they were not considered to play important roles for post-development wildlife movement due to their constraining effects, including potential secondary impacts such as noise, lighting, human activity, and introduced predators. The effectiveness of a culvert or bridge crossing for wildlife constructed as part of the RMDP would depend on indirect effects of the build-out at that location. For example, because Specific Plan build-out would constrain or prevent wildlife corridor usage in some areas by species sensitive to human disturbance such as mountain lion, analyzing a culvert within a constrained wildlife corridor would be irrelevant (*e.g.*, Exxon Canyon). All impacts are discussed together in the context of the combined effects of the RMDP/SCP and build-out of the Specific Plan, VCC, and Entrada planning areas.

Figure 4.5-32 of the Draft EIS/EIR shows six of the largest existing crossings that can be accessed by wildlife coming directly from adjacent uplands or by moving along the Santa Clara River. These six crossings are associated with current agricultural operations and are bridges or culverts large enough for vehicle passage, as illustrated in **Figure 4.5-32**. The large culverts in Ventura County are about 4.4 meters (14 feet, 7 inches) in height, 7.5 meters (25 feet) in width, and 51.8 meters (170 feet) in length, resulting in an openness factor of 0.65, which well exceeds the openness factor of 0.25 found by Donaldson (2005) to be adequate for white-tailed deer. They are therefore expected to provide adequate passage for high-mobility ground-dwelling species such as mule deer, mountain lion, and black bear. The easternmost of the Ventura County crossings serve wildlife passing through the Project area via the Salt Creek corridors discussed above, as well as Tapo Canyon in Ventura County. Within the Project area, there are existing crossings at San Martinez Grande Canyon, Chiquito Canyon, and at the Castaic Creek confluence with the Santa Clara River. These crossings are short and open and include soft bottom overpasses at the San Martinez Grande Canyon and Castaic Creek crossings and a large parallel set of box culverts at the Chiquito Creek crossing (Draft EIS/EIR **Figure 4.5-32**). These crossings are not expected to significantly constrain current wildlife movement in the area.

The Draft EIS/EIR analyzed the potential impacts of the proposed Project (Alternative 2) on the existing wildlife crossings described above and the large bridge crossings of the Santa Clara River in **Subsection 4.5.5.2.4.4** on pages 4.5-594 and 4.5-595.

Under the proposed Project (Alternative 2), three large-span bridges would be constructed over the Santa Clara River. All three bridges would exceed the recommended minimum height of 10 feet for black bear, mountain lion, and deer (see Table 4.5-22 of the Draft EIS/EIR). The minimum openness factor of 0.25 for deer (the species most sensitive to openness) would be exceeded. The three existing crossings of SR-126 west of the Project area would not be affected by the proposed Project.

Existing crossings of SR-126 within the Project area -- San Martinez Grande Canyon, Chiquito Canyon, and at the Castaic Creek confluence -- would remain, but the Chiquita Creek box culverts, which are becoming increasingly constricted by the buildup of sediments, would be replaced by a bridge structure. The bridge structure would be adequate for wildlife passage and would be more effective than the existing box culverts.

The analysis in the Draft EIS/EIR concluded that impacts to wildlife crossings would be adverse but not significant for the proposed Project (Alternative 2) because the bridge crossings of the Santa Clara River would not physically inhibit wildlife movement along the River. There may be some behavioral alterations due to lighting and noise, but these secondary impacts are not considered substantial enough under the significance criteria for the impact analysis because the River Corridor SMA, combined with the adjacent upland open space, is wide enough (1,000 to 2,000 feet wide) and well-vegetated enough to provide adequate protection for wildlife as they move along the corridor.

The potential impacts to wildlife crossings were also analyzed for Alternatives 3 through 7 in the Draft EIS/EIR. With the exception of Alternative 5, the main difference between the proposed Project (Alternative 2) and the other alternatives is the number of large-span bridges that would be constructed over the Santa Clara River. Two bridges would be constructed under Alternatives 3, 4, and 6, and one bridge would be constructed under Alternative 7. Three bridges would be constructed under Alternative 5. The undercrossings of SR-126 would be the same as those for Alternative 2 under Alternatives 3 through 7.

The Draft EIS/EIR concluded that because impacts to wildlife crossings would be similar to the proposed Project (Alternative 2) under Alternative 5 and impacts would be less under Alternatives 3, 4, 6, and 7, the potential impacts to wildlife crossings would be adverse but not significant under Alternatives 3 through 7. (For further responsive information, please see the Corps' draft 404(b)(1) alternatives analysis (Final EIS/EIR, **Appendix F1.0**).)

Wildlife Access to Water

As described above under the wildlife guild approach, another important component utilized in the analysis of wildlife movement was the consideration of the life history characteristics of the target species. This includes how the proposed Project would affect a species' ability to forage, gain access to water, or maintain access to suitable habitat for breeding or refugia. The Draft EIS/EIR discloses that the implementation of the proposed Project would result in the land use conversion of habitat utilized for foraging, watering, or breeding for a variety of species. In some cases, this would exclude or limit some species from accessing traditional water sources such as large mammals, including mule deer, mountain

lions, or coyotes. However, numerous small ephemeral, intermittent, and perennial drainages are present in the proposed open space system that borders the development area. These include the headwaters to Potrero Creek, Salt Creek, Ayres Canyon, Middle Canyon Spring, and the numerous small drainages that flow seasonally in the Project area. In addition, wildlife access to the Santa Clara River would be maintained through the Salt Creek area and River Corridor SMA. Species present in the High Country SMA would also have access to water through the seeps and drainages that flow in those areas. These areas would not be subject to Project construction and would maintain existing water sources that could be utilized by a variety of wildlife. Within the Project area Open Space, small mammals and disturbance-tolerant species would still have access to the many creeks and drainages that would remain post development. Although the proposed Project would constrain wildlife access to water sources in some areas, analysis in the Draft EIS/EIR appropriately concluded that effects of the proposed Project (Alternative 2) and Alternatives 3 through 7 on wildlife landscape habitat linkages and wildlife crossings would be adverse but less than significant; impacts on wildlife corridors would be less than significant with mitigation (Draft EIS/EIR, **Table 4.5-74**). (For further responsive information, please see the Corps' draft 404(b)(1) alternatives analysis (Final EIS/EIR, **Appendix F1.0**).)

Mitigation Strategy and Mitigation Measures

As described above, the Draft EIS/EIR determined that impacts to wildlife corridors would be significant absent mitigation under Alternatives 2 through 7 because several existing potential wildlife corridors in the Project area would be developed, become dead-ends, or be constrained, effectively precluding and limiting wildlife movement within the developed portions of the Project area. The Draft EIS/EIR also determined that impacts to wildlife landscape habitat linkages and wildlife crossings would be adverse but not significant under Alternatives 2 through 7 because of the large open space system comprised of the River Corridor SMA, High Country SMA, and Salt Creek area. Nonetheless, the mitigation strategy and specific mitigation measures described here would address all three scales of habitat connectivity and wildlife movement and would reduce significant impacts to wildlife corridors to a level less than significant.

As described in **Subsection 4.5.5.2.4.3** of the Draft EIS/EIR, the primary mitigation strategy for offsetting impacts to wildlife corridors is the protection, enhancement, and management of the River Corridor SMA, High Country SMA, and Salt Creek area, totaling approximately 6,300 acres of contiguous habitat. These areas were identified by Penrod *et al.* (2006) as important regional wildlife habitat linkages and the Draft EIS/EIR concluded that this open space system would provide for the continued use of, and movement through, the Project area following build-out. Also, because the proposed Project would be phased over a period of up to 20 years, many wildlife species would be able to incrementally adjust their behavior to the changing landscape over time.

The Draft EIS/EIR identifies a number of specific mitigation measures that would contribute to wildlife habitat connectivity at all three scales, including previously incorporated measures from the Newhall Ranch Specific Plan EIR and new recommended measures identified in the Draft EIS/EIR. These mitigation measures include SP-4.6-1 through SP-4.6-16 and SP-4.6-63 (conceptual wetlands mitigation plans), SP-4.6-21 through SP-4.6-26 and SP-4.6-36 through SP-4.6-42 (open space dedication of River Corridor SMA and High Country SMA), SP-4.6-17 and SP-4.6-29 through SP-4.6-32 (controls on human and pet activities in SMAs), and SP-4.6-56 (lighting controls adjacent to natural areas).

New recommended mitigation measures in the Draft EIS/EIR include BIO-1 through BIO-16 (additional requirements for conceptual wetlands mitigation plans); BIO-19 (dedication of Salt Creek area and enhancement of existing agricultural undercrossing of SR-126 and agricultural land at base of Salt Creek to facilitate wildlife movement); BIO-20 and BIO-21 (preservation/restoration of coastal scrub); BIO-59 (wildlife movement corridor plan); BIO-63 (HOA educational information regarding public and pet activities and controls of stray and feral cats and dogs); BIO-69 (conservation education and citizen awareness); BIO-73 (fencing along River Corridor SMA); and BIO-72, BIO-85, and BIO-87 (controls for and monitoring of Argentine ants). (For a description of the revised mitigation related to biological resources, please refer to the Final EIS/EIR, revised **Section 4.5**, Biological Resources.)