

aquatic sites were estimated according to the acreage of indicator soils and acreage of watershed draining into the special aquatic sites within the alternative.

The Tier 1 analysis of impacts to potential waters of the U.S. was conducted by calculating the linear feet of potential waters of the U.S. within each alternative using GIS analysis.

Potential impacts to the preferred MSHCP Alternative were evaluated by overlaying each of the CETAP corridor alternative areas over the criteria area (as shown in Figure 3.11.2). Impact measurements include total number of crossings, the area and linear distance of each alternative within the criteria area, and the location in criteria area.

4.11.2 Impacts

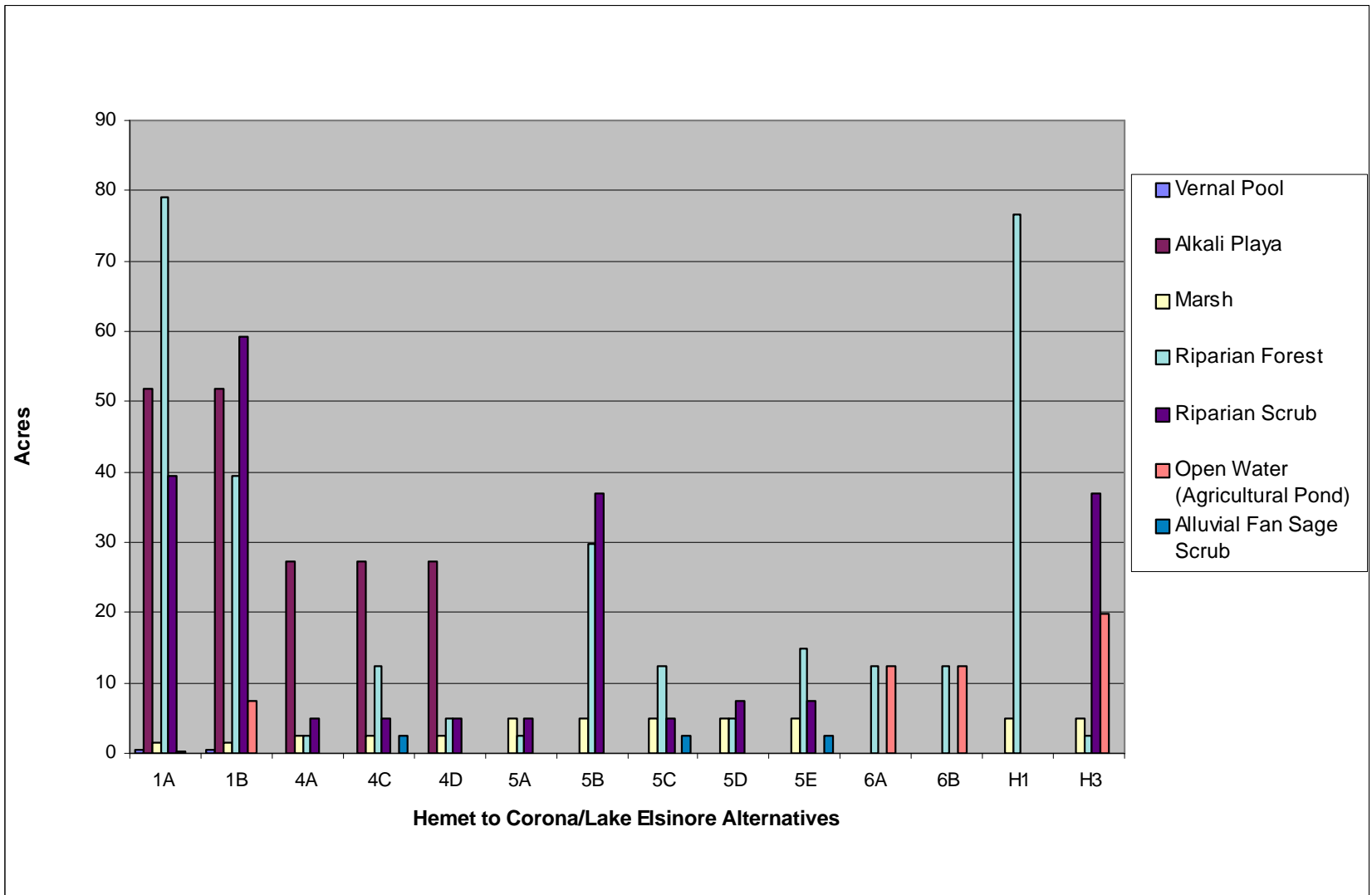
4.11.2.1 Potential Waters of the U.S. and Associated Habitats

The following discussion addresses the relative amount of potential impacts to Waters of the U.S. and associated habitats that the HCLE Corridor alternatives may have. Figure 4.11.1 illustrates the relative degree of impacts to these habitat types per alternative.

Alkali Playas. Alkali playa habitat is not abundant within the HCLE Corridor. Alkali playa only exists within five alternatives. The greatest amount of alkali playa occurs within Alternatives 1a and 1b each at 21 ha (52 ac). Of the five alternatives, Alternatives 4a, 4c, and 4d impact the least amount of alkali playa, at 11 ha (27.2 ac). The remaining alternatives do not impact any alkali playa.

Vernal Pools. Vernal pools are a unique, specialized form of seasonal wetlands that occur in a geographical area extending from southern Oregon through California into northern Baja California. Pool habitats are not homogenous throughout this large area because of regional differences in climate, topography, and soils. Although the pools of southern California share some wide-ranging temporary wetlands species with pools in other parts of the state, they also support species unique to the area (U.S. Fish and Wildlife Service, 1998). It is estimated that up to 90 percent of southern California vernal pools have been destroyed during the past century (Ferren, et al. 1996). Of the 20 threatened or endangered species known from the project study area, nine use vernal pools exclusively or in conjunction with other similar habitat types. Literature sources reviewed for the project analysis do not provide specific information on the extent (i.e., acreage) of vernal pools in western Riverside County. However, given the narrow range of conditions under which they occur and the limited extent that remain, vernal pools are considered to be one of the rarest habitat types in the study area. Thus, while the potential impacts to vernal pools appear to be small on an acreage basis, any impacts to vernal pools have high potential to be substantial.

Figure 4.11.1 - Potential Wetland Habitats Within the HCLE Alternatives



Vernal pools were found within Alternatives 1a, 1b, 4a, 4c, and 4d. Alternatives 1a and 1b encompass two vernal pools southeast of Lake Perris along either side of the Ramona Expressway. One vernal pool (basin area of approximately 0.08 ha [0.20 ac]) was found at the north edge of the Ramona Expressway, and a second vernal pool (basin area of 0.13 ha [0.32 ac]) was found at the south edge of the expressway. The two vernal pools are separated by a concrete box culvert under the expressway and share an approximately 150 ha (370 ac) watershed. Both are moderate to high quality vernal pools and support vernal pool indicator plant species. The southern vernal pool supports a listed vernal pool indicator plant, spreading navarretia.

Alternatives 4a, 4c, and 4d would impact a single vernal pool located northeast of Florida Avenue and Warren Road Intersection, west of Hemet, with a basin area of approximately 0.04 ha (0.1 ac) and a watershed area of approximately 40 ha (100 ac). A vernal pool complex, consisting of many small, shallow, interconnected depressions, was found southwest of the intersection. The area of inundation (vernal pool basin area) of this vernal pool complex may vary greatly from year to year, depending on rainfall patterns, and during the wettest years may cover nearly the entire area (approximately 8.2 ha [20 ac] within the alternative). Because of the nearly flat terrain (mean slope of 0.2 percent) and adjacent artificial structures (e.g., San Diego Aqueduct Canal and roadside ditches), the watershed does not extend beyond the maximum basin area. This vernal pool complex is of moderate to high quality, and supports vernal pool indicators. Vernal pools near Hemet are associated primarily with the Traver soil type. The other alternatives do not impact any vernal pool sites; however, soils that may promote the formation of vernal pools are found within all of the HCLE alternatives.

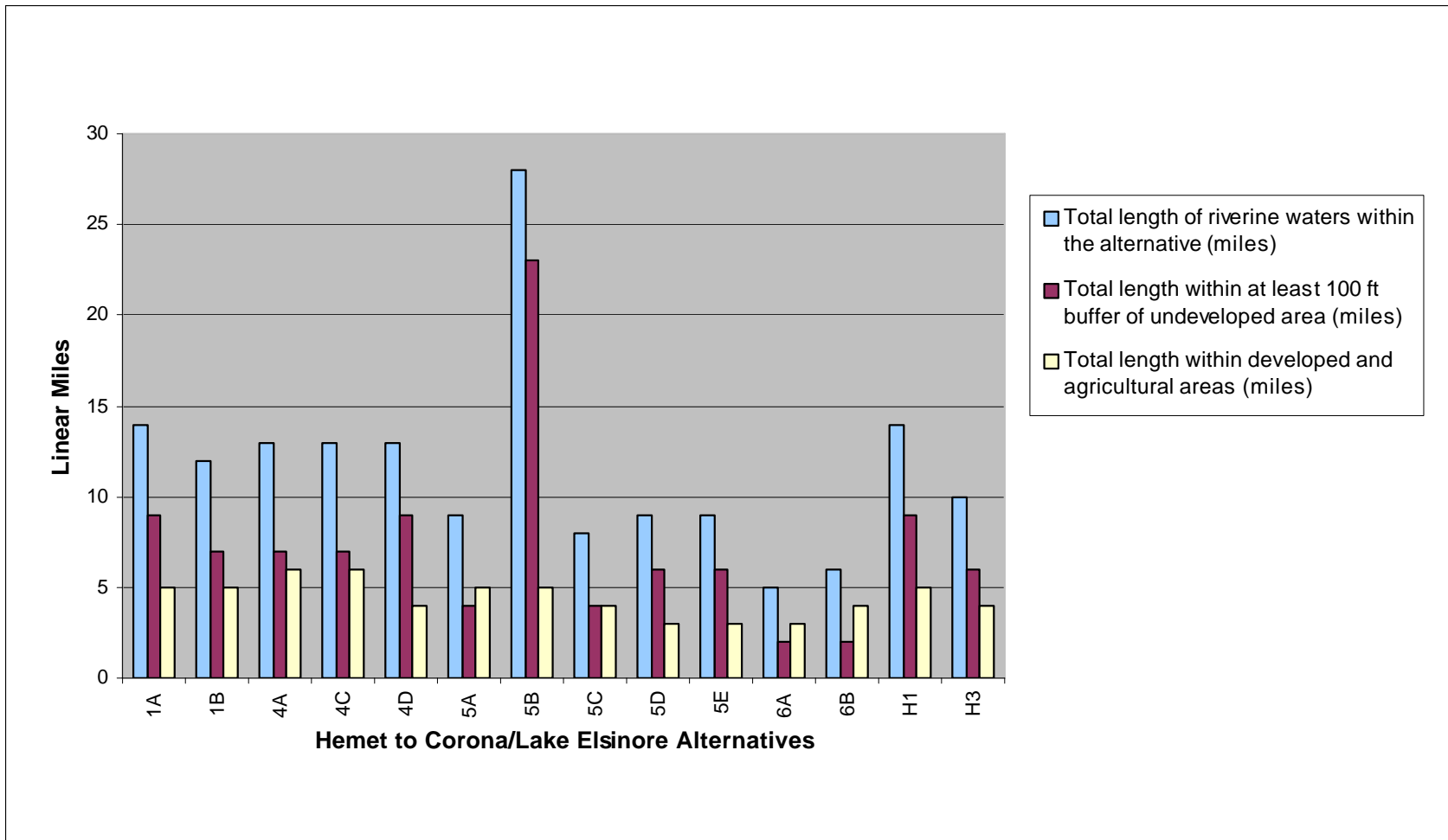
Marsh. Marsh habitat is present within most of the alternatives of the HCLE Corridor. In all alternatives, the amount of marsh habitat ranges from 0.0 ha (0 ac) to 2.0 ha (4.0 ac). The greatest impacts (all approximately the same) would be in Alternatives 5a, 5b, 5c, 5d, 5e, H1, and H3. No impacts are found with Alternatives 6a and 6b.

Open Waters. The open water sites within the alternatives are agriculture ponds, a city duck pond, and stormwater detention basins, which have little to no habitat value.

Streams. The majority of stream crossings associated with the HCLE Corridor alternatives are upland tributaries within coastal sage scrub habitat, primarily in the Cajalco and Arlington Hills, in the vicinity of Lake Mathews, and between Estelle Mountain and Steele Peak. Figure 4.11.2 illustrates the comparative amounts of streams/riverine Waters of the U.S. within each of the HCLE alternatives.

The alternative with the greatest potential impacts to linear feet of stream is Alternative 5b, which consists of 45 km (28 mi) of streams, primarily in the coastal sage covered hills between Lee Lake and Steele Peak, through Arroyo del Toro. This alternative also has the greatest impacts of linear kilometers within native vegetation. There are 37 linear km (23 mi) of streambed in this alternative within a 100 ft buffer of undeveloped areas.

Figure 4.11.2 - Potential Riverine Waters of the United States Within the HCLE Alternatives



Alternatives 1a, 1b, 4a, 4c, 4d, and H1 impact the next greatest amount of streams (ranging between 19 and 23 km [12 and 14 mi]). These upland tributaries run through hillsides of coastal sage scrub and nonnative grasslands, and impact the next greatest amount of streambeds within 100 ft buffer of undeveloped area ranging between 11 and 15 km (7 and 9 mi).

Alternatives 5a, 5c, 5d, 5e, and H3 all impact between 13 and 16 km (8 and 10 mi) of streams, and impact between 6 and 10 km (4 and 6 mi) of streambeds within 100 ft buffer of undeveloped areas.

The shortest alternatives, 6a and 6b, impact the least amount of streams, at 8 and 10 km (5 and 6 mi), respectively, in undeveloped coastal sage scrub hills around Railroad Canyon, and impact the least amount of streambeds within 100 ft buffer of undeveloped areas at 3 to 4 km (1.9 to 2.5 mi).

Riparian Scrub. Riparian scrub occurs in greatest amounts in Alternative 1b (24 ha [59 ac]), followed by 1a, 5b, H1, and H3 (ranging from 14 to 16 ha [35 to 40 ac]). There are between 2 and 3 ha (5 and 7 ac) of riparian scrub within Alternatives 4a, 4c, 5a, 5c, 4d, 5d, and 5e. No riparian scrub occurs within Alternatives 6a or 6b; therefore, those alternatives would have the least potential effects on riparian scrub.

Riparian Forest. Riparian forest habitat of highest habitat quality within the Corridor is located in Temescal Canyon, south of Steele Peak, Wasson Canyon, and in the San Jacinto River. The greatest amount of riparian forest is within Alternatives 1a and H1, at 32 and 31 ha (79 and 77 ac), respectively. Alternative 1b will impact 16 ha (40 ac), and the remaining alternatives average 6 ha (15 ac), ranging from 2 to 12 ha (5 to 30 ac). Alternatives 4a, 5a, and H3 will impact the least amount of riparian forest, at 1 ha (2.5 ac) each.

4.11.2.2 Listed Wildlife and Plant Species Associated with Wetland and Upland Habitats and Critical Habitat

Highest impacts to listed species were associated with the longest alternatives and those that will impact vernal pools known to support listed plant species that are present or have a high to moderate potential for occurring within the alternative and that may contain listed brachiopods. Figure 4.11.3 illustrates the listed species within each of the HCLE alternatives. Alternative 1a would potentially impact the most listed animal and plant species that are present or have a high to moderate potential for occurring within the alternative (14 species [10 wetland/4 upland]). Alternatives 1b, 4a, and 4d have the potential to impact the next greatest number, at 13 listed species (9 wetland/4 upland). The remaining alternatives, 5a through 5e, 6a and 6b, H1 and H3 would impact between 10 to 12 moderate to high potential occurring species (6 to 8 wetland/4 upland), with Alternative H3 impacting the least, at 10 listed species (6 wetland/4 upland).

Alternatives 1a and 1b are located in areas where two vernal pools are present, separated by a concrete box culvert on either side of the Ramona Expressway southeast of Lake Perris. One of these pools supports the federally listed as threatened, vernal pool indicator plant, spreading navarretia (*Navarretia fossalis*). Both Alternatives 1a and 1b have a high potential to contain the federally listed San Jacinto Valley crownscale.