

Railroad Canyon. The remaining extent of the alternative is located within agricultural areas from Perris to Winchester.

Based on the habitat fragmentation analysis and qualitative evaluation, Alternatives 1a and 1b impact the largest habitat blocks within the HCLE Corridor. Even though Alternatives 4d, 5b, 5d, 5e, 6a, 6b, and H1 do not affect any habitat patches greater than 4050 ha (10,000 ac), these alternatives do bisect other large contiguous natural areas and existing reserves and would result in the next greatest amount of impacts to contiguous natural areas, overall. Alternatives 4c and 5c would have the next greatest degree of habitat fragmentation impact. Alternatives H3 and 4a (SR-74 in entirety) and 5a would have the least degree of impacts to contiguous natural areas overall.

#### 4.11.2.8 Other Land Uses

Figure 4.11.10 illustrates the comparative amounts of other land uses within the HCLE Corridor alternatives. These land uses include fields/cropland, grove/orchard, dairy and livestock feed yards and developed urban lands. Alternatives 1a and 1b would affect the largest amount of fields and croplands compared to the other HCLE alternatives (nearly 405 ha [1,000 ac] each). Alternatives H1 and H3 would potentially affect the next largest amount of fields and croplands at approximately 324 ha (800 ac) each. Alternatives 4a, 4c and 4d would affect the least amount of fields and cropland among the alternatives (approximately 100 ha [247 ac] each). Alternatives 5a, 5b, 5c, 5d, 5e, 6a and 6b would all have approximately the same level of effect on fields and croplands (at approximately 240 ha [590 ac] within each alternative).

The alternatives that would potentially affect the largest amount of grove/orchard uses are Alternatives 1a, H1 and 1b (105 ha [260 ac] for 1a and H1, and 80 ha [195 ac] for 1b). Alternative H3 would potentially affect approximately 80 ha of groves/orchards. The other HCLE alternatives would have either no effect on groves and orchards or a minimal effect, as with Alternatives 6a and 6b.

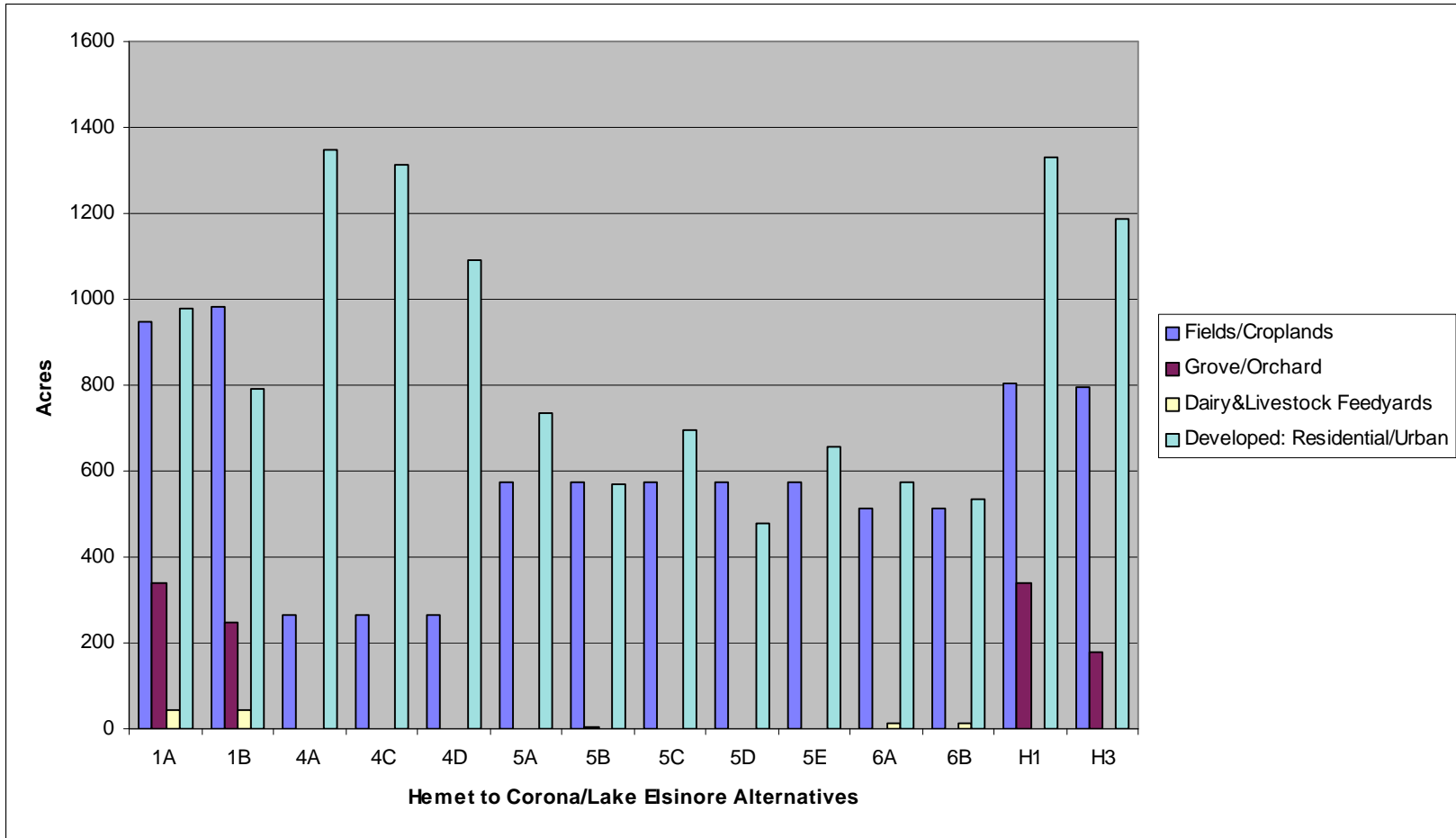
Most of the HCLE alternatives do not affect dairy and livestock feed yards, with the exception of Alternatives 1a and 1b, which include only minor amounts of those land uses within their rights-of-way.

The alternatives vary greatly in terms of the amounts of developed urban lands within their respective rights-of-way. Alternatives H1, H3, 4a, 4c and 4d would potentially affect the largest amount of developed land (between 400 and 600 ha (1,100 to 1,350 ac) each, with Alternative 4a including the largest amount).

#### 4.11.2.9 Qualitative Evaluation of Watershed-Scale Effects

The following summarizes a watershed-scale evaluation of the potential impacts by the various HCLE corridor alternatives. A separate technical study has been prepared for this evaluation: "Hemet to Corona/Lake Elsinore Corridor Qualitative Evaluation of Watershed-Scale Effects" (LSA, 2002). This study is available for review with the other technical reports for the EIS/EIR. Refer to this report for further detail regarding the methods and results of the evaluation. For the purpose of this evaluation, riverine functions that are directly related to the support of biological components of the natural

Figure 4.11.10 - Other Land Uses Within the HCLE Alternatives



ecosystem (i.e., flora and fauna) are considered hydro-biological functions. The evaluation is based on the premise that in a natural setting the hydro-biological functions of the riverine system increase as the stream order increases. The actual manifestation of the hydro-biological functions is inversely proportional to the extent of land development and the associated intensity of that land use through which the stream passes. The higher the functionality of the hydro-biological functions, the greater the value to society. Therefore, the impacts to the higher order streams, with well developed and diverse habitats are considered to be greater impacts than those to the lower order streams with lower levels of hydro-biological functions. Likewise, impacts to streams that remain in a natural setting, or remain in a largely natural setting, would be expected to have a greater level of impacts to the hydro-biological functions than to a stream impacted by urban or agricultural uses. Consequently, impacts to highly functional areas along or in natural settings are more likely to have adverse effects at a watershed-scale than are impacts to lower order streams or streams in developed settings.

**Methods.** The HCLE Corridor lies within the Santa Ana River watershed area, which includes the San Jacinto River basin. This large watershed is divided into smaller sections by internal surface water drainage areas and groundwater basins (Santa Ana Regional Water Quality Control Board, 1995). These smaller sections are known as Hydrologic Sub Areas (HSAs).

The Landscape Study Area of the project was defined by the outer boundaries of the HSAs crossed by the proposed HCLE Corridor (Figure 1 in Appendix E). To determine conditions within the HSA that influence the hydro-biological functions of the riverine habitat system, each HSA was examined using maps, aerial photos, and Geographic Information System (GIS) information.

The HSA conditions evaluated were:

- C Extent of development, natural lands, and agricultural uses.
- C Stream orders of the United States Geologic Survey blue line streams within the Landscape Study Area (USGS 1:100,000 scale map data [Horton method of classifying stream order and drainage density]).
- C Continuity of unmodified stream systems.
- C Locations of channel modifications.
  
- C Locations and types of riparian and upland vegetation.
- C General topographic features.

Using these data, the HSAs were assessed for potential watershed effects from the proposed alternatives based on the route locations within natural, agricultural, and urban settings.

Four distinct watershed-scale hydro-biological functions (modified functions from Brinson, et al., 1995) are identified as part of this qualitative assessment. They include:

- C **Maintain Characteristic Plant Community** - Species composition and physical characteristics of living plant biomass. The emphasis is on the dynamics and

structure of the plant community as revealed by the species of trees, shrubs, seedlings, saplings, and herbs, and by the physical characteristics of the vegetation.

- C **Maintain Characteristic Detrital Biomass** - The process of production, accumulation, and dispersal of dead plant biomass of all sizes. Sources may be on site or upslope and upgradient.
- C **Maintain Interspersion and Connectivity** - The capacity of a riverine system to permit aquatic organisms to enter and leave the system via permanent or ephemeral surface channels, overbank flow, or unconfined hyporheic gravel aquifers. The capacity of the riverine system to permit access of terrestrial or aerial organisms to contiguous areas of food and cover.
- C **Maintain Spatial Structure of Habitat and Associated Diversity of Wildlife** - The capacity of the riverine system to maintain the density and spatial distribution of wildlife populations and guilds.

**Results.** In general, the portions of the HCLE Corridor alternatives east of I-215 have a low potential level for impacts to the hydro-biological functions of the streams due to the highly disturbed condition of the area by urban and agricultural activity. The level of impacts to the hydro-biological functions by the alternatives west of I-215 vary depending on the specific route, but are generally higher than those east of I-215.

The HCLE Corridor alternatives are briefly summarized below and evaluated as to the level of their impacts to the hydro-biological functions within the proposed routes. Following the bulleted summaries, the alternatives are placed into three categories (high, moderate, and low) based on their overall potential for watershed-scale impacts to the hydro-biological functions.

The HCLE Corridor alternatives are ranked below in order from low to high in terms of potential impacts to the hydro-biological functions on a watershed-scale.

- C **Alternative 4a** has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. The alternative has a low potential for watershed-scale impacts along the rest of its route because it follows existing highways for most of its route.
- C **Alternative 5a** has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. This alternative has a low potential for watershed-scale impacts elsewhere because it follows existing highways and passes through agriculture areas for most of its unroaded route.
- C **Alternative H3.** Where this alternative crosses the San Jacinto River, it has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. It has high potential for watershed-scale impacts where it crosses a third order stream near the intersection of Wood Road and Cajalco Road. The alternative has low potential for watershed-scale impacts within the rest of the route because it follows existing roads and passes through agriculture

areas for most of its unroaded route. This is the only alternative that does not pass through any natural habitat blocks.

- C Alternative 4c** has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. This alternative has a high potential for impacts to Temescal Wash at the proposed location for the I-15 interchange. The unroaded segment of Alternative 4c at the west end passes through mostly developed area, and impacts here would generally be low.
- C Alternative 5c** has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. This alternative has a high potential for impacts to Temescal Wash at the proposed location for the I-15 interchange. The unroaded segment of Alternative 5c at the west end passes through mostly developed area, and the potential for impacts here would generally be low. This alternative has low potential for watershed-scale impacts to the hydro-biological functions for its proposed route east of the San Jacinto River because it follows existing highways and passes through agriculture areas for most of its unroaded route.
- C Alternative 5e** has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. This alternative has a high potential for impacts to Temescal Wash at the proposed location for the I-15 interchange. The unroaded segment of Alternative 5e at the west end passes through mostly developed area, and the potential for impacts here would generally be low. This alternative has low potential for watershed-scale impacts to the hydro-biological functions for the route east of the San Jacinto River because it follows existing highways and passes through agriculture areas for most of its unroaded route.
- C Alternative 1a.** Where this proposed route crosses the San Jacinto River it has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. The alternative has a high potential for watershed-scale impacts to five third-order streams, including Temescal Wash.
- C Alternative 1b.** Where this proposed route crosses the San Jacinto River, it has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. The alternative has a high potential for watershed-scale impacts to five third-order streams west of I-215, including Temescal Wash.
- C Alternative 4d** has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. This alternative has a high potential for watershed-scale impacts to the Estelle Mountain natural block.
- C Alternative 5b** has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. This alternative has a high potential for watershed-scale impacts to several second-order streams within the natural block, with a high potential to fragment the natural block.
- C Alternative 5d** has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake,

including Kabian Park and Estelle Mountain natural block. This alternative has a high potential for watershed-scale impacts to several second-order streams within the natural block, with a high potential to fragment the natural block.

- C **Alternative 6a** has a high potential for watershed-scale impacts to the San Jacinto River by impacting two meanders near the proposed I-15 interchange location. The alternative has a high potential to fragment the Sedco Hills natural block.
- C **Alternative 6b** has a high potential for watershed-scale impacts to the San Jacinto River by impacting two meanders near the proposed I-15 interchange location. The alternative has a high potential to fragment the Sedco Hills natural block.
- C **Alternative H1.** Where this proposed route crosses the San Jacinto River, it has a high potential to further restrict the regional habitat linkage between the Lake Perris natural block and the natural areas around Canyon Lake, including Kabian Park and Estelle Mountain natural block. The alternative has a high potential for watershed-scale impacts to five third-order streams west of I-215, including Temescal Wash. The alternative has low potential for watershed-scale impacts within the rest of the route because it follows existing roads and passes through agriculture areas for most of its unroaded route.

The relative levels of impacts to the hydro-biological functions of the HCLE alternatives are summarized below.

Level of Impact	HCLE ALTERNATIVES													
	1A	1B	4A	4C	4D	5A	5B	5C	5D	5E	6A	6B	H 1	H3
Low			X			X								X
Moderate				X				X		X				
High	X	X			X		X		X		X	X	X	

#### 4.11.2.10 Other Direct Effects

In addition to the direct effect of potential habitat removal within each of the alternatives' rights-of-way, the HCLE Corridor alternatives will likely have other direct effects on biological resources, including spillover of light and glare from the future transportation corridor facilities, noise, dust and other air quality emissions during construction and during long-term operations, and additional disturbances to wildlife due to increased human presence, thereby decreasing adjacent habitat values. These potential direct effects may occur within and/or adjacent to the right-of-way areas evaluated in this Tier 1 level EIS/EIR. The specific location of the selected corridor alternative to be evaluated as part of the Tier 2 process, and the specific design and placement of that alternative within the reserved right-of-way, will enable a more precise evaluation of where and to what degree these other direct effects may occur. This Tier 1 analysis acknowledges the potential for light and glare, noise, dust and emissions, and human encroachment as direct effects of the proposed corridor.