

# **COVER SHEET**

FEDERAL ENERGY REGULATORY COMMISSION

FINAL ENVIRONMENTAL IMPACT STATEMENT  
FOR HYDROPOWER LICENSE

Lake Elsinore Advanced Pumped Storage Project  
Docket No. P-11858-002

Section 5  
Staff's Conclusions  
Pages 5-1 through 5-42  
FEIS

## 5.0 STAFF CONCLUSIONS<sup>78</sup>

When the Commission considers license proposals, besides looking at power and other developmental purposes—irrigation, flood control, water supply—it must also give equal consideration to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. So far in this final EIS, we have described both the environmental effects and our estimated cost of building the proposed project and the staff alternative. Based on this analysis, we select the staff alternative as our preferred alternative. In this section, we examine the environmental effects and project costs of the alternatives and explain how we decided on the environmental measures we include in our preferred alternative.

During scoping and in comments on the draft EIS, many people commented about the potential effects of the co-applicants' proposed Morrell Canyon upper reservoir on Lion Spring, oak woodlands, and the use of existing trails and about the potential effects of the proposed transmission alignment on fire suppression activities, the use of existing hang gliding launch and landing sites, and adjacent residential communities. The staff alternative includes an alternative facility location for the upper reservoir as well as a revised transmission alignment developed by the USFS and Commission staff.

These alternative facility locations address many of the key issues raised during scoping and in comments on the draft EIS. Though the staff alternative transmission alignment may affect nearby residential communities to a greater extent than the proposed project, we prefer the revised staff alignment because the transmission alignment avoids as many private in-holdings within the Cleveland National Forest as possible while continuing to avoid the San Mateo Wilderness Area and to minimize encroachment on lands designated as back-country non-motorized and back-country motorized-use restricted in the Land Management Plan. For these reasons, we prefer the staff alternative to the co-applicant's proposed project.

Comparing the staff alternative to no-action, we find that we also prefer the staff alternative. The staff alternative would allow the co-applicants to construct and operate the project as a peak energy resource and as part of a long-term solution to southern California's transmission congestion bottlenecks. The Talega-Escondido/Valley-Serrano transmission line could provide up to 1,000 MW of import capability into the San Diego area with up to 500 MW of this imported power being supplied by the LEAPS Project during high-demand periods.

Although neither of the co-applicants currently has contracts with end use customers, licensing the LEAPS Project would allow the co-applicants the opportunity to compete in the power market for sale of the project's power and other ancillary benefits. Pumped storage projects store power during off-peak periods that can be provided rapidly during on-peak periods and may provide a valuable addition to the regional system. Besides the potential power and transmission benefits, the LEAPS Project, through the proposed lake management fee, would provide reliable funding for water to maintain the lake level targets specified in the Lake Elsinore Stabilization and Enhancement Project, which is necessary both to improve water quality in Lake Elsinore and to allow the pumped storage project to operate. The LEAPS Project also would fund annual stocking of sport fish in Lake Elsinore. The project-funded park facilities would also enhance recreational opportunities in the area.

As we've said, the staff alternative that we describe in this final EIS greatly reduces the environmental effects of the project as originally proposed. The staff alternative would substantially reduce but not eliminate the loss of southern coast live oak as shown in table 55. The effects on hang gliding activities would be mostly eliminated through the underground placement of the transmission

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<sup>78</sup> In this section, "we" means the Commission staff.

lines in the vicinity of the USFS permitted launch sites and along the connection to the Santa Rosa powerhouse.

Construction and operation of the LEAPS Project as defined in the staff alternative would result in several unavoidable adverse impacts. Construction of the upper reservoir and powerhouse would cause the short-term disruption of traffic along Grand Avenue, Ortega Highway, and South Main Divide Road. Construction of the powerhouse would displace several residents and businesses located in buildings in close proximity to the construction site. The co-applicants propose to acquire these buildings and use them for construction offices. After construction, the co-applicants propose to return these buildings to the local building inventory. The construction of the transmission line would permanently displace a few residents whose property would need to be acquired for the right-of-way. Although the effects on aesthetics would be reduced by placing segments of the transmission line underground, construction of the transmission lines would introduce a permanent linear facility that would affect the aesthetics of the project area. The presence of the transmission line also could affect property values in the vicinity of the project facilities including about 450 parcels within 0.25 miles of the transmission alignment. The exact number of parcels requiring the acquisition of easements would depend upon the final placement of the line within the 500-foot-wide alignment considered in the EIS. The southern segment of the staff alternative transmission alignment is also within 3,000 feet of a private airstrip, which could render the airstrip unusable. Although the owner of the property would have to be compensated for loss of the property's use, people who currently use the strip for pleasure flying or commuting would lose that resource.

## 5.1 COMPARISON OF PROPOSED ACTION AND ALTERNATIVES

We summarize the key differences of the potential effects of the co-applicants' proposal and the staff alternative in table 55.

Table 55. Summary of key differences in the potential effects of the co-applicants' proposal and the staff alternative (Source: Staff)

Resource/Issue	Upper Reservoir Comparison	
	Morrell Canyon (Co-applicants)	Decker Canyon (Staff)
Area of effect	130-acre footprint; daily fluctuations of 40 feet and weekly fluctuations of 75 feet	120-acre footprint; daily and weekly fluctuations would be on the same order of magnitude as the upper reservoir at Morrell Canyon
Fill materials	2.6 million cubic yards of fill needed for dam	3.0 million cubic yards of fill needed for dam Less overburden at Decker Canyon would allow easier procurement of solid rock material for fill for dam and dike construction
Groundwater	Construction of tunnels for high pressure conduits could affect groundwater; design review of collection system for Lion Spring and effects on groundwater	Construction of tunnels for high pressure conduits could affect groundwater; no collection system would be required
Seismic hazards	Faults may control surface flows at the Morrell Canyon site	No faults have been identified at the Decker Canyon site and subsurface flow does not appear to be controlled by the presence of faults

**Upper Reservoir Comparison**

<b>Resource/Issue</b>	<b>Morrell Canyon (Co-applicants)</b>	<b>Decker Canyon (Staff)</b>
Surface water	Upper reservoir would interrupt stream flow	Same
Wetland and riparian habitat	Would affect 1.7 acres of waters of the U.S. and 4.8 acres of waters of the state, including Lion Spring; loss of these waters and associated riparian habitat would affect plant diversity and wildlife species; effects on downstream areas would be minimized by the water conveyance system under the reservoir	Would affect 0.3 acre of waters of the U.S. and 0.9 acres of waters of the state; no effects on springs or seeps; smaller effects on downstream areas because drainage area is smaller
Oak woodland communities	Would convert about 20 acres of southern coast live oak forest (500 to 600 individual trees over 8 dbh) to project use; would need to plant 20 acres to mitigate	Would convert about 5 acres of southern coast live oak forest to project use so effects would be similar to Morrell Canyon but on a smaller scale; would only need 5 acres to mitigate
Special status wildlife	Would convert 80 acres of chamise chaparral and 20 acres of southern coastal live oak to project facilities.	Would convert 95 acres of chamise chaparral and 5 acres of southern coastal live oak to project facilities.
Mountain lion	Would remove 100 acres of suitable mountain lion habitat from Core B; project operation and maintenance would not likely increase disturbance or risk of interaction over levels that currently result from traffic on South Main Divide Road and use of Morgan Trail	Would remove 100 acres of suitable mountain lion habitat from Core B; project operation and maintenance would represent a very small increase in disturbance, because no trails currently provide for recreation at Decker Canyon site
Munz's onion	No suitable habitat at reservoir site; however, South Main Divide Road in vicinity passes through a soil type that is known to support occurrences of this species	Same
Developed recreation facilities	Footprint would not include Morgan Trail trailhead with minimal effect on users of the trailhead during construction but trail would need to be re-routed either temporarily or permanently depending on final design	Morgan Trail would not have to be rerouted and because visitation is low, increased traffic on South Main Divide Road would have minimal effect on Morgan trailhead users
Dispersed recreation	<p>Would affect hang gliders using the 2 most suitable of the 9 launch sites and waterside setting offered at Lion Spring</p> <p>Would eliminate a natural looking canyon with oak woodland vegetation and replace it with a reservoir surrounded by a chain link fence; inconsistent with Retention VQO</p>	<p>Would avoid effects on two most popular hang glider launch sites</p> <p>The existing aesthetic resources within Decker Canyon are subordinate to Morrell Canyon and construction effects associated with building a reservoir in this location would be less than those at the Morrell site; development of the alternative site would not build over a mature oak-woodland riparian area (Lion Spring)</p>
Traffic	Would achieve a balance of excavation to fill within the entire project site	Same

<b>Upper Reservoir Comparison</b>		
<b>Resource/Issue</b>	<b>Morrell Canyon (Co-applicants)</b>	<b>Decker Canyon (Staff)</b>
Cultural resources	Would destroy or damage four prehistoric archaeological sites	No known sites at Decker Canyon location

<b>Powerhouse Site Comparison</b>			
<b>Resource/Issue</b>	<b>Santa Rosa (co-applicants and staff)</b>	<b>Ortega Oaks</b>	<b>Evergreen</b>
Area of effect	30-acre site, 20-acre laydown, 340 depth of excavation	58 acres, inclusive of laydown; 320 depth of excavation; groundwater 30 to 70 feet	75 acres, 30-acre laydown, 290 depth of excavation
	327,500 cubic yards (includes 207,000 from the powerhouse cavern; 35,000 from the transformer gallery; 32,000 from the surge shaft; 500 from the vent shaft; and 53,000 from the powerhouse access shaft)	There will be similar values to Santa Rosa but about 33 percent more excavation for the tailrace tunnel, which would be about 86,450 cubic yards since the Santa Rosa tailrace tunnel is 65,000 cubic yards; also, the depth of excavation is slightly less than that of Santa Rosa	There will be similar values to Santa Rosa but about 10 percent less excavation for the tailrace tunnel, which would be about 58,500 cubic yards since the Santa Rosa tailrace tunnel is 65,000 cubic yards; also the depth of excavation is less than that of Santa Rosa
Special status plants	Construction of the powerhouse could affect Coulter's matilija poppy	Construction of tunnel between upper reservoir and powerhouse could affect Coulter's matilija poppy	No rare plants identified in vicinity of Evergreen powerhouse location
Wetland and riparian habitat	Would affect about 0.4 acre of waters of the U.S. and state	Same as Santa Rosa.	Would affect less than one-tenth of an acre of waters of the U.S. and state
Special status wildlife	Would affect 30 acres of coastal sage scrub and 20 acres of non-native grassland	Would affect 53 acres of non-native grassland and 5 acres of coastal sage scrub	Would affect 55 acres of non-native grasslands and 20 acres of coastal sage scrub
Future recreation use	Location of substation and above ground transmission lines from this location would affect hang gliding activities	Would affect use of hang gliding landing site during construction; would provide formal hang gliding landing site following construction	Would displace informal disperse recreational use at site

<b>Powerhouse Site Comparison</b>			
<b>Resource/Issue</b>	<b>Santa Rosa (co-applicants and staff)</b>	<b>Ortega Oaks</b>	<b>Evergreen</b>
Land Use and Property values	Would permanently change use to utility and recreation use and preclude residential use specified in General Plan; would purchase, modify, and reuse adjacent private property (Santa Rosa Mountain Villa apartments) and buffer would reduce effect on property values	No effect on adjacent residential property values at Ortega Oaks	Either raze or use current Lakeland Childcare Center at the Lakeland Village Plaza for construction office resulting in displacement of child-related businesses and purchase/raze one single family home
Aesthetics	The powerhouse would be underground but the substation would be visible from surrounding residential and commercial properties	The powerhouse would be underground but the substation would be visible from the heavily used Ortega Highway	Same as Santa Rosa.
Aesthetics	All construction activities within this area would conflict with the Partial Retention VQO designated by the USFS; these effects would be short term and last for the duration of the construction	Construction activity at Ortega Oaks site would be visible from the Ortega Highway and a small portion of Grand Avenue in Lakeland Village; two prominent viewpoints to commuters in the area	Similar effects on the aesthetic resources as described above with respect to the proposed Santa Rosa site
Cultural Resources	Would affect two historic sites and one prehistoric archaeological site; could affect two historic buildings (vibration)	Would directly affect one prehistoric site	No known sites at Evergreen location

<b>Transmission Alignment Comparison</b>		
<b>Resource/Issue</b>	<b>Co-applicants' Proposed Alignment</b>	<b>Staff Alternative Alignment</b>
Area of effect	34.1 miles in length with 10.8 miles of temporary access roads and 5.2 miles of permanent access road	33.7 miles in length with 9.3 miles of temporary access roads and 4.1 miles of permanent access road
Fire suppression activities	Could interfere with USFS fire suppression activities	Would avoid interference with USFS fire suppression activities

**Transmission Alignment Comparison**

<b>Resource/Issue</b>	<b>Co-applicants' Proposed Alignment</b>	<b>Staff Alternative Alignment</b>
Special status plants	Could affect Humboldt lily (Subarea 3); passes through potential habitat for Hammitt's clay-cress (Subarea 5). Pre-construction surveys could be conducted to prevent adverse effects during construction, but temporary access roads and permanent maintenance roads would substantially increase the risk of disturbance and habitat damage during project operation, if public access is not controlled	Could affect Humboldt lily (Subarea 3); avoids potential habitat for Hammitt's clay-cress (Subarea 5). Pre-construction surveys could be conducted to prevent adverse effects during construction, but temporary access roads and permanent maintenance roads would substantially increase the risk of disturbance and habitat damage during project operation, if public access is not controlled
Wetland and riparian habitat	Substation could affect about 1.1 acres of waters of the U.S. and state; effects from transmission towers would be minor as towers would be placed to avoid wetland and riparian habitat, but locations of access roads are unknown	Same
Special status wildlife	Substations would affect 35 acres and transmission line towers would affect 30 acres of potential habitat for special status species. About 10.3 miles of temporary access roads would affect an estimated 15.7 acres, plus indirect effects of construction (edge effects) and potential for disturbance (e.g., poaching, harassment) and habitat damage during operation, if public access is not controlled. Permanent maintenance road would affect 5.2 miles (9.5 acres)	Substations would affect 35 acres and transmission line towers would affect 30 acres of potential habitat for special status species. About 9.3 miles of temporary access roads would affect an estimated 13.5 acres, plus indirect effects of construction (edge effects) and potential for disturbance (e.g., poaching, harassment) and habitat damage during operation, if public access is not controlled. Permanent maintenance road would affect 4.1 miles (7.5 acres)
Mountain lion	Would remove about 21.25 acres of suitable mountain lion habitat from Core B for about 85 towers; although mountain lions may use roads for travel, construction of 5.2 miles of permanent and 10.8 miles of temporary access roads would substantially increase the risk of disturbance (e.g., poaching, harassment) and habitat damage during project operation, if public access is not controlled. Would cross proposed linkage 1 at Temescal Wash, but tower placement should not interrupt travel corridor	Same, except construction of 4 miles of permanent roads and 9.3 miles of temporary access roads would increase the risk of disturbance
Bird/T-lines	Northern portion (Temescal Wash/Lee Lake) of line presents a high risk to waterfowl; central portion siting either underground or behind ridgeline would minimize risk to raptors; southern portion poses moderate risk of collision where it would cross major drainages	Same

**Transmission Alignment Comparison**

<b>Resource/Issue</b>	<b>Co-applicants' Proposed Alignment</b>	<b>Staff Alternative Alignment</b>
Munz's onion	Would affect about 3.25 acres of potential habitat along the northern portion of the transmission line, about 23.2 acres at underground segment, and 35 acres at the northern substation. Pre-construction surveys could be conducted to prevent adverse effects during construction, but temporary access roads and permanent maintenance roads would substantially increase the risk of disturbance and habitat damage during project operation, if public access is not controlled	Same, except would affect about 15.1 acres at underground segment
Slender-horned spine flower, San Diego ambrosia, California Orcutt grass, San Jacinto Valley crownscale	Occurrences at Temescal Wash at Indian Creek and Alberhill (Subarea 1); vernal pool habitat may exist along southern segment of alignment (Subarea 8). Tower construction could affect about 3.25 acres of potential habitat. Pre-construction surveys could be conducted to prevent adverse effects during construction, but temporary access roads would substantially increase the risk of disturbance and habitat damage during project operation, if public access is not controlled	Same
Thread-leaved brodiaea	Occurrences in the vicinity of Tenaja Creek (Subarea 7). Tower construction could affect about 0.25 acre of potential habitat. Pre-construction surveys could be conducted to prevent adverse effects during construction, but temporary access roads would substantially increase the risk of disturbance and habitat damage during project operation, if public access is not controlled	Same.
Quino checkerspot butterfly	Substation and tower construction would affect 36.75 acres within designated critical habitat and about 0.75 acre of potential habitat; temporary access roads would substantially increase the risk of disturbance and habitat damage during project operation, if public access is not controlled	Same

**Transmission Alignment Comparison**

<b>Resource/Issue</b>	<b>Co-applicants' Proposed Alignment</b>	<b>Staff Alternative Alignment</b>
Arroyo toad and California red-legged frog	Construction of towers at Temescal Wash (north) and Los Alamos Canyon and Tenaja Creek (south) could adversely affect about 1.25 acres of potential arroyo toad habitat; but could avoid California red-legged frog habitat through siting. No effects on critical habitat for either species, but temporary access roads would substantially increase the risk of disturbance and habitat damage during project operation, if public access is not controlled	Same
Southwestern willow flycatcher and least Bell's vireo	Occurrences at Temescal Wash and Tenaja Creek; construction of towers could affect about 1 acre of potential habitat. Access roads could also adversely affect habitat; temporary access roads would increase risk of disturbance and habitat damage during project operation, if public access is not controlled	Same
Coastal California gnatcatcher	Construction of northern substation and towers could affect 38.5 acres of habitat within proposed critical habitat; access roads could also adversely affect habitat; temporary access roads would increase risk of disturbance and habitat damage during project operation, if public access is not controlled.	Same
Stephens' kangaroo rat	Construction of northern substation and towers could affect over 38.5 acres of habitat within the Stephens' Kangaroo Rat Fee Assessment Area and Lake Mathews-Estelle Mountain Core Reserve; temporary access roads could also affect habitat and would increase the risk of disturbance and habitat damage during project operation, if public access is not controlled	Same except includes access roads with northern substation and towers
Developed recreation facilities	Would affect Wildomar OHV area and campground and these facilities would likely need to be closed during the first two years of construction (would be covered in the detailed site plan for construction)	Would avoid Wildomar OHV and campground locations; increased traffic due to construction would have minimal effects on users at these facilities
Dispersed recreation	Major effect on dispersed recreation would be in the vicinity of flight paths used by hang gliders; would present safety hazards; would result in considerable loss of hang gliding opportunities	Avoids some conflicts with hang gliding and FS land classifications where transmission line construction would be inconsistent with FS land management directives

**Transmission Alignment Comparison**

<b>Resource/Issue</b>	<b>Co-applicants' Proposed Alignment</b>	<b>Staff Alternative Alignment</b>
Aesthetics	Towers and corridors would be visible in the foreground, middleground and background; construction activities within the Cleveland National Forest would result in features which conflict with the Retention and Partial Retention VQO standards	Would introduce line, colors, and textures into the landscape that do not currently exist and this would not be consistent with Retention VQO and would be slightly more visible from key viewpoints than the co-applicants' proposed alignment
	The linear features of the lines would contrast with the mountain and within the Cleveland National Forest be in conflict with the VQOs; the towers, conductors and resulting footprint of the corridor would be visible from highly traveled roadways	Same. Also because the lines would be lower down on the mountain they would be closer to Lakeland Village and more visible from the community of Lake Elsinore
Future recreation use	Transmission alignment would affect use by hang gliders of both launch and landing areas but avoids residential areas	Would reduce conflicts with hang gliding uses
Roads	About 15.7 acres of temporary access roads could be revegetated; it is estimated that about 10.8 miles of road would be needed to service 32.1 miles of transmission line. About 5.2 miles (9.5 acres) would be needed for a permanent maintenance road along the underground segment	About 13.5 acres of roads could be revegetated; public use could adversely affect habitat along 9.3 miles of road. About 4.1 miles (7.5 acres) would be needed for a permanent maintenance road along the underground segment
Property values	Would adversely affect private property values up to 3 miles and 5 miles from where transmission alignment would cross or parallel private properties along northern portion and southern portion, respectively and would cross or be parallel within 0.25 mile about 8.6 miles of lands designated for residential development and may make these lands less desirable for development	Would adversely affect private property values up to 4 miles and 9 miles from where transmission alignment would cross or parallels private properties along northern portion and southern portion, respectively and would cross or be parallel within 0.25 acre of about 15.9 miles of land designated for residential development under the General Plan and may make these location less desirable for development
Land Use	Would be within 0.25 mile of 406 privately owned parcels and would cross or be adjacent to 6.1 miles of property zoned for residential use	Would be within 0.25 miles of 452 privately owned parcels and would cross or be adjacent to 13.4 miles of property zoned for residential use
Cultural resources	Northern segment could affect one prehistoric and two historic period archaeological sites; southern portion would not effect any known sites, but southern substation would affect one prehistoric site and sites in unsurveyed areas	Alignment has not been surveyed; could affect as yet unknown prehistoric sites

### 5.1.1 Co-applicants' Proposed Action

#### Project Facilities

- Construct an upper reservoir at Morrell Canyon based on the conceptual designs for alternate A.3.
- Construct a powerhouse at the Santa Rosa site based on the conceptual designs for the water conduit alternative H.3.
- Install a 500-kV line along the proposed transmission alignment.

#### Geology and Soils

- Retain a board of three or more qualified independent engineering consultants experienced in critical disciplines, such as geotechnical, mechanical, and civil engineering, to review the design specifications and construction of the project for safety and adequacy.
- Conduct additional geotechnical studies.
- Develop an erosion control plan prior to construction.
- Implement erosion control measures during construction.
- Develop and implement a plan for the design and construction of a system that would automatically detect conduit or penstock failure and, in the event of such a failure, immediately shut off flow in the conduit or penstock at the headworks.
- Develop and implement plans for clearing the upper reservoir area and re-vegetating disturbed areas with native plant species beneficial to wildlife prior to the start of any land-disturbing or land-clearing activities at the project.

#### Water Resources

- Develop and implement a upper reservoir and water conduit monitoring program to assess the effects of the upper reservoir liner and seepage collection systems, shafts, and tunnel on groundwater levels and water quality, including the installation of perimeter wells designed to establish groundwater levels and water quality prior to construction and to detect changes in groundwater levels and water quality after construction.
- Develop and implement a plan for installing drainage and flood control measures and any water detention structures to control storm run-off over the term of any license issued for the project.
- Pay an annual lake management fee to Elsinore Valley MWD to maintain Lake Elsinore at the minimum target elevation of 1,240 feet msl consistent with the goals of the Lake Elsinore Stabilization and Enhancement Project.<sup>79</sup>
- Develop and implement a dam safety monitoring program.<sup>80</sup>

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<sup>79</sup> The co-applicants estimate this fee at \$1.8 million per year and indicate that it is subject to further negotiations with the Elsinore Valley MWD.

- Prepare a hazardous substances spill prevention and control plan.
- Develop and implement a plan to monitor DO and temperature downstream of the tailrace in Lake Elsinore and in Temescal Wash during construction and operation.

### **Aquatic Resources**

- During construction drawdown, remove or reduce the existing fish population via netting or rotenone poisoning.
- Retain a qualified biologist or natural resource specialist to serve as an environmental construction monitor to ensure that incidental construction effects on biological resources are avoided or limited to the maximum feasible extent.
- Establish appropriate setbacks from streams, avoid sediment discharge, and implement BMPs identified by the USFS to avoid any effects on the existing steelhead recovery efforts in the San Mateo Watershed as part of the erosion control plan.
- Design and install physical barrier screens consistent with NMFS criteria in areas of underwater intakes to prevent impingement and entrainment.
- Establish limits of flow velocity rates of underwater intakes of less than 1.5 feet per second reduce impingement and entrainment of fish.
- Conduct monitoring for 1 year to determine the extent of fish entrainment and mortality at the Lake Elsinore intake/outlet structures, and implement and test behavioral avoidance devices if entrainment is significant.

### **Terrestrial Resources**

- Employ a qualified biologist and/or natural resource specialist to monitor construction activities and help prevent adverse effects on sensitive species or habitats.
- Conduct wetlands delineations and prepare habitat mitigation and management plans in consultation with the Corps, CDFG, and the USFS.
- Develop and implement a plan to prevent and control noxious weeds and exotic plants of concern in project-affected areas.
- Design and construct the transmission line to the standards outlined in 1996 by APLIC.
- Consult with the USFS and Interior to identify appropriate parcels for mitigation of habitat losses including 2:1 replacement ratio for about of 20 acres of oak woodlands and 1:1 replacement of 31 acres of coastal sage scrub.
- Provide compensation of \$500 per acre for project effects within Stephens' Kangaroo Rat Fee Assessment Area.

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<sup>80</sup> This co-applicant-proposed measure is more of an administrative measure and would be coordinated with the Commission's Division of Dam Safety and Inspection and the California Department of Water Resources.

## **Recreational Resources**

- Develop and implement a detailed site plan of construction sites and laydown areas relative to existing recreational facilities and specify contingencies for restricting public access to these areas and providing alternative facilities.
- Install fencing around the upper reservoir.
- Provide interpretive signage at the upper reservoir.
- Provide USFS with an ancillary structure that would complement the USFS firefighter's memorial along Ortega Highway.
- Grade, contour, and revegetate using native plants to return the site to pre-construction conditions or prepare the upper reservoir construction laydown area or another location for future development by the USFS or other entity as determined by the USFS.
- Relocate portions of the Morgan Trail (Forest Route 7-s-12) if the upper reservoir is located in Morrell Canyon.
- Develop and implement a recreation plan, including the construction of a botanical garden, and provision of powerhouse tours and other amenities at the Santa Rosa or Evergreen powerhouse location.
- Develop a hang glider landing site, provide for a community park, and public tours of the powerhouse if the powerhouse is located at the Ortega Oaks site and the proposed northern transmission alignment is used.
- Develop an annual fish stocking program for Lake Elsinore in consultation with FWS, CDFG, and the Joint Watershed Authority.

## **Land Use and Aesthetic Resources**

- Acquire and modify the multi-family residences nearest the proposed powerhouse site (the Santa Rosa Villas in the case of the Santa Rosa powerhouse site and a single family home and Lakeland Village Plaza in the case of the optional Evergreen powerhouse site), provide relocation assistance, use properties for construction purposes or retain in vacant condition, and return to the regional housing inventory upon completion of construction to address potential adverse effects on residents during construction.
- Acquire fee simple or leasehold interests in lands needed for project purposes by voluntary sale or conveyance to the extent possible.
- Prepare a plan to avoid or minimize disturbances to the quality of the existing visual resource of the project area.
- Consult with the Riverside County Flood Control District and formulate and implement plans to avoid adversely affecting existing drainage facilities and to control any project-related drainage.
- Achieve a balance of excavation and fill materials at the project site by using excavated materials from the intake, powerhouse, penstock, tunnel, and upper reservoir excavations in the construction of upper reservoir dam and embankments.
- Participate in the installation of traffic signal at the Grand/Ortega intersection.

- If the Ortega Oaks power house location is selected, dedicate and improve any additional right-of-way along Ortega Highway that would be required to accommodate existing or anticipated future traffic volumes.
- Develop and implement traffic management and control plans to address construction traffic and access to and from active construction sites.
- Install temporary roads on National Forest System lands only with USFS approval and according to USFS policies and remove, recontour, and revegetate roads following construction, except where the USFS authorizes continued use of the roads for transmission line maintenance.
- Conduct all construction activities in accordance with the noise element of the County of Riverside Comprehensive General Plan, city of Elsinore construction noise standards and any applicable codes or standards.

### **Cultural Resources**

- Consult with the SHPO or USFS at least 180 days prior to commencement of any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in the license, including recreational development at the project.<sup>81</sup>
- If previously unidentified archaeological or historic properties are discovered during the course of constructing or developing the project works or other facilities at the project, stop all land-clearing and land-disturbing activities in the vicinity of such properties and consult with the SHPO.<sup>82</sup>
- Implement measures proposed in the draft HPMP developed in consultation with the SHPO and USFS and filed with Commission, including provisions for the following: (1) completing pre-construction archaeological surveys in the APE; (2) determining the need for intensive surveys; (3) monitoring historic properties during construction; (4) appointing a tribal liaison; (5) studying the potential effects of ground acceleration on historic buildings; (6) developing a program to monitor archaeological sites for 5 years; and (7) developing a public interpretative program.
- Conduct paleontological monitoring of earth-moving activities on a part-time basis in locations that are sensitive for paleontological resources.
- Prepare any recovered fossil remains to the point of identification and prepare them for curation by the Los Angeles County Museum or San Bernardino County Museum.

#### **5.1.2 Staff Alternative (Preferred Alternative)**

The staff alternative consists of an upper reservoir at the Decker Canyon site a powerhouse at the Santa Rosa site, and a transmission alignment. The staff alternative includes most of the co-applicants' environmental measures, except for their proposed recreational measures associated with the Morrell Canyon upper reservoir site, the measure to remove or reduce the existing fish population via netting or rotenone poisoning during construction, and the installation of fish screens. We have expanded the scope,

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<sup>81</sup> If activity is on USFS lands, also consult with the USFS at least 180 days prior to commencement of any land-clearing or land-disturbing activities within the project boundaries, other than those specifically authorized in the license, including recreational development at the project.

<sup>82</sup> Also consult with the USFS, if archaeological site or historic property is identified on USFS lands.

added consultation requirements or otherwise modified the co-applicants proposed measures for erosion control, water quality monitoring for the conveyance system, entrainment monitoring, habitat mitigation ratios, noxious weed control, avian protection guidelines, and construction monitoring in aquatic and terrestrial environments. The staff alternative would include the following modified and additional environmental measures.

### **Project Facilities**

- Construct an upper reservoir at Decker Canyon based on the conceptual designs for alternative B.2.
- Install a 500-kV transmission line along the staff alternative transmission alignment.

### **Geology and Soils**

- Include specific provisions in the proposed erosion control plan that apply erosion control measures and BMPs to all construction locations including the upper reservoir, drainage and flood control locations, penstock tunnels, powerhouse, tailrace, inlet/outlet structure, transmission lines, and all associated construction laydown areas and temporary on-site borrow areas and for all subsequent ground disturbing activities over the term of the license.

### **Water Resources**

- Develop and implement a revised lake operating plan for Lake Elsinore, addressing increased minimum lake levels, flood control implications, and water supply issues.
- Develop and implement a surface water resources management plan to control and monitor project-related effects on water resources that support riparian vegetation on National Forest System lands.
- Include specific remediation measures in the proposed upper reservoir and water conduit monitoring program to allow immediate action to be taken should water and non-native aquatic species be released from the upper reservoir into the San Juan Creek drainage.
- Include specific provisions in the proposed upper reservoir and water conduit monitoring program to explore the groundwater and characterize the aquifer, to consult on groundwater inflow criteria, and to monitor groundwater levels during construction and operation of the water conduits including the tunnels and penstocks that convey water between the upper reservoir and the powerhouse for 10 years or longer if necessary, specifying remedial actions if monitoring reveals changes in groundwater levels or seepage into the tunnels.

### **Aquatic Resources**

- Develop and implement a detailed plan specifying the activities, locations, methods, and schedules that the qualified environmental construction monitor would use to monitor construction activities in aquatic environments.
- Conduct entrainment monitoring for 1 year and once every 5 years over the term of any license issued to the project to determine the extent of fish entrainment and mortality at the Lake Elsinore intake/outlet structures and provide the monitoring results to CDFG, FWS, the State Water Board and the Joint Watershed Authority, and, based on the results of entrainment monitoring, develop and implement a plan to mitigate for entrainment losses through measures, such as enhancing nearshore fish habitat or stocking fish, that would aid in establishment of naturally sustaining population of desirable sport fish.

## **Terrestrial Resources**

- Develop and implement a detailed plan specifying activities, locations, methods and schedules the qualified environmental construction monitor would use to monitor construction in terrestrial environments.
- Develop and implement a vegetation and invasive weed management plan to prevent and control noxious weeds and exotic plants of concern in project-affected areas during construction and over the term of any license issued for the project.
- Develop and implement a Lake Elsinore monitoring and remediation plan to eliminate or reduce project-related effects, if any are identified, on nesting shorebirds, waterfowl, and other birds.
- Implement the proposed avian protection plan consistent with April 2005 avian protection plan guidelines and over the term of any license issued for the project.
- Conduct additional pre-construction special status plant surveys at transmission line tower sites and along transmission alignment access roads, consistent with the Multi-Species HCP.
- Prepare a habitat mitigation plan in consultation with the USFS, Interior, CDFG, and Riverside County to identify appropriate mitigation of habitat losses including a 1:1 replacement ratio for about 5 acres of oak woodlands, about 32 acres of coastal sage scrub, and about 216 acres of chaparral and grasslands.
- Consult with the USFS annually to review the list of special status species and survey new areas as needed.
- Develop and implement an annual employee awareness training program regarding special status plants and animals.
- Consult with the FWS during the process of developing final design drawings on measures to protect fish and wildlife resources.

## **Recreational Resources**

- Develop and implement a safety during construction plan identifying potential hazard areas near public roads, trails, and recreation areas and facilities, and measures necessary to protect public safety and conduct daily inspections on National Forest System lands for fire plan compliance, public safety, and environmental protection.
- In consultation with the USFS, develop and implement a plan for a recreational facility at the construction laydown area used during construction of the upper reservoir on National Forest System lands or for an alternative use and/or location.
- Develop and implement a recreation plan that provides for transfer of cleared land to a local entity and development of recreation facilities at the powerhouse location and O&M funding sufficient to operate the facility.

## **Land Use and Aesthetics**

- Develop and implement a plan to determine the toxicity of sediments in Lake Elsinore lakebed that would be disturbed by construction of the intake/outlet structure and to provide for appropriate handling and disposal if toxins are identified in the lakebed sediment prior to the commencement of the construction of the intake/outlet structure in Lake Elsinore.

- Achieve a balance of excavation and fill materials at the Decker Canyon reservoir site through additional excavation and dispose of all excavated materials from all other project facilities off site.
- Include in the proposed road and traffic management plan applicable on National Forest System lands, provisions addressing road construction, realignment, maintenance, use, and closure and identifying the co-applicants' responsibility for road maintenance and repair costs.
- Include in the proposed road and traffic management plan applicable on non-National Forest System lands, provisions addressing road construction, realignment, maintenance, use, and closure, as well as land management policies and practices associated with project-related roads during both construction and operations.
- Prepare and implement a scenery conservation plan to achieve the greatest consistency possible with the High Scenic Integrity Objectives of the Cleveland National Forest Land Management Plan.
- Develop and implement a transmission tower placement plan.

### **Cultural Resources**

- Revise the draft HPMP in consultation with the SHPO, Tribes, BIA, the Lake Elsinore Historical Society, and the USFS and file a final HPMP for Commission approval within 1 year of license issuance.

Finally, Commission staff notes that the staff alternative includes all of the revised preliminary 4(e) conditions specified by the USFS and described in section 2.6.2, *USFS Section 4(e) Conditions*. Commission staff would supplement the following measure:

- Ensure all transmission facilities conform to APLIC et al. (1996) guidelines, including power lines to reduce risks of bird strikes. The co-applicants should conform to the April 2005 avian protection plan guidelines.

## **5.2 DISCUSSION OF KEY ISSUES**

### **5.2.1 Project Facilities**

#### **Upper Reservoir**

The co-applicants propose to locate the upper reservoir in Morrell Canyon. Our analysis shows that construction of an upper reservoir at the Morrell Canyon site would disrupt flows in the San Juan Creek drainage, displace Lion Spring, and remove more than 20 acres of southern coast live oak riparian forest. Oak woodlands are considered to support higher levels of biodiversity than any other terrestrial ecosystem in California and would be difficult to replace at the project site. Construction at this location would also remove 80 acres of chamise chaparral. Although abundant in the vicinity, conversion of chaparral to project use would reduce habitat available for the Santa Ana mountain lion population, which is at risk of extirpation because of rapid urban development. Recreational use at this location would be adversely affected because Morgan Trail, which accesses the San Mateo Wilderness Area, would need to be relocated either temporarily or permanently depending on the final design of this facility and because two of the most-used hang gliding launch sites (E and Edwards) would be closed or subjected to use restrictions during construction.

To avoid these potential adverse effects, the staff alternative would locate the upper reservoir in Decker Canyon. There would be no need to install a stream bypass conveyance system at this location

because the footprint of the reservoir is situated at the very top of the watershed, with no established stream network entering the site. Only 5 acres of southern coastal live oak would be affected and less off-site mitigation for habitat loss would be required, and no rare plant species would be affected. Locating the upper reservoir at the Decker Canyon location would avoid construction effects on the use of the E and Edwards hang gliding launch sites.

Table 55 compares the potential effects at the proposed Morrell Canyon and Decker Canyon locations. We estimate that the overall energy facility and transmission line, including an upper reservoir at Decker Canyon, would have a cost of construction (which includes development costs but excludes the license and environmental measures) of about \$1,326,722,000, about \$43,550,700 more than our estimate for the cost associated with such a facility at the proposed Morrell Canyon location. Additionally, we estimate that significant water control costs at Morrell Canyon given its upstream drainage, upstream and groundwater collection systems, and potentially higher liner costs could add more than \$18,000,000 to the cost, decreasing the cost advantage of the co-applicants' proposed alternative to about \$20,500,000. Because these estimates are based on preliminary designs and cost estimates and additional geotechnical investigations may identify other issues, we consider the cost of construction at either site to be within a comparable range.

### **Powerhouse**

In the draft EIS, we included an underground powerhouse at the Ortega Oaks site and a mid-slope transmission alignment in a staff alternative to the co-applicants' proposal. The Ortega Oaks site combined with routing the transmission lines along a mid-slope alignment and west of the USFS-permitted launching sites lessened the potential effects on hang gliding opportunities and provided an opportunity to provide a formal landing area. In comments on the draft EIS, the co-applicants and others point out that Riverside County approved a subdivision of 100-single family residential lots at Ortega Oaks in April 2004, including the 58-acre site proposed by the co-applicants for the powerhouse and substation. The co-applicants also filed a report on the comparative geological and geotechnical conditions at the three powerhouse sites (Genterra, 2006). This report concludes that the Ortega Oaks site offers the least desirable subsurface conditions of the three sites. Hang gliding advocates commented that the proposed 5-acre formal landing area at Ortega Oaks would be inadequate and would still present hazards associated with an aboveground substation and the above ground distribution lines.

Our intent on including the Ortega Oaks powerhouse site in the draft EIS staff alternative was to avoid displacing residents and disrupting or eliminating hang gliding opportunities. We concluded that the geological and geotechnical challenges at any of three sites could be addressed in the final designs. However, given the proximity to the existing residential community adjacent to the site, the approved subdivision of lands that comprise the site, and the fact it would not eliminate hazards to hang gliders, we have revised the staff alternative to include a powerhouse at the Santa Rosa location. Locating the powerhouse at the Santa Rosa site combined with burying the transmission line connection to the powerhouse (see discussion under Transmission Alignment) would avoid conflicts with existing and planned high-density residential communities. This alternative also would provide a clear path for hang gliding from the USFS-permitted launch sites along South Main Divide Road and the existing informal landing site at Ortega Oaks and would place the above ground substation away from the existing landing site.

Construction activity at the Santa Rosa powerhouse site would affect the adjacent Butterfield school population, increase traffic on Grand Avenue, and disturb two historic archaeological sites and one prehistoric archaeological site. Vibrations could affect two historic buildings. Implementation of the co-applicants' proposed erosion control plan with our recommended measures and adherence to local noise and air quality ordinances would keep the effects of construction activity within acceptable limits for noise and dust. Implementation of the programmatic agreement and associated HPMP for cultural resources would avoid, reduce, or mitigate adverse effects to the three archaeological sites and two

historic buildings. It is important to note that National Register eligibility needs to be determined for the three affected archaeological sites. The construction activity would be short term. Operation of the project with an underground powerhouse at the Santa Rosa powerhouse site would introduce a new visual element (the substation) into a predominately low-density residential area instead of adjacent to a high-density residential development at the Ortega Oaks site.

### **Transmission Line**

In response to comments on the draft EIS, the co-applicants revised their proposed transmission alignment. In response to comments, we revised the staff alternative transmission alignment as well. Table 55 compares the effects of the co-applicants' proposed transmission alignment and the staff alternative transmission alignment

Both the proposed and staff alternative alignments now avoid conflicts with commercial enterprises along the northern segment and include underground segments to reduce potential effects on hang gliding activities at the USFS permitted hang gliding launch sites and egress from the Rancho Capistrano community. The staff alternative transmission alignment also reduces conflicts with the Cleveland National Forest Land Management Plan and USFS fire suppression activities. The co-applicants' proposed alignment reduces conflicts with residential subdivisions along the southern segment and would generally be less visible to area residents. From the connection with the SCE line for about 4 miles to the northern border of the Cleveland National Forest, the co-applicants' proposed transmission alignment and the staff alternative transmission alignment follow the same route (see figures F-1 through F-4 in appendix F). About 2 miles of this segment of the alignment would run north/south on or adjacent to the existing Glen Eden Sun Club and the third phase of the planned Sycamore Creek community. Here, the overhead transmission lines would introduce a new unattractive visual element to subdivisions where utility lines are buried. As discussed in section 3.3.7.2 use of tree-type poles and non-reflective coatings could lessen the affects of above ground lines on adjacent residential areas, especially where the line runs adjacent to the Sycamore Creek and Glen Eden Sun Club communities. The transmission alignment under consideration in this EIS is a 500-foot-wide corridor within which the line and towers can be placed to minimize the potential effects on the aesthetics of adjacent communities within the requirement of the National Electric Safety Code. We considered whether to bury the entire 32-mile-long line and the 2-mile connection to the powerhouse. Burying the entire line would eliminate most of the visual effects (there would still be above ground substation connections) but would be cost prohibitive at an incremental cost in excess of \$350 million. However, we recognize that there may be locations in close proximity to the alignment (such as Sycamore Creek or Glen Eden Sun Club) where the acquisition of easements may displace residents and where additional underground segments may be a feasible solution.

Within the Cleveland National Forest, the co-applicants' proposed transmission alignment would cross mostly National Forest System lands on relatively inaccessible, rugged, and steep terrain of the Elsinore Mountains and surrounding foothills for about 28 miles and would include an underground segment (about 3 miles) in the vicinity of the hang gliding launch sites and Rancho Capistrano and connecting to the powerhouse. The staff alternative transmission alignment generally follows a similar north/south through the Cleveland National Forest but runs up to a mile more easterly to avoid interference with firefighting activities, back country non-motorized areas, and wilderness areas. The staff alternative transmission alignment would include an underground segment of about 2.1 miles in the vicinity of the hang gliding launch sites. The two routes are the same along about 4 miles of the southern end of the alignment to the connection with the SDG&E line.

Hang gliding advocates raised concerns about the potential effects the proposed transmission line as discussed in the draft EIS would have on the current hang gliding opportunities in the city of Lake Elsinore and Riverside County. We concluded in section 3.3.8 of the draft EIS that the hang gliding industry may contribute about \$1 million per year to the local economy. The underground segments of

both the co-applicants and staff alternative transmission alignments in the vicinity of the USFS-permitted launch sites and to the Santa Rosa powerhouse site address these concerns and greatly reduce effects on hang gliding activities.

The southern segment of the staff alternative transmission alignment avoids the San Mateo Wilderness area but runs in proximity to private residential properties, including the La Cresta community. As with the northern portion of the line, the final line and tower placement would be determined by the National Electric Safety Code and could include tree-type towers and non-reflective coatings to lessen the effects on adjacent communities. Again we considered whether to bury the line along this southern segment and concluded that the reduced effects on the visual resources (see figure D-7) did not justify the incremental cost of about \$170 million.

As discussed in section 3.3.7, *Land Use and Aesthetic Resources*, the USFS has recently gone through an extensive public planning process to identify and develop policy for the forest. The Cleveland National Forest Land Use Plan is the framework designed to provide for management of USFS resources and values. The plan recognizes the potential for future development within the forest, and has designated certain lands as acceptable for various land uses, and sets guidelines for allowable alterations to the landscape. The plan provides for the preservation of certain unspoiled vistas and lands. This EIS discloses the effects of the proposed project on the USFS lands and indicates where it is incompatible with the approved plan. The Cleveland National Forest Land Management Plan may need to be amended to accept the project's inconsistencies while retaining the current plan's desired conditions and outcomes.

Overall, the staff alternative transmission alignment would reduce conflicts with USFS plan and fire suppression activities, hang gliding activities, and commercial enterprises. We recognize that, the co-applicants' proposed alignment is the less visible from key viewpoints in the wilderness area, along Ortega Highway, and from Lake Elsinore, but would still interfere with USFS fire suppression activities in several areas and would cross back-country non-motorized areas of the Cleveland National Forest. The staff alternative transmission alignment that would run parallel but east of the co-applicants' proposed alignment would avoid potential conflicts with fire suppression activities, although it would be more visible than the co-applicants' proposed alignment and would cross more private properties, many of which are in-holdings within the boundaries of the Cleveland National Forest. The proposed and staff alternative transmission line alignments are about the same length (about 32 miles with a 2 mile connection to the Santa Rosa powerhouse) and would involve comparable costs with the co-applicants alignment costing slightly more due to its longer overall length (34.1 miles versus 33.7 miles) and longer buried segment (5.2 miles versus 4.1 miles).

Both the co-applicants' proposed and staff alternative transmission alignments are considered as 500-foot-wide corridors within which the placement of transmission towers can be adjusted to avoid effects on buildings, sensitive habitats, riparian areas, viewsheds, and other environmental resources. The co-applicants propose to minimize the effects of the transmission line on environmental resources by placing towers outside of sensitive areas and riparian areas. The co-applicants also indicate that they would consider the use of tree-type towers in areas that cross or are adjacent to residential areas to reduce the visual impact of the transmission lines. Given these various considerations in the placing of towers, we recommend that the co-applicants prepare a transmission tower placement plan in consultation with the city of Lake Elsinore, Riverside County, the USFS, FWS, and CDFG. We estimate that this plan would entail a one time capital cost about \$100,000 or \$14,100 annualized and would be warranted as a means to ensure full consideration of the concerns of property owners, fish and wildlife resource agencies, and local governmental agencies about minimizing the effects of tower placements.

## **5.2.2 Construction Oversight**

The co-applicants would be required to submit plans and specifications and a supporting design report prior to construction. The plans and specifications would describe how the project will be

constructed and the supporting design report would ensure the proposed project structures are designed in accordance with the Commission's Engineering Guidelines and sound engineering practice. All project construction would be overseen by quality control personnel, independent of the contractor, as well as engineers from the Commission's Division of Dam Safety and Inspections – San Francisco Regional Office.

The co-applicants' proposal to retain a board of three qualified independent engineering consultants experienced in critical hydropower construction disciplines would ensure that design specifications are appropriate to the site and that construction would proceed in a reasonable and safe manner under either alternative. This is particularly critical given the additional geotechnical studies proposed by the co-applicants and the need to develop final design drawings for the project features included in the staff alternative. We estimate that it would cost about \$1,500,000 for the additional geotechnical and engineering design and review board services prior to and during construction of the project under either alternative, or \$211,600 annually.

### **5.2.3 Geology and Soils**

The potential for slope erosion and sediment transport into streams exists at the proposed project construction sites under both alternatives. The co-applicants' proposed erosion control plan would include measures and BMPs designed to avoid or minimize erosion at all construction locations during project construction. BMPs would include the co-applicants' proposal for appropriate setbacks from streams and avoidance of sediment discharges into streams to avoid effects on the existing steelhead recovery efforts in the San Mateo Watershed.

USFS revised preliminary 4(e) condition no. 15 specifies a plan that includes measures to control erosion, stream sedimentation, dust, and soil mass movement during construction and operation of the project. Development and implementation of an erosion control plan that applies erosion control measures and BMPs to all construction locations (including the upper reservoir, drainage and flood control locations, penstock tunnels, powerhouse, tailrace, inlet/outlet structure, transmission lines, and all associated construction laydown areas and temporary on-site borrow areas during project construction) would minimize the effects of erosion on water resources and other environmental resources in the project area.

A Quality Control and Inspection Program, including the co-applicants' proposed erosion and sediment control plan for construction activities, would be submitted prior to construction under the staff alternative. The staff alternative also would specify that the erosion control plan be implemented for any subsequent maintenance and ground-disturbing activities over the term of any license issued for the project.

The potential exists for high-pressure water conduits or penstock to fail. The co-applicants' proposed system to detect a water conduit or penstock failure and immediately shut off flow in the conduit or penstock at the headworks would limit the potential effects of erosion at and down slope of the failure point.

Removing vegetative cover during construction could result in the loss of native plants beneficial to wildlife and could result in surface erosion at the construction sites. To address this concern, the co-applicants propose two plans in conjunction with the erosion control plan. These plans address reservoir clearing and revegetation of disturbed soils. The reservoir clearing plan would identify the location and acres of lands to be cleared, describe the vegetation to be cleared, describe resource management goals related to fish and wildlife enhancement, and describe and map disposal methods and locations. The revegetation plan would address plant species and densities to be used, fertilization and irrigation requirements, an effectiveness monitoring program, provision for filing monitoring reports, and procedures to be followed if monitoring reveals that revegetation is not successful. These plans would be valuable in minimizing adverse effects on existing soil and botanical resources and helping to re-establish

appropriate plant communities. These plans would be consistent with USFS revised preliminary 4(e) condition no. 15, as described in section 3.3.1.2.

In section 3.3.4.2, we conclude that adding success criteria for replanting would improve the potential for restoring vegetation to its existing condition. Therefore, under the staff alternative the plan would specify that the co-applicants add a specific measure to the revegetation plan to identify criteria for success (e.g., percent coverage of desired species at specified time intervals) to provide the basis for determining which vegetation parameters to monitor as revegetation proceeds.

Under the staff alternative, the co-applicants would add a specific measure to the clearing plan to address stockpiling as clearing takes place and replacing topsoil after construction is completed. This step would provide additional support for re-establishment of native plant communities in native soils.

We estimate that the cost of developing the co-applicants' proposed erosion control plan would be about \$32,500 annually and the cost to implement the proposed erosion control measures and BMPs during the construction of the project would be about \$301,700 annually. The staff alternative would be \$308,600 annually, or \$6,900 more than the co-applicants' proposal. We estimate that the additional cost to implement the plan during the term of any license issued would be \$9,900. We estimate that the cost of developing and maintaining the co-applicants' proposed conduit shut-down system would be \$12,800 annually; the cost of their vegetative clearing plan would be \$4,900 annually; and the cost of the revegetation plan would be \$4,200.

## **5.2.4 Water Resources**

### **Revised Lake Operating Plan**

The co-applicants would pay an annual fee to the Elsinore Valley MWD to provide make-up water necessary to maintain lake elevations at 1,240 feet msl or above and would typically operate the project between lake elevations 1,240 and 1,247 feet msl under both alternatives.

The staff-recommended revised lake operating plan for Lake Elsinore would ensure that the measures related to make-up water, flood control, and project operations, in combination, would not produce unexpected consequences. Under the staff alternative the plan would, at a minimum, specify the amount and timing of minimum inflow for the make-up water and the point of discharge. In section 3.3.2.2, we conclude that the added volume of water from pumped storage operations (5,500 acre-feet) during flood seasons could raise the lake elevation several feet beyond the 1,249-foot msl elevation. Higher elevations could increase shoreline flooding and exacerbate the magnitude of spills into Temescal Wash and the Back Basin.

The co-applicants indicate that the annual lake management fee would be \$1.872 million subject to further negotiation. We estimate that the cost of developing and implementing a revised lake operating plan over the term of any license issued would be \$28,200 annually and would be necessary to address the effects of project operations of lake management. Developing and implementing a drainage and flood control plan as proposed by the co-applicants' and recommended by Riverside County would cost on additional \$14,100 annually. As we said in section 3.3.2.2, these measures would assure that the reservoir levels would be within the operating range of the proposed project.

### **Preventing Interbasin Water Transfers**

The storage of low quality Lake Elsinore water in the upper reservoir within the San Juan Creek Watershed has the potential to negatively affect water quality in the San Juan Creek. The co-applicants would monitor water quality and liner performance as part of their proposed upper reservoir and water conduit monitoring program (see discussion under Groundwater Monitoring). The co-applicants' plan to monitor the effectiveness of the drainage system/reservoir liner for the protection of existing flow

conditions at the upper reservoir would provide for an early detection of leakage from the upper reservoir liner and drain system. This plan would meet most of the objectives of Interior's recommendation for monitoring and maintaining the upper reservoir to eliminate or reduce release of water and non-native aquatic species from the upper reservoir into the San Juan Creek drainage. However, the co-applicants' plan is silent with regard to steps to take if monitoring shows that the liner and drain are not effective. In section 3.3.2.2, we conclude that advanced planning for remedial steps would allow for a rapid response in the unlikely event of leakage. Under the staff alternative, at this plan also would include specific remediation measures that could be taken. Our estimate for the cost of this plan is provided at the end of the discussion on groundwater monitoring.

### **Groundwater Monitoring**

The co-applicants identified groundwater monitoring as an important consideration in their technical reports and description of anticipated affects. They propose an upper reservoir and water conduit (tunnels, shafts, and penstocks) monitoring program that would assess the affects of project construction on ground water levels and water quality. The co-applicants' program calls for gathering information on groundwater levels and water quality prior to the start of construction, monitoring groundwater levels during project construction, and taking remedial steps to grout and seal any observed seeps during construction. Because the majority of the water conduits would be lined, we would not expect excessive seepage during project operation. However, seepage could occur. Under the staff alternative, the monitoring program would specify continued monitoring of ground water levels for at least 10 years following commencement of project operations and would specify what remedial steps would be taken should changes in groundwater levels be detected. Our alternative would also include the development of groundwater inflow criteria in consultation with the USFS as part of the characterization of the aquifer prior to construction of the project. We would consider this step to be consistent with the co-applicants' proposal to gather information about groundwater levels prior to the start of construction at the upper reservoir site.

Developing and implementing the co-applicants' groundwater monitoring program would have a capital cost of \$500,000 that would be incurred during the construction period and during the first 2 years of project operation. This would result in an annual cost of \$70,500. Including provisions in the groundwater monitoring program for groundwater exploration and aquifer characterizations, monitoring groundwater levels and water quality for at least 10 years after the start of operation, and specifying remedial actions as called for under the staff alternative would add an annual cost of \$34,700. The additional cost would be justified to ensure that the reservoir and tunnel linings are effective in preventing seepage that could adversely affect groundwater levels and water quality in surface streams.

### **Surface Water Monitoring**

Project construction could affect wetlands and riparian habitat. The USFS specifies in revised preliminary 4(e) condition no. 35 that the co-applicants develop and implement a water surface management plan to control and monitor project-related effects on water resources that support riparian vegetation on National Forest System lands. Following construction, interception of rainfall within the area occupied by the reservoir would reduce peak flows during extreme (i.e., 100-year) flood events by about 6 percent, as discussed in section 3.3.2.2. Effects would be greater just below the dam, and would diminish downstream. During most years, assuming that design features would not alter the natural hydrograph (i.e., flow volume and timing would be the same), and we do not anticipate any effects on downstream waters, streams, wetlands, or riparian habitat to result from project operation at the proposed Morrell Canyon site.

Implementation of USFS revised preliminary 4(e) condition no. 35 would provide baseline information about hydrology, water quality, riparian plant communities and wildlife in Decker Canyon or Morrell Canyon and would establish a mechanism for long-term monitoring to evaluate project effects on

these resources. The condition indicates that the co-applicants should conduct inventories at both reservoir sites, although we note that if the Commission issues a license for the project, only one upper reservoir would be constructed. Implementation of a surface water management plan would provide baseline information that could be used for long-term monitoring and management.

Development and implementation of a water surface management plan add about \$58,200 annually to the cost of the project but would be warranted.

### **Water Quality Monitoring**

Project operations could affect temperature, DO, and nutrient cycling occurring in Lake Elsinore under both alternatives. In section 3.3.2.2, we conclude that operating the project would slightly improve DO levels in Lake Elsinore as a result of the mixing of denser, cooler water from the upper reservoir with the warmer water in Lake Elsinore. The co-applicants propose to monitor DO and water temperature in the tailrace area and Temescal Wash during and after construction of the project. However, the actual effect of project operations may be difficult to separate from the improvements in DO from implementation of the aeration program under the Lake Elsinore Stabilization and Enhancement Project. We estimate that the annual cost of water quality monitoring would be \$31,200.

### **Spill Prevention Plan**

The potential for the release of fuels, oils, lubricants, and other hazardous substances exists at the sites of project features during construction and during operation of the project under both alternatives. The co-applicants' proposal to prepare a hazardous substances spill prevention and control plan would prevent and minimize any effects associated with the handling of hazardous substances during project construction and operation. We estimate the cost to develop and implement this plan would be \$1,400.

## **5.2.5 Aquatic Resources**

### **Environmental Construction Monitor**

The potential for slope erosion, sediment transport into streams, and hazardous substance spills exists at all the proposed construction sites under both alternatives. To address these concerns, the co-applicants propose to develop and implement a detailed plan for monitoring construction activities in aquatic and terrestrial environments by a qualified environmental construction monitor. USFS revised preliminary 4(e) condition no. 32 specifies that this plan should specify the activities, locations, and frequency of the monitoring that would occur. We conclude in section 3.3.3.2 that more specifics are needed to ensure that all the activities, locations, and frequencies of inspections are commensurate with the potential effects of project construction. Under the staff alternative, the detailed plan would describe the specific monitoring activities, locations, and frequencies. We estimate that the co-applicants' annual costs for environmental monitoring during construction would be \$18,300 for aquatic resources and \$42,300 for terrestrial resources. We estimate that the annual cost for developing our more detailed plan would be about \$20,000, or about \$2,800 more than the co-applicants' proposal for construction monitoring. These cost estimates would be the same under either alternative.

### **Entrainment Prevention Measures**

Operation of the project has the potential to entrain fish at the intake/outlet structure in Lake Elsinore. The co-applicants' propose a program to install screens in the areas of the intake structures, to monitor entrainment over a 1-year period, and to test and implement devices that would decrease entrainment if significant entrainment is documented, and reduce the potential project-related mortality of fish in Lake Elsinore. The co-applicants propose to adhere to the NMFS' design criteria for salmonids in designing and installing the intake fish screen. Lake Elsinore contains resident fish such as carp,

threadfin shad, bass and crappie, and the Joint Watershed Authority intends to stock largemouth bass, black crappie, Sacramento perch, and bluegill. Screen design criteria for these resident species have not been studied, however, assuming that NMFS approach velocity criteria of 0.8 feet per second were used (fish longer than 2.36 inches), the screens would need to be quite large in relation to the tailrace tunnels, and are likely not feasible for the Lake Elsinore Project. Without screens, the co-applicants state the approach velocity for the intakes will range from 1.5 to 1.8 cfs and entrainment would occur.

We estimate that the co-applicants' annual cost to design and install fish screens would be between \$4 and \$15 million for each tailrace tunnel, based on cost information provided by Washington DFW (2005). Assuming costs near the low end of the range and adding \$10,000 per year for O&M results in an annual cost of \$1,138,800. We estimate the cost of additional consultation with the agencies would add about \$1,400 annually.

Besides screening, other measures to provide entrainment could be considered. However, the costs of implementation of other behavioral devices cannot be estimated at this time, as it is not known which species might need to be targeted, such devices are highly dependent upon site-specific characteristics, and are as yet highly experimental and costly.

As discussed in section 3.3.3, *Fisheries Resources*, without more information on the exact location, distance from shore, depth and orientation of the intake/outlet structure to the surface and shore we can only generalize the potential impacts to the Lake Elsinore fishery from entrainment. If the intake structure were to be placed on the shoreline where juvenile fish would encounter the intake while foraging or cruising, the likelihood for entrainment is higher than if the structure were placed farther away from shore where juvenile fish are less likely to be found. Also, we note that many of the sport fish in the lake will continue to originate from stocking efforts, and most will be large enough to avoid entrainment, so that project effects on adult stocks is likely to be small. In addition, unlike river systems, the intake/outlet structure area is small in relation to the overall size of the lake, and fish would need to actively swim into the area in order to be vulnerable to entrainment. Therefore the likelihood of significant impacts from entrainment is low.

The relatively high costs and technical challenges of installing intake screens and/or experimental behavioral devices, as well as the changing nature of the fish populations in the lake due to efforts by the Joint Watershed Authority, make it difficult to assess the impact of the pump storage project would have on Lake Elsinore fish populations over the life of the license. Measures described by the Fisheries Management Plan developed by the Joint Watershed Authority seek to change the existing population structure and fish populations in the lake over a 20-year planning horizon as a result of bio-manipulation techniques, stocking activities, and habitat enhancement measures. As a result of these non-project-related activities the species of fish present in the lake subject to entrainment over time would likely change. Therefore, in lieu of physical fish barriers or screens, the staff alternative includes provisions for monitoring the intakes for entrainment for a period of 1 year after the project is put into operation, and again once every 5 years as recommended by the State Water Board. Such monitoring would provide information on the level of project impacts from entrainment over time. We recommend the co-applicants provide the monitoring results to and consult with CDFG, FWS, the State Water Board, and the Joint Watershed Authority to assess and, based on monitoring results, develop measures to mitigate for project impacts to the existing fishery. A report describing the results of the entrainment study and recommended measures to mitigate for any project impacts on the fishery in Lake Elsinore should be submitted to the Commission for approval. Measures to be implemented could range from making improvements to nearshore habitat including the establishment of aquatic and emergent vegetation, placement of log cribs and/or brush structures, placing spawning gravels where appropriate and providing spawning benches for bass as described in the Joint Watershed Authority Fisheries Management Plan. Coordinating activities with the Joint Water Authority and CDFG would help to ensure that activities are consistent with local and regional efforts to improve the sport fishery in Lake Elsinore.

We estimate that monitoring sports fish for entrainment and mortality once every 5 years as recommended by staff would cost about \$9,300. We estimate that the development and implementation of a plan to mitigate the effects of entrainment, including measures consistent with the Joint Watershed Authority Fisheries Management Plan, would be \$33,800 annually.

## **5.2.6 Terrestrial Resources**

### **Special Status Plants and Animals**

The co-applicants propose to employ a construction monitor to assist in identifying measures to protect native plants and wildlife, starting with pre-design conferencing and continuing through completion of the project. Interior's recommendation 10(a)-1 would provide specifically for consultation with FWS during project design to identify measures that may be needed to protect fish and wildlife. Implementation of USFS revised preliminary 4(e) condition nos. 29 and 30 would continue these benefits to terrestrial resources through the term of the license by providing for annual employee awareness training, annual review of species' status, consultation with USFS on the need for new surveys, and implementation of protective measures, if needed.

The staff alternative includes pre-construction surveys for special status plants and animals in areas that have not been covered yet or that have not been thoroughly covered during previous surveys. These surveys should also cover Multi-Species HCP narrow endemics, riverine/riparian, and Criteria Area Study species, to allow Riverside County to evaluate project consistency with this plan. The measures identified above would provide adequate protection for special status plants and animals, including federally listed species, from project design through any new license period. These actions would be consistent with Interior's request for consultation with FWS in designing measures to protect fish and wildlife, with Interior's and Riverside County's recommendations for an analysis of consistency of the project with the Multi-Species HCP.

Interior recommends that the co-applicants immediately halt project construction or operation if situations arise where fish or wildlife are being harmed or endangered, but the recommendation does not define what would constitute such an emergency or specify methods for determining whether harm or endangerment are occurring. This concern would be appropriately addressed, under either alternative, in the construction monitoring plan described above.

We estimate that the annual cost of the staff alternative measures for monitoring special status plants and animals would be about \$14,100 for pre-construction surveys; \$6,200 for annual reviews of species status; and \$11,400 annually for employee awareness training, or about \$31,700 annually for all three measures.

### **Noxious Weeds and Exotic Plants**

The co-applicants propose to design and implement an integrated pest management plan to prevent the introduction of weeds during construction and to control any populations of weeds that are identified near construction sites during project implementation. USFS revised preliminary 4(e) condition no. 33 is very similar, specifying that the co-applicants should consult with the USFS to develop and implement a plan to monitor and control noxious weeds and non-native invasive species, but the USFS specifies this plan should be continued through any license period. USFS also indicates that the vegetation and invasive weed management plan should be consistent with guidance provided in the Cleveland National Forest Land Management Plan, including consulting with USFS to design and conduct an invasive non-native plant and noxious weed risk assessment, using weed lists that are current at the time of survey (USFS, 2005b). Implementation of USFS revised preliminary 4(e) condition no. 29, which provides for annual employee awareness training, would apply to noxious weeds and invasive non-native plants, as well as to special status plants, as described above. Section 3.3.4.2, *Noxious Weeds and*

*Exotic Plants*, provides information about the minimum requirements of USFS revised preliminary 4(e) condition no. 29.

Although the co-applicants may not propose to construct any new project features during the license period, routine project maintenance could cause ground disturbance at project facilities, and project-related traffic would pose a risk of introducing and spreading weeds. Public use of any access roads would have an especially high potential for adverse effects because it would likely be difficult to control. Implementation of a noxious weed management plan throughout the term of any new license for both USFS and non-USFS lands within the project boundary would reduce these risks and help to protect native plant communities and wildlife habitat values. This approach would minimize planning costs and would provide coverage for weeds and invasive exotic plants throughout the project area, as a whole.

We estimate the annual cost of developing and implementing the co-applicants' noxious weed control plan would be \$14,100. We estimate the additional annual cost of developing and implementing the plan under the staff alternative would be \$22,800.

### **Habitat Mitigation**

The co-applicants propose to provide mitigation for the loss of high-value habitats at a ratio of 2:1 for oak woodlands and 1:1 for coastal sage scrub. The co-applicants do not propose mitigation for habitats, such as chamise chaparral and non-native grassland, because they are abundant in the project area. The co-applicants propose to mitigate wetland and riparian habitat effects. They would conduct formal wetland delineations when the final location of each project feature has been determined, and then prepare a habitat mitigation management plan for approval by the Corps, CDFG, and the USFS. We estimate the annual cost for the co-applicants' plan would be \$15,200.

Interior recommends that the co-applicants evaluate consistency of the project with the existing Multi-Species HCP and Stephens' Kangaroo Rat HCP, and with the North County Multi-Species HCP, which is under development. Interior recommends the co-applicants conduct an in-depth equivalency analysis to determine adequate mitigation ratios for effects that may occur within the Multi-Species HCP area. Interior indicates that in these areas the minimum ratio for mitigation would be 1:1. Riverside County also recommends an evaluation of consistency with the Multi-Species HCP.

The USFS revised preliminary condition no. 38 species a minimum mitigation ratio would be 1:1 for riparian oak woodland, coastal sage scrub, and habitats that are sensitive or support listed species, as well as the development of a habitat mitigation plan.

The staff alternative includes mitigation at a minimum ratio of 1:1 for oak woodlands and for coastal sage scrub and an equivalency analysis as specified by USFS and recommended by Interior. Although chamise chaparral and non-native grasslands vegetation cover types are currently abundant in the project area and in southern California, they provide habitat for native plants and wildlife, including many special status species. They are undergoing rapid development as a result of human population growth. We recommend replacing them at a 1:1 mitigation ratio, to reduce the project's contribution to cumulative habitat loss. The staff alternative's mitigation ratio would be consistent with Interior and USFS recommendations in terms of compensation ratios. Under the staff alternative the co-applicants would conduct formal wetland delineations when the location of each project feature has been determined. The co-applicants would also consult with the Corps regarding formal delineation of effects on Lake Elsinore. When the delineations are complete, the co-applicants would consult with the agencies to develop and implement a habitat mitigation and management plan. The habitat mitigation management plan would focus to the extent possible on replacing wetland acreage, functions, and values in-kind and on site. Where this is not possible, habitats associated with Lake Elsinore would provide a range of opportunities for wetland enhancement.

In developing cost estimates for habitat mitigation of project effects that occur on non-National Forest System lands under any alternative, we have assumed the co-applicants would acquire (in fee title or via conservation easements) private lands that are degraded or under threat of development, and transfer those lands into reserves that could be managed over the long-term by a non-governmental organization or public land trust. This approach would ensure the protection and management of large blocks of land and habitat linkages, would offer greater benefits to wildlife, and could be managed more economically than small, scattered parcels in individual ownership. The USFS revised preliminary 4(e) condition no. 38 specifies that mitigation should occur in the project area; otherwise, the highest priorities would be the Elsinore “Place,” the Trabuco Ranger District, or the Cleveland National Forest. Thus, mitigation for project effects that occur on National Forest System lands may focus on private in-holdings.

We estimate that the capital cost of these measures at Decker Canyon for habitat mitigation under the staff alternative would total \$3,212,500 with an annual cost of \$322,300 including \$4,200 for O&M, as compared to the co-applicants’ Morrell Canyon proposal with an estimated capital cost of \$2,060,000 and annual cost of \$204,100, resulting in an overall annual cost increase of \$118,200.

### **Avian Protection Plan**

The co-applicants propose to design the transmission line features to be consistent with guidelines developed by APLIC et al. (1996). USFS revised preliminary 4(e) condition no. 34 specifies this approach, also, and specifies marking the power lines if they are adjacent to Lake Elsinore or in a flyway where bird strikes may occur. In section 3.3.4.2, *Environmental Consequences in Terrestrial Resources*, we conclude that there is moderate risk of avian collision along several segments of both the co-applicants and staff alternative transmission alignments. The co-applicants should make use of Avian Power Line Interaction Committee’s publications, including *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996* and *Mitigating Bird Collisions with Power Lines: The State of the Art in 1994*. We note that APLIC and FWS (2005) recently completed new guidelines for the development of avian protection plans. These guidelines would assist the co-applicants with initial design and alignment of the transmission line and in design of a long-term plan for monitoring. A pre-construction evaluation of the transmission line design and alignment would be needed to identify high-risk crossings, where markers or bird diverters could be used to reduce the risk of bird collisions with the transmission line. A long-term plan for monitoring and managing risks, based on recent recommendations developed by APLIC and FWS (2005), could be used to track the effectiveness of measures that are implemented to protect birds. Results of monitoring could be used to identify problem spans or poles and allow for retrofitting where needed. The cost of the staff alternative measure to develop the avian protection plan would be \$20,000, or \$2,800 annually, the same cost as estimated by the co-applicants. The additional annual cost of implementing the plan over the term of the license under the staff alternative would be about \$20,000.

### **Lake Elsinore Monitoring and Remediation Plan**

The co-applicants do not propose any measures to address potential project-related effects to nesting shorebirds, waterfowl, or other birds at Lake Elsinore. Under the proposed operations, Lake Elsinore would fluctuate about 1 foot daily and about 1.7 feet weekly. Interior recommends that the co-applicants consult with FWS and CDFG to develop a plan to eliminate or reduce effects on nesting shorebirds that might be affected by water surface fluctuations. The plan would include monitoring to allow early detection of effects, immediate steps to remedy effects, timing and performance criteria, and annual reporting to FWS and CDFG. In section 3.3.4.2, *Environmental Consequences, Terrestrial Resources*, we conclude that habitat along the Lake Elsinore shoreline is generally not suitable for nesting waterfowl, although City of Lake Elsinore staff report that black-necked stilts, avocets, and killdeer (ground-nesters that use scrapes in bare soils or sparsely vegetated areas) do nest in undisturbed areas

around the lake. With implementation of the Lake Elsinore Stabilization and Enhancement Project, year-to-year water-level fluctuations would be reduced and Lake Elsinore would no longer dry up in drought years. Under these circumstances, additional riparian vegetation, such as cattails, tule, and willows may be able to establish along the shoreline. Improvements in riparian habitat could increase its suitability for nesting shorebirds, waterfowl, and other birds. For these reasons, the staff alternative would incorporate Interior's recommendation, and would further recommend that the co-applicants consult with the resource management agencies and other interested parties (FWS, CDFG, Riverside County, City of Lake Elsinore) to develop and implement the plan. We estimate that the initial capital cost to develop the staff alternative plan would be \$20,000 and the cost of implementing the plan would be \$20,000 annually, resulting in an overall annual cost of \$22,800.

### 5.2.7 Threatened and Endangered Species

As discussed in section 3.3.5.2, *Threatened and Endangered Species*), several federally listed species may occur in the project area. MBA conducted focused surveys for listed plants and animals between 2001 and 2006, and found no occurrences<sup>83</sup>. However, MBA's surveys did not cover all areas that would be affected by project construction, primarily because transmission alignments have been modified since the surveys were conducted, and the locations of many project features (e.g., access roads, helicopter fly yards, overhead/underground transition stations, pulling and tensioning stations) have not yet been determined. Some areas were excluded from survey due to private ownership, difficult access, or impenetrable vegetation. Thus, we have no evidence to support a conclusion that the project would not adversely affect any listed species that may be present. As discussed in section 5.6.4 (Endangered Species Act), we therefore find that the project may adversely affect San Diego thornmint, San Diego button-celery, spreading navarretia, Nevin's barberry, Munz's onion, slender-horned spineflower, San Diego ambrosia, California Orcutt grass, thread-leaved brodiaea, San Jacinto Valley crownscale, Quino checkerspot butterfly, arroyo toad, southwestern willow flycatcher, least Bell's vireo, coastal California gnatcatcher, and Stephens' kangaroo rat. Construction of some project features would occur within designated critical habitat for Quino checkerspot butterfly, proposed critical habitat for coastal California gnatcatcher, and a Core Reserve for the Stephens' kangaroo rat. Construction would also affect suitable habitat for these species, outside designated areas.

Operation of the project may also adversely affect listed species. Although temporary access roads would be obliterated, it is difficult to prevent OHV use, once a road has been cleared. OHV use directly affects soils and vegetation, promotes the introduction and spread of noxious weeds and invasive non-native plants, increases the risk of wildfire, and causes noise disturbance. Helicopter access for regular maintenance of the transmission line would also cause noise disturbance, but effects would be short-term and local.

To mitigate for project effects on listed species, the co-applicants propose to pay the \$500-per-acre fee required within the Stephens' Kangaroo Rat Fee Assessment Area. Interior 10(j)-3 recommends a minimum of 1:1 mitigation for any habitat impacts that occur inside the Core Reserve for this species. We estimate that construction would convert about 38.25 acres of Stephens' kangaroo rat habitat to project use. The staff alternative includes this acreage as part of the recommended habitat mitigation described above (section 5.2.6, *Habitat Mitigation*).

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<sup>83</sup> MBA did not conduct surveys for bald eagles, because they are rarely present in the project area. Rather than surveying for Stephens' kangaroo rat, the co-applicants elected to assume presence and provide mitigation. MBA observed Munz's onion "adjacent to the project right-of-way" at one location at the northern end of the transmission alignment. Although not observed during MBA's surveys, the Forest Service has records of coastal California gnatcatcher in the vicinity of the north end of the transmission alignment.

Interior's 10(a) recommendation no. 1 calls for the co-applicants to consult with FWS regarding protection, mitigation, and enhancement measures for fish and wildlife, as designs for the LEAPS Project are developed. Under the staff alternative, we recommend the co-applicants consult with FWS (and the USFS, on National Forest System lands) to design and conduct pre-construction surveys in areas that have not already been thoroughly covered; prepare detailed survey reports and maps for FWS (and the USFS) review and comment; and use this information to design and locate project features to avoid or minimize adverse effects on listed species and their habitat. We are recommending that if listed species are present, the co-applicants consult with the agencies to develop and implement a plan for annual consultation and implementation of protective measures (e.g., maintenance timing restrictions) to continue through any new license period. At a minimum, the plan should identify BMPs to be implemented during construction and operation, and provide mechanisms for monitoring, reporting, and adaptive management. We are also recommending the co-applicants develop road management and vegetation management plans, which should also be protective of listed species, if any are present.

We estimate the cost of the staff measure to consult with FWS would be \$3,400 annually. We estimate the annual cost of the Stephens' kangaroo rat fee for the co-applicants' proposal (38.25 acres) would be \$2,700

## **5.2.8 Recreational Resources**

### **Hang Gliding**

The co-applicants propose to place the transmission lines underground in the vicinity of the USFS permitted hang gliding launch areas. The staff alternative transmission alignment also would include an underground segment in this area. Lake Elsinore is a very popular location for hang gliding. The site possesses unique atmospheric conditions that create this opportunity and the site has become one of the best locations for this activity in the world. Both alignments would avoid placing transmission lines between the most popular launch sites and the informal landing site just west of the proposed Ortega Oaks powerhouse site and would allow for the continuation of world-class hang gliding and parasailing opportunities in the Lake Elsinore region.

We estimate that the additional cost associated with burying the transmission line underground for 4.1 miles in the vicinity of the USFS permitted hang gliding launch sites would be \$48,999,800 or \$6,913,800 annually.

### **Developed Recreational Facilities at the Upper Reservoir**

It is not the intent of the co-applicants to provide new water-based recreational activities at the upper reservoir. The focus during construction would be to ensure the safe use of existing roads, trails, and nearby recreational areas during construction. Following construction, the co-applicants would install a fence around the perimeter of the upper reservoir to prevent public access. The co-applicants' would install an ancillary structure, at a USFS-site off Ortega Highway, provide interpretive signage, and provide a cleared parcel at the upper reservoir or at another site to the USFS for future recreational development. USFS revised preliminary 4(e) condition no. 27 specifies that the co-applicants develop and implement a recreational development facility plan for a day-use recreational facility at the construction laydown area used to construct the upper reservoir. The co-applicants filed an alternative 4(e) condition that would broaden the USFS revised preliminary 4(e) conditions no. 27 to allow the co-applicants to provide an another site near the upper reservoir.

We conclude in section 3.3.6.2 that developing a recreational facility on the site used for the construction laydown area or another site near the upper reservoir would accommodate visitors who are coming to the area, visiting the upper reservoir, or viewing Lake Elsinore. Providing a formal recreational area would reduce pollution by providing visitors with facilities for disposing of trash and

human waste, protecting vegetation and soil by controlling the locations where vehicles may travel and park, and reducing the potential for fires by providing cleared areas for parking. Because day-use facilities do not currently exist in this area, this facility, along with an ancillary structure such as a visitor center, and signage, would meet the needs of visitors who are coming to the upper reservoir area by providing a few basic conveniences while protecting natural resources from the effects of wide-spread dispersed recreational use.

Fencing the upper reservoir would result in an annual cost of \$12,600. We estimate that the annual cost of the co-applicants' proposed ancillary structure (visitor center) and signage would be \$7,000 and \$1,200, respectively. We estimate the cost of developing and implementing the staff alternative plan for a recreational facility at the upper reservoir would have a capital cost of \$144,200 and annual costs of \$4,000, resulting in an overall annual cost of \$20,100 beyond what the co-applicants propose.

### **Developed Recreational Facilities at the Powerhouse**

The co-applicants propose to provide cleared lands and funding for the construction of recreational facilities at the powerhouse location. The co-applicants would consult with the USFS and local agencies to determine the type of community recreational facility to provide at the selected powerhouse. At the proposed Santa Rosa powerhouse site, the co-applicants would also provide a botanical garden and powerhouse tours to promote awareness of water conservation and use of drought-resistance plant species. In section 3.3.6.2, we conclude that the co-applicants' proposed measures would provide recreational opportunities that currently do not exist in these locations. Under both the co-applicants' proposal and the staff alternative, the existing informal hang gliding landing area at the Ortega Oaks location would remain available and any future development at that subject would be subject to local plans. Because the staff alternative would place the powerhouse at the Santa Rosa site (as opposed to the Ortega Oaks location) and would bury the transmission lines in the vicinity of the launching sites and the connection to the powerhouse, we do not include any provision for a formal hang gliding landing area our recommended recreation plan.

The co-applicants would not provide funding for the O&M of the facilities unless they remain in public ownership and are located on National Forest System lands. The co-applicants are willing to retain ownership and be responsible for O&M subject to a determination whether such ownership and operation would be authorized under the Elsinore Valley MWD's existing special district authority for developments not in public ownership and not located on National Forest System lands. We conclude in section 3.3.7.2 that relying on funding that may or not be available to local agencies would not provide certainty that the facilities would be properly maintained through the period of the license. The staff alternative includes a recreation plan for the facility development that includes financial commitments to provide for O&M funding in the event that intended sources of O&M funding are either insufficient or unavailable.

We estimate the cost of providing public tours at the powerhouse would be \$18,700. We estimate that the capital cost of the co-applicants' proposed recreational facilities at the Santa Rosa powerhouse site would be \$5,610,800 (including land acquisition costs) and the annual cost would be \$678,500. We estimate that the additional cost of the staff alternative measure to provide O&M funds for this recreational facility would be about \$125,400 annually.

### **Recreational Angling at Lake Elsinore**

The Joint Water Authority's Program Environmental Impact Report includes a detailed Fish Management Plan with objectives to improve the sport fishery in Lake Elsinore. The co-applicants' proposal to provide funds in support of the annual fish stocking program recommended in the Joint Watershed Authority's Fish Management Plan would enhance recreational fisheries in Lake Elsinore. We conclude in section 3.3.3.2 that the stocking of predators to carp and threadfin shad, consistent with the

Fish Management Plan, would reduce populations of those species and allow more game fish to survive, enhancing recreational angling opportunities. We estimate the annual cost for the co-applicants' proposed stocking program would be \$21,400.

## **5.2.9 Land Use and Aesthetics**

### **Road and Traffic Management**

The construction and operation of the proposed project facilities and about 32 miles of transmission lines across federal and private properties and access to project facilities would require the construction of an estimated 10.8 miles of temporary access roads and 1.0 mile of permanent access roads, the exact location of which are not identified at the current level of planning. We anticipate that about 9.3 miles of temporary roads to access the staff alternative's mid-slope transmission alignment would be constructed in part on National Forest System lands, and would also intersect with numerous existing roads on non-National Forest System lands.

USFS revised preliminary 4(e) condition no. 26 specifies the development and implementation of a road and traffic management plan for all USFS roads and unclassified roads needed for project access that would be constructed on National Forest System lands. The plan, to be developed in consultation with the USFS, would identify and map the roads, describe their purpose and use, explain maintenance levels and responsibilities show the locations and status of any gates or barricades, demonstrate authorization for their use, and assess their condition. The plan would specify maintenance and management standards that would provide for traffic safety and minimize erosion and damage to natural resources.

We conclude in section 3.3.7.2 that a plan would be needed to ensure the proper use and maintenance of both temporary and permanent roads necessary to access the project facilities. The staff alternative includes a provision to specify the exact segments of roads that would serve the project and the permanent roads that would need to be included in the project boundary.

Public access (and OHVs, in particular) would create the potential for trampling and soil compaction, dumping, vandalism, noise disturbance, harassment, poaching, collision, wildfire, and introduction of weeds. For this reason, under the staff alternative, the land and road management plan would include methods for closing and obliterating temporary roads following construction; minimizing adverse effects of project-related use; identifying areas of specific concern; providing for regular patrol and enforcement to ensure that closed roads area not being used by the public; and provide for long-term monitoring, reporting, and changes to the plan, as needed. The staff alternative includes a road management plan for non-National Forest System lands that would address the same issues.

The co-applicants propose to achieve a balance of excavated materials and fill at the entire project site and propose to haul up to 776,000 cubic yards of fill along Ortega Highway and South Main Divide Road to the upper reservoir site. In section 3.3.7.2, we conclude that hauling this volume of fill material on Ortega Oaks Highway and South Main Divide Road to the upper reservoir site would significantly affect the flow of traffic on this busy crossroad between Lake Elsinore the California coast. Instead of overtaxing this road, the staff alternative calls for the co-applicants to excavate additional depth at the Decker Canyon upper reservoir site to provide the fill deficit for the dam construction. We estimate that about 10 additional feet would need to be excavated to provide sufficient fill for the dam. Achieving the balance of excavation and fill entirely at the upper reservoir site would greatly reduce the construction truck traffic on Ortega Highway.

The co-applicants also propose several specific measures to improve traffic flow on Grand Avenue and Ortega Highway during construction and to prepare and implement traffic management and control plans. The staff alternative would specify that the co-applicants develop, with County of Riverside Transportation Department consultation, and implement a road and traffic management plan for

non-USFS roads that: (1) details plans to manage construction at road crossings and along access roads; (2) provides a schedule for the volume and timing of construction traffic; (3) describes methods for closing and obliterating temporary roads following construction; (4) minimizes adverse impacts of project-related use; (5) identifies areas of specific concern; and (6) provides for monitoring, reporting, and changes to the plan during the 4.5-year construction period.

We estimate that the annual cost associated with the staff alternative additional excavation at Decker Canyon to achieve the excavation and fill balance at the upper reservoir site would be \$732,800. The initial cost of developing co-applicants' traffic plans would be \$100,000 with an annual cost of \$24,100. The staff alternative traffic plans would add \$20,000 initial costs and \$2,800 to the annual costs.

### **Sediment Sampling in Lake Elsinore**

Excavations in Lake Elsinore to construct the intake/outlet structure would disturb lakebed sediments that could contain toxins. Water quality testing in Lake Elsinore did not include testing lakebed sediment for toxicity. In section 3.3.7.2, we conclude that excavated material from the lakebed should be disposed of off site. The toxicity of these sediments is unknown. Toxic materials require special handling and disposal. The staff alternative would specify that the co-applicants develop a plan to sample lakebed sediments for toxicity prior to construction and, if toxins are identified, for proper handling and disposal. We estimate that the annual cost for the staff alternative sediment sampling plan would be \$7,100 and would be necessary to protect the public from exposure to potentially toxic materials.

### **Visual Resources Plan**

Construction of the proposed project would introduce new visual elements to the landscape both during and following construction. The co-applicants propose to develop and implement a visual resources management plan. The co-applicants' proposed plan would be similar to the scenery conservation plan specified in the USFS revised preliminary 4(e) condition 37. We conclude that such a plan prepared in consultation with the USFS, under either alternative, would help to ensure that the design and materials proposed for project facilities on USFS-lands and any subsequent changes to the project facilities are compatible with the USFS' Land Management Plan's High Scenic Integrity Objectives and related standards for new construction in National Forests. We estimate that the annual cost for the co-applicants' proposed visual resources management plan would be \$2,800.

### **Project Boundary**

The co-applicants do not include Lake Elsinore within the proposed project boundary as defined in the exhibit G boundary maps for the project. Lake Elsinore is an integral part of the pumped storage project, serving as the lower reservoir. Under either alternative, inclusion of Lake Elsinore within the project boundary would provide for a complete unit of development. At the conceptual level of design, the co-applicants have not identified the location of temporary access roads for construction or permanent access roads for project operations. Access roads to project facilities, whether public, private, or USFS-owned, would need to be included in the project boundary, under either alternative, when the final exhibit G drawings are filed with the Commission. We assume this cost is included in the co-applicants' \$12,000,000 allocated to relicensing.

### **5.2.10 Cultural Resources**

Construction at the project sites has the potential to destroy or disturb historic properties. The co-applicants would consult with the USFS or SHPO prior to any ground-disturbing activities and would implement a stop-work procedure if unanticipated discoveries occur during construction. Given that known sites occur near project construction sites, we assume that over a 4.5-year construction period, one

or more unanticipated discoveries would occur. The draft HPMP filed with the Commission in April 2005, includes measures to: (1) complete pre-construction archaeological surveys in the APE; (2) determine the need for intensive surveys; (3) monitor historic properties during construction; (4) appoint a tribal liaison; (5) study the potential effects of ground acceleration on historic buildings; (6) develop a program to monitor archaeological sites for 5 years; and (7) develop a public interpretative program. The co-applicants also would conduct limited paleontological studies at sensitive locations during construction and prepare any fossil remains for curation by a local museum. In section 3.3.9.2, we conclude that co-applicants' proposal, as reflected in the draft HPMP, and including modifications under the staff alternative, would mitigate or avoid adverse effects on historic properties. These measures would address the site-specific needs to take into account historic properties during the construction and operation of the project under either alternative.

The staff alternative would specify that the co-applicants develop and implement a final HPMP that incorporates provisions to avoid or mitigate effects to known and as yet unknown historic properties. The plan would be developed in consultation with the SHPO, Tribes, the BIA, and the USFS, and other entities as appropriate. USFS revised preliminary condition no. 28 specifies that the HPMP accurately define the APE, including the effects of implementing the Section 4(e) condition. As discussed in section 3.3.9.2, the co-applicants' proposed HPMP would address the procedures and substantive requirements of Section 106 of the National Historic Preservation Act. The Commission would execute a Programmatic Agreement providing for the filing of the final revised HPMP with 1 year after license. Shortly thereafter, the final HPMP would then be implemented.

We estimate that the costs for the co-applicants' proposed consultation would be \$1,400, the annual cost for addressing unanticipated discoveries during construction would be \$16,900, the annual costs for implementing the co-applicants draft HPMP would be \$59,300, and the paleontological studies would cost \$14,100. We estimate the additional annual cost of filing the final HPMP under the staff alternative would be \$2,800.

## **5.3 FISH AND WILDLIFE AGENCY RECOMMENDATIONS**

### **5.3.1 Recommendations Pursuant to Section 10(j) of the FPA**

Under Section 10(j) of the FPA, each hydroelectric license issued by the Commission would include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, and enhancement of fish and wildlife resources affected by the project.

Section 10(j) of the FPA states that whenever the Commission finds that any fish and wildlife agency recommendations is inconsistent with the purposes and requirement of the FPA or other applicable law, the Commission and the agency shall attempt to resolve any such inconsistency, giving due weight to the recommendation, expertise, and statutory responsibilities of such agency.

By letter dated April 22, 2005, Interior provided three fish and wildlife recommendations. Table 56 lists Interior's recommendations and presents Commission staff's conclusion as to whether each recommendation is within the scope of Section 10(j), an estimate of the annual cost of each recommendation, and the decision about whether or not to recommend adopting each recommendation as part of the staff alternative. When a recommendation is not adopted, we provide a rationale. Recommendations that Commission staff consider outside the scope of Section 10(j) have been considered under Section 10(a) of the FPA and are addressed in the specific resource sections of this document. The staff alternative includes all current recommendations that Commission staff found to be within the scope of Section 10(j).

Table 56. Fish and wildlife agency Section 10(j) recommendations. (Source: Staff)

No.	Recommendation	Agency	Within the Scope of 10(j)?	Annualized Cost	Commission Staff Recommending?
1.	Lake Elsinore monitoring and remediation plan to reduce or eliminate impacts to nesting shorebirds	Interior	Yes	\$22,800	Yes
2.	San Juan Creek drainage monitoring and remediation plan to eliminate or reduce release of water and non-native species from the upper reservoir into San Juan Creek	Interior	Yes	\$74,000	Yes
3.	Consistency with existing and proposed HCPs	Interior	No, not a specific measure to protect fish and wildlife	\$0	No

Note: HCP – Habitat Conservation Plan

### 5.3.2 Recommendations Pursuant to Section 10(a)(1) of the FPA

Our recommendation not to adopt Interior 10(j) no. 3 is based on our finding that we could not evaluate the environmental effects that would result from recommending consistency of the LEAPS Project with HCPs that have not yet been developed. Although we do not adopt Interior 10(j) no. 3, we anticipate that our recommendations for specific measures for terrestrial resource protection and mitigation will meet Interior’s objectives regarding consistency of the LEAPS Project with existing HCPs. In some cases (e.g., minimum habitat compensation ratios), our recommendations may be more stringent than those that would be required under the Multi-Species HCP, because the Commission’s view of acceptable resource trade-offs may differ from the views of the Multi-Species HCP signatories.

In addition to its section 10(j) recommendations, Interior filed 3 recommendations under section 10(a) for (1) consultation with the FWS on completion of project plans and designs for measures to protect, mitigate damages to, and enhance fish and wildlife, (2) notification to FWS and remedial actions under emergency or special conditions arise where fish or wildlife are being killed, harmed, or endangered, and (3) a request for a specific ESA reopener in any license issued for the proposed project. As discussed in section 5.2.6, the staff alternative measures would provide adequate protection for special status plants and animals, including federally listed species, starting at project design and extending through the term of any license issued for the project.

### 5.4 CONSISTENCY WITH COMPREHENSIVE AND OTHER RESOURCE PLANS

Section 10(a)(2) of the FPA requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, and conserving waterways affected by the project. Under section 10(a)(2), federal and state agencies filed comprehensive plans that address various resources in California. Fourteen of these plans address resources relevant to the LEAPS Project:

- California Advisory Committee on Salmon and Steelhead Trout. 1988. Restoring the balance. 1988 annual report. Sausalito, California. 84 pp.
- California Department of Fish and Game. 1996. Steelhead restoration and management plan for California. February 1996. 234 pp.
- California Department of Parks and Recreation. 1998. Public Opinions and Attitudes on Outdoor Recreation in California – 1997. March 1998. 72 pp. and appendices.
- California Department of Parks and Recreation. 1988. California Outdoor Recreation Plan. Sacramento, California. June 1988. 223 pp.
- California Department of Parks and Recreation. 1994. California Outdoor Recreation Plan -1993. Sacramento, California. April 1994. 154 pp. and appendices.
- California Department of Water Resources. 1983. The California water plan: projected use and available water supplies to 2010. Bulletin 160-83. Sacramento, California. December 1983. 268 pp. and attachments.
- California Department of Water Resources. 1994. California water plan update. Bulletin 160-93. Sacramento, California. October 1994. Two volumes and executive summary.
- California State Water Resources Control Board. 1975. Water quality control plan report. Sacramento, California. Nine volumes.
- California—The Resources Agency. Department of Parks and Recreation. 1983. Recreation needs in California. Sacramento, California. March 1983. 39 pp. and appendices.
- Forest Service. 1986. Cleveland National Forest land and resources management plan. Department of Agriculture, Corona, California. February 1986.
- State Water Resources Control Board. 1999. Water quality control plans and policies. Adopted as part of the State Comprehensive Plan. April 1999. Three enclosures.
- Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. May 1986. 19 pp.
- Fish and Wildlife Service. Undated. Fisheries USA: The recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, DC. 11 pp.
- National Park Service. 1982. The nationwide rivers inventory. Department of the Interior, Washington, DC. January 1982. 432 pp.

## **5.5 RELATIONSHIP OF LICENSE PROCESS TO LAWS AND POLICIES**

### **5.5.1 Section 401 of the Clean Water Act—Water Quality Certification**

By letter dated March 16, 2005, the co-applicants applied to the State Water Board for Water Quality Certification for the LEAPS Project, pursuant to Section 401 of the Clean Water Act. On March 1, 2006, the co-applicants withdrew and refiled individual requests for water quality certifications for both the LEAPS and the TE/VS Interconnect projects. The Water Quality Certification is now due on March 1, 2007.

### **5.5.2 Section 18 of the Federal Power Act—Authority to Require Fishways**

Section 18 of the FPA, 16 USC Section 811, states that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as the secretaries of Commerce

and the Interior may prescribe. By letter dated April 22, 2005, Interior reserved its authority to amend prescriptions. The Secretary of Commerce did not file any fishway prescriptions for this project.

### 5.5.3 Section 4(e) of the Federal Power Act

Because the proposed LEAPS Project would occupy lands of the Cleveland National Forest and lands administered by BLM and the DOD, the USFS, DOD, and BLM have authority to impose conditions under Section 4(e) of the FPA. The USFS provided preliminary license conditions for the LEAPS Project by letter dated April 27, 2005 and revised preliminary Section 4(e) conditions on June 23, 2006.

The USFS provided 25 standard USFS conditions and 10 project-specific conditions. Condition nos. 1 through 25 are standard conditions that would involve obtaining USFS approval on final project design and changes, yearly consultation with the USFS to ensure the protection and development of natural resources, restrictions and protective measures that should be in place, and project O&M procedures that would enable continued project operations to be consistent with applicable provisions of the Cleveland Nation Forest Land Management Plan.

Condition nos. 26, 27, 28, 33, 34 35, and 36 pertain to development of plans for use of USFS-managed lands (including road and traffic management, recreation facilities, heritage resources, vegetation and invasive weeds management, wildlife management, surface water management, and ground water management). Condition no. 29 pertains to project-specific consultation with the USFS regarding annual employee awareness training pertaining to natural resource issues of importance to the Cleveland National Forest. Condition no. 30 pertains to updates regarding USFS special status plants and wildlife, monitoring needs of existing and future special status species. Condition no. 31 pertains to an action plan for ground-disturbing activities that are not addressed in this EIS. Condition no.32 pertains to the development of detailed monitoring plans.

### 5.5.4 Endangered Species Act

Section 7 of the ESA requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. By letter dated April 22, 2005, Interior indicated that the federally threatened coastal California gnatcatcher and the federally endangered arroyo toad, Stephens' kangaroo rat, and Munz's onion are known to occur within the project vicinity. No individuals of these species were observed during surveys associated with the project. We also evaluated the effect of the project on other listed species that may occur in the project area (table 57). Table 57 summarizes our determinations regarding the effect of the proposed action on these species, based on the analyses presented in section 3.3.5, *Threatened and Endangered Species*, and our recommendations as presented in section 5.2, *Comprehensive Development and Recommended Alternative*.

Table 57. Summary of species and critical habitat findings under the staff alternative.

Species	Species Status	Species Finding	Critical Habitat Finding
Southern California steelhead ( <i>Oncorhynchus mykiss</i> )	E	Likely to adversely affect	Not likely to adversely affect
San Diego thornmint ( <i>Acanthomintha ilicifolia</i> )	T	Likely to adversely affect No effect	No effect
San Diego button-celery ( <i>Eryngium aristulatum</i> var. <i>parishii</i> )	E	Likely to adversely affect No effect	No effect

Species	Species Status	Species Finding	Critical Habitat Finding
Mexican flannelbush ( <i>Fremontodendron mexicanum</i> )	E	No effect	No effect
Spreading navarretia ( <i>Navarretia fossalis</i> )	T	Likely to adversely affect No effect	No effect
Nevin's barberry ( <i>Berberis nevinii</i> )	E	Likely to adversely affect No effect	No effect
Munz's onion ( <i>Allium munzii</i> )	E	Likely to adversely affect	No effect
Slender-horned spine flower ( <i>Dodecahema leptoceras</i> )	E	Likely to adversely affect	No effect
San Diego ambrosia ( <i>Ambrosia pumila</i> )	E	Likely to adversely affect	No effect
California Orcutt grass ( <i>Orcuttia californica</i> )	E	Likely to adversely affect	No effect
Thread-leaved brodiaea ( <i>Brodiaea filifolia</i> )	T	Likely to adversely affect	No effect
San Jacinto Valley crownscale ( <i>Atriplex coronata</i> var. <i>notatior</i> )	E	Likely to adversely affect	No effect
Quino checkerspot butterfly ( <i>Euphydryas edith quino</i> )	E	Likely to adversely affect	Likely to adversely affect
Arroyo toad ( <i>Bufo californicus</i> )	E	Likely to adversely affect	No effect
California red-legged frog ( <i>Rana aurora draytonii</i> )	T	No effect	No affect
Southwestern willow flycatcher ( <i>Empidonax traillii extimus</i> )	E	Likely to adversely affect	No effect
Least Bell's vireo ( <i>Vireo bellii pusillus</i> )	E	Likely to adversely affect	No effect
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	T	Not likely to adversely affect	No effect
Coastal California gnatcatcher ( <i>Polioptila californica</i> )	T	Likely to adversely affect	Likely to adversely modify proposed critical habitat
Stephens' kangaroo rat ( <i>Dipodomys stephensi</i> )	E	Likely to adversely affect	Likely to adversely affect

The basis for our findings is summarized below.

### **Southern California Steelhead**

We conclude that the construction of the LEAPS Project may affect, but would not likely adversely affect the southern California steelhead or steelhead habitat. Only the lower 6 or 7 miles of San Mateo Creek are accessible to southern steelhead trout and spawning occurs in the downstream reach during periods of significant precipitation. Steelhead trout have not been identified in the tributaries to San Mateo Creek that would be crossed by transmission lines. A combination of BMPs during

construction and water quality monitoring during the life of the project would reduce, but not eliminate, the potential risk of adverse impacts from the downstream transport of sediments.

### **Mexican Flannelbush**

We conclude that the construction of the LEAPS Project would have no effect on Mexican flannelbush, because no suitable habitat is located at sites where project features would be constructed

### **San Diego Thornmint, San Diego Button-Celery, Mexican Flannelbush, Spreading Navarretia, and Nevin's Barberry**

We conclude that construction and operation of the LEAPS Project is likely to adversely affect San Diego thornmint, San Diego button-celery, spreading navarretia, and Nevin's barberry. Based on a comparison of the known range and habitat associations of these species with the project area's location, elevation, soils, and vegetation cover types, we think it is unlikely that they occur in the project area. However, because these plants are rare, their habitat requirements are not as well understood as many other native species, and it is possible that they are present. None were identified during MBA's surveys. MBA's surveys covered many, but not all, of the areas that would be disturbed by construction. For this reason, we recommend that the co-applicants conduct pre-construction surveys at all sites where ground disturbance would occur. If these species are identified, we recommend the co-applicants consult with FWS (and the USFS, if plants are located on National Forest System lands) to determine how project features could be re-sited or re-aligned to avoid impacts. Flexibility in project design and implementation of construction BMPs (such as those discussed in section 3.3.4.2, Vegetation) should minimize the risk of adverse effects during construction. To minimize the risk of adverse impacts during operation, we recommend the co-applicants develop and implement a threatened and endangered species management plan. The plan should specify protective measures, including road management and weed management, a monitoring program, and mechanisms for consultation, reporting and adaptive management. Such a plan would reduce, but would not eliminate, the potential for adverse effects during the life of the project, as a result of fuel management activities, road and transmission line maintenance, and unauthorized public use of temporary and permanent access roads.

### **Munz's Onion, Slender-horned Spine Flower, San Diego Ambrosia, California Orcutt Grass, Thread-leaved Brodiaea, and San Jacinto Valley Crownscale**

We conclude that construction of the LEAPS Project is likely to adversely affect Munz's onion, slender-horned spine flower, San Diego ambrosia, California Orcutt grass, thread-leaved brodiaea, and San Jacinto Valley crownscale. Suitable habitat for these species occurs in the project area. None of these species were observed during MBA's surveys. MBA's surveys covered many, but not all, of the areas that would be disturbed by construction. For this reason, we recommend pre-construction surveys and development and implementation of a threatened and endangered species management plan, as described above.

### **Quino Checkerspot Butterfly**

We conclude that construction of the LEAPS Project is likely to adversely affect the Quino checkerspot butterfly and designated critical habitat. MBA's surveys did not indicate the presence of any Quino checkerspot butterflies, but about 1.75 acres of designated critical habitat for this species would be removed to install transmission line towers at the northernmost end of the proposed transmission alignment and 35 acres would be removed to build the northern substation near Lee Lake. Construction of three transmission towers outside designated critical habitat would remove about 0.75 acre of potential habitat in the same vicinity. Construction of temporary access roads could affect additional habitat. Vegetation management and unauthorized public use of temporary access roads, if any are constructed in

butterfly habitat, could adversely affect habitat quality during project operation. Implementation of BMPs during construction and protective measures such as weed management and road management would reduce, but not eliminate, the risk of adverse effects through the life of the project.

### **Arroyo Toad**

We conclude that construction of the LEAPS Project is likely to adversely affect the arroyo toad, which is known to occur in Los Alamos Creek and Tenaja Creek, and could also occur in Temescal Wash. No occurrences of this species are documented at sites that would be affected by construction, and MBA's surveys did not indicate the presence of any arroyo toads in the project area. However, about 1.0 acre of potential habitat may be removed for the construction of five transmission towers where the proposed transmission alignment would cross these creeks. Construction of temporary access roads could affect additional habitat. Vegetation management and unauthorized public use of temporary access roads, if any are constructed in arroyo toad habitat, could adversely affect habitat quality during project operation. Implementation of BMPs during construction and protective measures such as weed management and road management plans would reduce, but not eliminate, the risk of adverse effects through the life of the project.

### **California Red-legged Frog**

We conclude that construction of the LEAPS Project would not affect the California red-legged frog. Although Los Alamos Creek and Tenaja Creek could provide suitable habitat, there are no known occurrences in either watershed, and MBA's surveys did not indicate the presence of this species. Only one population (three adult males) of California red-legged frogs is known to exist in Riverside County, and none are known in Orange or San Diego counties. FWS considers the potential for recovery in southern California to be low because there are few existing populations, habitat is generally of medium quality, and threats to its existence are high, due to human activities and competing land uses (FWS, 2002).

We conclude that construction of the project would not affect designated critical habitat. No designated critical habitat exists in Riverside, Orange, or San Diego counties.

### **Southwestern Willow Flycatcher and Least Bell's Vireo**

We conclude the project is likely to adversely affect the southwestern willow flycatcher and least Bell's vireo. These species were not detected during surveys, but suitable habitat is present along the transmission line route, and construction of transmission towers could affect about 0.5 acre of riparian shrub at Temescal Wash and Tenaja Creek crossings. Construction of temporary access roads could affect additional habitat. Vegetation management and unauthorized public use of temporary access roads, if any are constructed in southwestern willow flycatcher or least Bell's vireo habitat, could adversely affect habitat quality during project operation. Implementation of BMPs during construction and protective measures such as weed management and road management plans would reduce, but not eliminate, the risk of adverse effects through the life of the project.

### **Bald Eagle**

We conclude the project may affect, but would not likely adversely affect, the bald eagle. Under current conditions, bald eagles are rarely seen in the project area. Construction would not remove habitat, alter the prey base, or increase disturbance. The presence of a transmission line would represent a very low level of risk, because it would be designed to minimize the risk of electrocution and collision. As bald eagle populations in the state and in the county increase, however, bald eagle use may be more frequent, and monitoring would be needed to ensure that avian/power line interactions could be identified and addressed without delay.

## Coastal California Gnatcatcher

We conclude that construction of the LEAPS Project is likely to adversely affect the coastal California gnatcatcher. No coastal California gnatcatchers were observed during the co-applicants' surveys, but the USFS has documented occupied habitat along the northern segment of the proposed transmission line. Construction of transmission towers would affect about 38.5 acres of designated critical habitat along the northern segment of the transmission alignment and at the northern substation, about 1 acre nearby, and about 30.5 acres of potential habitat at the Santa Rosa powerhouse site. Construction of temporary access roads could affect additional habitat. Vegetation management and unauthorized public use of temporary access roads, if any are constructed in coastal California gnatcatcher habitat, could adversely affect habitat quality during project operation. Implementation of BMPs during construction and protective measures such as weed management and road management plans would reduce, but not eliminate, the risk of adverse effects through the life of the project.

## Stephens' Kangaroo Rat

We conclude the project is likely to adversely affect the Stephens' kangaroo rat. The co-applicants did not conduct surveys for this species, but it is known to occur in Riverside County. Construction of transmission towers and the northern substation would affect about 38.5 acres of habitat within the Stephens' Kangaroo Rat Fee Assessment Area or Lake Mathews-Estelle Mountain Core Reserve. Construction of temporary access roads could affect additional habitat. Vegetation management and unauthorized public use of temporary access roads, if any are constructed in Stephens' kangaroo rat habitat, could adversely affect habitat quality during project operation. Implementation of BMPs during construction and protective measures such as weed management and road management plans would reduce, but not eliminate, the risk of adverse effects through the life of the project. We are also recommending the co-applicants provide habitat mitigation at a ratio of 1:1 for losses of chaparral and non-native grasslands, coastal sage scrub, and oak woodland.

## Consultation with the U.S. Fish and Wildlife Service

By letter dated June 9, 2006, FWS concurred with our finding of "no effect" on Mexican flannelbush, "not likely to adversely affect" the bald eagle, and "not likely to adversely affect" California red-legged frog critical habitat. FWS did not discuss our findings of "likely to adversely affect" Quino checkerspot butterfly, coastal California gnatcatcher, and Stephens' kangaroo rat. FWS disagreed with our findings of either "no effect" or "not likely to adversely affect" regarding all the other species discussed above, and requested additional information about the project. Table 58 shows the requests and our responses.

Table 58. Information requested in FWS letter dated June 9, 2006, and staff responses.  
(Source: Staff)

Requested Information	Staff Response
Identification of which alternative represents the proposed action submitted for consultation	The staff alternative is the action submitted for consultation.
Information about the proposed locations of access roads, habitat that would be affected, any survey results, and analysis of effects associated with road building, use and maintenance on federally listed species	Locations of many project features have not been finalized at this time. We recommend the co-applicants consult with FWS (and the USFS, on National Forest System lands) to design and conduct surveys where they are needed; prepare detailed reports and maps for FWS (and USFS) review and comment; and design project features to avoid or minimize adverse effects on listed species. We recommend that if listed species are present, the co-applicants consult with the

Requested Information	Staff Response
Information about vegetation management measures, and how they would affect listed species	agencies to develop and implement a threatened and endangered species management plan. We also recommend development and implementation of road management and vegetation management plans that should be protective of listed species, and habitat mitigation at a minimum ratio of 1:1 for all habitats that are converted to project use.  Detailed information about vegetation management is not available at this time, but we recommend development and implementation of plans to manage vegetation and noxious and invasive weeds.
Information about noxious weed control, and how it would affect listed species	Detailed information about vegetation management is not available at this time, but we recommend development and implementation of plans to manage vegetation and noxious and invasive weeds.
Information about project effects on the Stephens' kangaroo rat Core Reserve lands	This information is shown in figure 15 and discussed in section 3.3.5.2. The staff alternative recommends 1:1 mitigation for impacts on chaparral and non-native grasslands.
Analysis of effects on arroyo toad that could occur in the event of a dam failure with release of water into San Juan Creek, and remediation measures that would be implemented.	Effects of a dam break on arroyo toads have not been studied in depth. We conclude the risk of a failure is small because the dam would be designed to comply with the Commission's Engineering Guidelines for the Evaluation of Hydropower Projects as well as State criteria. High hazard dams such as those proposed for the LEAPS Project must be able to safely pass the probable maximum flood, and to withstand the maximum credible earthquake. Both the Commission and the State of California routinely inspect dams and the Commission requires a rigorous dam safety review during the design process and every 5 years during project operations. However, the staff alternative includes a recommendation for the co-applicants to develop and implement a monitoring and remediation plan for San Juan Creek, as discussed in section 5.2.4, <i>Preventing Interbasin Water Transfers</i> .

### 5.6.5 National Historic Preservation Act

Relicensing is considered an undertaking within section 106 of the National Historic Preservation Act, as amended (P.L.89-665; 16 USC 470). Section 106 requires that every federal agency “take into account” how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, TCPs, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register. As the lead federal agency for issuing a license, the Commission is responsible for ensuring that the licensee will take all necessary steps to “evaluate alternatives or modifications” that “would avoid, minimize, or mitigate any adverse effects on historic properties” for the term of any license involving the project. The lead agency also must consult with the SHPO(s), as well as with other land management agencies where the undertaking may have an effect, and with Indian tribes who may have cultural affiliations with affected properties involving the

undertaking. The overall review process involving Section 106 is administered by the Advisory Council on Historic Preservation, an independent federal agency.

To meet the requirements of Section 106, the Commission will execute the Programmatic Agreement to take into account the effects on historic properties from the operation of the LEAPS Project. The terms of the Programmatic Agreement would ensure that the co-applicants would address and treat all historic properties identified within the project area through the HPMP. The HPMP entails ongoing consultation involving historic properties for the license term.