



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Ecological Services  
 Carlsbad Fish and Wildlife Office  
 6010 Hidden Valley Road  
 Carlsbad, California 92011



In Reply Refer To:  
 FWS-WRIV-08B0009/08F0004

Timothy J. Welch  
 Chief Hydro West Group 2  
 Federal Energy Regulatory Commission  
 888 First Street N.E.  
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**Subject: Formal Section 7 Consultation for the Lake Elsinore Advanced Pumped Storage Project (P-11858), Riverside County, California**

Dear Mr. Welch:

This document responds to your March 1, 2006, request for formal section 7 consultation in accordance with the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq.*) for the above-mentioned project. The consultation addresses the potential effects of the proposed Lake Elsinore Advanced Pumped Storage (LEAPS) project on the federally endangered arroyo toad (*Bufo californicus*), Quino checkerspot butterfly (*Euphydryas editha quino*), Stephens' kangaroo rat (*Dipodomys stephensi*), and the federally threatened coastal California gnatcatcher (*Poliophtila californica californica*) and designated critical habitats for the coastal California gnatcatcher and Quino checkerspot butterfly.

Based upon the habitat assessments and surveys completed with negative results from 2001-2006 (MBA, pers. comm., 2007), the small amount of permanent disturbance of designated critical habitat (0.2 acres of the 27,529 acre Unit 10), and the nature of the designated critical habitat within the project area according to habitat assessment information (*i.e.*, non-native grasslands) (MBA, pers. comm., 2007), we conclude that the coastal California gnatcatcher and its designated critical habitat are not likely to be adversely affected by the proposed project. In addition, based upon the surveys and habitat assessments completed with negative results from 2001-2006 (MBA, pers. comm., 2007) and the small amount of permanent disturbance of designated critical habitat (0.4 acres of the 14,250 acre Lake Matthews Unit), we conclude that the Quino checkerspot butterfly and its designated critical habitat are not likely to be adversely affected by the proposed project.

For the Stephens' kangaroo rat, the project proponent has indicated that the project will be consistent with the Habitat Conservation Plan for the Stephens' Kangaroo Rat (RCHCA 1996). This will include mitigating permanent and temporary disturbance on a 1:1 basis for areas within the Lake Matthews-Estelle Mountain Core Reserve Area by acquiring additional habitat. This additional habitat will be located in, contiguous with, or directly adjacent to the boundaries of the Lake Matthews-Estelle Mountain Core Reserve Area, to the extent feasible, and the specific

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area will be subject to the concurrence of the U.S. Fish and Wildlife Service (Service). Habitat will be acquired prior to ground-disturbing activities within the Core Reserve Area. In addition, for habitat disturbance within the Stephens' Kangaroo Rat Fee Assessment Area, a \$500 fee will be paid on a per-acre basis. Finally, temporarily disturbed areas will be restored in accordance with a plan to be reviewed and approved by the Carlsbad Fish and Wildlife Office prior to ground disturbing activities within the Core Reserve Area. Thus, this project is consistent with the Habitat Conservation Plan for the Stephens' Kangaroo Rat and no additional section 7 analysis is necessary for this species.

In view of these determinations, we believe that the interagency consultation requirements of section 7 of the Act have been satisfied for these species. Should project plans change, or if additional information on the distribution of listed species becomes available, these determinations may be reconsidered.

## BIOLOGICAL OPINION

### DESCRIPTION OF THE PROPOSED ACTION

The proposed project involves the issuance of a license by the Federal Energy Regulatory Commission (FERC) for the 500-megawatt LEAPS project which would be located on Lake Elsinore and San Juan Creek near the city of Lake Elsinore, Riverside County, California. The upper reservoir would be located in the headwaters of the San Juan Creek Watershed, also in Riverside County. The proposed project would consist of the following:

1. a lined upper reservoir (Decker Canyon) with a 180-foot-high main dam and a perimeter dike ranging up to 60 feet high and a gross storage volume of 5,750 acre-feet, usable storage of 5,500 acre-feet, and a surface area of about 76 acres at a normal maximum water surface elevation of 2,880 feet;
2. two parallel high-pressure water conduits, each consisting of a 7,890-foot-long concrete-lined power shaft and tunnel transitioning to a 250-foot-long, 12-foot-diameter steel penstock;
3. an underground powerhouse (Santa Rosa) containing two reversible pump-turbine units with a total installed capacity of 500 megawatts in the generating mode;
4. the existing Lake Elsinore to be used as a lower reservoir with a surface area of 3,319 acres and a storage capacity of 54,504 acre-feet at a normal pool elevation of 1,245 feet mean sea level;
5. two 1,950-foot-long, 20-foot-wide, and 20-foot-high concrete-lined tailrace tunnels;
6. a 25 to 50-acre surface switchyard/substation;

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7. about 32 miles of 500-kilovolt transmission line connecting the project to an existing Southern California Edison transmission line located north of the proposed project and to an existing San Diego Gas and Electric transmission line located to the south; and
8. appurtenant facilities.

Materials for an embankment would be obtained from excavated materials from the upper reservoir, powerhouse, and tunnel excavations. Final embankment design could call for a zoned earth and rockfill dam having a central impervious core or a concrete-faced earth and rockfill dam. The co-applicants propose that, overall, the project site would achieve a balance between excavation and fill, thereby avoiding the need to transport materials to the project site or to haul spoil materials from the project site. An exception to the excavation and fill balance would be in the case of an embankment type dam with an impervious core requiring low-permeability clay or clay-like material. The co-applicants have identified the Alberhill area located about 10 miles northwest of the project site as a likely source of clay; alternatively, the low-permeability material could be manufactured on site, requiring the import of bentonite to mix with on-site soils.

The dam would include a concrete-lined emergency spillway and a low-level outlet. A 20-foot-wide crushed stone roadway would be provided around the crest of the embankment to allow access for maintenance and inspection. An 8-foot-high chain-link fence would be located on the outer side of the crest roadway. The outside (downstream) face of the embankment would be seeded. The total footprint of the upper reservoir would be about 100 acres.

The specific proposed access roads and tower sites are documented in the October 25, 2007, correspondence from the project proponent (MBA, pers. comm., 2007) and identified by the Staff Alternative alignment. Conservation measures associated with the proposed project that will avoid or minimize effects to fish and wildlife resources are appended to this document.

#### STATUS OF THE SPECIES

The arroyo toad was listed as endangered on December 16, 1994 (59 FR 63264). At the time of listing, the arroyo toad was described as the arroyo southwestern toad (*Bufo microscaphus californicus*). Gergus (1998) published a genetic justification for the reclassification of the arroyo southwestern toad as a full species (*i.e.*, arroyo toad [*Bufo californicus*]). Critical habitat for the arroyo toad was designated on April 13, 2005 (69 FR 23254).

Description. The arroyo toad is a small, dark-spotted toad of the family Bufonidae. The parotoid glands, located on the top of the head, are oval-shaped and widely separated. A light/pale area or stripe is usually present on these glands and on top of the eyes. The arroyo toad's underside is buff-colored and usually without spots (Stebbins 1985). Recently metamorphosed individuals typically blend in with streamside substrates and are usually found adjacent to water. The male arroyo toad's courtship vocalization is a high trill, usually lasting 8-10 seconds per call.

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**Habitat Affinities.** Arroyo toads breed and deposit egg masses in shallow, sandy pools which form in low-gradient sections of streams. These stream segments are usually bordered by sand-gravel flood-terraces. Stream order, elevation, and floodplain width appear to be important factors in determining habitat capability (Griffin 1999, Sweet 1992). High stream order (*i.e.*, 3rd to 6th order), low elevation (particularly below 3,000 feet), and wide floodplains seem to be positively correlated with arroyo toad population size. However, small arroyo toad populations are found along 1st and 2nd order streams at elevations up to 4,600 feet, and this species has been known to occur at up to 8,000 feet in Baja (USFWS 1999).

Optimal breeding habitat consists of low-gradient sections of slow-moving streams with shallow pools; also, these areas contain nearby sandbars and adjacent, undeveloped stream terraces. Outside of the breeding season, arroyo toads are essentially terrestrial and are known to utilize a variety of upland habitats, including, but not limited to, sycamore-cottonwood woodlands, oak woodlands, coastal sage scrub, chaparral, and grassland (Griffin *et al.* 1999, Holland 1995). Arroyo toads usually burrow underground during periods of inactivity; thus, they tend to use upland habitats with friable soils (66 FR 9414).

The primary constituent elements of designated critical habitat include: 1) rivers or streams with hydrologic regimes that supply water to provide space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, and adult breeding toads (specifically, the conditions necessary to allow for successful reproduction of arroyo toads are: a. breeding pools with areas less than 12 inches deep, b. areas of flowing water with current velocities less than 1.3 feet per second, and c. surface water that lasts for a minimum length of two months in most years (*i.e.*, a sufficient wet period in the spring months to allow arroyo toad larvae to hatch, mature, and metamorphose)); 2) low-gradient stream segments (typically less than 6 percent) with sandy or fine gravel substrates that support the formation of shallow pools and sparsely vegetated sand and gravel bars for breeding and rearing of tadpoles and juveniles; 3) a natural flooding regime, or one sufficiently corresponding to a natural regime, that will periodically scour riparian vegetation, rework stream channels and terraces, and redistribute sands and sediments, such that breeding pools and terrace habitats with scattered vegetation are maintained; 4) riparian and adjacent upland habitats (*e.g.*, alluvial scrub, coastal sage scrub, chaparral, and oak woodlands, but particularly alluvial streamside terraces and adjacent valley bottomlands that include areas of loose soil where toads can burrow underground) to provide foraging, aestivation, and living areas for subadult and adult arroyo toads; and 5) stream channels and adjacent upland habitats allowing for migration between foraging, burrowing, or aestivating sites, dispersal between populations, and recolonization of areas that contain suitable habitat.

**Life History/Population Dynamics.** Arroyo toad larvae feed on loose organic material such as interstitial algae, bacteria, and diatoms. They do not forage on macroscopic vegetation (Jennings and Hayes 1994, Sweet 1992). Juvenile toads rely on ants almost exclusively (USFWS 1999). By the time they reach 0.7 to 0.9 inches in length, they take more beetles, along with the ants (USFWS 1999, Sweet 1992). Adult toads probably consume a wide variety of insects and arthropods including ants, beetles, spiders, larvae, caterpillars, and others.

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Breeding typically occurs from February to July on streams with persistent water (Griffin *et al.* 1999). Female arroyo toads must feed for a minimum of approximately two months to develop the fat reserves needed to produce a clutch of eggs (Sweet 1992). Females apparently move to breeding pools for only short time periods during the breeding season (66 FR 9414). Eggs are deposited and larvae develop in shallow pools with minimal current and little or no emergent vegetation. The substrate in these pools is generally sand or fine gravel overlain with silt. Arroyo toad eggs hatch in four to five days and the larvae are essentially immobile for an additional five to six days (Sweet 1992). They then begin to disperse from the pool margin into the surrounding shallow water, where they spend an average of 10 weeks (Sweet 1992). After *metamorphosis* (June-July), the juvenile toads remain on the bordering gravel bars until the pool no longer persists (usually from 8 to 12 weeks depending on site and yearly conditions) (Sweet 1992). Most individuals become sexually mature by the following spring (Sweet 1992).

Arroyo toads spend much of their lives in upland habitats (66 FR 9414). Upland habitat use occurs during both the breeding and non-breeding season (66 FR 9414). This species has been observed moving approximately 1 mile within a stream reach and 0.6-1.2 miles away from the stream, into native upland habitats (USFWS 1999, Holland 1995, Sweet 1992) or agricultural areas (Griffin *et al.* 1999). Movement distances may be regulated by topography and channel morphology. Griffin (1999) reported a female arroyo toad traveling more than 948 feet perpendicular from a stream and Holland and Sisk (2000) found arroyo toads 0.7 miles from a water course. Most arroyo toad movements and activity appears to occur between the months of January and August (Ramirez 2003). Arroyo toads tend to burrow relatively deep during the fall and winter and remain largely inactive (Sweet 1992).

**Historic and Current Range.** Historically, arroyo toads occurred in at least 22 river basins in southern California from the upper Salinas River system in Monterey County to San Diego County and southward to the vicinity of San Quintin, Baja California, Mexico. They have been found at elevations extending from sea level to 8,000 feet (USFWS 1999). Arroyo toads have been extirpated from an estimated 75 percent of their former range in the United States (USFWS 1999), and they now occur primarily in small, isolated areas in the middle to upper reaches of streams. The current distribution of the arroyo toad in the United States is from the San Antonio River in Monterey County, south to the Tijuana River and Cottonwood Creek Basin along the Mexican border. Arroyo toads are also known from a seemingly disjunct population in the Arroyo San Simeon River System, about 10 miles southeast of San Quintin, Baja California. Although the arroyo toad occurs principally along coastal drainages, it also has been recorded at several locations on the desert slopes of the Transverse Range (Jennings and Hayes 1994, Patten and Myers 1992). There are six units of arroyo toad designated critical habitat; these units are in Santa Barbara, Ventura, Los Angeles, San Bernardino, and Riverside counties and total about 11,695 acres (69 FR 23254).

**Rangewide Trends and Current Threats.** Because arroyo toad habitats (*i.e.*, broad, flat floodplains in southern California) are favored sites for flood control projects, agriculture, urbanization, and recreational facilities, such as campgrounds and off-highway vehicle parks, many arroyo toad populations were reduced in size or extirpated due to extensive habitat loss

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from 1920 to 1980 (USFWS 1999). The loss of habitat, coupled with habitat modifications due to the manipulation of water levels in many central and southern California streams and rivers, as well as predation from introduced aquatic species, caused arroyo toads to disappear from a large portion of their previously occupied habitat in California (Jennings and Hayes 1994). Currently, the major threats to arroyo toad populations are from stream alteration, introduction of exotic species, urban and rural development, mining, recreation, grazing, drought, wildfire, and large flood events.

Several incidental take permits pursuant to Section 10(a)(1)(B) of the Act have been issued for the arroyo toad addressing the effects of urban development on this species. In 1996, the Service issued a permit for the Central and Coastal Subregion Natural Community Conservation Plan and Habitat Conservation Plan for Orange County. In 1997 and 1998, the Service issued permits to the city of San Diego and San Diego County, respectively, for Multiple Species Conservation Plans. In 2004, the Service issued a permit for the Western Riverside County Multiple Species Habitat Conservation Plan. In 2007, the Service issued a permit for the Southern Orange Natural Community Conservation Plan/Master Streambed Alteration Agreement/Habitat Conservation Plan. These plans are expected to provide long-term protection of core occurrences of this species in western Riverside, Orange, and San Diego counties.

#### ENVIRONMENTAL BASELINE

Regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation, and the impacts of State and private actions that are contemporaneous with the consultation in progress. According to 50 CFR § 402.02 pursuant to section 7 of the Act, the "action area" means all areas to be affected directly or indirectly by the Federal action. Subsequent analyses of the environmental baseline, effects of the action, and levels of incidental take are based upon the action area.

For this project, we define the action area to be the area of the project facilities, access roads, areas subject to vegetation management activities, and downstream areas subject to indirect effects. The known arroyo toad occurrences near or within the project area occur within Los Alamos Creek (USFS 2003). In addition, arroyo toads occur downstream from the Decker Canyon Reservoir in San Juan Creek (USFWS 1999). In San Juan Creek, arroyo toads occur from I-5 near San Juan Capistrano up to the Upper San Juan Campground area (USFWS 1999), about 2 miles downstream from the project site.

#### EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species, together with the effects of other activities that are interrelated and interdependent with that action, that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are

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those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action, are later in time, and still reasonably certain to occur.

### Direct Effects

Potential effects to the arroyo toad include the crushing of arroyo toads inside and outside burrows due to ground disturbing activities and trampling associated with the construction, maintenance and vegetation management activities proximal to Los Alamos Creek. Most of the proposed towers and access roads occur greater than 500 feet from the streambed in Los Alamos Creek and outside the 80-foot contour from the streambed, where arroyo toads are most likely to occur in upland habitats (69 FR 23254). However, one tower and access road occurs within 200-300 feet of a tributary to Los Alamos Creek (MBA, pers. comm., 2007). The potential for crushing of arroyo toads during construction and maintenance activities should be limited by the distance from the stream bottom, the temporal nature of construction activities, and the intermittent nature of potential maintenance activities. Further, vegetation management activities have the potential to open more areas of upland habitat for toad use.

### Indirect Effects

#### *Sedimentation*

There are some potential effects to the arroyo toad due to sedimentation from construction activities proximal to Los Alamos Creek and upstream of San Juan Creek in Decker Canyon. Sedimentation of habitat due to foot and road traffic associated with construction activities can lead to the filling of breeding pools, the restriction of water flow, and the consequent reduction of oxygen levels. Increased sedimentation can adversely affect arroyo toads by asphyxiation of egg masses or early stage larvae (USFWS 1999). Sedimentation can also lead to decreased cover and foraging habitat for amphibians by filling in interstitial spaces (Welsh and Ollivier 1998). However, the potential for sedimentation effects should be minimized by the temporal nature of construction activities, the distance of project activities from the streambed in Los Alamos Creek and downstream populations in San Juan Creek, and the implementation of practices to minimize erosion.

In addition to the potential negative effects of unseasonal sedimentation during construction activities, the construction of a reservoir in Decker Canyon could reduce some natural and beneficial sediment production into arroyo toad breeding areas in San Juan Creek. Fine sediments and gravel are important components of arroyo toad breeding habitat (USFWS 1999). However, effects to sediment production should be limited due to the nature of the streambed in the upper reaches of Decker Canyon, which includes boulders and exposed bedrock. Further, the reservoir will capture only 90-100 acres of the 112,640 acre San Juan Watershed area (Genterra Consultants, Inc. 2003).

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### *Unauthorized Vehicle Use*

There is potential for access roads near Los Alamos Creek to provide access for unauthorized motor vehicle use. This could lead to the crushing of arroyo toad adults, eggs, and larvae and the destruction of habitat (USFWS 1999). The project proponent will block new and improved access roads to prevent access by unauthorized vehicles.

### *Non-Native Species*

Construction, maintenance, and vegetation management activities have the potential to promote non-native weeds. An invasive weed management plan will be developed to control and contain the spread of non-native weeds. The invasive weed plan will provide for: A) inventory and mapping of new populations of invasive weeds using U.S. Forest Service-compatible database and software packages; B) weed risk assessment; C) an integrated pest management approach for invasive weed control; D) a schedule for control of known populations as designated by resource agencies; E) ongoing monitoring of known populations over the term of the license; and F) strategies to prevent and control the spread of invasive weeds.

In addition, potential effects to the arroyo toad in San Juan Creek could occur due to the introduction of non-native aquatic species and the introduction of Lake Elsinore water. However, the project proponent indicates that water will only be discharged into Lake Elsinore (MBA, pers. comm., 2007). Thus, impacts to arroyo toads within San Juan Creek are not expected from the release of Lake Elsinore water and non-native species. In order to verify that non-native species are not released, annual surveys will occur for 1,000 linear feet downstream of the reservoir. If non-native species are detected, they will be removed and surveys will occur monthly for at least six months.

### *Reduction in Water Quantities*

Streamflow within Decker Canyon will not be impounded; however, streamflows could be reduced due to capture of precipitation in a reservoir in Decker Canyon. The potential for effects should be minimized since the reservoir will capture precipitation for only 90-100 acres of the 112,640 acre San Juan Watershed Area (Genterra Consultants, Inc. 2003). Streamflows should only be affected just below the dam in Decker Canyon due to the lack of impoundment of streamflows and the low amount of area that collects precipitation. Further, arroyo toads do not occur until two miles downstream, approximately at the Upper San Juan Campground area (USFWS 1999); thus, it is unlikely effects will occur to this species due to reduced water quantities.

## CUMULATIVE EFFECTS

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



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We are unaware of any non-Federal actions affecting listed species that are reasonably certain to occur in the action area considered by this opinion.

## CONCLUSION

After reviewing the current status of the arroyo toad, environmental baseline for the action area, effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed action is not likely to jeopardize the continued existence of the arroyo toad. Critical habitat for this species has been designated; however, this action does not affect that area and no destruction or adverse modification of that critical habitat is anticipated. Our conclusions are based on the following reasons:

- 1) This project affects a small area of arroyo toad habitat and most of the potential effects from construction should be temporary. Overall, project effects are only expected during the construction and maintenance activities near Los Alamos Creek. Finally, the area of permanent impact is located within upland habitat.
- 2) The project proponent will implement measures to minimize the potential for erosion and the spread of non-native weeds.

## INCIDENTAL TAKE STATEMENT

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

## AMOUNT OR EXTENT OF TAKE

Total incidental take of arroyo toads is difficult to detect or quantify, particularly in the non-breeding season, as their relatively small body size and burrowing behavior make the finding of a dead animal unlikely, and losses and numbers may be masked by seasonal or annual fluctuations in numbers or other causes. Therefore, quantifying the take of arroyo toads from the proposed action is not possible, although we anticipate that the number of individuals that might be taken is low. Because we cannot provide a reliable estimate of the numbers of arroyo toads that are likely to be taken, we have established a take threshold that, if exceeded, will trigger reinitiation of consultation. We anticipate that up to one arroyo toad may be taken annually.

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This take is expected in the form of mortality due to crushing during construction and maintenance activities near Los Alamos Canyon.

#### EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

#### REASONABLE AND PRUDENT MEASURES

*The following reasonable and prudent measure is necessary and appropriate to minimize incidental take:*

FERC will conduct monitoring for the arroyo toad.

#### TERMS AND CONDITIONS

FERC will conduct periodic arroyo toad monitoring at the construction activities near Los Alamos Creek in accordance with a schedule and protocol approved by the Carlsbad Fish and Wildlife Office. Any effects will be recorded and provided to the Carlsbad Fish and Wildlife Office.

#### CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The recommendations provided here do not necessarily represent complete fulfillment of the FERC responsibility for these species, pursuant to section 7(a)(1) of the Act.

- 1) FERC should monitor the status of the arroyo toad and its habitat in Los Alamos and San Juan creeks.
- 2) FERC should aid the Forest Service in implementing non-native species removal efforts in Los Alamos and San Juan creeks.

#### REINITIATION NOTICE

This concludes formal consultation on the proposed project. As provided in 50 CFR § 402.16 reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may

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affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation. Any questions or comments should be directed to Jesse Bennett of my staff or me at (760) 431-9440.

Sincerely,

Karen A. Goebel  
Assistant Field Supervisor

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**Appendix: Conservation Measures**

1. Employ a qualified biologist or natural resource specialist to monitor construction activities and help prevent adverse effects on sensitive species or habitats.
2. Conduct wetlands delineations and habitat mitigation and management plans in consultation with the U.S. Army Corps. of Engineers, the California Department of Fish and Game (CDFG), and the U.S. Forest Service (USFS).
3. Develop and implement a plan to prevent and control noxious weeds and exotic plants of concern in project-affected areas.
4. Design and construct the transmission line to the standards outlined in 1996 by the Avian Power Line Interaction Committee (APLIC).
5. Consult with the USFS and Interior to identify appropriate parcels for mitigation of habitat losses including a 2:1 replacement ratio for about 20 acres of oak woodlands and 1:1 replacement of 31 acres of coastal sage scrub.
6. Provide compensation of \$500 per acre to Riverside County for project effects within the Stephens' Kangaroo Rat Fee Assessment Area.
7. Nevada Hydro and Elsinore Valley Metropolitan Water District (MWD) shall provide annual employee awareness training to familiarize maintenance and operations staff with local USFS issues, including special status species, noxious weeds, procedures for reporting to the USFS, and USFS orders that pertain to the Cleveland National Forest System lands in the vicinity of the project.
8. Nevada Hydro and Elsinore Valley MWD shall annually review the current list of special status plant and wildlife species (federally listed as threatened or endangered and USFS sensitive species), consult with the USFS on the need for new surveys, develop study plans, conduct surveys, and prepare reports as needed.
9. Nevada Hydro and Elsinore Valley MWD shall develop and implement a vegetation and invasive weed management plan for the purpose of controlling and containing the project-related spread of invasive weeds. The invasive weed plan shall provide for: A) inventory and mapping of new populations of invasive weeds using USFS-compatible database and software packages; B) weed risk assessment; C) an integrated pest management approach for invasive weed control; D) a schedule for control of known populations as designated by resource agencies; E) ongoing monitoring of known populations over the term of the license; and F) strategies to prevent and control the spread of invasive weeds. The vegetation management plan shall include or address hazard tree removal; transmission line clearing to comply with electrical safety and fire clearance requirements; management of native habitat and biodiversity improvement; revegetation of disturbed sites; soil fertility and moisture analysis; use of clean, weed-free seed and approved mixes of native plant species; irrigation plans; and pest treatment.

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10. Nevada Hydro and Elsinore Valley MWD shall develop and implement a water surface resources management plan for the purpose of controlling and monitoring project-related effects on water resources on National Forest System land. The licensees shall develop, in consultation with USFS staff: 1) an inventory of springs and other water courses within 1 mile of the upper reservoir location, and 2) a riparian vegetation and surface water monitoring plan addressing springs and other surface water courses in the canyon selected for the upper reservoir.

11. Nevada Hydro and Elsinore Valley MWD shall develop and implement a plan for the management of groundwater and the associated surface waters on or affecting National Forest System land for the purpose of reducing the potential for groundwater extraction or contamination to surface water resources. The licensees shall develop, in consultation with USFS staff: 1) a groundwater and aquifer characterization plan including the installation of additional exploration boreholes and monitoring wells, aquifer testing, and geophysics as deemed necessary to determine the baseline data, construction monitoring data, and post-construction monitoring data; 2) groundwater inflow criteria for tunneling; 3) a plan to monitor and control groundwater and tunnel inflow during construction of the penstocks and tunnels and for a minimum of 10 years post construction unless impacts no longer exist; 4) a groundwater testing and monitoring program for the lined reservoir to detect seepage; and 5) a groundwater testing and monitoring program for the tunnel, unless a final impervious liner is installed, to detect seepage.

12. Nevada Hydro and Elsinore Valley MWD shall develop and implement a habitat mitigation plan that would identify requirements for construction and mitigation measures necessary to meet USFS habitat objectives and standards and provide additional enhancement measures to offset unavoidable effects that are inconsistent with the Land Management Plan. The plan must include minimum mitigation ratios for permanent loss of habitat of 1:1 for habitats that are sensitive or support listed species, coastal sage scrub, and riparian oak woodlands.

13. Include specific provisions in the proposed erosion control plan that applies erosion control measures and best management practices 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 for all subsequent ground disturbing activities over the term of any license issued for the project.

14. Develop and implement a revised lake operating plan for Lake Elsinore, addressing increased minimum lake levels, flood control implications, and water supply issues.

15. 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.

16. Include specific remediation measures in the upper reservoir and water conduit monitoring program to allow immediate action to be taken if water or non-native aquatic species are released from the upper reservoir into the San Juan Creek drainage. In addition, annual surveys will

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occur for 1,000 linear feet downstream of the reservoir. If non-native species are detected, they will be removed and surveys will occur monthly for at least six months.

17. Include specific provisions in the 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.

18. Develop and implement a detailed plan specifying activities, locations, methods and schedules that the qualified environmental construction monitor will use to monitor construction in aquatic environments.

19. Conduct entrainment monitoring for one 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, the Carlsbad Fish and Wildlife Office, 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 populations of desirable sport fish.

20. Develop and implement a detailed plan specifying the activities, locations, methods, and schedule that the qualified environmental construction monitor would use to monitor construction activities in terrestrial environments.

21. 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.

22. Develop and implement a Lake Elsinore monitoring and remediation plan to address potential project-related effects on nesting shorebirds, waterfowl, and other birds.

23. Implement an avian protection plan consistent with APLIC and U.S. Fish and Wildlife Service (2005) guidelines and over the term of any license issued for the project.

24. Conduct additional pre-construction special status plant and animal surveys at transmission line tower sites and along transmission alignment access roads to ensure compliance with the Western Riverside County Multi-species Habitat Conservation Plan.

25. Prepare a habitat mitigation plan in consultation with the USFS, Department of 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.



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26. Consult with the USFS annually to review the list of special status species and survey new areas as needed.

27. Develop and implement an annual employee awareness training program regarding special status plants and animals.

28. Consult with the Carlsbad Fish and Wildlife Office during the process of developing final design drawings on measures to protect fish and wildlife resources.

29. All new or improved access roads will be blocked prohibiting recreational activity.

30. The LEAPS project will be implemented consistent with the Habitat Conservation Plan for the Stephens' Kangaroo Rat (SKR) in Western Riverside County (RCHCA 1996). In compensation for direct and indirect impacts associated with applicant-initiated ground-disturbing activities undertaken within the SKR Core Reserve Area, the applicant shall acquire property containing suitable habitat and subject to the following criteria: (1) compensatory acreage, off-setting physically disturbed acreage in the Core Reserve Area, shall be on a minimum 1:1 basis with no net loss of occupied habitat, based on the actual area of disturbance to be determined prior to the initiation of construction; (2) to the extent feasible, the applicant will work with the Carlsbad Fish and Wildlife Office to find the off-setting property or properties in, contiguous with, or directly adjacent to the boundaries of the Lake Mathews-Estelle Mountain Core Reserve Area; (3) the off-setting property or properties shall be occupied by SKR or shall contain suitable habitat for that species; (4) the property shall be maintained for conservation purposes by the Riverside County Habitat Conservation Agency; and (5) the adequacy of the selected property to offset impacts to the SKR Core Reserve is subject to written concurrence of the U.S. Fish and Wildlife Service. If off-setting properties cannot be located in or adjacent to the Lake Mathews-Estelle Mountain Core Reserve Area, FERC will work with the U.S. Fish and Wildlife Service to identify other areas for mitigation. Implementation shall occur prior to commencement of project-related ground-disturbing activities within the Core Reserve Area.

31. For areas of temporary disturbance within the SKR Core Reserve Area, FERC will develop a restoration plan for review and approval by the Carlsbad Fish and Wildlife Office prior to ground-disturbing activities within the Core Reserve Area.

32. A restoration plan will be prepared to restore suitable habitat areas temporarily impacted by project installation for the arroyo toad, Quino checkerspot butterfly, coastal California gnatcatcher, and Stephens' kangaroo rat.