DOCKETED	
Docket Number:	85-AFC-03C
Project Title:	Compliance - Application for Certification for Midway-Sunset Cogeneration Project
TN #:	264131
Document Title:	CEC Approval of BVWSD Pipeline Easement on CNLM Lokern Preserve and Land Transfer Consistent with Midway Sunset (85-AFC-03) COC
Description:	Memo for CEC Approval of BVWSD Pipeline Easement on CNLM Lokern Preserve and Land Transfer Consistent with Midway Sunset (85-AFC-03) COC BIO-5
Filer:	Ashley Gutierrez
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	6/9/2025 12:15:04 PM
Docketed Date:	6/9/2025

MEMORANDUM

TO: Center for Natural Lands Management (CNLM), c/o Greg Warrick and California Department of Fish and Wildlife (CDFW), c/o Krista Tomlinson

FROM: Ashley Gutierrez, Compliance Project Manager

SUBJECT: Approval of Buena Vista Water Storage District Pipeline Easement on CNLM Lokern Preserve and Land Transfer Consistent with Condition of Certification BIO-5 for the Midway Sunset Cogeneration Project (85-AFC-03)

DATE: June 6, 2025

I. Introduction

As detailed below, California Energy Commission (CEC) staff approves the Center for Natural Lands Management (CNLM) entering into an agreement with the Buena Vista Water Storage District (BVWSD) in relation to mitigation lands associated with the Midway Sunset Cogeneration Project (85-AFC-03) and BVWSD's proposed Belridge Pipeline Project.

The BVWSD owns a 5-acre parcel in Kern County, California (APN 099-072-10), and CNLM owns adjacent land to the west (APN 099-010-02). BVWSD has proposed to provide $1,000 and transfer the 5-acre parcel (APN 099-072-10) to CNLM in exchange for a "Pipeline Easement" within the CNLM Lokern Preserve (APN 099-010-02). This agreement between CNLM and BVWSD requires approval by the CEC, as the affected parcel was, in part, acquired under Condition of Certification BIO-5 for the Midway Sunset Cogeneration Project (85-AFC-03). The memo outlines the regulatory context, site history, and environmental suitability of the replacement parcel.

II. Background

The Lokern Preserve, managed by the CNLM, spans over 3,870-acres across more than 30 non-contiguous parcels approximately 30 miles west of Bakersfield, California. Acquired between 1989 and 2010, either directly by CNLM or via transfer from The Nature Conservancy, these lands were set aside for conservation through mitigation funds linked to projects regulated by the CEC, United States Fish and Wildlife Service (USFWS), and California Department of Fish and Wildlife (CDFW). These lands were acquired for preservation in perpetuity as mitigation required by the California Endangered Species Act (CESA) Incidental Take Permit No. 2081-2001-004-4 (CDFW ITP) (Attachment 1) and the USFWS Formal Section 7 Consultation and Biological Opinion 1-1-00-F-172 (Biological Opinion) for the Midway Sunset

Cogeneration's Western Midway Sunset Power Project (Midway Sunset Cogeneration Project) (Attachment 2).

The CNLM lands are managed for the preservation of listed species including the San Joaquin kit fox (*Vulpes macrotis mutica),* blunt-nosed leopard lizard (*Gambelia sila*), and San Joaquin antelope squirrel (*Ammospermophilus nelsoni*). Management activities at the Lokern Preserve include vegetation monitoring, targeted grazing, and herbicide trials to benefit native species such as Kern mallow (*Eremalche kernensis*), in alignment with long-term conservation goals outlined in the CNLM Lokern and Semitropic Ridge Preserves Management Plan (July 2000). An addendum to the management plan will need to be submitted to document this additional parcel of land.

Under agreements with the CEC, CNLM's ownership and management of this property, among others, is also overseen by USFWS and CDFW. Approval is required before the property or any portion of it can be transferred or sold and if certain requirements are met. The agreement prohibits the sale of any of the property unless it is no longer suitable habitat for any of the listed or sensitive species. Although there is a Biological Opinion issued related to the CNLM Lokern Preserve, since there is no Conservation Easement currently designating USFWS as a third-party beneficiary, the agency has no authority to make decisions or take action related to this property.

The BVWSD would install a pipeline and secure a permanent, non-exclusive pipeline easement (90 feet x 60 feet) affecting the southeast and southwest corners of the CNLM property. The BVWSD would also use a temporary 100 foot x 100 foot area during construction (Construction Easement Area). In exchange, the BVWSD would pay CNLM $1,000 for the easement and transfer its 5-acre property to CNLM. CNLM will continue to manage the property and the additional 5-acre parcel under the existing management plan consistent with Condition of Certification BIO-5. There are no fence lines separating the properties.

On July 12, 2024, CNLM's Preserve Manager assessed APN 099-072-10 and found its habitat quality comparable to APN 099-010-02. The parcel supports suitable conditions for several listed species, including the San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, and San Joaquin antelope squirrel. As of May 2025, CNLM finalized its due diligence, including a title review for APN 099-072-10. Additionally, the Phase I environmental site assessment was completed and found the parcel to be clear of recognized environmental conditions.

III. Recommendation

Because the proposed land transfer is consistent with the existing requirements of BIO-5 and contains similar habitat as the areas subject to pipeline construction, CEC staff, in coordination with CDFW, approves the proposed land transfer between the CNLM and the BVWSD as well as granting a pipeline easement for the proposed Belridge Pipeline Project alignment.

This approval pertains solely to the land transfer and pipeline easement agreement and <u>does not</u> constitute any permitting approval for construction of the proposed Belridge Pipeline Project by the BVWSD.

CDFW and CEC staff recommend a Conservation Easement be recorded on the affected parcels and further recommend Conservation Easement(s) be recorded over the entirety of the Lokern Preserve to protect the properties in perpetuity with CDFW as the Grantee. Coordination for development of the

Conservation Easement(s) can be done following completion of the land transfer of the affected parcels.

ATTACHMENTS

1- CDFW Incidental Take Permit No. 2081-2001-004-4 (CDFW ITP) (September 2001)
2- USFWS Formal Section 7 Consultation and Biological Opinion 1-1-00-F-172 (Biological Opinion) (February 2001)

REFERENCES

GEI Consultants, Inc. (2024). Final Initial Study and Mitigated Negative Declaration for the Belridge Pipeline Project (SCH No. 2024010439). Prepared for the Buena Vista Water Storage District, March 2024.

ATTACHMENT 1

CDFW Incidental Take Permit No. 2081-2001-004-4

California Department of Fish and Game
San Joaquin Valley and Southern Sierra Region
1234 East Shaw Avenue
Fresno, California 93710

California Endangered Species Act
Incidental Take Permit No. 2081–2001-004-4

Midway Sunset Cogeneration Company
Western Midway Sunset Power Project

Authority: This California Endangered Species Act ("CESA") Incidental Take Permit ("Permit") is issued by the Department of Fish and Game ("Department") pursuant to Fish and Game Code Section 2081(b) and Section 2081(c), and California Code of Regulations, Title 14, Subdivision 3, Chapter 6, Article 1, commencing with Section 783. CESA prohibits the take[1] of any species of wildlife that is included in the list of endangered species, the list of threatened species, or the list of candidate species[2]. However, the Department may authorize, by Permit, the take of such species if the conditions set forth in Section 2081(b) and Section 2081(c) are met.

Permittee:

Midway Sunset Cogeneration Company
3466 W. Crocker Springs Road
P.O. Box 457
Fellows, California 93224

Contact Person:

Ed Western, Executive Director
Office: (661) 768–3000
Fax: (661) 768–4570

[1] Pursuant to Fish and Game Code Section 86, " take" means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill.

[2] Candidate species are species of wildlife that have not yet been placed on the list of endangered species or the list of threatened species, but which are under formal consideration for listing pursuant to Fish and Game Code Section 2074.2.

Project Location:

The Project location is shown in Figure 1. The power plant site is located in western Kern County, about 40 miles west of Bakersfield, in the southeastern portion of Section 17, Township 31 South, Range 22 East (Mount Diablo Base and Meridian, West Elk Hills, California, USGS Quadrangle, 1:24,000 scale).

The electric transmission line route extends northwesterly from the power plant site; north over the McKittrick Hills and northeasterly in the San Joaquin Valley where it terminates at the PG&E Midway Substation near Buttonwillow.

The raw water pipeline is approximately 1.8 miles in length and begins in the Midway–Sunset oil field in the southeastern corner of Section 17, Township 31 South, Range 22 East, of the Panorama Hills Quadrangle, 7.5 minute series, Mount Diablo Base and Meridian. The route begins at the Midway Sunset Cogeneration Company ("MSCC") facility and crosses under West Crocker Springs Road, then runs south almost to Crocker Canyon over private property. It turns east before reaching Crocker Canyon and runs along the northern section line of Sections 20, 21, and part of 22 for about 1.8 miles.

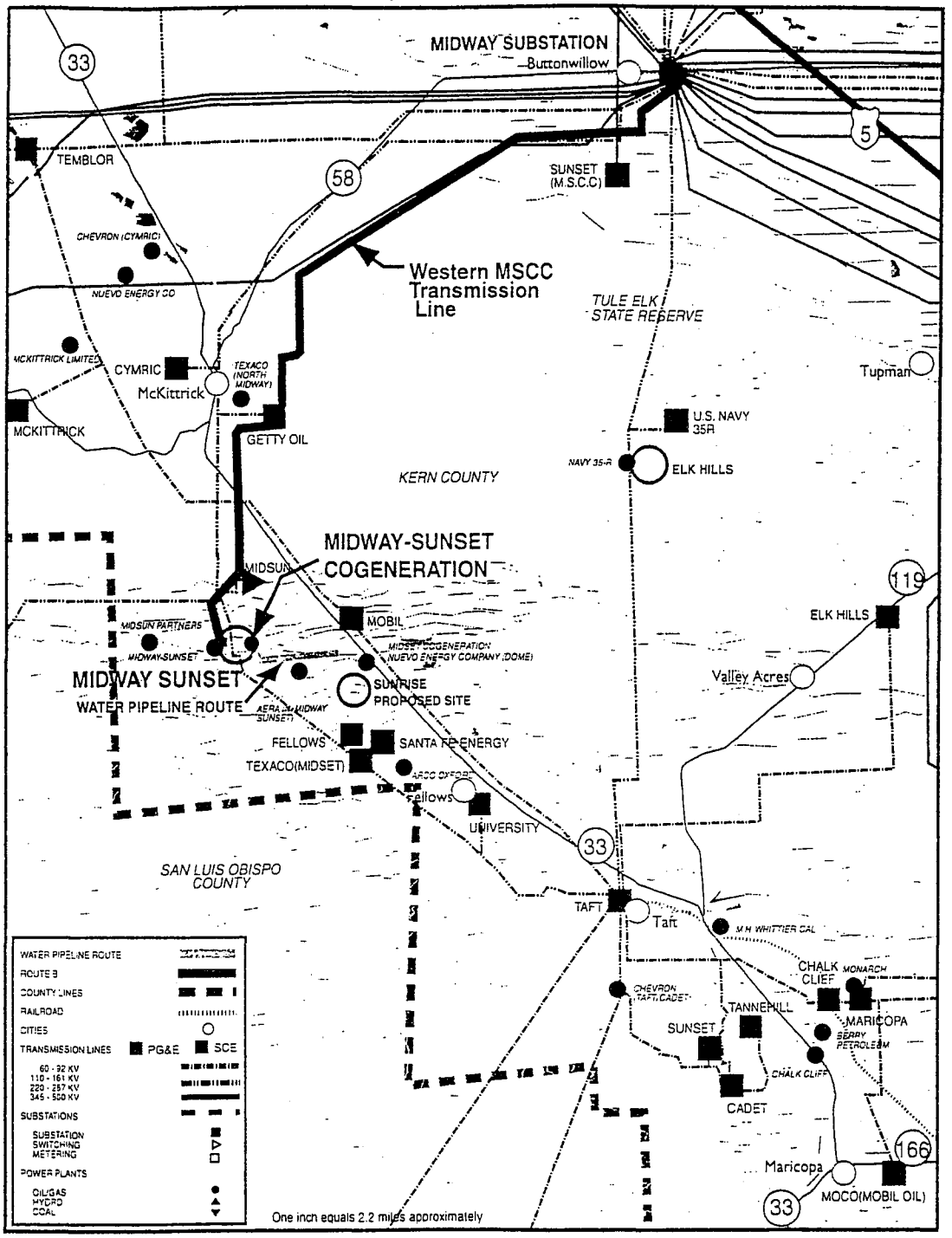
Project Description:

The Western Midway Sunset Power Project ("Project") is the construction, operation and maintenance of a 500–megawatt natural gas fired combined cycle power plant. The Project includes the power plant on a 10–acre site, a 19–mile 230 kV transmission line, and a 1.8–mile water supply pipeline. Natural gas will be delivered from two existing gas lines. An existing pipeline to MSCC will supply potable water.

This Permit is based upon the Project as described in the approved application for California Energy Commission certification (99-AFC-9). The project will result in the permanent loss of 10.2 acres and temporary impacts on an additional 62.25 acres. Ten acres of permanent habitat impacts will occur at the plant site. The additional 0.2 acres of permanent impact is a result of transmission and water lines. The construction of the transmission line will result in 55 acres of temporary disturbance. Seven acres are required for construction laydown.

Maintenance activities include driving vehicles on existing dirt roads in the oil fields and along the transmission line route to inspect and repair/replace parts and other associated operations. Maintenance operations occur about four times per year. They typically involve a few personnel and use of one or two vehicles over a short period of time (days or a few weeks). All personnel are required to attend the sensitive species awareness program.

PROJECT DESCRIPTION - Figure 1
Western Midway Sunset Cogeneration Company Project - Local Setting



CALIFORNIA ENERGY COMMISSION ENERGY FACILITIES SITING & ENVIRONMENTAL PROTECTION DIVISION, AUGUST 2000
SOURCE: California Energy Commission Statewide Transmission Line & Power Plant maps/2000 & USGS 7.5 Minute Quadrangles

Covered species:

This Permit covers the following species:

	Name	Status[3]
Mammals		
1.	*Ammospermophilus nelsoni* San Joaquin antelope squirrel	State threatened
2.	*Dipodomys ingens* Giant kangaroo rat	State endangered
3.	*Dipodomys nitratoides nitratoides* Tipton kangaroo rat	State endangered
4.	*Vulpes microtus mutica* San Joaquin kit fox	State threatened
Plants		
5.	*Atriplex tularensis* Bakersfield saltbush	State endangered
6.	*Caulanthus californicus* California jewelflower	State endangered
7.	*Opuntia basilaris var. treleasei* Bakersfield cactus	State endangered

These species and only these species are hereinafter referred to as Covered Species.

[3] Refers to status under CESA. Under CESA, a species may be on the list of endangered species, the list of threatened species, or the list of candidate species.

Effective date and expiration date of Permit:

This Permit shall be executed in duplicate original form and shall become effective once a duplicate original is acknowledged by applicant (see below) and returned to the Department. Unless renewed by the Department, this Permit shall expire on April 1, 2050.

Incidental take authorization:

The Department authorizes the Permittee, its employees, contractors, and agents to take Covered Species incidentally in carrying out the Project, subject to the limitations described in this Section and the conditions of approval and other provisions identified below. This Permit does not authorize any intentional take of Covered Species, take of Covered Species from activities outside the defined scope of the Project as described above, or take of Covered Species resulting from a Permit violation.

Fully protected species:

This Permit does not authorize the take of any fully protected species. See Fish and Game Code Section 3511, Section 4700, Section 5050, and Section 5515. The Department finds that the conditions of approval of this Permit, if fully implemented and adhered to, will avoid the take of the blunt-nosed leopard lizard, a state endangered species and fully protected reptile that may occur within the Project area. The Department therefore finds that the Project as conditioned by this Permit can be carried out in compliance with Fish and Game Code, Section 5050. If incidental take of the blunt-nosed leopard lizard occurs during the Project, the Department shall immediately be notified.

In the future, if there is a change in state law such that the Department may issue a permit to allow incidental take of blunt–nosed leopard lizard, or other fully protected species, the Permittee may apply for an amendment to this Permit to permit incidental take of such species, subject to appropriate conditions to minimize and fully mitigate the adverse effects of such taking.

Conditions of Approval:

The Department's issuance of this Permit and Permittee's authorization to take the Covered Species is subject to Permittee's compliance with and implementation of the following conditions of approval:

1. Permittee shall comply with all applicable state, federal and local laws in

existence on the effective date of this Permit or adopted thereafter.

2. Permittee shall fully implement and adhere to the United States Department of the Interior Fish and Wildlife Service ("USFWS") Formal Section 7 Consultation dated February 2, 2001, including, but not limited to, Conservation Measures 1-33 (pages 14-24; Terms and Conditions 1-33 (pages 73-88) and Conservation Recommendations 1-9 (pages 88-90). Should the USFWS Section 7 Consultation be voided, revoked, or amended, the Permittee is still responsible for implementing the above as a condition of this Permit.

3. Permittee shall comply with the Mitigation Monitoring and Reporting Program ("MMRP"), Attachment 1 to this Permit.

4. This Permit may be amended without the concurrence of the Permittee if the Department determines that continued implementation of the Project under existing Permit terms and conditions would jeopardize the continued existence of a Covered Species or that changed biological conditions necessitate a Permit amendment to ensure that impacts to the Covered Species are minimized and fully mitigated.

5. The Department may issue Permittee a written stop work order to suspend any activity covered by this Permit for an initial period of up to 25 days to prevent a violation of this Permit or the illegal take of an endangered, threatened or candidate species. Permittee shall comply with the stop work order immediately upon receipt thereof. The Department may extend a stop work order under this provision for a period not to exceed 25 additional days, upon written notice to the Permittee. The Department shall commence the formal suspension process pursuant to California Code of Regulations, Title 14, Section 783.7 within five working days of issuing a stop work order.

6. Construction site and/or ancillary facilities preparation (described as any ground disturbing activity other than California Energy Commission ("CEC") approved geotechnical work) shall not begin until a CEC-approved Designated Biologist is available to be on site.

7. The Compliance Project Manager-approved Designated Biologist shall perform the following during project construction and operation:

   a. Advise the Permittee's Construction Manager on the implementation of this Permit;
   b. Supervise or conduct mitigation, monitoring and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as wetlands and special status species; and,

c. Notify Permittee and the Department of non–compliance with this Permit.

8. Permittee shall fully cooperate with the Department in its efforts to verify compliance with or effectiveness of mitigation measures.

9. Permittee shall develop and implement a Department-approved Worker Environmental Awareness Program in which each of its employees, as well as employees of contractors and subcontractors who work on the project site, or at related facilities during construction and operation, are informed about the sensitive biological resources associated with the project area and the conditions of this Permit.

10. A specific individual shall be designated in writing as contact representative between the Permittee and Department to oversee compliance with the Section 2081(b) Permit.

11. Prior to construction, a qualified biologist shall conduct an environmental pre–activity survey of the Project site no more than 14 days prior to construction to assess Covered Species' presence and distribution. The presence of Covered Species shall be reported immediately to the Department.

12. If Tipton kangaroo rats are present, the Permittee shall provide an estimate of how many are present to the Department. The Department will determine whether Tipton kangaroo rats are to be trapped and relocated.

13. All potential kangaroo rat burrows shall be hand excavated to ensure removal of all kangaroo rats. This action will also verify that blunt–nosed leopard lizards do not occupy the burrows.

14. Any potential San Joaquin kit fox dens will be monitored as described in the USFWS Section 7 Consultation, Terms and Conditions (page 75, no. 9) to determine if the burrows are active. If the burrows are inactive, the dens will be closed. If the burrows are active, the Department will be contacted to determine an appropriate course of action.

15. Project boundaries, dens/burrows, or buffer zones that are to be avoided during construction shall be flagged and posted as necessary to prevent straying of vehicles and equipment into adjacent areas where take could occur. The Permittee shall consult with a qualified biologist to determine the necessity and extent of flagging and posting.

16. All construction equipment, staging areas, materials and personnel shall be

restricted to the Project site, previously disturbed off–site areas that are not habitat for listed species, or areas previously approved for temporary disturbance.

17. A 10 mile-per-hour speed limit shall be enforced on the Project site in areas with high populations of blunt-nosed leopard lizards and/or San Joaquin antelope squirrels. A 20 mile-per-hour speed limit shall be enforced in all other areas on the Project site.

18. All garbage and food shall be contained and removed from the site regularly to prevent attraction of predators such as dogs, coyotes or San Joaquin kit fox to the Project area where they may injure or increase harassment of the Tipton kangaroo rat, or result in the potential for incidental take of the San Joaquin kit fox.

19. Employees and contractors shall be prohibited from using firearms on, or bringing dogs or other pets to, the Project site.

20. Permittee shall consult with the Department prior to application of any rodenticide on the Project area during construction and operation of the proposed facility.

21. Spills of petroleum products or other chemicals which may represent a hazard to wildlife shall be cleaned up promptly and in accordance with appropriate laws and regulations.

22. All pipeline and utility trenches shall be inspected in the mornings to prevent entrapment of kangaroo rats and the San Joaquin kit fox, or shall be provided escape ramps as determined by a qualified biologist. All trenches shall be inspected prior to back–filling and a qualified biologist shall remove any entrapped wildlife or allow animals to escape voluntarily prior to resuming construction.

23. All pipe, culverts, or similar structures on–site with a diameter of two to twenty–four inches shall be inspected for Covered Species prior to moving or welding, and shall be capped or otherwise covered if sections cannot be inspected to prevent the entry and potential loss of wildlife. If a Covered Species is discovered inside a pipe, a qualified biologist shall safely remove the animal. The pipe segment shall not be moved until the animal has escaped, or the pipe segment shall be moved a single time out of the path of construction. Alternatively, stored pipe may be kept capped at all times until used. During construction, all open–ended pipe segments two to twenty–four inches in diameter that are welded into place shall be capped during periods of inactivity.

24. To minimize disturbance of adjacent wildlife and the potential for increased night–time predation, facility lighting shall be directed toward the facility and shielded in a manner as to minimize artificial lighting of the habitat. Landscaping will also be of a type to reduce or shield light from adjacent habitat.

25. Any dead, sick or injured threatened or endangered species shall be reported within 48 hours to the Fresno office of the Department.

26. If the construction or operation of the Project disturbs more than the number of acres of habitat described in the CEC Final Staff Assessment (November 15, 2000) for the listed species, the action must cease, and the Department shall be contacted immediately for further guidance.

27. If the incidental take of any of the Covered Species occurs during construction, the Department shall be notified immediately.

28. Permittee shall include in all construction contracts a requirement that the contractor comply with the mitigation requirements of the Department. If compliance with this requirement is impossible, the Permittee shall immediately explain in writing to the Department why this measure cannot be fully implemented.

29. Permittee shall immediately notify the Department, in writing, if it determines that any of the mitigation measures were not implemented during the period indicated in the MMRP, or if Permittee anticipates, for any reason, that measures may not be implemented within the time period indicated.

30. For the duration of construction activities, Permittee shall conduct compliance inspections at least once a week to assess compliance with all construction-phase impact minimization and mitigation measures, especially those requiring creation and maintenance of exclusion zones.

31. Every month, for the duration of construction activities, Permittee shall provide the Department with a written Compliance Report to communicate observations made during compliance monitoring, as well as other information obtained by Permittee.

32. Beginning with issuance of the Permit and continuing for the life of the project, Permittee shall provide the Department an annual Status Report no later than July 1 of every year. Each Status Report shall include, at a minimum: 1) a general description of the status of the project, including actual or projected completion dates, if known; 2) a copy of the attached table with notes showing the current implementation status of each mitigation measure; and 3) an

assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts.

33. No later than 45 days after completion of construction of the Project, including completion of all required mitigation measures, Permittee shall provide the Department with a Final Mitigation Report. The Final Mitigation Report shall be prepared by a knowledgeable, experienced biologist and shall include, at a minimum: 1) a copy of the attached table with notes showing when each of the mitigation measures was implemented; 2) all available information about project-related incidental take of species named in the Permit; 3) information about other project impacts on the species named in the Permit; 4) construction dates; 5) an assessment of the effectiveness of each mitigation measure in minimizing and compensating for project impacts; 6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the species; and, 7) any other pertinent information. Permittee's other monitoring and reporting obligations under this Permit will continue for the life of the Project.

34. The permanent loss of habitat from this Project is estimated to be 10.2 acres. Temporary disturbance is estimated at 62.25 acres. Permittee has agreed to a compensation ratio of 3:1 replacement for permanent impacts and 1.1:1 for temporary impacts (0.1 acres will be replaced at 4:1 since it is already conserved habitat). Based upon these acreages and ratios, Permittee will preserve 99.2 acres of habitat as compensation for the effects of the Project on Covered Species.

    Permittee shall provide no less than $148,000 (99.2 acres multiplied by $1,500/acre) to the Center for Natural Lands Management ("CNLM") for the purchase and management in perpetuity of 99.2 acres of habitat in the immediate vicinity of CNLM's Lokern Preserve within the Lokern Natural Area of western Kern County. This level of funding is sufficient to cover the purchase price, administrative costs, and the establishment of a suitable endowment for perpetual management of the habitat. To account for inflation and other changes in habitat compensation costs, the Permittee will consult with CNLM no more than 90 days prior to the start of any project related ground disturbance to obtain the final habitat compensation amount. No less than 60 days prior to the start of any project related ground disturbance, Permittee will provide written verification to the Department that all habitat compensation funds including endowment funds have been paid to CNLM.

Biological Resources Mitigation Implementation and Monitoring Plan:

Permittee shall prepare a final approved Biological Resources Mitigation Implementation and Monitoring Plan ("BRMIMP") prior to ground disturbing activities. This plan will identify the means by which Permittee will avoid and minimize impacts, protect and conserve biological resources, and comply with federal and state requirements for the Project. Permittee shall implement all measures identified in the plan. Any changes made to the BRMIMP will be subject to the approval of the California Energy Commission, the Department, and USFWS. The BRMIMP shall include the following:

- A description of the funding source and the level of funding available for implementation of the avoidance, minimization and mitigation measures;
- All biological resources, mitigation, monitoring, and compliance conditions included in the Energy Commission's Final Decision;
- All sensitive biological resources to be impacted, avoided, or mitigated by project construction, operation and closure;
- All mitigation measures identified in the USFWS Section 7 Consultation;
- Required habitat compensation strategy, including provisions for acquisition, enhancement and management, for any temporary and permanent loss of sensitive biological resources;
- All locations, on a map of suitable scale, of laydown areas and areas requiring temporary protection and avoidance during construction;
- Aerial photographs of all areas to be disturbed during project construction activities - one set prior to site disturbance and one set after completion of mitigation measures;
- Duration for each type of monitoring and a description of monitoring methodologies and frequency.
- Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
- All remedial measures to be implemented if performance standards are not met;
- Terms and conditions contained in the Project's Fish and Game Section 2081 Incidental Take Permit.

Operation/Maintenance/Facility Closure:

Permittee shall prepare as part of the BRMIMP, a discussion of biological resource-related mitigation measures for operation and maintenance activities and planned and unexpected plant closure. Activities beyond the scope described in the Project description are not covered by this Permit. Activities associated with the identified temporary impacts are permitted for one-time only. Future activities on the same land are not covered. If these activities are not covered in the BRMIMP, Permittee will be required to amend this Permit or submit a permit application for the new scope of work. Measures to promote the re-establishment of native plant and wildlife species upon site abandonment should be addressed in the BRMIMP.

Compliance with Other Laws:

This Permit contains the Department's requirements for the Project pursuant to the CESA. This Permit does not necessarily create an entitlement to proceed with the Project. The Permittee is responsible for complying with all other applicable state, federal, and local laws.

Notices:

Written notices, reports and other communications relating to this Permit shall be delivered to the Department by first class mail at the following addresses, or at addresses the Department may subsequently provide the Permittee:

Original to:

Regional Manager
California Department of Fish and Game
1234 East Shaw Avenue
Fresno, California 93710

Copy to:

General Counsel
California Department of Fish and Game
1416 Ninth Street, Twelfth Floor
Sacramento, California 95814

CESA Findings:

Section 2081 of CESA states, in pertinent part:
. . .

(b)The department may authorize, by permit, the take of endangered species, threatened species, and candidate species if all of the following conditions are met:

(1) The take is incidental to an otherwise lawful activity.

(2) The impacts of the authorized take shall be minimized and fully mitigated. The measures required to meet this obligation shall be roughly proportional in extent to the impact of the authorized taking on the species. Where various measures are available to meet this obligation, the measures required shall maintain the applicant's objectives to the greatest extent possible. All required measures shall be capable of successful implementation. For purposes of this section only, impacts of taking include all impacts on the species that result from any act that would cause the proposed taking.

(3) The Permit is consistent with any regulations adopted pursuant to Sections 2112 and 2114.

(4) The applicant shall ensure adequate funding to implement the measures required by paragraph (2), and for monitoring compliance with, and effectiveness of, those measures.

(c) No permit may be issued pursuant to subdivision (b) if issuance of the permit would jeopardize the continued existence of the species. The department shall make this determination based on the best scientific and other information that is reasonably available, and shall include consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (1) known population trends; (2) known threats to the species; and (3) reasonably foreseeable impacts on the species from other related projects and activities.

These CESA provisions constitute the criteria for the issuance of an Incidental Take Permit. The Department finds that these criteria are met for the issuance of an Incidental Take Permit to Permittee as follows:

1. The take of Covered Species as defined in the Permit will be incidental to otherwise lawful Project activities.

2. The impacts of take of Covered Species will be minimized and fully mitigated through implementation of measures that are required as Permit conditions of approval.

3. The minimization and mitigation measures required in the Permit are roughly proportional in extent to the Project's impact of taking Covered Species.

4. The required minimization and mitigation measures will maintain the Permittee's Project objectives to the greatest possible extent.

5. All required measures are capable of successful implementation.

6. This Permit is consistent with any regulations adopted pursuant to Sections 2112 and 2114 of the Fish and Game Code.

7. The Permittee has ensured adequate funding to implement the required minimization and mitigation measures, and for monitoring compliance with, and the effectiveness of, those measures.

8. Issuance of this Permit will not jeopardize the continued existence of any Covered Species. The Department's finding is based on the best information that is reasonably available, and includes consideration of the species' capability to survive and reproduce, and any adverse impacts of the taking on those abilities in light of (a) known population trends; (b) known threats to the species; and (c) reasonably foreseeable impacts on the species from other related projects and activities. The Department's finding is further based on the Department's express authority to revise the terms of the Permit as necessary to avoid jeopardy.

Attachments:

ATTACHMENT 1 Mitigation Monitoring and Reporting Program

ISSUED BY THE CALIFORNIA DEPARTMENT OF FISH AND GAME

on 9/12, 2001.

William E. Loudermilk

William E. Loudermilk, Regional Manager
San Joaquin Valley and Southern Sierra Region

Approval as to form:

Michael R. Valentine
General Counsel

ACKNOWLEDGMENT

The undersigned applicant acknowledges receipt of this Permit and, by signing, accepts and agrees to comply with all terms and conditions of the Permit.

By: E R Western Date: September 29, 2001

Name: E. R. Western

Title: Executive Director

ATTACHMENT 1

DEPARTMENT OF FISH AND GAME

MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

CALIFORNIA ENDANGERED SPECIES ACT

INCIDENTAL TAKE PERMIT NO. 2081-2001-004-4

PERMITTEE: MIDWAY SUNSET COGENERATION COMPANY

PROJECT: WESTERN MIDWAY SUNSET POWER PROJECT

PURPOSE OF THE MMRP

The purpose of the MMRP is to insure that the impact minimization and mitigation measures required by the California Department of Fish and Game (Department) for the above-referenced project are properly implemented, and thereby to ensure compliance with Section 2081(b) of the Fish and Game Code and Section 21081.6 of the Public Resources Code. A table summarizing the mitigation measures required by the Department is attached. This table is a tool for use in monitoring and reporting on implementation of mitigation measures, but the descriptions in the table do not supersede the mitigation measures set forth in the Incidental Take Permit (Permit) and in the attachments to the Permit, and the omission of Permit requirements from the attached table does not relieve the Permittee of the obligation to ensure the requirement is performed.

OBLIGATIONS OF PERMITTEE

Mitigation measures must be implemented within the time periods indicated in the table that appears below. Permittee has the primary responsibility for monitoring compliance with all mitigation measures and for reporting to the Department on the progress in implementing those measures. These monitoring and reporting requirements are set forth in the Permit itself and are summarized at the front of the attached table.

VERIFICATION OF COMPLIANCE, EFFECTIVENESS

The Department may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.

TABLE OF MITIGATION MEASURES

The following items are identified for each mitigation measure: Mitigation Measure, Source, Implementation Schedule, Responsible Party, and Status/Date/Initials. The Mitigation Measure column summaries the mitigation requirements of the Section 2081(b) Permit. The Source column identifies the Permit document that sets forth the mitigation measure. The

Implementation Schedule column shows the date or phase when each mitigation measure will be implemented. The Responsible Party column identifies the person or agency that is primarily responsible for implementing the mitigation measure. The Status/Date/Initials column shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report, and must identify the implementation status of each mitigation measure, the date that status was determined, and the initials of the person determining the status.

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
1.	Permittee shall immediately notify the Department, in writing, if it determines that any of the mitigation measures were not implemented during the period indicated in the MMRP, or if Permittee anticipates, for any reason, that measures may not be implemented within the time period indicated.	Permit	Entire project	Permittee	
2.	For the duration of construction activities, Permittee shall conduct compliance inspections at least once a week to assess compliance with all construction-phase impact minimization and mitigation measures, especially those requiring creation and maintenance of exclusion zones.	Permit	During construction	Permittee	
3.	Every month, for the duration of construction activities, Permittee shall provide the Department with a written Compliance Report to communicate observations made during compliance monitoring, as well as other information obtained by Permittee.	Permit	During construction	Permittee	
4.	Beginning with issuance of the Permit and continuing for the life of the project, Permittee shall provide the Department an annual Status Report no later than July 1 of every year. Each Status Report shall include, at a minimum: 1) a general description of the status of the project, including actual or projected completion dates, if known; 2) a copy of the attached table with notes showing the current implementation status of each mitigation measure; and 3) an assessment of the effectiveness of each completed or partially completed mitigation measure in minimizing and compensating for project impacts.	Permit	Entire project	Permittee	
5.	No later than 45 days after completion of construction of the project, including completion of all required mitigation measures, Permittee shall provide the Department with a Final Mitigation Report. The Final Mitigation Report shall be prepared by a knowledgeable, experienced biologist and shall include, at a minimum: 1) a copy of the attached table with notes showing when each of the mitigation measures was implemented; 2) all available information about project-related incidental take of species named in the Permit; 3) information about other project impacts on the species named in the Permit; 4) construction dates; 5) an assessment of the effectiveness of each mitigation measure in minimizing and compensating for project impacts; 6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future projects on the species; and, 7) any other pertinent information. Permittee's other monitoring and reporting obligations under this Permit will continue for the life of the Project.	Permit	Post–construction	Permittee	
6.	The Department accepts the Final Mitigation Report as complete.	Permit	Post-project	Department of Fish and Game	
7.	The Department may, at its sole discretion, verify compliance with any mitigation measure or independently assess the effectiveness of any mitigation measure.	Permit	Entire project	Department of Fish and Game	
8.	Permittee shall fully cooperate with the Department in its efforts to verify compliance with or effectiveness of mitigation measures.	Permit	Entire project	Permittee	
9.	Construction site and/or ancillary facilities preparation (described as any ground disturbing activity other than California Energy Commission (CEC) approved geotechnical work) shall not begin until a CEC Compliance Project Manager (CPM) approved Designated Biologist is available to be on site.	CEC and Permit	Pre–construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
10.	The CPM approved Designated Biologist shall perform the following during project construction and operation: a. Advise the project owner's Construction Manager on the implementation of the Biological Resource Conditions of Certification. b. Supervise or conduct mitigation, monitoring and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as, wetlands and special status species; and, c. Notify the project owner and the CPM of non–compliance with any Biological Resources Condition of Certification.	CEC and Permit	Entire project	Permittee	
11.	The project owner's Construction Manager shall act on the advice of the Designated Biologist to ensure conformance with the Biological Resources Conditions of Certification.	CEC and Permit	During construction	Permittee	
12.	The project owner shall develop and implement a CPM–approved Worker Environmental Awareness Program in which each of its employees, as well as employees of contractors and subcontractors who work on the project site, or related facilities during construction and operation, are informed about the sensitive biological resources associated with the project area.	CEC and Permit	Entire project	Permittee	
13.	Prior to the start of any ground disturbance activities, the project owner shall provide the CPM with a final copy of the project's Section 7 Biological Opinion obtained from the U.S. Fish and Wildlife Service (USFWS) in accordance with the federal Endangered Species Act.	CEC and Permit	Pre–construction	Permittee	
14.	Prior to the start of any ground disturbance activities, the project owner shall provide the CPM with a final copy of the project's CDFG Incidental take Permit, in accordance with the state Endangered Species Act.	CEC and Permit	Pre–construction	Permittee	
15.	If necessary, the applicant will acquire and implement the terms and conditions of a California Department of Fish and Game Streambed Alteration Agreement.	CEC and Permit	Pre–construction	Permittee	
16.	The project owner shall submit to the CPM for review and approval a copy of the final Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) and shall implement the measures identified in the plan. Any changes made to the adopted BRMIMP must be made in consultation with CEC staff, CDFG, and the USFWS.	CEC and Permit	Pre–construction	Permittee	
17.	To compensate for temporary and permanent impacts to sensitive species habitat, the project owner will provide no less than $148,800 to the Center for Natural Lands Management.	CEC and Permit	Pre–construction	Permittee	
18.	The project owner will incorporate into the planned permanent or unexpected permanent closure plan measures that address the local biological resources. The biological resource facility closure measures will also be incorporated into the Western Midway Sunset Project BRMIMP.	CEC and Permit	Entire project	Permittee	
19.	A specific individual shall be designated in writing as contact representative between the Permittee, Service and Department to oversee compliance with the Section 2081(b) Permit and requirements of the Service for the Project.	Permit	Pre–construction	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
20.	Permittee shall hire a qualified biologist to perform specific monitoring duties and other biological work as required below.	Permit	Pre–construction	Permittee	
21.	Prior to construction, a qualified biologist shall conduct an environmental pre–activity survey of the Project site no more than 30 days prior to construction to assess endangered species presence and distribution.	Permit	Pre–construction	Permittee	
22.	The Permittee shall consult with the Service and Department prior to application of any rodenticide on the Project area during construction and operation of the proposed facility. Rodenticide use shall be in accordance with Federal Insecticide, Fungicide, Rodenticide Act (FIFRA) requirements being implemented under the FIFRA Biological Opinion through the Kern County Agricultural Commissioner's office.	Permit	Entire project	Permittee	
23.	If Tipton kangaroo rats are present, the Permittee shall provide an estimate of number present to the Department and the Department will determine whether Tipton kangaroo rats are to be trapped and relocated.	Permit	Entire project	Permittee	
24.	All potential kangaroo rat burrows shall be hand excavated to ensure removal of all kangaroo rats. This action will also verify that blunt–nosed leopard lizards do not occupy the burrows.	Permit	Entire project	Permittee	
25.	Any potential San Joaquin kit fox dens will be monitored as described in the section 7 Consultation, (p. 75, no. 9) to determine if the burrows are active. If the burrows are inactive, the dens will be closed. If the burrows are active, the Department will be contacted to determine an appropriate course of action.	Permit	Entire project	Permittee	
26.	Project boundaries, dens/burrows, or buffer zones that are to be avoided during construction shall be flagged and posted as necessary to prevent straying of vehicles and equipment into adjacent areas where take could occur. The Permittee shall consult with a qualified biologist to determine the necessity and extent of flagging and posting.	Permit	Entire project	Permittee	
27.	All construction equipment, staging areas, materials and personnel shall be restricted to the Project site, previously disturbed off–site areas that are not habitat for listed species, or areas previously approved for temporary disturbance.	Permit	Entire project	Permittee	
28.	A 10 mile–per–hour speed limit shall be enforced on the Project site in areas with high populations of blunt-nosed leopard lizard and/or San Joaquin antelope squirrels. A 20 m.p.h. speed limit shall be enforced in all other Project areas.	Permit	Entire project	Permittee	
29.	All garbage and foodstuffs shall be contained and removed from the site regularly to prevent attraction of predators, such as dogs, coyotes or San Joaquin kit fox, to the Project area where they may injure or increase harassment of the Tipton kangaroo rat, or result in the potential for incidental take of the San Joaquin kit fox.	Permit	Entire project	Permittee	
30.	Employees and contractors shall be prohibited from using firearms on, or bringing dogs or other pets to the Project site.	Permit	Entire project	Permittee	
31.	Any spills of petroleum products or other chemicals which may represent a hazard to wildlife, shall be cleaned up promptly and in accordance with appropriate laws and regulations.	Permit	Entire project	Permittee	
32.	All pipeline and utility trenches shall be inspected in the mornings to prevent entrapment of kangaroo rats and the San Joaquin kit fox, or shall be provided escape ramps as determined by a qualified biologist	Permit	Entire project	Permittee	
33.	All trenches shall be inspected prior to back–filling and a qualified biologist shall remove any entrapped wildlife or allow animals to escape voluntarily prior to resuming construction.	Permit	Entire project	Permittee	

	Mitigation Measure	Source	Implementation Schedule	Responsible Party	Status / Date / Initials
34	All pipe culverts or similar structures on-site with a diameter of two to twenty-four inches shall be inspected for Covered Species prior to moving or welding, and shall be capped or otherwise covered if sections cannot be inspected to prevent the entry and potential loss of wildlife. If a Covered Species is discovered inside a pipe, a qualified biologist shall safely remove the animal. The pipe segment shall not be moved until the animal has escaped, or the pipe segment shall be moved a single time out of the path of construction. Alternatively, stored pipe may be kept capped at all times until used. During construction, all open-ended pipe segments two to twenty-four inches in diameter that are welded into place shall be capped during periods of inactivity.	Permit	Entire project	Permittee	
35	To minimize disturbance of adjacent wildlife and the potential for increased night-time predation, the facility lighting shall be directed toward the facility and shielded in a manner as to minimize artificial lighting of the habitat for the Covered Species. Landscaping will also be of a type to reduce or shield light from adjacent habitat.	Permit	Entire Project	Permittee	
36	Any dead, sick, or injured threatened or endangered species shall be reported within 48 hours to the Fresno DFG office.	Permit	Entire Project	Permittee	
37	If the construction or operation of the Project disturbs more than the number of acres described in the Final Staff Assessment, the action shall cease, and the Department shall be contacted for further guidance.	Permit	Entire Project	Permittee	
38	If the incidental take of any Covered Species occurs during construction, the Department shall be notified.	Permit	Entire Project	Permittee	
39	An employee training program shall be conducted by a qualified biologist prior to construction to educate all workers on the mitigation measures and the reporting requirements of this Permit.	Permit	Prior to construction	Permittee	
40	Permittee shall include in all construction contracts a requirement that the contractor comply with the mitigation requirements of the Department. If compliance with this requirement is not possible, the Permittee shall immediately explain in writing to the Department why this measure cannot be implemented.	Permit	Entire project	Permittee	
41	A qualified biologist shall be present on site during the initial land clearing to ensure implementation of the mitigation measures.	Permit	Entire project	Permittee	
42	The Permittee shall provide the Department access to the Project site during construction, mitigation, and monitoring to ascertain Project progress and compliance.	Permit	Entire Project	Permittee	

ATTACHMENT 2

USFWS Formal Section 7

Consultation and Biological Opinion 1-1-00-F-172

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
1-1-00-F-172

February 2, 2001

Memorandum

To: Field Office Manager, U.S. Bureau of Land Management, Bakersfield Field Office, Bakersfield, California

From: Assistant Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Formal Section 7 Consultation on the Western Midway Sunset Cogeneration Company Expansion Project, Kern County, California

This biological/conference opinion responds to your April 20, 2000, request for formal consultation with us on the Western Midway Sunset Cogeneration Company expansion project (WMSCC project) in western Kern County, California. Your request was received in our office on April 21, 2000. We initiated formal consultation on July 28, 2000, after receiving additional, relevant information. The Environmental Protection Agency (EPA) also has regulatory responsibilities regarding the proposed action, however, your agency was designated as the lead during consultation (April 20, 2000, letter #6840 (CA-016.3) from the Bureau of Land Management (BLM), Bakersfield, California, to the Fish and Wildlife Service (Service), Sacramento, California). The applicant for the proposed project is the Midway Sunset Cogeneration Company (MSCC, Applicant), Fellows, California.

The action proposed by your agency is to authorize the construction and operation of the following facilities by the Applicant: 1) 500-megawatt (MW) generation facility; 2) 230-kilovolt (kV) substation, switchgear, transformers, and 19 miles of 230-kV transmission line; 3) cooling tower, surface condenser, selective catalytic reduction system, and carbon monoxide oxidation catalyst system; and 4) 1.8 miles of 16-inch diameter water supply line. Although the proposed generation facility will be constructed on privately-owned lands, the proposed transmission and water lines will cross lands administered by your agency.

Biologists from your agency determined that the proposed action will not affect the federally-listed Bakersfield cactus (*Opuntia basilaris* var. *treleasei*), California jewelflower (*Caulanthus californicus*), California red-legged frog (*Rana aurora draytonii*), delta smelt (*Hypomesus transpacificus*), giant garter snake (*Thamnophis gigas*), Sacramento splittail (*Pogonichthys macrolepidotus*), longhorn fairy shrimp (*Branchinecta longiantenna*), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), or vernal pool fairy shrimp (*Branchinecta lynchi*). These species have not been reported in the vicinity of the project footprint, and are not anticipated to be affected by the direct or indirect effects of the proposed action. As a result, they are not considered in this biological opinion. However, the proposed action may affect the following federally listed and proposed species: San Joaquin kit fox (*Vulpes macrotis mutica*; kit fox), giant kangaroo rat (*Dipodomys ingens*), Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), blunt-nosed leopard lizard (*Gambelia sila*; leopard lizard), Hoover's woolly-star (*Eriastrum hooveri*), Kern mallow (*Eremalche kernensis*), San Joaquin woolly-threads (*Lembertia congdonii*), Aleutian Canada goose (*Branta canadensis leucopareia*), bald eagle (*Haliaeetus leucocephalus*), California condor (*Gymnogyps californianus*), and mountain plover (*Charadrius montanus*). Critical habitat has been designated for the California condor, but the proposed project does not occur within areas designated as critical.

Biologists from your agency concluded that the proposed action is not likely to adversely affect the Kern mallow or San Joaquin woolly-threads based on the results of walking transect surveys in and near the anticipated construction area, and a discussion with botanist Dr. Ellen Cypher, Endangered Species Recovery Program, Bakersfield, California, regarding the distribution of Kern mallow near the California aqueduct. However, we decided to evaluate the potential effects of the proposed action on these species in this biological opinion for the following reasons: 1) historically, these species were known to occur within the action area; 2) remaining occurrences of these species are intermittently scattered in the Lokern area; 3) walking transect surveys of the action area were not comprehensive; 4) potential habitat that could be occupied by these species is present within the project footprint; and 5) the loss of additional habitat suitable for these species could affect their long-term survival and recovery.

Your agency requested consultation regarding the effects of the proposed project to the American peregrine falcon (*Falco peregrinus anatum*), which was included in the list of endangered and threatened wildlife on October 13, 1970 (35 *Federal Register* 16047). On August 25, 1999, however, we determined that this subspecies is no longer an endangered or threatened species pursuant to the Endangered Species Act of 1973 (ESA), as amended (64 *Federal Register* 46542). Hence, all protections from take and commerce for the American peregrine falcon under the ESA have been removed and consultation with our agency is no longer required for this subspecies. In turn, all designations of critical habitat for the American peregrine falcon, including 5 areas in

northern California (50 CFR 17.95), have been rescinded (64 *Federal Register* 46557). The American peregrine falcon is still protected by the Migratory Bird Treaty Act and its implementing regulations (50 CFR Parts 20 and 21).

This biological opinion is based on information provided in the following sources:

- *Application for Certification for the Western Midway Sunset Cogeneration Company Project* (*AFC*; MSCC 1999) that was submitted by the MSCC to the California Energy Commission (CEC), Sacramento, California, on December 22, 1999;
- Supplemental information that was submitted by the MSCC to the CEC on February 8, 17, and 29, 2000, (MSCC 2000*a*, *b*, *c*);
- August 18, 2000, *Preliminary Staff Assessment: Western Midway Sunset Cogeneration Company Project, Application for Certification 99-AFC-9, Kern County* (Preliminary Staff Assessment) filed by the CEC on August 21, 2000 (CEC 2000);
- December 7, 2000, Biological Resources section of the *Final Staff Assessment: Western Midway Sunset Cogeneration Company Project, Application for Certification 99-AFC-9, Kern County* (Final Staff Assessment) by the CEC;
- Telephone conversations with Jack Caswell, Linda Speigel, and Rick York, CEC, Sacramento; Larry Saslaw, BLM, Bakersfield; and Ellen and Brian Cypher, Endangered Species Recovery Program, Bakersfield;
- Notes and reference documents from an August 1, 2000, meeting with your agency and the CEC;
- Written correspondence from your agency and the CEC; and
- Other sources of relevant information.

A complete administrative record of this consultation is on file in our office.

Consultation History

The following list summarizes important meetings, conversations, and documents regarding consultation on the proposed action:

December 22, 1999: The MSCC filed an *AFC* (#99-AFC-9) seeking approval from the CEC for the construction and operation of the proposed power plant.

December 28, 1999: We sent a letter to the CEC regarding the issue of growth inducing impacts associated with the proliferation of proposed new power plants in California. We suggested that CEC assess a growth impact fee on new power plants in California to compensate for indirect effects to federally listed species.

January 4, 2000: We received a *Request for Agency Participation in the Review of the Western Midway Sunset Cogeneration Company Application for Certification (99-AFC-9)* from the CEC.

February 3, 2000: The CEC sent us a letter in which they declined to support our proposal to assess a "growth impact fee" on new electric power plants in California because "Without knowing the geographic location of customers for each project's electricity production, determining whether or not the growth induced produces a significant environmental impact is not possible." The CEC's response also states "... [W]e do not see a way in which to tie that future growth to the electricity produced from each and every power plant the Energy Commission certifies."

February 9, 2000: The CEC found the data submitted by the MSCC in the *AFC* was inadequate in the areas of air quality, biological resources, cultural resources, facility design, geological hazards and resources, land use, project overview, socioeconomic resources, traffic and transportation, transmission system engineering, visual resources, water resources, and worker safety.

February 28, 2000: We received "Supplemental Material" for the *AFC* from the CEC. This information was submitted to the CEC on February 17, 2000, by the MSCC in order to remedy data inadequacies in the original filing.

March 2, 2000: P.J. White of my staff discussed our concerns regarding the potential indirect effects to listed species that could result from private development facilitated by an increase in available electricity from the WMSCC project with Larry Saslaw of your staff during a training session for biological monitors on the Lokern Natural Area, California. Despite these concerns, we were informed that your agency would soon request the initiation of formal consultation without providing any information regarding the potential for indirect effects from this project.

March 3, 2000: We provided comments to the CEC regarding the *AFC* for the WMSCC project, including the following statements: "However, the MSCC has not adequately considered the potential indirect effects to listed species that could result from private development facilitated by an increase in available electricity. We realize that it is impossible to determine where the electricity produced by the Western MSCC will actually be used because the electricity will be introduced into the power grid. However, it is likely that the increased electricity generated by this facility will affect the density, distribution, scope, duration, or timing of growth and development in California and, as a

result, indirectly affect the survival and recovery of listed species. Hence, effects to listed species owing to private development facilitated by this increase in electrical capacity must be evaluated in environmental analyses and documentation."

March 23, 2000: We received "Supplemental Materials 1 and 2" for the *AFC* from the CEC. This information was originally submitted to the CEC on February 8, 2000, by the MSCC in response to CEC's data adequacy worksheets and a request from the CEC to re-submit previously docketed supplementary material.

March 28, 2000: We received a *Notice of Informational Hearing -and- Site Visit* from the California Energy Resources Conservation and Development Commission regarding the WMSCC project. My staff did not attend the April 10, 2000, meeting based on a recommendation from the CEC.

April 3, 2000: We received a *Notice of Workshop on Data Requests, Western MSCC Facility Project* from the CEC. My staff did not attend the April 13, 2000, meeting owing to prior, conflicting commitments.

April 5, 2000: The CEC sent a request for additional data regarding the WMSCC project to WZI, Inc., Bakersfield, California (i.e., the project consultant for the MSCC).

April 10, 2000: We received the April 5, 2000, *Western Midway Sunset Cogeneration Company Project Issue Identification Report* from the CEC. This report contained a discussion of the potential issues the Energy Commission staff had identified to date, including "growth-inducing impacts" and potential take of the leopard lizard, which is listed as an endangered and fully protected species by the State of California. Current regulations by the California Department of Fish and Game (CDFG) do not allow take of species designated as fully protected.

April 20, 2000: Your agency sent us a letter requesting the initiation of formal consultation and formal conference for the WMSCC project. The correspondence states "The Bureau acknowledges that the Service has asked the CEC to consider the indirect effects (growth inducing) of how this and nearby power projects may affect listed species through the supply of power into the power grid. However, the BLM wishes to initiate formal consultation at this time because the Bureau believes that the applicant has provided the Bureau and the Service with the information required in 50 CFR 402.14 (c) and (d)."

May 2, 2000: The CEC sent a request for additional data regarding the WMSCC project to WZI, Inc., Bakersfield, California.

May 5, 2000: We received a notice of *Data Response Workshop, Western Midway Sunset Cogeneration Company* from the CEC. My staff did not attend the May 15, 2000, meeting owing to prior, conflicting commitments.

May 22, 2000: We received the May 17, 2000, *Western Midway Sunset Cogeneration Company Project Status Report #1* from the CEC.

May 22, 2000: We received the April 28, 2000, *Summary of the April 13, 2000 Data Response Workshop #1 Regarding the Western Midway Sunset Cogeneration Company Project (99-AFC-9)* from the CEC.

May 24, 2000: We received the May 18, 2000, *Summary of the May 15, 2000 Data Response Workshop #1 Regarding the Western Midway Sunset Cogeneration Company Project (99-AFC-9)* from the CEC.

June 1, 2000: We sent a letter to your agency declining to initiate formal consultation until we received sufficient information for an adequate review of the potential indirect effects that the WMSCC project may have upon listed species. We requested that the BLM arrange a meeting as soon as possible between our agencies, EPA, MSCC, CEC, CDFG, and other interested parties to determine the availability of relevant information and how best to proceed with the consultation.

June 9, 2000: We received the June 5, 2000, *Western Midway Sunset Cogeneration Company Project Status Report #2* from the CEC. This report states "[T]he USFWS has expressed concern for growth inducing impacts from power plant development. Energy Commission staff are responding to a letter from USFWS. Staff will provide a meeting date and time to address this issue with the suggested participation of other agencies."

June 19, 2000: Your agency sent us a letter stating that you had "met the requirements of 50 CFR 402.14(c) and (d), and together with the applicant, have submitted the best scientific and commercial information available on the direct and indirect effects of this project. The Service should consider the day you received our April 21, 2000 initiation letter as the date of initiation for formal consultation. This meeting should be conducted *during* the consultation period and may only serve to formalize the CEC expert opinion that it is not reasonable to forecast how the WMSCC electricity may affect listed species somewhere in the western power grid." The letter further states that "If it is the expert opinion of the California Energy Commission, the state agency responsible for energy assessment and planning, that it is not possible to make such a forecast, we believe that private development as a result of the power plant is not reasonably certain to occur, and is not an indirect effect of the proposed action." Your agency recommended that we request an extension of formal consultation.

June 28, 2000: The CEC sent us a letter stating "The Energy Commission staff has previously informed you in a letter dated on February 3, 2000 of our opinion that the growth inducing impacts you are seeking to analyze are not capable of being identified. Given that fact, there is an insufficient legal basis for the biological opinion concepts outlined in the June 1, 2000 letter. We therefore, endorse the Bureau of Land Management's June 19, 2000 letter to you requesting that the Section 7 Endangered Species Act consultation proceed based upon available data."

July 7, 2000: We electronically mailed a list of questions pertaining to the supply, demand (i.e., load), generation, transmission, distribution, and regulation of electricity in California to your agency and the CEC. A copy of these questions is available in the administrative record.

July 12, 2000: We received the July 10, 2000, *Western Midway Sunset Cogeneration Company Project Status Report #3* from the CEC. This report states "[T]he USFWS has expressed concern for growth inducing impacts from power plant development in a letter dated June 1, 2000. CEC staff have sent a letter to USF&WS acknowledging their concerns; included in the letter is a previously agreed to meeting scheduled for August 1, 2000 at the USF&WS office location."

July 28, 2000: The CEC electronically mailed a response to our July 7, 2000, questions regarding electricity.

August 1, 2000: We met with your agency and the CEC to discuss the supply, demand (i.e., load), generation, transmission, distribution, and regulation of electricity in California, and the potential for the proposed project to indirectly affect listed species by facilitating private development. Information presented and discussed during this meeting is available in the administrative record.

August 1, 2000: The CEC electronically mailed us a draft version of their Preliminary Staff Assessment regarding potential impacts to biological resources from the construction and operation of the WMSCC project.

August 3, 2000: The CEC electronically mailed us a copy of the project description for the WMSCC project.

August 8, 2000: We received the August 7, 2000, *Western Midway Sunset Cogeneration Company Project Status Report #4* from the CEC. This report states "At this time Staff does not anticipate any issues or environmental impacts that can not be mitigated to less than significant. CEC Staff met with the staff from the US Fish and Wildlife Service and Bureau of Land Management on Aug. 1, 2000 to resolve the USFWS concern with growth inducing indirect impacts associated with power plant development in California. USFWS has accepted Energy Commission staff's response to a set of questions they had

asked, and have begun work July 28, 2000 on the Section 7 consultation for endangered species."

August 9, 2000: We requested a copy of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) from CEC. We were informed that the Applicant had not yet submitted the BRMIMP, and that CEC staff contacted them on this date to request submittal.

August 16, 2000: The CEC electronically mailed us an updated copy of the project description for the WMSCC project.

August 24, 2000: We received the August 18, 2000, Preliminary Staff Assessment from the CEC. The CEC requested that we provide comments on the assessment by September 18, 2000.

September 6, 2000: We sent an electronic mail version of the project description to your agency for review, comment, and/or concurrence. Also, we requested confirmation of your agency's "no effect" determinations for the California red-legged frog, giant garter snake, delta smelt, Sacramento splittail, valley elderberry longhorn beetle, and longhorn fairy shrimp.

September 6, 2000: You informed us via electronic mail that the CEC had transmitted the project description to MSCC for their review, and clarified your "no effect" determinations.

October 5, 2000: We provided comments on the Preliminary Staff Assessment to your agency and the CEC.

November 17, 2000: We contacted your agency and the CEC to inquire if the Applicant had any revisions to the project description, including modifications to the proposed conservation measures. We were informed via electronic mail from the CEC that suggested revisions to the proposed conservation measures had been incorporated into their *Final Staff Assessment: Western Midway Sunset Cogeneration Company Project, Application for Certification 99-AFC-9, Kern County*, but that the Applicant had not provided comments on either the project description or the assessment. Your agency did not respond to our inquiry.

November 29, 2000: We received an electronic mail version of the Biology section of CEC's Final Staff Assessment regarding the Western Midway Sunset Cogeneration Company Project.

BIOLOGICAL OPINION

Description of the Proposed Action

Project Description: The MSCC has proposed to construct and operate a natural gas-fired, combined cycle, 500-MW power plant in western Kern County. This project is a market-based response to the deregulation of California's electricity industry. The WMSCC generating plant will be operated as a merchant power facility, selling its electricity via direct sales agreements, the spot market of the California Power Exchange, and other wholesale and retail power–marketing outlets. The project is designed as a base load facility to provide operating flexibility in response to the Power Exchange's "day-ahead" and "day-of markets" bidding processes. The base load or peaking capabilities of the project will also be utilized in the ancillary services market conducted by the California Independent System Operator. Energy output and operational levels would vary according to demand in the deregulated California energy market, and electricity prices and operational levels would not be subject to regulation by the California Public Utilities Commission.

The proposed project includes the construction of 2 advanced "F" class combustion turbine generators, associated heat recovery steam generators, cooling tower, condenser, emissions controls, and electrical switch yard. The project will also include the construction of a new 230-kV, 19-mile transmission line to Pacific Gas and Electric's (PG&E's) Midway Substation near Buttonwillow, California, and an above-ground, 16-inch diameter, water supply line connecting to the West Kern Water District located approximately 1.8 miles to the east of the WMSCC plant. The proposed project will be fueled by natural gas from existing pipelines operated by the Kern/Mojave Pipeline and Southern California Gas Company. Discharged water will be used by the existing MSCC plant. Steam from the proposed project will be used for the generation of power. No steam from the new plant will be supplied for oil field operations.

A more-comprehensive description of the project is provided in the *AFC* (MSCC 1999). Only the components of the project that relate to potential impacts to biological resources are described below. The Applicant intends to initiate construction immediately after certification by the CEC, which is expected to occur in March 2001. Construction will likely continue through October 2002. Commercial operation is expected to begin in November 2002.

Generation Plant and Supporting Facilities: The proposed power plant will be constructed on a 10-acre site located approximately 40 miles southwest of Bakersfield, California, and 2.5 miles west of the unincorporated community of Derby Acres, California (southeastern portion of section 17, Township 31 South, Range 22 East, Mount Diablo Baseline and Meridian). State Highway 33 traverses northwest to southeast approximately 2.5 miles east of the site. The WMSCC project site is located

immediately adjacent to the existing 225-MW MSCC facility site and, after construction, the WMSCC project will be incorporated into the MSCC site.

The proposed plant will be arranged in a "two-on-one" configuration featuring 2 advanced, "F" class, 170-MW combustion turbine generators and associated heat recovery steam generators. The 2 heat recovery steam generators will raise steam to drive one 160-MW, reheat/condensing steam turbine generator. Dry low NO_x combustors will be used in each combustion turbine generator. Each heat recovery steam generator will be equipped with a selective catalytic reduction system for $N0_x$ reduction. The selective catalytic reduction system will consist of a reduction catalyst and an aqueous ammonia injection system. A continuous emissions monitoring system will be installed on each heat recovery steam generator stack to sample, analyze, and record the concentrations of carbon monoxide, oxides of nitrogen, and diluent (oxygen/carbon dioxide) in the flue gas. Other major equipment and systems associated with the power plant include a mechanical draft 7-cell cooling tower with high efficiency drift eliminators, water cooled surface condenser, and an electrical 230 kV switchyard with 2 power transformers.

Access to the proposed WMSCC facility will be from the existing Crocker Springs Road. Waste oil, other hazardous wastes generated by plant operations, and non-hazardous solid wastes generated from routine maintenance activities and office operations, will be recycled if possible. Wastes that cannot be recycled will be transported by licensed waste haulers to disposal sites that are licensed to receive these wastes.

Earthwork will consist of a balanced cut and fill operation. The existing terrain on the proposed site for the WMSCC project slopes from a high point elevation of 1,865 feet above sea level at the west end to a low point elevation of 1,815 feet above sea level in the east end. The existing site topography will be cut and filled to provide a level area for the new power plant at an elevation of approximately 1,834 feet above sea level. Approximately 50,000 cubic yards of cut and 44,000 cubic yards of fill will be required to achieve the finished grade. Hence, the use of borrowed fill is not anticipated.

Topsoil will be removed from the site prior to cut and fill, and stored at a location depicted in Figure 3.5-1, *AFC* (MSCC 1999), for later application on temporarily disturbed sites (i.e., sites that will be revegetated after disturbance during construction). Materials suitable for backfill will be stored in stockpiles at designated locations using proper erosion protection methods. Any excess material will be removed from the site and disposed of at an acceptable location. If contaminated material is encountered during excavation, then it will be disposed of in a manner that complies with applicable Federal, State, and local regulations.

The original laydown area (i.e., area used to store and access equipment and supplies) for the existing 225-MW MSCC facility, which was revegetated after construction, will also

be graded and used to park equipment, materials, and vehicles during construction of the WMSCC facility. The laydown area is located southwest of the existing MSCC facility, adjacent to Crocker Springs road (Figure 2 in Appendix I, *AFC*, MSCC, 1999).

Construction is expected to take approximately 20 months and result in a temporary increase in traffic over an estimated 20-month period associated with the movement of construction vehicles, equipment, and personnel on the transportation network serving the project area. Operation of the plant will not result in increased traffic associated with plant employees and movement of vehicles serving the plant. The power plant will operate 24 hours per day. The expected useful life of the facility is more than 30 years.

Transmission line and interconnection: The proposed generating plant will supply electric energy to an existing PG&E Midway Substation, located approximately 19 miles distant, east of Buttonwillow, California. A new 19-mile, 230-kV, bundled, single circuit transmission line will be installed to provide a direct intertie between the WMSCC facility and PG&E's substation, and redundant capacity for the existing MSCC facility. No interconnections with existing transmission lines are required for this project.

The entire 19-mile route for the new transmission line will be installed within MSCC's existing 100-feet wide transmission corridor and parallel existing transmission lines. From the plant site (milepost (MP) 0.0) to MP 6.0, the route parallels the existing MSCC 230-kV transmission line (Figure 1.5-1 in MSCC 1999). From MP 6.0 to MP 9.0, the route parallels the existing MSCC 230-kV transmission line and the proposed La Paloma 230-kV transmission line. At MP 9.0, the route turns northeasterly, crosses the proposed La Paloma 230-kV transmission line, and begins to parallel the Diablo-Midway #2 500-kV transmission line. The route continues to parallel the proposed La Paloma 230-kV transmission line, the Diablo-Midway #2 500-kV transmission line, and the existing MSCC 230-kV transmission line to the vicinity of the Midway Substation (MP 18.5). The remaining 0.5 mile of the route is located to maintain proper conductor clearances with the numerous transmission lines that converge at the substation. The route will terminate on the south side of the Midway Substation 230-kV bus (MP 19.0).

The new 230-kV transmission line will utilize single shaft, tubular steel poles with braced posts for the tangent and light angle structures. Large angle and dead-end structures will be single shaft, tubular steel poles with the conductor's dead-end in a vertical orientation on the structures. "T-Top" structures, consisting of single shaft, tubular steel poles with a horizontal crossarm mounted on top of the steel pole, will be used for crossing under existing lines. Each structure will support one 3-phase circuit and six 1,590 kcmil ACC "Coreopsis" subconductors.

Current designs anticipate a total of 141 structures (3 T-Top, 118 tangents, 5 light angles, 3 heavy angles, 10 double dead-ends, and 2 double deadend slack structures).

T-Top structures will be approximately 28 feet from ground to base of vertical insulator. Tangent, angles, and dead-end structure heights will vary from approximately 90 feet to 115 feet above ground. Foundations for tangent and light angle structures will consist of a single shaft, tube steel extension of the steel structure that will be direct embedded with either soil backfill or concrete slurry backfill as determined by geotechnical engineering. Concrete drilled piers with steel reinforcing will be used for the large angle and dead-end structures.

Construction of the transmission line will require the use and installation of heavy equipment, including various trucks (pickup, boom, cement and digger/auger), mobile cranes, cable puller and, possibly, a helicopter. Three staging areas are anticipated for the transmission line to store equipment and materials. One staging area will be located at the generating plant site; another staging area will be located at the Midway Substation; a third staging area will be located near the center of the route in a location that has yet to be identified. Anticipated ground disturbance includes clearing a small area of 100 square feet at each pole location. Construction of the transmission line is anticipated to take 6 months.

For the route segment that parallels MSCC's existing 230 kV-transmission line (MP 0.0 to MP 9.0), access to the transmission structures will be via existing private roads. To access pole locations from these roads, the spur routes to MSCC's existing 230 kV-transmission line will be utilized to the fullest extent. For the segment of the route that parallels the Diablo– Midway transmission line from MP 9.0 to the route's entry into the agricultural fields (MP 14.8), the tower locations will be accessed from the existing tower line road that services the Diablo–Midway transmission line. To access pole locations from this road, the spur routes to MSCC's existing 230 kV-transmission line structures will be utilized to the fullest extent. For the segment of the route that crosses agricultural fields, existing farm roads will be used to access tower locations to the extent possible. Where farm roads are not available, access will be coordinated with the farmer to minimize impacts on the fields.

If any new spur routes are required, they will be kept short and ungraded. The routes will be well-marked to ensure consistent use of the designated spur routes by construction crews. The transmission lines will be inspected periodically to examine the structural integrity of the poles and to inspect the insulators. Also, emergency situations may require access to one or more areas. The same roads and pole access paths used during construction would be used for inspections, maintenance/repairs, and emergencies.

Water supply: The West Kern Water District (WKWD) will supply raw (i.e., untreated) water to the proposed WMSCC facility for steam cycle cooling, combustion turbine generator evaporative cooling, and firewater. A new 1.8-mile, 16-inch diameter pipeline will be constructed between the WKWD's number 303 line and the proposed WMSCC facility. The proposed tie-in point is located at the midpoint of section 15 along the

section 15/section 22 border (T31S, R22E). Three 50-percent capacity pumps will be set at the tie-in location.

The new 1.8 mile water line will follow an existing right-of-way, and will rest above ground on existing pipe supports or on new supports in the existing pipe corridor. This pipeline right-of-way was constructed as part of the original MSCC project to transport boiler feed water, steam, fresh water, and wastewater to and from the MSCC site. At minor road crossings and driveways, the pipeline will be constructed below ground and installed by open-cut trenches or borings. Oil field access roads exist across the entire length of the pipeline to facilitate construction without disturbing surrounding areas.

Construction of the water supply line and pump station is anticipated to require one month. Construction will require the use and installation of air compressors, compactors, concrete vibrators, dozers, excavators, 2 boom trucks, water trucks, and fuel trucks. Construction materials will be delivered to staging sites along the proposed routes by truck. These staging areas have not yet been identified. The water supply pipeline will be inspected periodically and maintained, however no increase in activity due to the WMSCC Project is anticipated.

The facility's annual average water requirement is a nominal 2,020 gallons per minute. This equates to an annual average water requirement of 3,260 acre-feet. Owing to water reclamation and the installation of dry low NO_x on the existing MSCC turbines, however, net increase in water demand will only approximate 1,980 acre-feet. The proposed water line will be designed to deliver a maximum peak flow rate of 3,000 gallons per minute.

The WMSCC project's water supply will be secured by entering into a long-term agreement with the WKWD. The WKWD receives an annual allotment of 25,000 acre-feet from the State Water Project, and also possesses 216,000 acre-feet of banked groundwater reserves. The WMSCC project will increase WKWD's annual customer demand to 15,500 acre-feet per year. The WKWD's allotment is more than sufficient to meet its customer demand during normal water years. During dry years when the WKWD does not receive its full allotment, banked water will be used to meet any supply shortfall. The banked water reserve is sufficient to sustain the WKWD's commitments during extended periods of shortfall. Potable water will be supplied by the existing pipeline to MSCC.

The existing MSCC plant system will provide all steam cycle makeup water required by the proposed WMSCC facility. Water storage on site will make use of MSCC's existing 500,000 gallon water storage tank. The tank will act as a buffer to be drawn down in the daytime while being filled at night. The cooling tower basin will serve as the firewater reservoir for the WMSCC plant, thus eliminating the need for a separate firewater storage tank. Functionality of the tank will remain unchanged for the existing MSCC facility. The WMSCC project will use the MSCC's existing reverse osmosis demineralizer water

treatment system. The plant water reclamation system will collect cooling tower blowdown, heat recovery steam generator boiler blowdown, and evaporative cooler blowdown. The blowdowns will be routed directly to the MSCC facility for utilization. Hence, the proposed WMSCC project will not require an additional effluent water line. Water will be collected from washdown, storm water and equipment drains. These streams will be sent to a new oily water separator prior to discharge to the storm water retention area.

Fuel gas interconnection: The WMSCC generating facility will be fueled by natural gas at a nominal rate of 85,000 MMBtu/day (higher heating value). The plant will receive its fuel from 2 existing natural gas pipelines that currently provide fuel for the existing MSCC power plant: a Kern River/Mojave pipeline and a Southern California Gas Company pipeline. Each pipeline is of sufficient size to supply both the proposed WMSCC generating facility and the existing MSCC facility.

The primary source of natural gas for the proposed WMSCC facility will come from a large interstate pipeline jointly owned by the Kern River Gas Transmission Company and the Mojave Pipeline Company. The MSCC owns, operates, and maintains a 3.8 mile, 14-inch diameter pipeline connecting the existing MSCC facility to the Kern River/Mojave west-side natural gas distribution system. The MSCC gas pipeline has a maximum design capacity of 200 million standard cubic feet per day, which is sufficient to run the existing plant and the proposed WMSCC facility.

The other source of natural gas comes from the Southern California Gas Company, which owns, operates, and maintains a gas pipeline connecting MSCC to the Southern California Gas Company's west-side distribution system (i.e., line 85). The Southern California Gas Company cannot feed the proposed WMSCC facility directly owing to a higher pressure requirement for the advanced technology gas turbines. Hence, an existing compressor will be used to boost Southern California Gas Company's gas pressure in the absence of the primary fuel supply.

Conservation Measures: The following actions were either voluntarily proposed by the Applicant, or required as Biological Resources Conditions of Certification for the WMSCC project by the CEC (as outlined in Preliminary and Final Staff Assessments), to avoid and minimize the effects of project activities to federally listed and proposed species:

Measure 1: Transmission line towers, access roads, pulling sites, and storage and parking areas will be sited to avoid sensitive resources wherever possible. All wetland areas will be avoided. The power plant site and linear facilities will be sited to use existing roads and utility corridors.

Vernal pool surveys were not completed in 1999 along the proposed transmission line route. Hence, the CEC has required that the Applicant complete vernal pool surveys during the appropriate hydrological conditions before vegetation clearing and ground disturbance activities occur along the proposed transmission line route. Survey results will be provided in the project's final BRMIMP and, if listed species are found, avoidance measures will be implemented.

Measure 2: Transmission lines and poles will be designed to reduce the risk of electrocution for large birds. Bird flight diverters will be installed to manufacturer's specifications along the entire length of the ground wire of the new transmission line for the life of the facility. Diverters will be replaced when damaged or deemed defective. No later than 10 days prior to energizing the new transmission line, the Applicant will provide photographic verification to the CEC that all required bird flight diverters have been installed, according to manufacturer's specifications, for the full length of the new transmission line. The project's final BRMIMP will provide further details and guidance regarding bird flight diverter installation and maintenance.

Measure 3: The existing employee orientation program will be expanded by MSCC to include all workers on the project, including employees of contractors. Training will be offered at the start of work. New workers joining the work force will be trained within 15 days of arrival on the job site. The orientation program will consist of a briefing of environmental issues relative to the project, including an explanation of endangered species concerns to contractors, their employees, and other personnel involved in the project. The education program, presented by persons knowledgeable in endangered species biology and legislative protection, will include a discussion of the kit fox, San Joaquin antelope squirrel, giant kangaroo rat, Tipton kangaroo rat, and leopard lizard biology; the habitat and needs of these species; their occurrence in the project area; their status under the Federal and State Endangered Species Acts; and measures being taken for the protection of these species and their habitats during construction and operation of the project. Similar information will also be provided for all other sensitive species that are found in the project study area. Upon completion of the orientation, employees will sign a form stating that they attended the program and understand all conservation measures.

At least 60 days prior to the start of rough grading, the Applicant will provide copies of the Worker Environmental Awareness Program and all supporting written materials, and the name and qualifications of the person(s) administering the program to the CEC for approval. The Applicant will state in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. The signed statements for the construction phase shall be kept on file by the project owner and made available for examination by the CEC for a period of at least six (6) months after the start of commercial operation. During project operation, signed statements for active project

operational personnel shall be kept on file for the duration of their employment and for six (6) months after their termination.

Measure 4: No more than 14 days prior to initiation of construction in any portion of the project area, MSCC will hire a qualified biologist acceptable to both our agencies and the CDFG to conduct a pre-construction survey. To conduct this survey, the biologist will re-inventory the lands (including a 500-feet-wide buffer zone around each area) that will be subject to vegetation clearance and/or grading for the occurrence of listed species and species of concern. The area to be re-inventoried will not include the entire transmission line right-of-way, but only those areas that will be disturbed by construction of the transmission line and the associated 500-feet-wide buffer area. The project areas subject to pre-construction surveys include the power plant site, laydown and employee parking areas, water supply pipeline route, transmission pole sites, new access roads (graded permanent roads and ungraded temporary routes), pulling sites, and other areas subject to disturbance.

During the survey of any particular area, the status of kit fox dens and other burrows identified during previous surveys will be reviewed; the project area will be searched for additional listed species; and dens, burrows, and locations of listed plant populations will be flagged for avoidance. For dens and burrows of San Joaquin kit foxes and giant kangaroo rats, and listed plant populations within 500 feet of the construction area, avoidance zones will be delineated using wooden or metal stakes connected by flagging or by other fencing approved by the CEC. Known kit fox dens will be protected by fencing, not flagging. The CEC has required that each avoidance zone have the following distance measured outward from the den or burrow entrances, or the edge of the plant population:

- 50 feet for currently unoccupied potential earthen and atypical non-natal dens for kit foxes;
- 100 feet for currently unoccupied earthen and atypical non-natal dens known to be previously used by kit foxes;
- 1000 feet for currently unoccupied natal dens for kit foxes during December through July (500 feet during the remainder of the year);
- 500 feet for earthen and atypical non-natal dens suspected or known to be currently occupied by kit foxes;
- For natal dens suspected or known to be currently occupied by kit foxes, contact the Service;
- 50 feet for currently unoccupied burrows known to be previously used Tipton kangaroo rats, giant kangaroo rats, or leopard lizards;
- 100 feet for burrows known or suspected to be currently occupied by Tipton kangaroo rats, giant kangaroo rats, or leopard lizards;
- 50 feet from the outer edge of populations of Hoover's woolly-star (which appear to readily recolonize disturbed areas if nearby seed sources are available);

- 100 feet from the outer edge of populations of other federally listed or proposed plant species; and
- 1,000 feet from the outer edge of vernal pool complexes.

Avoidance zones will be maintained until all construction activities have been completed; after which they will be removed. If specified avoidance zones cannot be observed for any reason, the CEC will be contacted for guidance prior to ground disturbing activities on or near the subject den.

If dens, nests, or burrows are located outside of the construction area, but within the avoidance zone designated for the resource type (listed above), the boundary of the avoidance zone will be drawn to include all areas within the radius stated above, except those falling within the construction area. Dens or burrows falling within the avoidance area will not be excavated. After kit fox dens have been determined to be empty in accordance with the procedures outlined below, they will be covered with plywood that is firmly secured to prevent access by kit foxes. The covers will not be installed more than 14 days prior to the start of construction. The covers will remain in place for the duration of construction, after which time they will be removed.

If avoidance of any kit fox den within the project area is not practicable and the den may be unavoidably damaged or destroyed by project actions, the following procedure will be implemented. Prior to surface-distributing activities, any such potential kit fox den will be completely excavated and then backfilled and compacted to preclude later use by kit foxes during the construction period. Any kit foxes found inside a den will be allowed to escape unharmed before backfilling. Potential or known kit fox dens will not be excavated without prior permission from our agency. All excavations will be conducted by, or under the direct supervision of, a service-approved wildlife biologist with a current permit for kit foxes.

The CEC has required that the MSCC compensate for the destruction or disturbance of kit fox dens by preserving habitat in the Lokern Preserve at the following ratios: 1) preserve 0.1 acre of habitat in perpetuity for each potential den that is covered with plywood for more than 30 days; 2) preserve 0.3 acre of habitat in perpetuity for each potential den that is excavated; 3) preserve 0.5 acre of habitat in perpetuity for each known or suspected non-natal den that is disturbed; 4) preserve 1.0 acre of habitat in perpetuity for each known or suspected non-natal den that is excavated; 5) preserve 5.0 acres of habitat in perpetuity for each known or suspected natal den that is disturbed; and 6) preserve 10.0 acres of habitat in perpetuity for each known or suspected natal den that is excavated.

If avoidance of listed plant populations (in the case of annuals) is not feasible during temporary construction disturbances, MSCC will conserve topsoil to be re-spread in the

disturbed area as part of the reclamation effort. These efforts will be described in the reclamation plan prepared for the project.

Measure 5: Until such time as MSCC obtains appropriate authorization for take of the state-designated, Fully Protected leopard lizard by the Fish and Game Commission, the following take avoidance protocols apply in any areas that contain suitable habitat of the leopard lizard:

A qualified biologist will survey areas proposed for project disturbance that contain suitable habitat for the leopard lizard to determine the likelihood of its presence. Suitable habitat consists of non-native grasslands, valley saltbush scrub, and/or washes. If blunt-nosed leopard lizards are found to occur in areas proposed for project disturbance, consideration of avoidance will take place first. If avoidance is not practicable, then the blunt-nosed leopard lizards will be trapped and relocated prior to the disturbance by qualified persons having all appropriate permits and according to a pre-approved management plan. The expense for trapping and relocation shall be born by MSCC.

Two other species that may be found in the project area are also state-designated Fully Protected species: American peregrine falcon and white-tailed kite. The likelihood of the take of these species from project construction or operation is negligible, due to their mobility and preferred habitats. However, to avoid take of these species, the same take-avoidance protocol as set out for the leopard lizard will apply to each of these two species.

Measure 6: Construction area boundaries around the project site will be clearly delineated by stakes, flagging, and/or rope or cord to minimize inadvertent degradation or loss of adjacent wildlife habitat during facility construction.

Measure 7: MSCC will post signs and/or place a fence around the power plant site and laydown area, to restrict access of vehicles and equipment unrelated to site operations.

Measure 8: MSCC will establish and issue traffic restraints and signs to minimize temporary disturbances. All project-related vehicle traffic will be restricted to established roads, designated access roads and routes, construction areas, storage areas, and staging and parking areas. Off-road traffic outside of designated project areas will be prohibited. Project-related vehicles will observe a 10-mph speed limit in areas with high populations of blunt-nosed leopard lizards and/or San Joaquin antelope squirrels. (Population levels will be based on pre-activity surveys, in consultation with CEC staff.) A 20-mph speed limit will be observed in all other project areas except on county roads and state and federal highways.

Measure 9: MSCC will designate a specific individual as a contact representative between MSCC, CEC, and our agencies to oversee compliance with the conservation

measures and terms and conditions included in this biological opinion. MSCC will provide written notification of the contact representative to the CEC and our agencies within 30 days of permit issuance. Written notification will also be provided by MSCC to the CEC during any future times that the designee is changed for any reason.

Measure 10: During construction activities, MSCC will provide a qualified wildlife biologist to monitor all activities that may result in incidental take of listed species or their habitat. The biologist will ensure that the required measures for the protection of listed species and their habitats are implemented. In areas with abundant sensitive plant species, such as the Lokern Plain between the California Aqueduct and the West Side Canal, a qualified botanist will monitor construction activities that occur during the growing, blooming, and seed-setting periods of the sensitive plants (typically January through July).

Measure 11: During construction, compliance inspections will be conducted once per week and an annual compliance report will be provided to the CEC, the Sacramento Fish and Wildlife Office and the CDFG Region 4 Office. Weekly reports will be maintained by MSCC for review by the CEC, CDFG, and our agencies upon request. The first weekly report shall be prepared within one week of the beginning of surface disturbing activities and subsequent reports shall be prepared for any week during which the monitoring biologist determines that monitoring is necessary for the protection of sensitive species.

Inspections will check for compliance with conservation measures and terms and conditions outlined in this biological opinion. The avoidance zones will be checked to ensure that the signs, stakes, and fencing are intact and that human activities have been restricted in these protected zones.

Measure 12: All equipment storage and parking during site development and operation will be confined to the designated construction area or to previously disturbed offsite areas that are not habitat for listed species. The traffic constraints described above in Measure 8 will also apply during construction.

Measure 13: Construction activities on transmission lines and pipelines will be limited to daylight hours.

Measure 14: To prevent entrapment of listed species or other animals during the construction phase of the project, all excavated, steep-walled holes or trenches more than 2 feet deep will either be covered at the close of each working day by plywood or provided with one or more escape ramps constructed of earth fill or wooden planks. The ramps will be located at no greater than 1,000-feet intervals and will be sloped less than 45 degrees. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If, at any time, an injured kit fox is discovered, the procedures in Measure 25 will be followed. In the case of trapped animals, escape ramps or structures

will be installed immediately to allow the animal(s) to escape, or the CEC will be contacted for advice.

Measure 15: In construction zones within 50 feet of a giant kangaroo rat burrow, open holes or trenches shall be fenced with 0.5 inch (or smaller) hardware cloth, aluminum or plastic flashing, or similar material approved by our agency and the CDFG. The fencing will be buried approximately 6 inches below ground level and have a height of at least 2 feet.

Measure 16: Trenches will be inspected for entrapped wildlife each morning prior to the onset of construction. Before such holes or trenches are filled, they will be thoroughly inspected for entrapped animals. Any animals so discovered will be allowed to escape voluntarily, without harassment, before construction activities resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded.

Measure 17: All construction pipes, poles, culverts, or similar structures with a diameter of 4 inches or greater stored at a construction site for one or more overnight periods will be thoroughly inspected for kit foxes before the subject pipe is subsequently buried, capped, or otherwise used or moved in any way. Unburied pipes laid in trenches overnight will be capped. If a kit fox is discovered inside a pipe, that section of pipe will not be moved until the CEC has been consulted. If necessary, and under the direct supervision of a qualified biologist, the pipe may be moved only once to remove it from the path of construction activity, until the animal has escaped.

Measure 18: Within 45 calendar days of completion of the project, MSCC will submit to our agencies, the CEC, and the CDFG a brief post–construction compliance report that includes the following information: 1) dates that project construction occurred; 2) pertinent data concerning MSCC success in meeting project mitigation measures, and an explanation of failure to meet such measures, if any; 3) known occurrences of incidental take effects on listed species habitat, including the specific number of habitat acres disturbed and the specific number of giant kangaroo rat and kit fox dens and burrows destroyed, if any; and 4) any other pertinent information.

Measure 19: Upon completion of construction, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads installed by the project, pipeline corridors, and pulling areas, will be recontoured if necessary and allowed to revegetate. If topsoil from the area has been salvaged, the topsoil will be spread after recontouring.

An inspection to check for compliance with the reclamation plan will be conducted within 30 days of completion of reclamation and annually for 3 years thereafter. Within 45 days of completion of the first inspection, MSCC will submit to our agencies, the CEC, and the CDFG a brief post-reclamation compliance report that includes a description of the

reclamation activities and when they were conducted. Within 45 days of subsequent surveys, MSCC will submit to our agencies, the CEC, and the CDFG a report that describes the general condition of the vegetation and soil in the reclaimed areas.

Measure 20: Streambeds disturbed during construction will be recontoured so that drainage patterns are not changed from pre–construction conditions.

Measure 21: All food–related trash items such as wrappers, cans, bottles, and food scraps generated both during construction and subsequent facility operation will be disposed of in closed containers and removed at least once a week from the site. Deliberate feeding of wildlife is prohibited.

Measure 22: Except for those carried by security personnel, no firearms will be allowed on the project site.

Measure 23: To prevent harassment, mortality, or destruction of kit fox dens or predation on wildlife by domestic dogs and cats, no pets will be permitted on the project site.

Measure 24: Use of rodenticides and herbicides in project areas will be minimized. This is necessary to prevent primary or secondary poisoning of endangered species using adjacent habitats, and to avoid the depletion of prey upon which they depend. All uses will observe label and other restrictions imposed by the US Environmental Protection Agency, the California Department of Food and Agriculture, and other state and federal legislation, as well as the additional project–related restrictions deemed necessary by the CEC. If rodent control must be conducted, zinc phosphide will be used because of its proven lower risk to kit foxes.

Measure 25: Any employee who inadvertently kills or injures a kit fox, San Joaquin antelope squirrel, giant kangaroo rat, or leopard lizard, or who finds any such animal either dead, injured, or entrapped will be required to report the incident immediately to MSCC's representative. In the case of entrapped listed animals, escape ramps or structures will be installed immediately if possible to allow the subject animal(s) to escape unimpeded.

In the case of injured animals, MSCC shall immediately notify the CDFG. During business hours Monday through Friday, the phone number is (209) 243–4017. For non–business hours, report to (800) 952–5400. Notification shall include the date, time, location, and circumstances of the incident. MSCC shall include the date, time, location, and circumstances of the incident. MSCC shall also follow the instructions of CDFG for the care of the injured animal.

In the case of dead animal(s) that are listed as threatened or endangered, MSCC shall immediately (within 24 hours) notify our agency and the CDFG by phone or in person and shall document the initial notification in writing within two working days of the finding of any such animal(s). Notification shall include the date, time, location, and circumstances of the incident.

Written notification will include the date, time, location, and circumstances of the incident. Any leopard lizard, giant kangaroo rat, Tipton Kangaroo rat, San Joaquin antelope squirrel, or kit fox found dead or injured will be delivered to the CDFG immediately for care, analysis, or disposition.

Measure 26: In areas of high concentration of nocturnal threatened and endangered species (i.e., Tipton kangaroo rats, giant kangaroo rats, and San Joaquin kit foxes) activities will be minimized during nighttime hours, when wildlife is most vulnerable to vehicular or equipment–induced injury or mortality. Except as required by worker safety requirements, night lighting will be hooded to direct illumination toward the project area and illumination will be as low as reasonable.

Measure 27: Following resolution of any emergency situation taking place in habitat occupied by listed species, MSCC will consult with the CEC regarding appropriate protection measures for listed species and their habitat that will be implemented during clean–up activities.

Measure 28: Construction site and/or ancillary facilities preparation (described as any ground disturbing activity other than CEC-approved geotechnical work) will not begin until a CEC-approved Designated Biologist is available to be on site. At least 90 days prior to the start of any ground disturbance activities, the Applicant will submit to the CEC for approval, the name, qualifications, address and telephone number of the individual selected by the Applicant as the Designated Biologist. If a Designated Biologist is replaced, the qualification information on the proposed replacement, as specified in the Final Staff Assessment, must be submitted in writing at least ten working days prior to the termination or release of the preceding Designated Biologist.

Measure 29: The Designated Biologist will perform the following activities during project construction and operation: 1) advise the Applicant's Construction Manager on the implementation of the Biological Resource Conditions of Certification; 2) supervise or conduct mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as wetlands and special status species; and 3) notify the Applicant and CEC of non-compliance with any Biological Resources Condition of Certification. During project construction, the Designated Biologist will maintain written records of the tasks described above, and summaries of these records will be submitted along with the

Monthly Compliance Reports to the CEC. During project operation, the Designated Biologist will submit record summaries in the Annual Compliance Report.

Measure 30: The Applicant's Construction Manager will act on the advice of the Designated Biologist to ensure conformance with the Biological Resources Conditions of Certification. The Applicant's Construction Manager will halt, if necessary, all construction activities in areas specifically identified by the Designated Biologist as sensitive to assure that potential significant biological resource impacts are avoided. The Designated Biologist will inform the Applicant and their Construction Manager when to resume construction, and advise the CEC if any corrective actions are needed or have been instituted.

Within two (2) working days of notification by the Designated Biologist that non-compliance with a Biological Resources Condition of Certification has occurred or construction has been halted, the Applicant will notify the CEC by telephone of the circumstances and actions being taken to resolve the problem or the non-compliance with a condition. For any necessary corrective action taken by the Applicant, a determination of success or failure will be made by the CEC within five (5) working days after receipt of notice that corrective action is completed, or the Applicant will be notified by the CEC that coordination with other agencies will require additional time before a determination can be made.

Measure 31: The project description and terms and conditions of this biological opinion and accompanying incidental take statement will be incorporated into the final BRMIMP and implemented during project construction and operation. At least 60 days prior to start of any project-related ground disturbance activities, the Applicant will provide the CEC with the final version of the BRMIMP, and the CEC will determine the plan's acceptability within 15 days of receipt of the final plan. All modifications to the approved BRMIMP must be made only after consultation with the CEC, CDFG and Service. The Applicant will notify the CEC at least five (5) working days before implementing any approved modifications to the BRMIMP.

Within 30 days after completion of project construction, the Applicant will provide to the CEC for review and approval, a written report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which mitigation and monitoring plan items are still outstanding.

Measure 32: Within 90 days after completion of project construction, the Applicant will provide post-construction aerial photographs and an analysis of the amount of temporary and permanent habitat disturbance to the CEC. The CEC will notify the project owner of any additional funds required to compensate for any additional habitat disturbances at the adjusted market value at the time of construction to acquire and manage habitat.

Measure 33: The Applicant will incorporate into the planned permanent or unexpected permanent closure plan measures that address the local biological resources, including the following: 1) removal of transmission conductors when they are no longer used and useful; 2) removal of all power plant site facilities; and 3) measures to restore wildlife habitat to promote the re-establishment of native plant and wildlife species. These closure measures will also be incorporated into the BRMIMP.

The planned permanent or unexpected permanent closure plan will require a discussion of the feasibility of the following biological resource-related mitigation measures:

Compensation for temporary and permanent effects to listed and proposed species: To minimize the effects of the proposed project to listed and proposed species in the action area, the Applicant has proposed to compensate for the destruction and disturbance of habitat using the following ratios: 1) preserve 4 acres of habitat in perpetuity for each acre of permanent disturbance to land that is already conserved (e.g., land owned by the Center for Natural Lands Management in the Lokern Natural Area); 2) preserve 3 acres of habitat in perpetuity for each acre of permanent disturbance in habitat; 3) preserve 1.5 acres of habitat in perpetuity for each acre of conserved land temporarily disturbed; and 4) preserve 1.1 acres of habitat in perpetuity for each acre of temporary disturbance of other habitat.

The permanent loss of habitat from this project is estimated to be approximately 10.2 acres. The amount of temporary disturbance is estimated to be approximately 62.25 acres. Hence, the Applicant anticipates preserving approximately 99.2 acres of habitat as compensation for the effects of the WMSCC project to federally listed and proposed species. The Applicant has agreed to provide no less than $148,800 (i.e., 99.2 multiplied by $1,500 per acre) to the Center for Natural Lands Management (CNLM) for the purchase and management in perpetuity of 99.2 acres of habitat in the immediate vicinity of CNLM's Lokern Preserve within the Lokern Natural Area of western Kern County. Brenda Pace, CNLM Administrative Director, (541/330-5533), has indicated that this funding is sufficient to cover the purchase of 99.2 acres for addition to the Lokern Preserve, administrative costs (including initial and capital costs), and the establishment of a suitable endowment for perpetual management of the habitat. The Applicant has agreed to provide these funds to the CNLM prior to the start of any project-related ground disturbance activity.

To account for inflation and other anticipated changes in land acquisition costs, the Applicant will consult the CNLM no less than 90 days prior to the start of any project-related ground disturbance, and CNLM will identify the final cost per acre and total compensation amount. Once the final habitat compensation amount has been determined and no less than 60 days prior to the start of any project-related ground disturbance activities, the Applicant will provide written verification to the CEC that all habitat compensation funds (including the endowment) have been provided to CNLM. The

Applicant has also agreed to provide additional habitat compensation funds if more habitat is disturbed during project construction than is anticipated in the Final Staff Assessment.

Status of the Species/Critical Habitat

The status' (i.e., distribution, abundance) of the kit fox, giant kangaroo rat, Tipton kangaroo rat, and leopard lizard have decreased since their listing, and these trends are reasonably certain to continue into the foreseeable future unless measures to protect, sustain, and restore suitable habitats, and alleviate other threats to their survival and recovery, are implemented. This finding is derived from the following supporting conclusions: 1) more than 95 percent of habitats within the historical ranges of these species have already been converted to vegetation types or land uses that are generally incompatible with their survival and recovery; 2) the destruction and fragmentation of habitat by agricultural, municipal, and industrial developments continues to be a primary threat to the survival and recovery of these species, and is reasonably certain to continue into the foreseeable future; 3) other threats to the survival and recovery of these species have not been alleviated; and 4) to date, conservation efforts for these species have not been successful at reversing the decreasing trends in their status, and their conservation needs have not been met.

The status' of Hoover's woolly-star, Kern mallow, and San Joaquin woolly-threads are reasonably certain to decrease in the foreseeable future unless measures to protect, sustain, and restore suitable habitats, and alleviate other threats to their survival and recovery, are implemented. This finding is derived from the following supporting conclusions: 1) remaining populations are small, isolated, and susceptible to local extirpation; 2) the destruction and fragmentation of habitat by agricultural, municipal, and industrial developments continues to be a primary threat to the survival and recovery of these species, and is reasonably certain to continue into the foreseeable future; 3) other threats to the survival and recovery of these species have not been alleviated; and 4) to date, conservation efforts for these species have not been successful at reversing the decreasing trends in their status, and their conservation needs have not been met.

The status' of the Aleutian Canada goose and bald eagle have improved sufficiently since their listing that we proposed to remove them from the list of endangered and threatened wildlife. This finding is derived from the following supporting conclusions: 1) conservation efforts for these species have been successful at reversing the decreasing trends in their status, and their conservation needs have been met; 2) current data indicate that abundance, distribution, and population growth in these species is sufficient to maintain recovery; and 3) threats to the survival and recovery of these species have been reduced or eliminated.

The status of the California condor has decreased since its listing, and this species remains at high risk of extinction. This finding is derived from the following supporting conclusions: 1) a self-sustaining population of California condors no longer exists, and captive-bred, released birds have not bred in the wild; 2) threats to the survival and recovery of this species have not been reduced or eliminated; and 3) to date, conservation efforts for this species have not been successful at reversing the decreasing trend in its status, and its conservation needs have not been met.

The status of the mountain plover has decreased continuously since 1966, and this trend is reasonably certain to continue into the foreseeable future unless measures to protect, sustain, and restore suitable habitats, and alleviate other threats to its survival and recovery, are implemented. This finding is derived from the following supporting conclusions: 1) between 1966 and 1991, the continental population of the mountain plover decreased an estimated 63 percent, primarily due to the conversion of breeding and wintering habitat to cultivated agriculture and urban uses; 2) the destruction and fragmentation of habitat by agricultural, municipal, and industrial developments continues to be a primary threat to the survival and recovery of these species, and is reasonably certain to continue into the foreseeable future; 3) other threats to the survival and recovery of these species have not been alleviated; and 4) to date, conservation efforts for this species have not been successful at reversing the decreasing trend in its status, and its conservation needs have not been met.

Evidence supporting these findings is summarized in the following species-specific sections. Unless otherwise noted, the information was obtained from the *Recovery Plan for Upland Species of the San Joaquin Valley, California* (Service 1998) and references cited therein.

San Joaquin kit fox: The kit fox was federally listed as endangered on March 11, 1967 (32 *Federal Register* 4001). The principal reason for this action was the extensive loss and fragmentation of their habitats by agricultural, industrial, and urban developments in the Central Valley and adjacent foothills. Critical habitat was not designated for this subspecies. Information regarding the description, taxonomy, life history, habitat requirements, behavior, and population demographics of this subspecies is provided in the *Recovery Plan*.

Historically, kit foxes occurred throughout California's Central Valley and adjacent foothills. Extensive conversions of their habitat to agricultural, industrial, and residential uses began in the mid-1800s and by the 1930s their range had been reduced to the southern and western parts of the San Joaquin Valley. Approximately one-half of the natural communities in the San Joaquin Valley were tilled or developed by 1958. This rate of loss accelerated following the completion of the Central Valley Project and State Water Project, which diverted and imported new water supplies for irrigated agriculture. Approximately 1.97 million acres of habitat, or about 66,000 acres per year, were

converted in the San Joaquin region between 1950 and 1980 (California Department of Forestry and Fire Protection 1988), and only approximately 370,000 acres out of a total of approximately 8.5 million acres on the San Joaquin Valley floor remained as non-developed land by 1979. During 1990 to 1996, a gross total of approximately 71,500 acres of habitat were converted to farmland, and 101,700 acres were converted to urban land use, within the Conservation Program Focus area of the Central Valley Project. Because these assessments included a substantial portion of the Central Valley and adjacent foothills, they provide the best scientific and commercial information currently available regarding the patterns and trends of land conversion within the kit fox's geographic range.

Land conversions contribute to decreases in kit fox abundance through direct and indirect mortalities, displacement, reduction of prey populations and denning sites, changes in the distribution and abundance of larger canids that compete with kit foxes for resources, and reductions in carrying capacity. Even moderate destruction and fragmentation of habitat may significantly impact the abundance and distribution of kit foxes by lowering the carrying capacity of the remaining habitat for both foxes and their prey species (Spiegel 1996, Warrick and Cypher 1998), imposing barriers that impede movements and increase the likelihood of mortality or injury, and/or contributing to the expansion of competitors and predators (e.g., coyotes (*Canis latrans*), red foxes (*Vulpes vulpes*)) into areas inhabited by kit foxes. Extensive destruction and fragmentation of habitat also contribute to smaller, more-isolated populations of kit foxes. Small populations have a higher probability of extinction than larger populations because their low abundance renders them susceptible to stochastic (i.e., random) events such as high variability in age and sex ratios, and catastrophes such as floods, droughts, or disease epidemics (Lande 1988). Similarly, isolated populations are more susceptible to extirpation by accidental or natural catastrophes because their recolonization has been hampered. Furthermore, the destruction and fragmentation of habitat could eventually lead to reduced genetic variation in populations of kit foxes that are small and geographically isolated. An increase in inbreeding and the loss of genetic variation could increase the extinction risk for small, isolated populations of kit foxes by interacting with demography to reduce fecundity, juvenile survival, and life span (Frankham and Ralls 1998, Saccheri et al. 1998).

As the human population of central California increases, and more land is converted to municipal and industrial uses, the amount and quality of habitat suitable for kit foxes will inevitably decrease. It has been estimated that between 12,000 and 50,000 acres of land are converted from agricultural use to urban use per year in the Central Valley; a number that is expected to increase in the future (Sokolow 1997). In fact, conversion of agricultural land to urban use between 1995 and 2040 has been predicted to exceed 1,000,000 acres (Thompson et al. 1995), and the Program Environmental Impact Statement for the Central Valley Project Improvement Act forecasts that municipal and industrial land uses in the Central Valley will increase 50 percent in the next 30 years

(Bureau of Reclamation 1997). The new infrastructure and increased reserve capacity necessary for this continued population growth and development within the Central Valley is currently being provided, as evidenced by the recent water contract renewals for Bureau of Reclamation's Friant District and Interim Water Contracts (Biological Opinion for the Interim Water Contract Renewal, Ref. No. 1-1-00-F-0056, February 29, 2000) and the proliferation of electrical generation facilities in the southern part of the San Joaquin Valley (Sunrise Cogeneration and Power Project Biological Assessment, June 23, 1999). The reliable delivery of water and electricity contributes a substantial incentive for the continuing, rapid conversion of habitat throughout the Valley, which will inevitably reduce habitat for kit foxes both within and outside the service areas. There are no limiting factors or regulations that are likely to retard this development or force it to other areas which are already served. Hence, it is reasonably certain that development will continue to destroy and fragment habitat for kit foxes into the foreseeable future.

Other threats that limit and/or regulate populations of kit foxes include competitive interactions with other canids, disease, pesticides and rodenticides, section 9 violations and noncompliance with the terms and conditions of existing biological opinions, and the risk of chance extinction owing to small population size, isolation, and high natural fluctuations in abundance. Coyote-related injuries accounted for 50-87 percent of the mortalities of radiocollared kit foxes at Camp Roberts, the Carrizo Plain Natural Area, the Lokern Natural Area, and the Naval Petroleum Reserves, and there is evidence that these mortalities may dampen or prevent population growth of foxes, and/or accentuate, hasten, or prolong population decreases (White and Garrott 1997, 1999). Two documented deaths of kit foxes due to non-native red foxes have been reported, and red foxes appear to be displacing kit foxes in the northwestern portion of their range. Although wildlife diseases do not appear to be a primary mortality factor that consistently limits kit fox populations throughout their range, there are some indications that rabies virus may have contributed to a catastrophic decrease in kit fox abundance at Camp Roberts, San Luis Obispo County, California, during the early 1990s (White et al. 2000). Also, pesticides and rodenticides pose a significant threat to the kit fox, as evidenced by the death of 2 kit foxes at Camp Roberts in 1992 owing to secondary poisoning from chlorophacinone applied as a rodenticide. The intentional or unintentional destruction of areas occupied by kit foxes is an issue of serious concern because there are numerous examples of section 9 violations and noncompliance with the terms and conditions of existing biological opinions. For example, the Bureau of Reclamation has not effectively implemented terms and conditions accompanying incidental take statements for their water contract renewals that require them to ensure landowners obtain clearance pursuant to the ESA, prior to being eligible for the delivery of Federal water that may contribute, at least in part, to the conversion of lands supporting habitat for listed species (e.g., see Term and Condition #1 in the Biological Opinion for the Friant Division Water Contract Renewals, Ref. No. 1-1-91-F-22, October 15, 1991, page 41). As a result, the Service has identified at least 9,820 acres of habitat on 16 sites in Fresno, Kern, Madera, Merced, and Tulare Counties that were destroyed during unpermitted conversions between 1997

and 1999 (Biological Opinion for the Interim Water Contract Renewal, Ref. No. 1-1-00-F-0056, February 29, 2000). In other words, these mandatory terms and conditions, which were implemented to minimize the incidental take of listed species during these Federal actions, have been ineffective. Lastly, extensive habitat fragmentation will result in geographic isolation, smaller population sizes, and reduced genetic exchange among populations of kit foxes. Populations of kit foxes are extremely susceptible to the risks associated with small population size and isolation because they are characterized by marked instability in population density. Periods of prey scarcity owing to drought or excessive rain events can contribute to population crashes and marked instability in the abundance and distribution of kit foxes because their reproductive and neonatal survival rates are strongly depressed at low prey densities (White and Garrott 1997, 1999). Hence, unpredictable, short-term fluctuations in precipitation and, in turn, prey abundance can generate frequent, rapid decreases in kit fox density that increase the extinction risk for small, isolated populations.

A goal of the *Recovery Plan* for the kit fox is to establish a viable complex of populations (i.e., a viable metapopulation) on private and public lands throughout its geographic range. The viability of the envisioned metapopulation hinges on the protection and management of 3 core populations, 9 satellite populations, and intervening linkage areas that encompass as much of the environmental and geographic variation of the historic geographic range as possible. The 3 core populations are proposed to established and/or protected in the Carrizo Plain Natural Area, western Kern County, and the Ciervo-Panoche area. Satellite populations and intervening linkages are proposed to be established and/or protected in the northern range and Valley edges (Alameda, Contra Costa, San Joaquin, and Stanislaus counties), northern Valley floor (Merced and Madera counties), central Valley floor (Fresno County), west-central Valley edge (Fresno and Kings counties), southeast Valley floor (Tulare and Kern counties), Kettleman Hills (Fresno, Kings, and Kern counties), southwestern Valley floor (Kern County), Salinas-Pajaro Rivers watershed (Monterey, Santa Benito, and San Luis Obispo counties), and upper Cuyama Valley (Santa Barbara and San Luis Obispo counties). These areas must be secured and protected from uses that are incompatible with the conservation of the kit fox. The *Recovery Plan* called for protecting at least 90 percent of the existing habitat in western Kern County and the Ciervo-Panoche areas, and 100 percent of the existing habitat in the Carrizo Plain Natural Area. Service-approved management plans that include the long-term survival of the kit fox as a primary objective must be implemented for each of these recovery areas. In order for our agency to delist the kit fox, the abundance of each core population, and at least 3 of the satellite populations, must be stable or increasing through one precipitation cycle, and there must be demonstrated population interchange between one or more core populations and the satellite populations.

To date, this goal of the *Recovery Plan* has not been met, and none of the current threats to the survival and recovery of the kit fox have been alleviated through conservation

efforts. More than one million acres of suitable habitat for kit foxes have been converted to agricultural, municipal, or industrial uses since the listing of the kit fox. In contrast, less than 500,000 acres have been preserved and/or are subject to community-level conservation efforts designed, at least in part, to further the conservation of the kit fox. Furthermore, the unpermitted conversion of habitat in the San Joaquin Valley has continued at a rate of more than 9,800 acres per year. Both the Carrizo Plain and western Kern County populations have undergone population decreases during the past few decades (Cypher and Scrivner 1992; Cypher and Spencer 1998, White and Ralls 1993), while some of the smaller satellite populations (e.g., Camp Roberts, Fort Hunter-Liggett) have decreased to such low abundances (i.e., less than 10 known foxes) that local extinction is possible.

In summary, the kit fox is already at a point where its survival and recovery are tenuous and cannot be ensured in the long-term owing to the magnitude of historical habitat losses, an expanding agricultural base, and increasing municipal and industrial development. Hence, any future, unmitigated land conversions that contribute to a net loss of habitat, or result in the removal of native habitat, can reasonably be expected to reduce the likelihood of both the survival and recovery of the kit fox. Given that there is no regulation of agricultural conversion under Federal or State law, and that water purveyors do not acknowledge the causal relationship between the provision of water and land conversion, most of the current and future impacts to habitat for kit foxes will likely be unmitigated. This continuing, unmitigated loss of habitat for kit foxes will preclude recovery options, result in decreased abundance, and possibly lead to the local extinction of isolated or remnant populations (i.e., decreased distribution). Hence, the status of kit fox, which has been decreasing since its listing, is expected to continue in a downward trend unless measures to protect, restore, and sustain remaining habitats, and the ecosystem processes upon which they depend, are immediately implemented.

Giant kangaroo rat: The giant kangaroo rat was federally listed as endangered on January 5, 1987 (52 *Federal Register* 283). The principal reason for this action was the extensive loss and fragmentation of their habitats by agricultural, industrial, and urban developments in the Central Valley and adjacent foothills. Critical habitat was not designated for this species. Information regarding the description, taxonomy, life history, habitat requirements, behavior, and population demographics of this species is provided in the *Recovery Plan.*

The historical distribution of giant kangaroo rats encompassed the following areas: 1) a narrow band of gently sloping ground along the western edge of the San Joaquin Valley from the base of the Tehachapi Mountains in the south to southern Merced County in the north, 2) the Carrizo Plain, Elkhorn Plain, and San Juan Creek watershed along the western boundary of the southern San Joaquin Valley, 3) the upper Cuyama Valley next to and nearly contiguous with the Carrizo Plain, and 4) scattered colonies on steeper

slopes and ridge tops in the Ciervo, Kettleman, Panoche, and Tumey Hills, and in the Panoche Valley.

As recently as the 1940s, colonies of giant kangaroo rats occupied hundreds of thousands of acres of continuous habitat within this range. However, completion of the San Luis Unit of the Central Valley Project and the California Aqueduct of the State Water Project resulted in rapid cultivation and irrigation of natural communities that had provided habitat for giant kangaroo rats along the west side of the San Joaquin Valley. Between about 1970 and 1979, almost all the natural communities on the western floor and gentle western slopes of the Tulare Basin were developed for irrigated agriculture, restricting the distribution of the giant kangaroo rat. Less than 2 percent of the habitat within the historical range of the giant kangaroo rat remained when extant habitat was last estimated, and there has been a substantial net loss of habitat since that time.

Today, the distribution of giant kangaroo rats is fragmented into 6 major geographic units: 1) the Panoche region in western Fresno and eastern San Benito counties, 2) Kettleman Hills in Kings County, 3) San Juan Creek Valley in San Luis Obispo County, 4) western Kern County in the area of the Lokern, Elk Hills, and other uplands around McKittrick, Taft, and Maricopa, 5) Carrizo Plain Natural Area in eastern San Luis Obispo County, and 6) Cuyama Valley in Santa Barbara and San Luis Obispo counties. These major geographic units are further fragmented into more than 100 smaller populations, many of which are isolated by barriers such as unsuitable terrain or vegetation (including agriculture) and industrial or urban development. In 1992, only approximately 27,540 acres of habitat remained for this species.

As discussed above for the kit fox, land conversions contribute to decreases in the abundance of giant kangaroo rats through direct and indirect mortalities, displacement, reduction of food sources and burrow sites, and reductions in carrying capacity. Extensive destruction and fragmentation of habitat also contributes to smaller, more-isolated populations of giant kangaroo rats that are more-susceptible to extinction during random, catastrophic events such as floods, droughts, or prolonged rainfall.

Habitat destruction and fragmentation associated with urban, agricultural, and petroleum development, mineral extraction, roads and highways, and energy and communications infrastructures collectively have reduced habitat for giant kangaroo rats and contributed to their decreasing status; especially along the western edge of the San Joaquin Valley between Coalinga and Maricopa. Although the conversion of habitat for giant kangaroo rats has slowed substantially in recent years because most tillable land has already been cultivated and water is often unavailable for additional irrigation, land conversion will continue to destroy and fragment habitat for kangaroo rats into the foreseeable future.

Other threats that have contributed to the decrease in status of giant kangaroo rats include pesticides and rodenticides, section 9 violations and noncompliance with the

terms and conditions of existing biological opinions, and the risk of chance extinction owing to small population size, isolation, and high natural fluctuations in abundance. The widespread use of rodenticides and rodenticide-treated grain to control ground squirrels and kangaroo rats may also have contributed to the decrease of giant kangaroo rats in some areas. During the 1960s to the 1980s, rodenticides such as compound 1080 were often broadcast over broad areas by airplane. Today, there are large areas in Kings, Kern, and Fresno counties that show characteristic features of giant kangaroo rat precincts, but are unoccupied by kangaroo rats. Populations in these areas may have been eliminated by use of rodenticides.

Populations of giant kangaroo rats are characterized by marked instability in population size; with density often varying 5-fold or more from year to year. High frequency fluctuations in abundance appear to be intrinsic to many populations of kangaroo rats owing to the unpredictable weather of the desert systems they inhabit. The arid regions of California are subjected to considerable environmental variation; particularly in year-to-year precipitation that occurs primarily as winter rains. During droughts, plant production is poor and rodents that subsist on seeds and vegetation often reproduce poorly or not at all once their seed caches are exhausted. Hence, their numbers may decrease substantially. Unusually high precipitation may also contribute to catastrophic decreases in rodent populations, although the causal mechanism(s) have not been identified. These rapid decreases in abundance render small populations even more susceptible to chance extinctions. As a result, random catastrophic events may currently pose the greatest risk to the long-term survival of the species.

A goal of the *Recovery Plan* for the giant kangaroo rat is to protect and appropriately manage the 3 largest remaining populations (i.e., western Kern County, Carrizo Plain Natural Area, and the Panoche Region), and populations in the Kettleman Hills, San Juan Creek Valley and Cuyama Valley. Of highest priority for habitat protection is proper land use and management on publicly-owned and conservation lands in the Carrizo Plain Natural Area, Naval Petroleum Reserves, Lokern Natural Area, and Ciervo-Panoche Natural Area. Second in priority for habitat protection is the preservation of additional land supporting key populations; especially land in the Lokern area of western Kern County. The *Recovery Plan* also calls for a long-term program to evaluate population responses to random catastrophic events and differing land uses.

To date, the goals of the *Recovery Plan* have not been met, and none of the current threats to the survival and recovery of the giant kangaroo rat have been alleviated through conservation efforts. Although substantial habitat for giant kangaroo rats is now in public ownership (e.g., Carrizo Plain Natural Area, Lokern Natural Area, Ciervo-Panoche Natural Area), recovering populations of giant kangaroo rats require additional habitat protection. Habitat for 3 of the 6 regional populations (i.e., Cuyama Valley, Kettleman Hills, San Juan Creek Valley) of giant kangaroo rats include no public or conservation lands. Each of these populations is small and vulnerable to extinction from

demographic and random catastrophic events, and inappropriate land uses that would degrade or destroy habitat. Also, the sale of Naval Petroleum Reserve #1 in Elk Hills to private interests could represent a threat to one of the 3 largest regional populations of kangaroo rats if rates of exploration and production are increased. Although substantial progress in understanding the current distribution, habitat associations, and population demographics of giant kangaroo rats, there are currently no funds obligated to carry out research or monitoring programs in the future.

Tipton kangaroo rat: The Tipton kangaroo rat was federally listed as endangered on August 8, 1988 (53 *Federal Register* 25608). The principal reason for this action was the extensive loss and fragmentation of their habitats by agricultural, industrial, and urban developments in the Central Valley and adjacent foothills. Critical habitat was not designated for this species. Information regarding the description, taxonomy, life history, habitat requirements, behavior, and population demographics of this subspecies is provided in the *Recovery Plan.*

The historical range of the Tipton kangaroo rat encompassed more than 1.7 million acres in the Tulare Lake Basin of the southern San Joaquin Valley, extending from Tulare Lake in the north to the foothills of the Tehachapi Mountains in the south. By 1985, however the area inhabited by Tipton kangaroo rats had been reduced to approximately 63,000 acres; primarily by cultivation and urbanization. The construction of dams and canals, which made a dependable supply of water available and allowed the cultivation of the alkaline soils of saltbush, valley sink scrub, and relictual dune communities facilitated the decrease in abundance and distribution of the Tipton kangaroo rat. Since 1985, Tipton kangaroo rats have reinhabited several hundred to a few thousand acres retired from crop production because of drainage problems or lack of water. Unfortunately, these gains have been offset by the loss of a similar acreage of habitat to development. Hence, the current acreage of occupied habitat is probably not much different from the 1985 estimate. Less than 4 percent of the habitat for Tipton kangaroo rats remains and, currently, this subspecies is limited to scattered, isolated areas in Tulare County (e.g., west of Tipton, Pixley, and Earlimart; Pixley National Wildlife Refuge; Allensworth Ecological Reserve; Allensworth State Historical Park) and Kern County (e.g., southeast of Bakersfield, Kern National Wildlife Refuge, Coles Levee Ecosystem Preserve).

Habitat destruction and fragmentation associated with agriculture and urban, industrial, and petroleum development have reduced habitat for Tipton kangaroo rats, and continue to contribute to their decreasing status. Nearly every parcel of land in private ownership that is currently inhabited by Tipton kangaroo rats is surrounded by cultivated fields or urbanized land where these animals cannot live. Also, more than half of this remaining habitat is subject to winter flooding owing to high water tables. As a result, individuals may be drowned or captured by predators after being forced from their burrows during floods. Furthermore, several parcels with extant natural lands in the 1970s now have private evaporation ponds into which salt-laden, agricultural drain waters are being

diverted. Unless other solutions are found for agricultural drainage problems, more habitat for Tipton kangaroo rats probably will be lost to this purpose.

Other threats that have contributed to the decrease in status of Tipton kangaroo rats include pesticides and rodenticides, the formation of heavy thatch by exotic grasses, competition with Heermann's kangaroo rats, and the risk of chance extinction owing to small population size, isolation, and high natural fluctuations in abundance. The use of rodenticides to control California ground squirrels (*Spermophilus beecheyi*) probably contributed to the decrease or extirpation of small populations of Tipton kangaroo rats that were isolated and surrounded by agricultural land. Populations of Tipton kangaroo rats are characterized by marked instability in population size, with periodic irruptions to high levels, rapid decreases, and occasional local extinctions. For example, a population of Tipton kangaroo rats at Pixley National Wildlife Refuge decreased 99 percent (from 88.2 rats per hectare to 1.1 rat per hectare) during January 1993 to April 1995 in response to above average precipitation. This high rainfall apparently caused the deaths of kangaroo rats from water penetrating burrows and drowning occupants, spoiling seed stores, hypothermia, or pneumonia-like diseases that afflict these animals when they are placed in a cool, moist environment. When large expanses of connected habitat existed, local extinction was not a great problem because some surviving populations eventually irrupted and individuals recolonized areas where they had been eliminated. Given the small, fragmented populations that remain for this subspecies, however, precipitous population decreases owing to random catastrophic events currently pose a high threat to their long-term survival.

Compounding this pattern of high-amplitude, high-frequency population dynamics is competition with Heermann's kangaroo rats, which are much larger in body size, more general in their habitat requirements, and more successful in maintaining populations in fragmented landscapes than Tipton kangaroo rats. Hence, during times when the environment is poorly suited to Tipton kangaroo rats, competition with Heerman's kangaroo rats may lead to local extirpation of the former. Furthermore, following periods of high rainfall, a heavy thatch of exotic grasses may develop in areas where there is little grazing by native ungulates or livestock. Because kangaroo rats are adapted for habitats with low, sparse vegetation, their usual defenses of speed and alertness may be hampered when vegetation is high and dense. As a result, more animals may be taken by predators and their survival and persistence may be threatened.

A goal of the *Recovery Plan* for the Tipton kangaroo rat is to consolidate, protect, and manage blocks of suitable habitat to minimize the effects of random catastrophic events and competition with Heerman's kangaroo rats on their populations. To contribute to this goal, the *Recovery Plan* calls for protecting additional natural land and restoring contiguous agricultural land in the Kern Fan area, the Pixley National Wildlife Refuge-Allensworth Natural Area, and the Kern National Wildlife Refuge-Semitropic Ridge area. Blocks of habitat should be several thousand acres in size, with a core of at least 5,000

acres of "high quality" habitat that is not subject to periodic flooding. The vegetation should be actively managed by an appropriate level of livestock grazing to prevent excessive accumulation of mulch and growing plants. Studies of competition between Tipton and Heermann's kangaroo rats, and range-wide monitoring programs to measure population and environmental fluctuations at sites representative of the range of natural land sizes and habitat conditions, are also recommended. To date, the goals of the *Recovery Plan* have not been met, and none of the current threats to the survival and recovery of the Tipton kangaroo rat have been alleviated through conservation efforts.

Blunt-nosed leopard lizard: The leopard lizard was federally listed as endangered on March 11, 1967 (32 *Federal Register* 4001). The principal reason for this action was the extensive loss and fragmentation of their habitats by agricultural, industrial (including petroleum), and urban developments in the San Joaquin Valley and adjacent foothills. Critical habitat was not designated for this species. Information regarding the description, taxonomy, life history, habitat requirements, behavior, and population demographics of this species is provided in the *Recovery Plan*.

The leopard lizard is endemic to the San Joaquin Valley of central California. Although the boundaries of its original distribution are uncertain, blunt-nosed leopard lizards probably occurred throughout the San Joaquin Valley and adjacent interior foothills and plains, extending from central Stanislaus County in the north, southward to the Tehachapi Mountains in Kern County. Their range also extends into the Carrizo Plain and Cuyama Valley west of the southwestern end of the San Joaquin Valley.

Less than 5 percent of the habitat within the historical range of the leopard lizard remained when the species was listed, and there has been a substantial net loss of habitat since that time. This dramatic loss of habitat was the result of cultivation, petroleum and mineral extraction, pesticide application, off-road vehicle use, and the construction of transportation, communications, and irrigation infrastructures. Currently, the leopard lizard is known to occupy scattered parcels of undeveloped land on the Valley floor and in the foothills of the Coast Range. In the southern portion of the Valley, extant populations are known to occur on the Pixley National Wildlife Refuge, Liberty Farms, Allensworth, Kern National Wildlife Refuge, Antelope Plain, Buttonwillow, Elk Hills, and Tupman Essential Habitat Areas, on the Carrizo and Elkhorn Plains, north of Bakersfield in the vicinity of Poso Creek, and in western Kern County in the vicinity of the towns of Maricopa, McKittrick, and Taft.

Habitat disturbance, destruction, and fragmentation from agricultural, industrial, and urban development continue as the greatest threat to populations of blunt-nosed leopard lizards. Other threats that have contributed to the decrease in status of blunt-nosed leopard lizards include livestock grazing, use of pesticides, and vehicle traffic and off-road vehicle use. Livestock grazing can result in removal of herbaceous vegetation and shrub cover, destruction of rodent burrows used by lizards for shelter, and associated soil

erosion if the stocking rate is too high or animals are left on the range too long after annual plants have died. The aerial application of pesticides (e.g., malathion) may reduce the availability of food for reproducing lizards in the spring, and later for hatchlings when they should be storing fat to sustain themselves during their first winter. Mortality of leopard lizards is known to occur as a result of regular automobile traffic and off-road vehicle use. Little information is available regarding the relative effect of this cause of mortality on population dynamics. However, roads typically surround and often bisect remaining fragments of habitat, thereby increasing the risks of mortality by vehicles and strengthening the population effects of isolation.

Goals of the *Recovery Plan* for the leopard lizard include protecting additional habitat for them in key portions of their range, conducting a range-wide population survey to determine current distribution, population sizes, and habitat conditions, determining appropriate habitat management and compatible land uses, and gathering data on population responses to environmental variation at representative sites in its extant geographic range. Because several important populations are isolated on fragmented, undeveloped lands on the Valley floor and along its southern and western perimeter, the *Recovery Plan* also calls for determining viable population size, genetic variation, and methods to enhance dispersal and restore habitat on retired farmlands.

To date, the goals of the *Recovery Plan* have not been met, and none of the current threats to the survival and recovery of the leopard lizard have been alleviated through conservation efforts. Although substantial habitat is in public ownership or conservation programs, appropriate habitat management prescriptions for these parcels mostly are unknown. Sufficient habitat has not been protected to ensure long-term survival and recovery, and no parcel is currently being specifically managed to optimize habitat conditions for this species. Also, although the leopard lizard has been listed as endangered for 30 years, there has never been a comprehensive survey of its entire historical range.

Hoover's woolly-star: Hoover's woolly-star was federally listed as threatened in July 19, 1990 (55 *Federal Register* 29361). The principal reason for this action was the loss and degradation of habitats in the San Joaquin Valley, primarily by farming operations and secondarily by urban development. Information regarding the description, taxonomy, life history, habitat requirements, pollinators, and population demographics of this species is provided in the *Recovery Plan*.

Prior to 1986, Hoover's woolly-star was known from 19 sites in 4 counties (Kern, Fresno, San Luis Obispo, and Santa Barbara). Since that time, this species has been discovered in Kings and San Benito counties, and at numerous additional sites in the four original counties; particularly in the foothill areas. Most of the occurrences are concentrated in 4 metapopulations: 1) the Kettleman Hills in Fresno and Kings counties, 2) Carrizo Plain - Elkhorn Plain - Temblor Range - Caliente Mountains - Cuyama Valley - Sierra Madre

Mountains in San Luis Obispo, Santa Barbara, and extreme western Kern counties, 3) Lokern - Elk Hills - Buena Vista Hills - Coles Levee - Taft - Maricopa in Kern County, and 4) Antelope Plain - Lost Hills - Semitropic in Kern County. Small isolated populations occur in other scattered areas in Fresno, Kern, and San Benito counties.

Habitat disturbance, destruction, and fragmentation from agricultural, industrial, and urban development is ongoing in Valley-floor areas, and continues to threaten the survival and recovery of Hoover's woolly-star. Remaining occurrences of this species occur primarily in hilly areas, many of which are affected by oil production and exploration. Other threats that have contributed to the decrease in status of Hoover's woolly-star include flooding and dense growth of associated vegetation. Flooding, as a result of high precipitation, groundwater recharge programs, agricultural wastewater diversion, or waterfowl management, can destroy populations in low-lying areas. Dense growth of associated vegetation, such as in areas where exotic grasses dominate or where fire has been suppressed, may create unsuitable conditions for growth of Hoover's woolly-star. Research at the former Naval Petroleum Reserves No. 1, Kern County, indicated that densities of Hoover's woolly-star are negatively correlated with total vegetation cover (Hinshaw et al. 1998).

The goal of the *Recovery Plan* for Hoover's woolly-star is to protect populations throughout the species' range that represent a variety of topographic positions and community types. The *Recovery Plan* states that recovery of Hoover's woolly-star can be accomplished using public lands and other areas already dedicated for conservation. Given that habitat conversion is ongoing in Valley floor areas, and that oil production and exploration could increase on public lands, however, the continued existence of these populations cannot be assumed unless a specific commitment is made to protect them from incompatible uses. Also, some amount of unoccupied, suitable habitat is important to allow for population fluctuations among years, and a buffer zone is important to minimize external influences. Hence, the *Recovery Plan* calls for protecting habitat blocks at least 40 acres in size, with an average density of 250 plants per acre.

To date, the goal of the *Recovery Plan* has not been met, and none of the current threats to the survival and recovery of Hoover's woolly-star have not been alleviated through conservation efforts. Several populations are protected at the Nature Conservancy's Paul Paine Preserve, CDFG's Alkali Sink Ecological Reserve, and within established private conservation banks. Also, some protection is afforded to known populations on Federal lands administered by your agency and U.S. Department of Energy. However, occurrences of Hoover's woolly-star in the vicinity of Buttonwillow, Lost Hills, Rosedale, and sites along Interstate Highway 5 are threatened by commercial development. Also, agricultural conversion continues to threaten several populations on the Valley floor. Furthermore, the acquisition of Elk Hills by Occidental Petroleum may lead to greater surface disturbance if rates of exploration and production are increased.

Kern mallow: Kern mallow was federally listed as endangered on July 19, 1990 (55 *Federal Register* 29361). The principal reason for this action was the loss and degradation of habitats in the Lokern area of the San Joaquin Valley, primarily via cultivation. Information regarding the description, taxonomy, life history, habitat requirements, pollinators, and population demographics of this species is provided in the *Recovery Plan.*

Kern mallow was first described as *Eremalche kernensis* (Wolf 1938). The most recent treatments (Bates 1992, 1993) assign Kern mallow the name *Eremalche parryi* (Greene) Greene ssp. *parryi.* However, Bates' (1992, 1993) treatment of Kern mallow, which includes both white- and purple-flowered gynodioecious plants, has not widely been accepted by the scientific community. Due to the debate within the scientific community over the newest treatment, we intend to undertake a status review to solicit available scientific information on which to base a determination of the appropriate taxonomic circumscription of Kern mallow. In the interim, we will continue to consider the listed entity to be *E. kernensis* C.B. Wolf, which was the circumscription used when Kern mallow was listed in 1990 (55 *Federal Register* 29361).

The Kern mallow has always had a highly-restricted distribution within valley saltbush scrub along the eastern base of the Temblor Range, occurring from the vicinity of McKittrick to near Buttonwillow. It occurs intermittently within an area of approximately 100 square kilometers of the Lokern, which is the local name for the area between Buttonwillow and McKittrick in western Kern County.

The loss and degradation of habitat in the Lokern area have been responsible for the decrease of Kern mallow. Construction of the California aqueduct impacted Kern mallow both directly, by destroying plants in its path, and indirectly, by providing water that allowed cultivation of cotton and alfalfa in the area of endemism. The western portion of the Lokern was developed for petroleum production, which eliminated Kern mallow from its type location. The installation of liquid waste disposal facilities and pipelines and transmission lines, as well as off-road vehicle use, have also degraded habitat for the Kern mallow. Habitat disturbance, destruction, and fragmentation from agricultural, industrial, and urban development continue as the greatest threat to this species.

Other threats that have contributed to the decrease in status of the Kern mallow include livestock grazing and use of pesticides. Paradoxically, both uncontrolled grazing and cessation of grazing have the potential to threaten the Kern mallow metapopulation. Sheep have grazed the Lokern area for decades and continue to graze on private lands during the growing season. Grazing reduces the number of stems and branches on Kern mallow plants, which in turn reduces the reproductive output. In addition, trampling is likely to lead to localized destruction of Kern mallow in bedding areas where sheep are concentrated. However, flower production and the survival rate of Kern mallow seedlings is reduced in areas that are dominated by exotics compared to sparsely-

vegetated sites. Hence, light to moderate grazing may benefit Kern mallow by reducing competition in areas that are dominated by aggressive exotics.

The application of malathion or other pesticides on lands in or adjacent to the Lokern could pose a threat to the long-term survival of Kern mallow by reducing pollinator populations. Malathion is sprayed periodically on natural lands in the San Joaquin Valley to control the beet leafhopper. Although current permit conditions for the California Department of Food and Agriculture prohibit malathion spraying within 1.6 kilometers of Kern mallow, research has not been conducted to verify that this buffer is adequate. If the abundance and distribution of pollinators was reduced, the Kern mallow metapopulation would likely experience reduced seed-set and a decrease in genetic variability.

The goal of the *Recovery Plan* for the Kern mallow is to protect 90 percent of the remaining occupied habitat in the Lokern area. Blocks of at least 160 acres, with buffer zones of 150 meters beyond the population margins, will be protected to avoid fragmenting the metapopulation into more than 2 blocks of contiguous, protected natural land, reduce external influences, allow for population expansion, and allow for movement of pollinators and seed dispersers. Another high-priority task in the *Recovery Plan* is to conduct research to identify pollinators and evaluate their vulnerability to pesticides that are used locally. Until this research is available, the *Recovery Plan* states that pollinator availability should be considered a limiting factor and pesticide spraying should be avoided in the Lokern area during the flowering period of the Kern mallow.

To date, the goals of the *Recovery Plan* have not been met, and none of the current threats to the survival and recovery of the Kern mallow have been alleviated through conservation efforts. Approximately 15 percent of the occupied Kern mallow habitat, primarily on the margins of the metapopulation, is owned by your agency and The Nature Conservancy. However, the remainder of Kern mallow habitat in the Lokern area is privately owned and vulnerable to development for many potential uses (Service 1998).

San Joaquin woolly-threads: San Joaquin woolly-threads was federally listed as endangered on July 19, 1990 (55 *Federal Register* 29361). The principal reason for this action was the loss and degradation of habitats in the San Joaquin and Cuyama Valleys, where the majority of the occurrences were eliminated by agricultural activities. Information regarding the description, taxonomy, life history, habitat requirements, pollinators, and population demographics of this species is provided in the *Recovery Plan*.

By 1989, 33 of the 52 known historical occurrences of San Joaquin woolly-threads had been eliminated. Today, occurrences constitute 4 metapopulations and several small, isolated populations. The largest metapopulation occurs on the Carrizo Plain Natural Area, where the occupied habitat totaled over 2,800 acres in 1993. Much smaller

metapopulations are found in Kern County near Lost Hills, in the Kettleman Hills of Fresno and Kings counties, and in the Jacalitos Hills of Fresno County. Isolated occurrences are known from the Panoche Hills in Fresno and San Benito counties, the Bakersfield vicinity, and the Cuyama Valley.

Habitat disturbance, destruction, and fragmentation from agricultural, industrial, and urban development continue as the greatest threat to populations of San Joaquin woolly-threads. Several occupied sites in and around Bakersfield were eliminated by urban development, and the Lost Hills metapopulation is on private land in an area of high value for commercial development and agriculture. Two sites between Lokern and Lost Hills apparently were destroyed as a result of intensive oilfield development. Several other occurrences in the Kettleman Hills, Jacalitos Hills, and west of Bakersfield are in low-density oil fields. These plants do not seem to be threatened by the current level of activity, but could be destroyed by more intensive use of the area.

Other threats that have contributed to the decrease in status of San Joaquin woolly-threads include gravel and sand extraction, livestock grazing, competition from exotic plants, and off-road vehicle use. Both competition from exotic plants and spring grazing may reduce the survival rates of this species. Trampling also reduces survival in areas where livestock congregate, such as around water troughs.

The goal of the *Recovery Plan* for San Joaquin woolly-threads is to maintain self-sustaining populations in protected areas representative of the former geographic and topographic range of the species and in a variety of appropriate natural communities. The top-priority task is to protect existing habitat for this species in the San Joaquin Valley. The plan states that unoccupied habitat within metapopulations should be protected to allow population fluctuation with rainfall and to facilitate seed dispersal. Hence, the *Recovery Plan* calls for protecting habitat blocks at least 160 acres in size, with an average density of 400 plants per acre. No metapopulation should be fragmented into more than 2 blocks of contiguous, protected land, and buffer zones of 150 meters or more should be protected beyond the population margins to reduce external influences and allow for population expansion.

To date, the goal of the *Recovery Plan* has not been met, and none of the current threats to the survival and recovery of San Joaquin woolly-threads have been alleviated through conservation efforts.

Aleutian Canada goose: The Aleutian Canada goose was federally listed as endangered on March 11, 1967 (32 *Federal Register* 4001), and reclassified as threatened on December 12, 1990 (55 *Federal Register* 51112). The principal reason for these actions was a decrease in abundance and distribution owing to the introduction of predators such as Arctic foxes (*Alopex lagopus*) and, to a lesser extent, red foxes to its breeding islands for the purpose of developing a fur industry. Hunting along the Pacific Flyway, and loss

and alteration of habitat on its migration and wintering range, also contributed to the subspecies' decrease. Information regarding the description, taxonomy, life history, habitat requirements, behavior, and population demographics of the Aleutian Canada goose is provided in the *Federal Register* (Volume 64, pages 42058-42068; August 3, 1999). Unless otherwise noted, the information in this section was obtained from that document and references cited therein.

The *Aleutian Canada Goose Recovery Plan* identified the following recovery objectives: 1) a minimum overall population of 7,500 individuals and a demonstrated upward trend in population numbers, 2) a minimum nesting population of 50 pairs in each of the 3 geographic parts of its historic range (i.e., western Aleutians (other than Buldir Island), central Aleutians, and Semidi Islands) for 3 or more consecutive years, and 3) protection and management of a total of 25,000-35,000 acres of feeding and roosting habitat needed for migration and wintering. The recovery plan allowed that failure to achieve the specific acreage target of migration and wintering habitat would not preclude delisting of the Aleutian Canada goose if otherwise warranted.

On August 3, 1999, we proposed to remove the Aleutian Canada goose from the list of endangered and threatened wildlife. Current data indicate that the population of Aleutian Canada goose in North America has recovered. This recovery has primarily been the result of four activities: 1) the removal of introduced Arctic foxes from some of its nesting islands, 2) the release of captive-reared and wild, translocated family groups of geese to fox-free islands to establish new breeding colonies, 3) protection of the Aleutian Canada goose throughout its range from mortality due to hunting, and 4) protection and management of migration and wintering habitat.

Since the Aleutian Canada goose was downlisted to threatened in 1990, annual population growth has averaged approximately 20 percent. The most recent estimate of the overall population is approximately 32,000 birds, which is more than 4-fold greater than the population objective for delisting. Contrary to our expectations, the delisting objective of 50 or more pairs of Aleutian Canada geese nesting in each of 3 geographic parts of the historic range has not been met. Aleutian Canada geese in the central Aleutians have not recovered despite protection of these birds on both the breeding and wintering grounds. Similarly, the segment of birds breeding in Semidi Islands has not increased in number, although it is not known how large this group of birds was historically. However, the population of Aleutian Canada geese nesting in the western Aleutians far exceeds the delisting objectives, with self-sustaining breeding populations established on 3 islands — Buldir, Agattu, and Alaid/Nizki. We believe that the explosive growth of this breeding segment is sufficient to reduce or eliminate threats to recovery.

We have not fully met the recovery objective of conserving and managing 25,000 to 35,000 acres of migration and wintering habitat. However, more than 8,000 acres of currently-used winter and migration habitat are secure, and we have an active acquisition

program in the Sacramento and San Joaquin Valleys. This total secure acreage does not include 33,108 acres of national wildlife refuge land and 67,000 acres of private land protected under perpetual conservation easements within the Grassland Ecological Area located approximately 40 miles south of the main use area for Aleutian Canada geese. We have documented recent use by Aleutian Canada geese in this area. Hence, we believe that sufficient progress is being made toward this objective to warrant delisting.

Bald eagle: The bald eagle was federally listed as endangered on February 14, 1978 (43 *Federal Register* 6233) in all of the coterminous United States except Minnesota, Wisconsin, Michigan, Oregon, and Washington, where it was classified as threatened. The principal reason for this action was plummeting abundance, recruitment, and distribution owing to widespread shooting for feathers and trophies, secondary poisoning from carrion treated with poisons, loss of nesting habitat from forest clearing and development, and, most importantly, the use of organochlorine compounds (e.g., DDT) whose breakdown products (e.g., DDE) impaired calcium release necessary for normal egg shell formation, resulting in thin shells and reproductive failure. On August 15, 1995, the bald eagle was down-listed to threatened throughout its range (60 *Federal Register* 36010). Critical habitat has not been designated for this species. Information regarding the description, taxonomy, life history, habitat requirements, behavior, and population demographics of the bald eagle is provided in the *Federal Register* (Volume 64, pages 36454-36464; July 6, 1999). Unless otherwise noted, the information in this section was obtained from that document and references cited therein.

The bald eagle is the only North American representative of the fish or sea eagles, and is endemic to North America. The breeding range of the bald eagle includes most of the continent, but they now nest mainly in Alaska, Canada, the Pacific Northwest States, the Great Lake States, Florida, and Chesapeake Bay. The winter range includes most of the breeding range, but primarily extends southward from southern Alaska and southern Canada.

On July 6, 1999, we proposed to remove the bald eagle from the list of endangered and threatened wildlife in the lower 48 States. We proposed this action because the available data indicate that this species has recovered. The recovery is due in part to habitat protection and management actions initiated under the ESA. It is also due to a reduction in levels of persistent organochlorine pesticides such as DDT occurring in the environment.

Since the development and implementation of regional recovery plans, the bald eagle's population growth has exceeded most of the goals established in the various plans. In 1994, our cooperators reported about 4,450 occupied breeding areas with an estimated average of 1.16 young per occupied territory. Compared to surveys conducted in 1974, the number of occupied breeding areas in 1994 in the lower 48 States had increased by 462 percent. Between 1990 and 1994, there was a 47 percent increase. We estimate that

the breeding population exceeded 5,748 occupied breeding areas in 1998. Hence, the bald eagle population has essentially doubled every 7 to 8 years during the past 30 years. Recovery has been broadly distributed throughout the bald eagle's range. In 1984, 13 States had no nesting pairs of bald eagles. By 1998, all but 2 of the lower 48 States supported nesting pairs. Also, reproduction has generally met or exceeded target values established by recovery teams nationally for the past 10 years. Because adult bald eagles are long-lived, a minimum of 0.7 young per occupied breeding area is necessary to maintain a stable population. With a national average of more than one fledgling per occupied breeding area since 1990, the eagle population continues to increase in overall size and maintain a healthy reproductive rate.

The delisting goals for the Pacific Recovery Region (i.e., California, Oregon, Washington, Idaho, Montana, Wyoming, and Nevada) included the following: 1) a minimum of 800 nesting pairs with an average reproductive rate of 1.0 fledged young per occupied breeding area, 2) an average success rate for occupied breeding areas of not less than 65 percent over a 5 year period, 3) attainment of breeding population goals in at least 80 percent of the management zones, and 4) stable or increasing winter populations. The numeric listing goals have been met since 1995. Productivity has averaged about 1.0 young per occupied breeding area since 1990. The average success rate for occupied breeding areas has exceeded 65 percent for the past 5 years. For 1998, 6 of the 7 Pacific-region States reported an average success rate of 75 percent. However, the plan goal for distribution among management zones is not yet fully achieved for all areas. The number of occupied breeding areas exceeded 800 in 1990 and has continued to increase. In 1998, 1,480 occupied breeding areas were estimated. Twenty-eight of 37 (76 percent) management zone targets have been met. The zone targets were based on a best estimate for each area at the time, and several management zones that still lack nesting bald eagles may not contain preferred habitat.

California condor: The California condor was federally listed as endangered on March 11, 1967 (32 *Federal Register* 4001). The principal reason for this action was the virtual extirpation of the species by poisoning, shooting, egg and specimen collecting, collisions with man-made structures, and loss of habitat. Critical habitat for the California condor was designated on September 24, 1976 (41 *Federal Register* 187), in Tulare, Kern, Los Angeles, Ventura, Santa Barbara, and San Luis Obispo Counties. Information regarding the description, taxonomy, life history, habitat requirements, behavior, and population demographics of this species is provided in the *Federal Register* (Volume 61, pages 54044 and 54045; January 2, 1996). Unless otherwise noted, the information in this section was obtained from that document and references cited therein.

During the Pleistocene era (10,000 to 100,000 years ago), the California condor ranged from British Columbia, Canada, to Baja California, Mexico, and through the southwest to Florida and north to New York State. With the extinction of the large Pleistocene Era mammals, condors decreased in abundance and distribution. Another large decrease

occurred when European settlers arrived on the West Coast, and accelerated during the gold rush of 1849. By 1940, the condors' range was reduced to a horseshoe-shaped area in southern California that included the coastal mountain ranges of San Luis Obispo, Santa Barbara and Ventura Counties; a portion of the Transverse Range in Kern and Los Angeles Counties; and the southern Sierra Nevada mountains in Tulare County. By 1982, only 21 California condors remained in the wild. Hence, all remaining individuals in the wild were captured and included in a captive breeding program designed to produce captive-reared condors for release to the wild. The release of captive-bred birds was initiated in 1992 and, to date, California condors raised in captivity have been reintroduced into Ventura County, western Monterey County, eastern San Luis Obispo County, and eastern Santa Barbara County in California, and near the Grand Canyon in Arizona.

The primary recovery objective in the *California Condor Recovery Plan* is to reclassify the species to threatened status. The minimum criterion for reclassification is the maintenance of at least 2 non-captive populations and one captive population. These populations must each number at least 150 individuals, contain at least 15 breeding pairs, be reproductively self sustaining, and exhibit positive population growth. The non-captive populations must be spatially disjunct, non-interacting, and contain individuals descended from each of the 14 founders.

To date, the goals of the recovery plan have not been met, and none of the current threats to the survival and recovery of the California condor have been alleviated through conservation efforts. As of August 1, 2000, the total population of California condors was 170 individuals, of which 116 were in captivity, 23 were pending release, and 31 were being closely monitored in the wild (30 birds in California and 1 bird in Arizona). Released birds have not bred in the wild (*Condor Stats*, CDFG and the Los Angeles Zoo, website at "www.lazoo/cstats.htm").

Mountain plover: The mountain plover was proposed for federal listing as threatened on February 16, 1999 (64 *Federal Register* 7587). The principal reason for this action was a 63 percent decrease in the estimated abundance of this species during 1966 to 1991 owing to conversion of grasslands to cultivated agriculture and urban uses, agricultural practices, management of domestic livestock, decreased abundance of native herbivores, and, possibly, pesticides. Information regarding the description, taxonomy, life history, habitat requirements, behavior, and population demographics of this species is provided in the *Federal Register* (Volume 64, pages 7587-7601; February 16, 1999). Unless otherwise noted, the information in this section was obtained from that document and references cited therein.

Mountain plovers are endemic to grasslands. They spend the summer in the Great Plains, and migrate across the Rocky Mountains in both spring and autumn. Historically, mountain plovers have been observed wintering in California, Arizona, Texas, and

Nevada; the California coastal islands of San Clemente Island, Santa Rosa Island; and the Farallon Islands. In Mexico, wintering mountain plovers have been sighted in Baja, California, as well as in Chihuahua, Coahuila, Sonora, Nuevo Leon, and San Luis Potosi in north-central and northeastern Mexico. Currently, the majority of mountain plovers appear to winter in California, with fewer birds observed wintering in Texas, Arizona, and Mexico.

In California, mountain plovers are most frequently reported and found in the greatest numbers in two general locations, the Central Valley south of Sacramento and west of U.S. Highway 99, and the Imperial Valley in southern California. In these areas, sightings occur on agricultural fields and uncultivated sites, with uncultivated sites constituting the preferred habitat. Within the Central Valley, flocks of up to 1,100 birds have been seen recently in Tulare County. The Carrizo Plain Natural Area in San Luis Obispo County also is recognized as an important wintering site, with wintering birds reliably reported from the west side of the Carrizo Plain Natural Area since 1971. The Sacramento Valley portion of the Central Valley also provides wintering habitat for flocks of mountain plovers within Solano and Yolo Counties. During the 1998 census, 230 and 187 mountain plovers were observed within each of these counties, respectively. About 2,000 mountain plovers were counted on agricultural fields in the Imperial Valley in 1994. At other locations in southern California, birds have been seen at Harper Dry Lake, Antelope Valley, San Jacinto Lake Wildlife Area, and the Tijuana River Valley. Mountain plovers are considered extirpated (i.e., extinct) from Orange County.

Conversion of grassland habitat to cultivated agriculture and urban uses within the breeding range of the mountain plover has been extensive, with about 32 percent of the grasslands in the Great Plains now converted. From 1982 to 1992, the amount of rangeland in counties of Wyoming, Colorado, Nebraska, Kansas, and Oklahoma that are used for breeding by mountain plovers decreased by more than 573,600 acres. Conversion destroys existing mountain plover breeding sites and eliminates the opportunity to manage grasslands to provide future nesting sites. Also, conversion may create habitats that attract breeding mountain plovers, which would then be exposed to the tilling of cultivated fields to control weeds. This tilling can destroy mountain plover nests, eggs, and chicks. For example, 48 percent of nests located on cultivated fields in Colorado, Oklahoma, and Kansas were destroyed by tilling in 1993 and 1994.

The amount and variety of mountain plover habitat has also been significantly reduced throughout its winter range, including the Central Valley and in southern California. Habitats for mountain plovers have been reduced to less than 4 percent of their historical abundance, and essential habitats for their early winter survival (i.e., sink scrub and uncultivated grasslands) have been nearly extirpated; occupying no more than approximately 66,000 acres of the Valley. Hence, the conversion of grasslands remains a significant threat to the species.

Other threats that have contributed to the decrease in status of the mountain plover include range management practices for domestic livestock, extensive eradication of prairie dogs and other burrowing rodents, and use of pesticides. Historically, mountain plover habitat was a byproduct of the grazing and wallowing activities of large numbers of nomadic grazing ungulates (e.g., bison (*Bison bison*), elk (*Cervus elaphus*), pronghorn (*Antilocapra americana*)), and the digging behavior of burrowing mammals such as kangaroo rats (*Dipodomys* sp.), prairie dogs (*Cynomys* sp.), and badgers (*Taxidea taxus*). The herbivores dominated the landscape at both breeding and wintering sites, and their activities created and maintained a mosaic of vegetation and bare ground to which mountain plovers became adapted. Some current domestic livestock grazing management emphasizes a uniform grass cover to minimize grassland and soil disturbance, which is unfavorable to mountain plovers and may be partly responsible for their decrease in Oklahoma and Canada. Other range management projects that enhance the development of taller vegetation, and have eliminated suitable nesting habitats in Montana and Colorado, include "pitting" to increase moisture retention in the soil, introduction of exotic grass species, watershed improvement projects, and fire suppression.

The decrease in abundance of the mountain plover is partially due to the decreased abundance and distribution of prairie dogs in their breeding range and small burrowing mammals in their winter range. Prairie dog towns and giant kangaroo rat precincts have shorter vegetation and more-abundant food for mountain plovers. Therefore, these areas are better foraging sites than surrounding areas. Unfortunately, prairie dog abundance and distribution has been reduced by up to 98 percent across the species range due to concerted efforts aimed at the eradication of prairie dogs, extensive habitat reduction and fragmentation, and sylvatic plague. We estimate that the federally-listed giant kangaroo rat occupies less than about 2 percent of its former range due primarily to conversion of grassland habitat to agriculture and urbanization.

Pesticides may be a factor contributing to the decrease of mountain plovers, but their effects are not completely understood. In California, pesticides are applied to cultivated fields during the 5 months that mountain plovers occupy these wintering habitats. Birds are exposed to pesticides by adsorption through the skin, preening, ingestion, and inhalation. Residues of DDE in wintering adult mountain plovers ranged from near 1 to 10 parts per million, and 22 of 54 eggs collected in Colorado and Montana had DDE residues similar to those found in the wintering birds. Although these DDE residues in eggs do not appear detrimental to the reproductive success of mountain plovers, residues found in adults may cause death to some individuals if they are mobilized to the brain. Also, 27 pesticides that are responsible for killing numerous species of birds throughout the nation are commonly applied to crops in Imperial County and the Central Valley of California from November through February, when mountain plovers are wintering in these areas.

A recovery plan has not been prepared for this species.

Environmental Baseline

The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities on the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impacts of State or private actions that are contemporaneous with the consultation in progress.

Pursuant to the ESA, the action area encompasses all areas that will be directly or indirectly affected by the action, rather than just the immediate area directly affected by the action. It is well-established that the lack of reliable utilities or necessary resources (e.g., electricity) in a given area can retard development or force it to other areas which are already served. Hence, the proposed increase in the availability of electricity could remove an impediment to private development in areas occupied by listed species that are currently relatively undeveloped and limited by the current supply of electricity. If electricity generated by the WMSCC facility is distributed to these areas, then a potential indirect effect to listed species that could result is the facilitation of private development. The increased electricity supplied to these areas could affect the density, distribution, scope, duration, or timing of development and, as a result, indirectly affect the survival and recovery of listed species.

The electricity generated by the proposed WMSCC plant will be introduced to the western power grid and, as a result, could be used anywhere in the western United States. At this time, sufficient information is not readily available to identify specific areas that may receive this additional electricity. As a result, for the purposes of describing the environmental baseline we have limited the action area to the portion of western Kern County in which the proposed project construction and operation activities will occur (e.g., Figure 1.5-1 in MSCC 1999). The indirect effects of the proposed action, including the potential facilitation of private development, are discussed in the following "Effects of the Proposed Action" section.

The landscape in Western Kern County is dominated by human disturbance including agriculture and associated activities (e.g., pesticide application, irrigation), oil and mineral exploration and extraction, urban development, off-road vehicle trails and use, and infrastructure for transportation, energy, communications, waste disposal, waste water treatment, and water delivery. These existing magnitude of these disturbances can be linked to the importation of water and, in turn, rapid population growth in Kern County. The completion of the San Luis Unit of the Central Valley Project and the California Aqueduct of the State Water Project resulted in rapid cultivation and irrigation of wild lands along the west side of the San Joaquin Valley (Service 1998). The population of Kern County is forecast to double between 1987 and 2010, from 286,000 people to 567,500 people. This growth increment will require an additional 34,000 acres for houses and 10,500 acres for commercial and industrial uses (City of Bakersfield

1990). The new infrastructure and increased reserve capacity necessary for this continued population growth and development is currently being provided. Hence, there are no limiting factors or regulations that are likely to retard this development or force it to other areas which are already served. Rather, it is reasonably certain that the pressure to develop remaining parcels of habitat for federally listed and proposed species will increase into the foreseeable future.

A part of western Kern County around Bakersfield is currently covered by a habitat conservation plan. This plan sets in place measures to minimize and mitigate for impacts to listed species resulting from urban development activities. This should then reduce some of the indirect, growth inducing impacts resulting from this and other power projects. In addition, a comprehensive habitat conservation plan is under development for all of western Kern County. Implementation of the Kern County Valley Floor HCP (anticipated for 2002) will address urban development as well as oil and gas activities. This would lead to an increasing amount of project effects being mitigated in a comprehensive, planned manner.

Oil fields in western Kern County continue to be an area of expansion and development activity (Sunrise Cogeneration and Power Project Biological Assessment, June 23, 1999). This expansion is reasonably certain to increase in the near future owing to market-driven increases in the price of oil. The cumulative and long-term effects of oil extraction activities on populations of federally listed and proposed species are not fully known, but recent studies indicate that even moderate oil field development may contribute to a decrease in carrying capacity for species such as the kit fox and leopard lizard owing to habitat loss or changes in habitat characteristics (Service 1998 and references cited therein).

According to the Energy Element of the Kern County General Plan, 25 cogeneration projects (representing 994 MW) had begun operation in Kern County by 1990 and an additional 25 projects with a combined output of 1,076 MW were permitted, under construction, or had permit applications pending (Sunrise Cogeneration and Power Project Biological Assessment, June 23, 1999). Most of the existing projects are less than 50 MW, but there are two 300 MW cogeneration plants in the Kern River oil field and the 225 MW MSCC plant in the Midway Sunset field. In addition to these existing projects, are the 1,000 MW La Paloma project which is currently being constructed near McKittrick, the approved 500 MW Sunrise Cogeneration and Power project located near Fellows, and the proposed 500 MW Elk Hills project located in the Elk Hills reserves. These projects will permanently destroy more than 60 acres of habitat for the federally listed species discussed in this opinion, and temporarily degrade hundreds of acres. As compensation for these impacts, the applicants have agreed to preserve in perpetuity more than 900 acres of habitat for listed species.

The vegetation communities in the action area include Valley saltbush scrub, non–native grassland, valley sink scrub (i.e., alkali sink), wetlands, ruderal (i.e., weedy) and cultivated (i.e., agriculture). Section 5.6.1.5 and Appendix I of the *AFC* (MSCC 1999) provide descriptions, maps, and other information regarding the distribution of these plant communities. The results of wetlands delineations and analysis of waters of the U.S. are also provided.

The status of federally listed and proposed species within the action area, including the factors affecting their environment, are discussed in the following species-specific sections.

San Joaquin kit fox: One of the largest extant populations of the kit fox occurs in western Kern County. Hence, the recovery strategy for this subspecies hinges on the enhanced protection and management of habitat in this region, including lands in the action area for the proposed WMSCC project. The level of protection recommended by the *Recovery Plan* is 90 percent of the existing potential habitat in western Kern County (Service 1998, Table 5, p. 188).

Kit foxes are known to inhabit areas that will be affected by the proposed action (Mull 1999*a*, Service 1998, Spiegel 1996). Dens and sign (e.g., tracks, scat) were detected at dozens of locations during surveys along the proposed routes for the water supply pipeline and transmission line (MSCC 1999; Mull 1999*a*, *b*). Although no kit foxes were detected during spotlighting and scent station surveys in the vicinity of the existing MSCC facility, kit fox sign (i.e., tracks and scat) was observed along a dirt road that borders the proposed laydown area, adjacent to Crocker Canyon (Mull 1999*b*).

Recent studies of kit foxes in the Elk Hills and Lokern areas documented decreases in the abundance of kit foxes. The estimated density of kit foxes at the Naval Petroleum Reserves, California, decreased from 1.6 to 0.2 foxes per square kilometer during 1982-1983; increased from 0.2 to 1.7 foxes per square kilometer during 1992-1994; and then decreased to 0.6 foxes per square kilometer during 1995 (Cypher and Scrivner 1992; Cypher and Spencer 1998). These population trends appeared to be driven by precipitation-mediated variations in prey abundance, particularly kangaroo rats (Cypher et al. 2000, Dennis and Otten 2000). Likewise, during 1989 to 1991 kit foxes in the Lokern area had reduced reproductive and neonatal survival rates following a drought-induced decrease in the abundance of their staple prey (Spiegel 1996). These populations have not rebounded to pre-decrease levels.

Genetic assessments indicate that historic and recent gene flow among most populations of kit foxes in the southern portion of their range were quite high, with effective dispersal rates of 2.7 to 9.4 migrants per generation. There were no major barriers to dispersal among populations, and genetic dispersal was likely sufficient to allow for local adaptation while preventing the loss of any rare alleles. Estimated gene flow among

subpopulations of kit foxes in western Kern County is even higher, with effective dispersal rates of more than 10 migrants per generation between the Lokern and Elk Hills areas. Estimates of heterozygosity and the mean number of alleles per locus from foxes in western Kern County are also relatively high, indicating that this population is not experiencing the deleterious effects of inbreeding (K. Ralls, Smithsonian Institution, pers. commun. on August 22, 2000, to P. White, Fish and Wildlife Service, Sacramento, California).

Most of the valley bottom grassland and alkali scrub habitats in western Kern County have been eliminated or degraded by agricultural, suburban, and industrial development (Service 1998). This loss and fragmentation of habitat has adversely affected kit foxes via injuries and mortalities, displacement, reduction of prey populations and denning sites, changes in the distribution and abundance of larger canids (e.g., red foxes) that are known to kill kit foxes or compete with them for resources, and/or reductions in carrying capacity. In addition, remaining habitat in western Kern County is fragmented by obstacles and hazards to movements by foxes, including the following: 1) Interstate 5, State Highways 33, 46, and 58, and other busy roads, 2) California aqueduct and numerous canals, 3) the towns of McKittrick, Buttonwillow, and Taft, and other commercial developments, 4) intensive oil development in the Midway Sunset, Elk Hills, and Lost Hills areas, and 6) irrigated agricultural fields. These obstacles and hazards may constrain and/or impede movements by foxes within or through portions of this area, and increase rates of mortality owing to increased exposure vehicles, competitors and predators (e.g., red foxes, feral/domestic dogs), and humans.

Loss and degradation of habitat by agricultural, industrial, and urban developments and associated practices continue to contribute to decreases in the abundance and distribution of San Joaquin kit foxes in western Kern County through displacement, direct and indirect mortalities, barriers to movement, and reduction of carrying capacity. Although kit foxes may persist in agricultural areas if enough uncultivated land is maintained to provide adequate denning sites and a suitable prey base (Jensen 1972, Knapp 1978, Hansen 1988), intensively irrigated or cultivated areas are often devoid of kit foxes (Jensen 1972, Morrell 1975). Agricultural interests in western Kern County generally employ "clean farming" practices in orchards and fields to reduce pests and weeds that might decrease field productivity. An attendant effect of this management is that it eliminates all vegetation other than the crops themselves. As a result, these areas generally lack sufficient denning sites and prey to support viable populations of kit foxes. Furthermore, effective dispersal (i.e., dispersal followed by successful reproduction; dispersal of genes) is often precluded or low because patches of habitat are isolated and connectivity between subpopulations have been severed. The Endangered Species Recovery Program, Fresno, California, has documented that kit foxes in the Lost Hills area travel as much as 1.7 kilometers into the orchards and agricultural fields during nocturnal foraging. However, no kit fox has ever utilized any natural or artificial den in orchards or agricultural fields.

Petroleum development in this region has also fragmented habitat. Petroleum field developments in the southern half of the San Joaquin Valley result in high surface disturbance and widely dispersed patches of natural habitat for kit foxes. Increased noise, ground vibrations, venting of toxic and noxious gases, and the release of petroleum products and waste waters also contribute to habitat degradation. The most significant impact of hydrocarbon extraction on kit foxes appears to be mediated through habitat loss (Williams et al. 1997). Kit fox abundance in the Midway-Sunset oil field of western Kern County, which is highly developed with about 70 percent ground disturbance, was only about 50 percent that of the nearby, undeveloped Lokern area (Spiegel 1996). Capture rates of kit foxes at the former Naval Petroleum Reserves tended to be negatively associated with the extent of oil-field development after 1987; likely owing to changes to habitat or direct loss of habitat (Warrick and Cypher 1998). Even moderate development tends to encourage dense stands of saltbush, which may have a detrimental affect on kit foxes by contributing to increased densities of predators and reduced visibility (Warrick and Cypher 1998). Petroleum field activities also reduce the number of typical, earthen dens available to kit foxes. Dens are essential for the survival and reproduction of kit foxes which use them year-round for shelter and escape, and in the spring for rearing young. Hence, kit foxes generally have dozens of dens scattered throughout their territories (White et al. 1994). The average density of typical, earthen kit fox dens at NPRC, was negatively correlated with the intensity of petroleum development (Zoellick et al. 1987), and almost 20 percent of the dens in developed areas were found to be in well casings, culverts, abandoned pipelines, oil well cellars, or in the banks of sumps or roads (O'Farrell 1983). These results are important because the California Energy Commission found that, even though kit foxes frequently used pipes and culverts as dens in oil-developed areas of western Kern County, only earthen dens were used to birth and wean pups (Spiegel 1996). Furthermore, petroleum development has influenced the selection of foraging sites by kit foxes in western Kern County. Development often results in a shift in the small mammal community from primarily granivorous species (e.g., *Dipodomys*) to species adapted to early successional stages and disturbed areas (e.g., California ground squirrels, murid rodents; Spiegel 1996, Cypher et al., submitted). Development also results in an increase in the availability of human-derived food sources. Refuse from human discarded food items were found more frequently in the diets and at dens of foxes inhabiting an oil-developed site as compared to an undeveloped site; particularly during years of low rainfall when heteromyid densities were low (Spiegel 1996). Hence, kit foxes in developed areas are often able to utilize smaller home ranges than foxes in undeveloped areas, and may not be as susceptible to periods of prey scarcity (Spiegel 1996). The opportunistic use of refuse may not be beneficial in the long-term, however, because human-derived food supplements are ephemeral, unpredictable, and lack the equivalent nutritional value of natural prey items (Spiegel 1996).

Giant kangaroo rat: One of only 6 remaining populations of the giant kangaroo rat occurs in the Lokern area of western Kern County. Hence, a goal of the *Recovery Plan*

for this species is to protect 90 percent of the extant historical habitat in this area (Service 1998, Table 5, p. 186).

Although the population of giant kangaroo rats in western Kern County is believed to be one of the 3 largest remaining populations of the species (Service 1998), no rigorous estimates of abundance, reproduction, or survival are available. During the last decade, there have been significant decreases in the relative abundance of giant kangaroo rats in the Lokern area in response to both drought and above average rainfall conditions. An extremely hot fire during spring 1997 that burned approximately 5,800 acres may also have contributed to reduced abundance. Giant kangaroo rats remain scarce on the Lokern Natural Area (Germano et al. 1999).

Habitat for giant kangaroo rats in the Lokern area continues to be destroyed and fragmented by urban and industrial development, petroleum and mineral exploration and extraction, and the construction of energy and water conveyance facilities, and communication and transportation infrastructures. Habitat degradation due to lack of appropriate habitat management on conservation lands, especially lack of grazing or fire to control density of vegetation (including shrubs), may be an additional threat to giant kangaroo rats in this area (Williams and Germano 1993).

The giant kangaroo rat population in western Kern County is isolated and fluctuates extensively in response to variable precipitation patterns; decreasing to only a few small areas during drought and after periods of heavy rainfall. Thus, this population is extremely vulnerable to extinction during random catastrophic events, and any factor that would reduce appreciably the amount of habitat in this region poses a major threat to the population (Service 1998).

A total of 12 giant kangaroo rat precincts were observed along the proposed transmission line route. Each of these precincts appeared to be uninhabited, however, no livetrapping was conducted to verify this assessment. One dead individual was found in the Lokern Natural Area. No giant kangaroo rat burrows were observed in the vicinity of Canyon Creek near the proposed WMSCC facility. A small precinct used to be located approximately 1,000 feet south of the existing MSCC facility. However, this subpopulation has apparently gone extinct, possibly due to cattle grazing and/or increased density of vegetation (MSCC 1999; Mull 1999*a*, *b*).

Tipton kangaroo rat: The *Recovery Plan* for the Tipton kangaroo rat calls for consolidating and protecting more than 6,000 acres of occupied habitat, primarily in the Kern Fan, Semitropic Ridge Natural Area, and Pixley National Wildlife Refuge-Allensworth Natural Area (Service 1998, Table 5, p. 187). Habitat destruction or modifications continue to render areas unsuitable for Tipton kangaroo rats, and increase the isolation of subpopulations scattered throughout western Kern County. Hence, these subpopulations are susceptible to extinction during random catastrophic events, and any

factor that would reduce appreciably the amount of habitat in this region poses a major threat to the population (Service 1998). During the last decade, there has been a significant decrease in the relative abundance of Tipton kangaroo rats in the action area in response to both drought and above average rainfall conditions. Tipton kangaroo rats remain scarce in this area (Germano et al. 1999).

Three potential burrows for Tipton kangaroo rats were detected during walking transect surveys along the proposed transmission line route. It is unknown if these burrows were occupied because no livetrapping was conducted. Excellent habitat for Tipton kangaroo rats exists just east of the California Aqueduct, and portions of the transmission line through sections 28 and 29 (Lokern quadrangle; Map 17 in Mull 1999*a*) could potentially be occupied by Tipton kangaroo rats. No Tipton kangaroo rat burrows were observed in the vicinity of Canyon Creek near the proposed WMSCC facility, or along the proposed water supply pipeline route (MSCC 1999, Mull 1999*a*).

Blunt-nosed leopard lizard: The Lokern area is essential for the survival and recovery of the leopard lizard. Hence, the *Recovery Plan* for this species calls for protecting more than 6,000 acres of contiguous, occupied habitat in western Kern County, including lands west of State Route 33 and around the Lokern Natural Area (Service 1998, Table 5, p. 187).

There has never been a comprehensive survey of blunt-nosed leopard lizards, including western Kern County. However, evidence indicates that the status of this species is decreasing in this region. For example, data from the California Department of Fish and Game (1985) and Service file information indicate that between 1977 and 1988, essential habitat for the leopard lizard decreased by about 80 percent - from 311,680 acres to 63,060 acres, an average of about 22,000 acres per year (Biological Opinion for the Interim Water Contract Renewal, Ref. No. 1-1-00-F-0056, February 29, 2000). Virtually all of the documented loss of essential habitat was the result of conversion to irrigated agriculture, and much of the loss occurred in Kern County. Also, above average precipitation in recent years has contributed to an increase in the amount of vegetative cover in many areas. This increase in cover may be a factor in the low abundance of adult lizards seen during the population monitoring at the former Naval Petroleum Reserve in western Kern County in 1995 (U.S. Department of Energy and Chevron 1996). The abundance of leopard lizards on the Lokern Natural Area continues to be extremely low (Germano et al. 1999).

Habitat disturbance, destruction, and fragmentation continue as the greatest threats to leopard lizard populations because even light to moderate development may significantly limit their abundance and distribution. For example, densities of blunt-nosed leopard lizards typically decrease as oil activity increases (O'Farrell and Kato 1980). Eighty-three percent of the leopard lizard population on the former Naval Petroleum Reserves

inhabited areas where little or no petroleum-related activity had occurred (Kato and O'Farrell 1986).

No blunt-nosed leopard lizards were observed during walking transect surveys of the proposed WMSCC facility site, transmission line route, or water supply line route. However, temperatures were generally below the optimum for this species to be active (Mull 1999*a*, *b*). Habitat with moderate to high potential for occupancy by blunt-nosed leopard lizards occurs along the eastern half of the transmission line route; especially near the corridor in the Lokern Natural Area (Maps 7-17, Mull 1999*a*). Crocker Canyon wash, located approximately 800 feet from the MSCC facility, contains marginal habitat for lizards. Also, one leopard lizard was observed in 1994 along a dirt road that borders the proposed laydown area, adjacent to Crocker Canyon. Since that time, the density of vegetation in this area has increased, possibly making the area unsuitable for this species (Mull 1999*a*).

Hoover's woolly-star: The "Lokern-Elk Hills-Buena Vista Hills-Coles Levee-Maricopa-Taft" metapopulation of Hoover's woolly-star is the third largest (out of 4 remaining metapopulations) in terms of estimated number of individual plants. Hence, the *Recovery Plan* calls for protecting at least 75 percent of the habitat occupied by this population (Service 1998, Table 5, p. 185).

Land conversion continues to threaten the survival and recovery of this population (Service 1998). Hoover's woolly-star exists on some remnants of native habitat in western Kern County. Although some of the sites occupied by Hoover's woolly-star in western Kern County contain substantial numbers (i.e., 5,000-40,000) of individual plants, most are at risk because they contain fewer than 1,000 individual plants, range in size from approximately one to 400 acres, and are isolated (55 *Federal Register* 29361). Densities of Hoover's woolly-star are known to fluctuate substantially among years in response to variations in rainfall during the growing season. For example, densities of Hoover's woolly-star at Elk Hills during 1993, a year with higher than average rainfall, were 5 to 15 times greater than during 1991, a year of average rainfall. Because remaining occurrences of Hoover's woolly-star in the Lokern area are small and isolated, they are susceptible to extirpation during random events such as droughts which induce drastic decreases in abundance.

Hoover's woolly-star plants were detected at 24 locations during walking transect surveys of the proposed transmission line route, mostly within the Lokern Natural Area. No Hoover's woolly-star plants were detected during surveys of the proposed generating plant site (including a 1,500-foot buffer zone) and water supply pipeline route (Mull 1999*a*, *b*).

Kern mallow: The only known metapopulation of Kern mallow occurs in western Kern County, with occurrences intermittently scattered within an area of approximately 100

square kilometers in the Lokern area. Hence, the top-priority task for recovery is to protect 90 percent of the remaining plants and occupied habitat in the Lokern area (Service 1998, Table 5, p. 184).

Approximately 85 percent of the occupied Kern mallow habitat in the Lokern area is privately owned and vulnerable to development for many potential uses (Service 1998). Hence, the persistence of Kern mallow continues to be threatened by agriculture and urban development. Although the current level of petroleum production does not appear to pose a threat to the portion of the metapopulation that remains, increased production levels could cause further fragmentation and loss of localized colonies of Kern mallow. Ongoing activities such as the maintenance of pipelines and utility corridors continue to disturb occupied habitat.

No recent estimates of abundance, reproduction, or survival are available from the Lokern area. However, the abundance of this species is known to vary substantially among years owing to variations in rainfall during the growing season. For example, the density of Kern mallow in the Lokern during 1995, a year with higher than average rainfall, was nearly 10 times higher than during 1994, a year with below average rainfall. Similarly, the number of flowers per plant ranged from 1 to 8 in 1994, and from 1 to over 700 in 1995 (Service 1998). Because remaining occurrences of Kern mallow in the Lokern area are small and isolated, they are susceptible to extirpation during random events such as droughts which induce drastic decreases in reproduction and density.

No Kern mallow plants were detected during surveys of the proposed generating plant site (including a 1,500-foot buffer zone), transmission line route, and water supply pipeline route (Mull 1999). Kern mallow is known to occur on the Lokern Natural Area to the north of the proposed transmission line route, however, and potential habitat occurs along the route.

San Joaquin woolly-threads: The top-priority task to ensure the survival and recovery of San Joaquin woolly-threads is to protect at least 640 acres of occupied habitat in the San Joaquin Valley, including western Kern County (Service 1998, Table 5, p. 185).

Land conversion continues to threaten the survival and recovery of populations of San Joaquin woolly-threads in western Kern County (Service 1998). Historically, San Joaquin woolly-threads were known to occur from north of the Lokern to Lost Hills in Kern County. However, these occurrences were apparently extirpated by intensive oil development (Service 1998). No San Joaquin woolly-thread plants were detected during surveys of the proposed generating plant site (including a 1,500-foot buffer zone), transmission line route (including a 500-feet buffer zone), and water supply pipeline route (including a 500-feet buffer zone) (Mull 1999*a*, *b*). However, potential habitat occurs along the proposed transmission line route.

Aleutian Canada goose: This subspecies is not known to nest within the action area. However, the action area contains suitable foraging habitat that could be used by migrating and/or wintering birds. Alteration of habitat continues to reduce the availability of foraging habitat for this subspecies within the action area.

Bald eagle: This species is not been observed nesting in the vicinity of the proposed WMSCC project. However, they are known to winter in the Central Valley and suitable foraging habitat occurs within the action area. Environmental contaminants still represent a potentially significant threat to bald eagles wintering within the action area.

California condor: The principal foraging regions used by condors since the late 1970s have been the foothills bordering the southern San Joaquin Valley and axillary valleys in San Luis Obispo, Santa Barbara, Kern, and Tulare counties. Birds reintroduced in Santa Barbara and San Luis Obispo counties forage in the foothills and on the valley floor west of Interstate 5 in western Kern County and along the Tehachapi foothills in southern Kern County. Foraging habitat for the California condor has been lost to oil development, urban development, and row crops (Service 1998).

Recent releases of captive-reared condors in Ventura, Santa Barbara and San Luis Obispo Counties have increased the possibility that these birds may encounter construction operations and maintenance activities or transmission lines in foraging habitat in the vicinity of this project. A new release of 6 condors has just occurred in northwestern Santa Barbara County, near the edge of the San Joaquin Valley. Condors were not observed in the project area in 1998. Should condors become established in coastal California, it is likely they would fly over the entire southern San Joaquin Valley, including the project area. Although condors bred in the wild were not known to forage on the valley floor, the animals bred in captivity tend to be more opportunistic and may feed there (Mesta pers. comm.).

California condors were not observed in the action area during surveys of biological resources in 1999 (Mull 1999*a*, *b*). However, the potential exists for condors to fly over the project in route to foraging areas in the Sierra Nevada foothills. Since reintroductions were initiated, 5 birds have died from collisions with power lines. Because of these deaths, in 1995 California condors began receiving power line aversion training before their release. In 1997, however, 2 more condors died as a result of power line collisions (Service 1998*b*).

Mountain plover: The 1998 California Bird Census found 2,179 mountain plovers in 10 California counties, including Imperial, Kings, Los Angeles, Monterey, Riverside, San Benito, San Luis Obispo, San Bernardino, Solano, and Yolo Counties (Hunting in litt. 1998). While mountain plovers were not counted in Kern County, they were seen in surrounding counties, and they are likely to be present in western Kern County (including the action area).

Conversion of grassland habitat, agricultural practices, the management of domestic livestock, decrease of native herbivores, and pesticides are factors that likely have contributed to the mountain plover's decrease in the action area. Also, pesticides are applied to cultivated fields during the 5 months that mountain plovers occupy their winter habitat in California (Knopf 1996*b*).

Conservation Efforts in the Action Area: Approximately 10 miles north of the WMSCC site, 30,000 acres have been designated as the Lokern Natural Area by a cooperative group which includes the CEC, CDFG, our agencies, and several private groups. Within this area, private and public organizations manage a total of approximately 8,600 acres for the benefit of sensitive species, including all of the listed and proposed species covered by this biological opinion. The CNLM manages approximately 2,600 acres of conserved lands (15 parcels), and approximately 850 acres are owned and managed by the CDFG and Department of Water Resources. Your agency manages more than 4,000 acres in the Lokern Natural Area for the benefit of sensitive species, including the Lokern Area of Critical Environmental Concern.

The Buena Vista Valley Management Area is managed by your agency for the conservation of threatened and endangered species, with consideration of the valuable oil and gas resources in the area. It includes 20,820 acres of federal surface and subsurface rights, and 12,940 acres of federal mineral estate, in western Kern County. These lands are located within the action area near McKittrick, Derby Acres, Fellows, Taft, and Maricopa.

Recently we issued an incidental take permit to the Nuevo Energy Company/Torch Operating Company for continued oil and gas activities over the next 30 years on approximately 21,900 acres in western Kern County. All of the species covered under this biological opinion will be affected by these activities. To mitigate for these effects, the Nuevo Energy Company/Torch Operating Company developed a habitat conservation plan that includes the preservation in perpetuity of approximately 840 acres of habitat in the Lokern Natural Area for listed and proposed species (Nuevo Energy Company/Torch Operating Company 1999).

Effects of the Proposed Action

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, 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 those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Construction of the proposed WMSCC generating facility will permanently destroy approximately 10 acres of non-native grassland habitat. Use of the proposed laydown area during construction will temporarily disturb approximately 7 acres of non-native grassland habitat. The proposed route for the transmission line crosses approximately 4.0 miles of land that has been modified by oil production activity (MP 3.5 to MP 5.5 and MP 6.5 to MP 8.5), 10.8 miles of undeveloped land (MP 0.0 to MP 3.5, MP 5.5 to MP6.5, and MP 8.5 to MP 14.8), 4.2 miles of irrigated agricultural land (MP 14.8 to MP 19.0). Hence, its construction will affect a variety of habitat types, including valley saltbush scrub, grasslands, valley sink scrub, ruderal, and agricultural areas. Anticipated permanent habitat destruction at each tower location includes clearing an approximately 50-square-feet area to install the power pole. The total acreage that is anticipated to be disturbed for all towers is approximately 0.2 acres. Approximately 55 acres of habitat will be temporarily disturbed by vehicles driving within the corridor to hang the transmission line onto the towers. Construction of the water supply pipeline will permanently destroy approximately 0.01 acre and temporarily disturb a total of 0.25 acre of ruderal habitat. The proposed fuel gas supply pipeline will connect directly to the existing Midway Sunset power plant, located immediately adjacent to (east of) the proposed project. No new habitat disturbance will occur as a result of the construction of the new fuel gas supply pipeline (MSCC 1999, Mull 1999*a*, *b*).

Effects of the Proposed Action on Listed Animals: Construction of the proposed WMSCC generating facility will permanently destroy approximately 10.0 acres of habitat for the kit fox, and temporarily disturb approximately 7.0 acres (i.e., laydown area). No effects to habitat for other listed animal species are anticipated during the construction of this facility owing to the lack of suitable habitat and/or presence in the area (Mull 1999*a*, *b*).

Four artificial dens that were constructed as compensation for effects to this species during the construction of the existing MSCC facility will likely be destroyed or disturbed during the proposed construction of the WMSCC facility. The destruction of artificial dens is not expected to decrease the status of kit foxes in this area, however, because natural, earthen dens are not limiting in the area and, to our knowledge, artificial dens have never been used in this vicinity (L. Spiegel, CEC, Sacramento, personal communication, to P. White, Service, Sacramento, on August 2, 2000).

Construction of the transmission line will permanently destroy approximately 0.2 acre of habitat for the kit fox, 0.3 acre of habitat for the giant kangaroo rat, and 0.14 acre of habitat for the leopard lizard. Construction of the new transmission line will temporarily disturb approximately 55 acres of habitat for the kit fox, which includes 19.4 acres of habitat for the giant kangaroo rat, and 7.2 acres of habitat for the leopard lizard. At least one den known to be used by kit foxes, and 3 potential dens, are located along the centerline of the proposed route and, as a result, may be destroyed or disturbed construction. Also, at least 2 giant kangaroo rat precincts that appear to be currently

unoccupied, and one potential Tipton kangaroo rat precinct, are located along the centerline of the proposed route and, as a result, may be destroyed or disturbed construction (MSCC 1999; Mull 1999*a*, *b*). Another 12 potential dens for kit foxes are located within the 1,000-foot-wide buffer for the proposed route and could be disturbed during construction activities.

Construction of the water supply pipeline will permanently destroy approximately 0.01 acre and temporarily disturb a total of 0.25 acres of habitat for kit foxes. All of the ruderal habitat that will be permanently or temporarily affected during the construction of the water supply pipeline has been previously disturbed by oil field activities. Two dens known to be used by kit foxes are located along the centerline of the proposed route and, as a result, may be destroyed or disturbed construction. No effects to habitat for other listed animal species are anticipated during the construction of this pipeline owing to the lack of suitable habitat and/or presence in the area (Mull 1999*a*, *b*).

Kit foxes are known to inhabit and/or travel through each of the areas that will be directly affected by construction, operation, and maintenance activities. Also, habitat for giant kangaroo rats, Tipton kangaroo rats, and blunt-nosed leopard lizards occurs along the proposed transmission line route. Thus, at any time, these species could be, or may begin, using portions of the sites that will be affected by construction. The Applicants have committed to having qualified biologists conduct surveys for listed species prior to commencement of ground disturbance or vegetation clearing. However, these species, and project-related effects to them, are difficult to detect during surveys for one or more of the following reasons: 1) they are nocturnal, 2) they use underground dens or burrows, 3) there is often no external sign that a den or burrow is occupied, and 4) populations under-go frequent, high amplitude fluctuations in abundance in response to precipitation patterns and food abundance. Hence, these species are often present at low densities, and large areas of habitat that are essential for long-term survival and recovery may be temporarily unoccupied for numerous years when their abundance is low. However, these areas will be re-occupied when environmental and food conditions improve.

Because the listed animal species considered in this opinion are difficult to detect during surveys, it is feasible that some animals on or adjacent to the proposed construction sites may not be detected prior to ground disturbance or vegetation clearing activities. As a result, activities associated with the proposed construction may result in higher rates of mortality and injury for animals remaining in, or traveling through, these areas owing to increased exposure and susceptibility to threats (e.g., increased vehicular traffic). Animals could be struck or crushed on the ground surface by vehicles or heavy equipment, or buried inside dens or burrows during surface disturbing activities such as discing, grading, trenching, tower construction, or cable pulling. Any ditches dug and left open overnight could entrap these species. Also, any equipment with hiding places, such as pipes, can attract wildlife, and create hazards for them if left open or uncapped overnight.

Increased human disturbance (e.g., noise, ground vibrations, illumination from lights, vehicle traffic, vehicle parking, storage sites, access roads, foot traffic, pets, spills, anthropogenic fire ignitions, need for fire suppression or fuel modification, soil compaction) could cause the listed animal species considered in this opinion to avoid sites during and after construction; thereby restricting their home ranges and the resources available to them. Harassment may impede or otherwise alter the behavior of animals (e.g., activity periods, space use) resulting in increased predation risk, increased energetic expenditures, or reduced reproductive success. Animals may also be permanently displaced from portions of the action area during grading, transmission line and pipeline construction, recontouring, and revegetation activities. Displacement into unfamiliar areas could increase the risk of predation and increase the difficulty of finding required resources such as food and shelter. Displacement would also increase the susceptibility of animals to starvation, exposure, and predation because they would have little or no knowledge of the location of potential resting/escape refugia or foraging sites when traversing unfamiliar areas. Even if displaced animals managed to find other areas with suitable habitat, they would likely face competition from resident kit foxes and/or other canid species. Animals displaced by habitat loss may, at least in the short term, pack more densely into remaining refuges of suitable habitat within or adjacent to the construction limits. This crowding phenomenon in response to habitat fragmentation has also been observed in tropical and temperate forest reserves, where initial rises in population densities in isolated fragments were followed by increased competition and population decreases to levels lower than those before the displacement (Meffe and Carroll 1994).

Food or garbage at construction, residential, or commercial sites could attract predatory species; thereby increasing the vulnerability of the listed animal species considered in this opinion to predation. Food and garbage would also likely attract animals such as skunks (*Mephitis mephitis*) and raccoons (*Procyon lotor*) that are known vectors of diseases to which kit foxes are susceptible. Because the spread of diseases such as rabies is related to the frequency of social encounters (Ball 1985), higher rates of encounters between kit foxes and vectors of disease could result in an increased risk of disease outbreaks.

Possible indirect effects of the proposed construction activities include increased soil erosion, invasion of disturbed areas by alien grasses, increased "edge effects" owing to fragmentation, lowered effective dispersal rates and distances, higher mortality rates for animals remaining in disturbed areas owing to the removal of refuges, higher mortality for dispersing animals owing to the creation of a "mortality sinks" (i.e., areas of denuded vegetation), increased human contact, and persistent effects (time lags) on local population dynamics owing to the removal of reproductive-aged individuals and the newly-born cohort from the population. These effects are difficult, if not impossible, to quantify given our limited knowledge about these listed species and the ecosystems they inhabit. However, all of these potential effects are expected to be minimal or temporary because of the linear nature of much of the disturbance, relatively-short construction

period, relatively-high intrinsic reproductive rates of kangaroo rats, and the Applicants' commitment to revegetate disturbed habitats along the transmission line and water supply pipeline routes.

Construction activities would result in local increase of noise, traffic, nighttime illumination, and human activity. However, similar disturbances are currently present throughout the plant site and in adjacent areas due to ongoing oil–related activities and operations of the existing MSCC facility.

Information about the susceptibility of other lizards to noise suggests that there could be a potential for impacts to blunt-nosed leopard lizards from construction noise, even when they are in burrows. However, there is no documentation of specific impacts to individual blunt-nosed leopard lizards from noise or to impacts to leopard lizard populations that can be attributed to noise. These potential impacts would most likely be restricted to areas where noise levels are at or above 95 dBA (estimated to be within about 50 feet of construction activities) (CEC 1999).

Operations and maintenance of the proposed power plant expansion would not significantly contribute to the traffic, noise, nighttime illumination, and human activity other than those presently associated with operations and maintenance at the existing facility. There are no anticipated impacts to sensitive plants and sensitive habitats within 1,500 feet of the plant site because none were found in these areas.

The power plant, which will operate up to 24 hours a day, will generate minor additional traffic, due to a minimal increase in existing staff after the expansion. This amount of traffic will be minor as compared to the existing traffic on Highway 33 and Highway 58 and in the adjacent oil fields, and traffic impacts will be below levels of significance. Traffic at night can be especially hazardous to nocturnal species such as the kit fox. The existing facility utilizes a van pool system. The night van pool has room for any additional night employees required by the WMSCC expansion. Traffic impacts at night would not be increased under normal conditions. Therefore, the increased likelihood of collisions between vehicles and San Joaquin antelope ground squirrels, blunt–nosed leopard lizards, and other wildlife is not significant.

Additional lighting at the plant site will have the same impact as the existing lighting at the site, which may alter the nighttime behavior of small mammals near the power plant. The greatest potential impact to small mammals from lighting may be from allowing increased predation by owls and other nocturnal predators. This impact is below levels of significance. The lighting will be designed for safe operation of the expanded facility. Shielding will be employed to minimize the impact of the additional lighting.

Effects of the Proposed Action on Listed Plants: Construction of the proposed WMSCC generating facility and the water supply pipeline are not anticipated to affect federally

listed species of plants because none were detected during walking transect surveys within a 1,500-feet radius of the proposed facility or a 1,000-feet corridor along the pipeline route (Mull 1999*a*, *b*). The pipeline corridor is highly disturbed and devoid of vegetation in many areas owing to daily pipeline operations and associated oil field activities such as clearing and grading areas to install new wells, removing old non-producing wells, repairing oil field equipment, installation and maintenance of utilities (including pipelines), clean up of oil spills, and installation of other related facilities. As a result of these ongoing operations and activities, non-native ruderal species continue to invade the area along roads and edges of the disturbed areas, making it difficult for native species and rare plants to compete (Mull 1999*b*).

Construction of the transmission line could permanently impact approximately 1.5 acres and temporarily disturb 2.8 acres of Hoover's woolly–star habitat (Vanherweg 1999 as cited in MSCC 1999). No direct effects are anticipated to Kern mallow or San Joaquin woolly-threads because these species were not detected during walking transect surveys within a 1,000-feet corridor along the pipeline route (Mull 1999*a*, *b*).

The MSCC will attempt to avoid direct effects to Hoover's woolly-star plants along the transmission line route by flagging areas containing sensitive plants and not locating towers in these areas. In addition, monitoring during construction activities in identified sensitive areas will ensure impacts are minimized. Despite these conservation measures, direct effects of the project to Hoover's woolly-star may include the following: destruction or injury of individual plants; destruction and degradation of habitat; removal and alteration of the spatial distribution of seed banks; alteration of site hydrology; soil compaction; destruction of soil crusts (e.g., cryptogamic soils) and soil microorganisms (e.g., decomposers and detritus feeders); accumulation of fugitive dust on plant tissues; soil contamination by equipment fluids; decreases in air quality from equipment exhaust and facility operations; mortalities or injuries to pollinators; anthropogenic fire ignitions; and the need for fire suppression or fuel modification. Species that recolonize disturbed areas after they become revegetated may be damaged or destroyed by subsequent routine maintenance. Impacts to plants occurring after seed germination but prior to seed set could be particularly harmful as both current and future generations would be adversely affected.

Little is known about the ecology of Hoover's woolly-star, or about its tolerance to disturbance. Taylor and Davilla (1986 as cited in Holmstead and Anderson 1998) suggested the species was closely associated with dense cryptogamic soil crust, characteristic of undisturbed sites. However, research at the former Naval Petroleum Reserve No. 1, Kern County (Holmstead and Anderson 1998; Hinshaw et al. 1999, 2000), indicates that Hoover's woolly-star may recolonize disturbed sites during the subsequent growing season if seeds can naturally disperse from adjacent habitat. In fact, Hoover's woolly-star plants are often present on previously disturbed areas, sometimes with the disturbance apparently defining colony boundaries. Surface disturbance negatively

affects the density of Hoover's woolly-star for at least 2 growing seasons, but plant densities on control (i.e., undisturbed) and disturbed sites on the former Naval Petroleum Reserve No. 1 were similar after 5 growing seasons. Topsoil salvage and respreading did not significantly affect the recolonization of Hoover's woolly-star on disturbed plots, as long as seeds could naturally disperse from adjacent habitat. Hence, disturbed areas may revegetate naturally as long as the dispersal of seeds from adjacent habitat is not precluded.

Possible indirect effects of the proposed construction activities include increased soil erosion, invasion of disturbed areas by alien grasses, increased "edge effects" owing to fragmentation, lowered effective dispersal rates and distances, and persistent effects (time lags) on local population dynamics owing to the removal of reproductive-aged individuals and the newly-born cohort from the population. These effects are difficult, if not impossible, to quantify given our limited knowledge about these listed species and the ecosystems they inhabit. However, all of these potential effects are expected to be minimal or temporary because of the linear nature of much of the disturbance, relatively-short construction period, relatively-high intrinsic reproductive rates of kangaroo rats, and the Applicants' commitment to revegetate disturbed habitats along the transmission line and water supply pipeline routes.

Access roads associated with the proposed transmission line could contribute to increased off-road vehicle use of the area. Also, fragmentation will likely disrupt or alter pollination patterns of Hoover's woolly-star. Although the pollination ecology of Hoover's woolly-star has not been investigated, other members of the genus *Eriastrum* are pollinated by native bees (superfamily Apoidae) and beeflies (family Bombyliidae) (Grant and Grant 1965 as cited in Service 1998). These small insects may not be able to traverse relatively-large areas of denuded vegetation.

Drift from the cooling tower on the western half of the WMSCC facility will adversely affect nearby vegetation that provides habitat for listed species. The WMSCC facility will require approximately 100,000 gallons per minute of cooling water for the steam cycle. Cooling tower drift results from the entrainment of water droplets in the air stream induced by the cooling tower fans. These droplets contain dissolved solids which, upon evaporation of the water, form particulate matter. Particulate matter emissions and characteristics are dependent on the cooling water circulation rate, drift eliminator efficiency, and the total dissolved solids content of the cooling water. The following dissolved solids would be present in the drift, listed in order of decreasing concentration: sulfate, chloride, sodium, bicarbonate, calcium, magnesium, silica, potassium, calcium, nitrate, boron, aluminum, and iron. Other dissolved solids would be present in the circulating water, but are projected to be in concentrations of one part per million or less (MSCC 1999).

Simulations using the Industrial Source Complex - Short Term Version 3 (ISCST3) dispersion model (MSCC 1999) estimated maximum rate of total salt deposition at 5.7 kg/ha/mo (5.1 lb/ac–mo). Maximum deposition was limited to the side of a hill about 50 meters over the north fence line of the proposed plant (UTM 260,500 E: 3,901,500). The second highest deposition was projected to be 0.9 kg/ha/mo (0.8 lb/ac–mo).

Vegetation is damaged by foliar application of salts when a droplet deposited on a leaf contains dissolved solids. These are taken up by the leaf and, if present in large enough amounts, may kill the cells below causing a necrotic (dead) lesion on the leaf. Such lesions may damage only a small percentage of the leaf area, but young leaves damaged by many such lesions are prevented from full expansion. The result is a reduction in overall photosynthetic capacity. In a dry climate, the threshold for plant damage or loss of yield is approximately 3–4 kg/ha–mo (3 lb./ac–mo).

Although the projected maximum salt deposition for the proposed project is within the order of magnitude for damage to plants under arid conditions, the MSCC maintains that the deposition of salts will not cause toxicity to the local natural vegetation or result in a detectable reduction in growth (MSCC 1999). This conclusion is based on the following rationale: 1) any potential effect would be limited to a very small area across the north fence line; 2) effects demonstrated in simulations were based on a dissolved solid content 250 percent higher than expected during facility operations; 3) worst-case deposition for all other neighboring areas is expected to be considerably less than the above-cited damage threshold of 3–4 kg/ha–mo; 4) vegetation found in the vicinity of the generating plant is relatively salt tolerant; 5) most of the largest components of dissolved solids in the drift (i.e., calcium, magnesium, potassium, sulfates, iron, and boron) are plant nutrients that would be neutral or beneficial to overall plant growth; and 6) the existing WMSCC facility has no cooling tower, therefore, there is no cumulative impact of the expansion project cooling tower drift. As a result, the MSCC has not proposed any conservation measures to minimize the effects of cooling tower drift on habitat for listed species. Their analysis does not consider the effects of any fungicides or biocides added to the cooling tower water, however, or the high-degree of inherent uncertainty in their predictions.

Native plants in the vicinity of the proposed facility are vulnerable to competition from invasive, non-native grasses that also decrease the suitability of areas for kit foxes and kangaroo rats by increasing the density of ground cover. Increased dust and nitrogen deposition accelerates plant community succession by increasing the water-holding ability and available soil nutrient level of the soil. Typically, increases in water and nutrient availability serve to promote the growth of non-native invasive plant species over native species.

As required by San Joaquin Valley Unified Air Pollution Control District Rule 2201, emissions from the WMSCC project will be offset using actual emissions reductions. All

nitrogen oxide emissions from the WMSCC Project will be offset using contemporaneous emissions reductions resultant from the installation of dry low nitrogen combustion, or equivalent, technology on three existing gas turbines at MSCC's 225 MW cogeneration plant. Therefore, there will be no net increase in nitrogen oxide emissions as a result of the proposed project.

Effects of the Proposed Action on Listed and Proposed Birds: Construction of the proposed WMSCC generating facility, water supply pipeline, and transmission line are not anticipated to affect any nesting habitat for the listed bird species considered in this opinion because none of these species are known to nest in the action area. However, activities associated with the proposed construction, operation, and maintenance of the WMSCC project may disrupt essential behaviors of the species (e.g., feeding) and/or result in higher rates of mortality and injury for birds foraging on, or traveling through, the action area owing to the following effects: collision with transmission lines; electrocution from transmission lines; permanent and temporary loss of potential foraging habitat (by displacement from construction activities); harassment and/or accidental flushing of perched or feeding birds; and accidental poisoning by chemicals associated with the use of heavy equipment, such as antifreeze, oil, and grease.

The Aleutian Canada goose's crepuscular activity pattern makes them particularly susceptible to collisions with towers because of poor visibility during twilight hours when flocks of geese fly between preferred roosting and foraging habitats. Areas along the route that parallel existing distribution lines may present higher risks of collisions due to clustering of lines. The entire 19-mile route parallels existing transmission lines, including the existing MSCC 230 kV transmission line, the Diablo-Midway #2 500 kV transmission line, and the La Paloma 230 kV transmission line, which is currently under construction. It is anticipated that avian collisions with the transmission structures will be minimal, however, because the towers are quite visible, there are no large populations of waterfowl nearby, and the towers are not located in a migration pathway.

Bald eagles travel along and past the transmission corridor during foraging and seasonal movements. The transmission towers supporting the conductors provide perches from which many raptors engage in hunting and courtship, and act as ideal nest sites. Hence, bald eagles may be attracted to the towers. Also, California condors tend to be attracted to the vicinity of human activity and man-made obstacles, especially power lines (61 *Federal Register* 38). The potential for electrocution exists if birds collide with transmission lines or if they perch on poles in such a manner as to complete an electrical circuit (i.e., touching two or more live lines or a live line and a grounded surface). Since the reintroduction of the California condor, at least 5 birds have died owing to electrocution (61 *Federal Register* 38). However, we anticipate that electrocution of bald eagles and California condors on the proposed high-voltage transmission line is unlikely to occur because the distances between the conductors, or between conductors and the ground wire, is approximately 16 feet. California condors have a wingspan of

approximately 9 feet. Hence, it is unlikely that a bird could complete a circuit and be electrocuted. Also, captive-bred California condors now receive aversion training for transmission lines before they are released (61 *Federal Register* 38).

The action area may include areas that mountain plovers use during mid-October to mid-March of each year. Mountain plovers often forage on grasslands and disturbed ground, such as could occur along portions of the proposed pipeline and transmission routes. Construction or maintenance activities may disrupt normal behavior patterns of these birds (i.e., harassment), as well as any Aleutian Canada geese, bald eagles, and/or California condors using these areas.

Potential Indirect Effects of the Facilitation of Private Development: During formal consultation, we expressed concern to your agency and the CEC that the increase in available electricity generated by the proposed project could affect the extent and distribution of private development in the region and, in turn, the survival and recovery of listed species. This preliminary evaluation was based on the following rationale: 1) the needs assessment (i.e., demand) for additional electricity generated by the proposed plant is based, at least in part, on forecasts of population growth; 2) these forecasts assume that additional electricity will be available to support projected growth independent of effects to listed species (i.e., no regional multi-species habitat conservation plan); 3) it is reasonably certain that there will not be enough electricity to support forecast growth if additional power plants are not built; and 4) it is reasonably certain that forecast growth would be curtailed without an increase in available electricity. Your agency and the CEC countered that such indirect effects were not reasonably certain to result from the proposed action because generated electricity will be placed onto the interconnected western power grid, and it is impossible to determine where the electricity might be consumed. Because the geographic location of customers for the projects' electricity production is not known, your agency and the CEC maintain that it is not possible to determine whether or not development facilitated by the increased availability of electricity produces a significant environmental impact.

Further evaluation by my staff suggests that, under some circumstances, an increase in the maximum available generating capacity of electricity could facilitate private development and, in turn, indirectly affect listed species. At this time, however, we cannot conclude with reasonable certainty that such effects will result from the proposed WMSCC plant because it is conceivable that the overall supply of electricity in California will still approximate demand when the plant is completed. Hence, the proposed plant may not result in an overall increase in the availability of electricity in California. This uncertainty does not translate into a demonstrated lack of indirect effects, however, or indicate that it is not possible to assess indirect effects resulting from an increase in the maximum available generating capacity. To the contrary, once adequate generation and distribution information becomes available, we maintain that it is feasible and reasonable to anticipate the potential indirect effects to listed species from the increased availability of electricity

by monitoring long-term contracts and market transactions, and identifying where new or upgraded transmission and/or distribution facilities will be required in the future. If subsequent information indicates that the additional generating capacity provided by the WMSCC plant is reasonably certain to result in indirect effects to listed species (e.g., proposals to increase the local capacity of the grid via transmission or distribution upgrades or construction), then your agency will need to reinitiate consultation. In our opinion, the upgrade or construction of distribution substations and transmission lines is an appropriate scale to assess potential indirect effects because such infrastructure is necessary to distribute electricity to new areas, and their service areas are generally well-defined. Hence, the potential indirect effects to listed species can be reasonably anticipated and evaluated. A summary of this evaluation, including findings and supporting evidence, is provided in Appendix A.

Adequacy of Proposed Conservation Measures: To minimize the incidental take of federally listed and proposed species during the WMSCC project, the Applicant has proposed the following: 1) siting facilities in areas without sensitive habitats and/or within areas previously or currently disturbed by on-going industrial activities, 2) implementation of avoidance and minimization measures during construction and operation activities, 3) monitoring and reporting requirements, and 4) preservation and management of habitat in perpetuity to compensate for disturbances to habitat. The effectiveness of each of these conservation measures at avoiding and minimizing the effects of incidental take, and contributing to the conservation needs (survival, recovery) of the listed and proposed species covered in this biological opinion, is discussed in the following paragraphs.

The Applicant has attempted to avoid and minimize effects to listed and proposed species by siting facilities away from sensitive habitats and within areas previously or currently disturbed by on-going industrial activities. The WMSCC generating facility will be constructed adjacent to the existing MSCC facility. The laydown area for the proposed WMSCC project is located on the original laydown area for the existing MSCC facility. The proposed transmission line will occur within an existing transmission corridor and existing roads will be used to the maximum extent possible during construction activities. The proposed water supply pipeline will use the same pipeline corridor that was constructed on the original plant. This corridor traverses an area that is already highly degraded by oil field activities. There is an existing road immediately adjacent to the pipe corridor which will be used for construction and maintenance. The Applicant has also committed to siting towers, pulling sites, access roads, and storage/parking areas in areas that will avoid direct effects to individuals of listed species.

To reduce the incidental take of kit foxes during construction, the Applicants have proposed to implement best management practices and conservation measures prior to and during ground disturbance activities, including a worker education program, operational restrictions (e.g., speed limits, no pets or rodenticide use), pre-construction

surveys, presence of a qualified biological monitor, avoidance zones, and design modifications (e.g., distances between conductors, bird flight diverters). These measures will reduce the risk of incidental take during construction activities. However, additional measures that could be reasonable and feasible (e.g., live-trapping and relocation of animals within the project footprint, burrow/den excavation) could be implemented to minimize the chance of incidental take during construction.

Dens are essential for the survival and reproduction of kit foxes which use them year-round for shelter and escape from predators. Hence, the destruction of earthen dens may affect the survival of kit foxes by increasing their energetic requirements and/or reducing the number and distribution of escape refugia from predators. Kit foxes also use dens in the spring for rearing young. Natal dens are often large (i.e., numerous tunnels and openings) and traditional (i.e., re-used from year to year). This complexity and strong site fidelity suggests that natal dens may be a limiting resource for kit foxes in some areas. Research in the Lokern area by the California Energy Commission found that, even though kit foxes frequently used pipes and culverts as dens in oil-developed areas, only earthen dens were used to birth and wean pups. Hence, the destruction or temporary disturbance of earthen dens could adversely impact the reproductive success of kit foxes. The commitment by the Applicant to compensate for these effects by preserving habitat will minimize these effects.

Research indicates that food availability, reproductive rates, and juvenile survival strongly influence the population dynamics of kit foxes, kangaroo rats, and/or leopard lizards. Hence, any disturbances that disrupt or impair essential behaviors such as feeding, sheltering, or breeding can reduce the survival and recovery of these species. Disturbances during the breeding period may be especially detrimental if adults abandon home ranges when young are still dependent, or aggressive interactions between members of neighboring social groups increase due to home range expansions or abandonment. The sizes of the avoidance zones agreed to by the Applicant will minimize these effects of the proposed project to the essential behavior patterns of listed animal species, and ecosystem processes essential to the viability of listed plant populations.

It is reasonable to assume that a pipeline leak, fire, spill, or other destructive situation will eventually occur during the operation of the proposed project. Hence, we recommended in our October 5, 2000, letter that the Applicant propose remedial compensation and conservation measures that would be implemented following unforeseen circumstances. To date, no contingency measures have been proposed to minimize the effects of incidental take during such circumstances.

The Applicant has agreed to recontour areas that are temporarily disturbed during construction activities and allow them to revegetate naturally. Research on the former Naval Petroleum Reserves indicates that habitats subjected to single, short-term disturbances can successfully revegetate without seeding or active management if seeds

can naturally disperse from adjacent, undisturbed habitat. The restoration of habitat for listed species is not ensured by this technique, however, as evidenced by the failure to restore habitat for listed species on the original laydown area for the existing MSCC facility, which was seeded after construction of the facility. The Biological Assessment for the proposed project indicates that the vegetation on the original laydown area for the existing MSCC plant, "... is so dense that kit fox and antelope squirrels have not used the proposed expansion site and laydown area in a few years." In other words, habitat for sensitive and listed species was not successfully restored in this area and, as a result, the effects were essentially permanent rather than temporary. Also, it seems reasonable that maintenance activities and periodic inspections of the proposed transmission line will repeatedly disturb habitats for listed species. As a result of these ongoing operations and activities, non-native ruderal species will likely continue to invade the area along roads and edges of the disturbed areas, making it difficult for native species and rare plants to compete. Furthermore, any listed species that re-colonize these disturbed areas following construction will be susceptible to death, injury, or harassment during subsequent, repeated maintenance activities or inspections. Hence, we recommended in an October 5, 2000, memorandum to your agency that the repeated, chronic disturbance of an area be compensated for as a permanent effect. The Applicant did not revise their estimates of permanent and temporary disturbances in response to this recommendation and, as a result, some portion of the purported temporary effects may, in fact, have permanent effects to listed species.

Research at the former Naval Petroleum Reserves No. 1 indicated that the time required for vegetation on disturbed sites to attain 70 percent of the cover on adjacent, undisturbed areas was approximately 5 to10 years. Site use by rodents stabilized by the second year post-revegetation, whereas the use of reclaimed sites by kit foxes appeared to slightly increase after 3 or 4 years following treatment (Hinshaw et al. 1999). This lag between disturbance and recolonization or use of the site will result in a temporal loss of habitat value for listed species of approximately 5 to 10 years; even if revegetation is successful. The Applicant has not proposed adequate compensation for this temporal loss of habitat, or suitable conservation measures to ensure that revegetation is successful and listed species recolonize areas.

The Applicant has proposed to conduct compliance inspections once per week and provide annual compliance reports and a post-construction compliance report to the CEC and our agency. These minimal reporting requirements are inadequate to ensure that effects to listed species are avoided and or minimized

The Applicant has proposed to compensate for permanent and temporary disturbances to listed species and their habitats by preserving habitat and providing an endowment for long-term management of the property in the amount required by the chosen land manager. In an October 5, 2000, memorandum to your agency (#1-1-00-I-2433), we agreed with the compensation ratios proposed by the Applicant for this project. This

preservation will contribute to the survival and recovery of listed species in western Kern County by precluding the development of some areas that resident and dispersing, migrating, or wintering animals use during their essential behaviors. However, these ratios still equate to a 25% overall loss of habitat and, therefore, are not adequate to meet the goal of the *Recovery Plan for Upland Species of the San Joaquin Valley* (Region 1, U.S. Fish and Wildlife Service, Portland, Oregon, 1998) to protect 80 to 90% of the remaining natural lands in western Kern County, including the Lokern area (recovery task 2.1.4, p. 197).

The applicant has agreed to provide sufficient funds to the CNLM for acquisition and management of habitat that will be incorporated into the Lokern Preserve. The Lokern Preserve currently encompasses more than 3500 acres, and is located within a much larger planning area identified as the Lokern Natural Area. The 44,000-acre Lokern Natural Area has been identified by the CEC, CDFG, our agencies, and other County, State, and Federal agencies as an area in need of protection because it is relatively undisturbed and contains populations of listed species. Other energy projects (e.g., La Paloma, Sunrise, Pastoria and Elk Hills) have also agreed to provide their habitat compensation funds to CNLM to purchase habitat as part of the Lokern Preserve. Hence, these projects will cumulatively contribute to implementing the *Recovery Plan* by protecting and consolidating habitat in an essential area for the survival and recovery of numerous listed species.

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 ESA.

Forecast population increases in western Kern County are reasonably certain to contribute to numerous non-Federal activities that will eliminate habitat for listed species within the action area, including residential development; oil and gas development on private lands; road and utility right-of-way management; flood control and water banking projects that may not be funded, permitted, or constructed by a Federal agency; overgrazing by livestock; and continuing agricultural expansion. Listed and proposed animal species are also affected by poisoning, shooting, increased predation associated with human development, ground squirrel reduction efforts, mosquito control, and reduction of food sources. Extinction of several remaining populations of some of these species appears likely due to chance fluctuation of small populations, unusual climatic events, or the loss of genetic fitness commonly associated with very small population sizes. The cumulative effects of these known actions pose a significant threat to the eventual recovery of listed species in the action area.

Conclusion

After reviewing the status' of the species, the environmental baseline of the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the proposed project is not likely to jeopardize the continued existence of the kit fox, giant kangaroo rat, Tipton kangaroo rat, leopard lizard, Hoover's woolly-star, Kern mallow, San Joaquin woolly-threads, Aleutian Canada goose, bald eagle, California condor, or mountain plover. We reached this conclusion based on the following reasons:

1. The number of individuals anticipated to be killed or injured during the proposed action is small owing to avoidance and minimization measures that the BLM and MSCC have agreed to implement.

2. The number of individuals anticipated to be affected by the project is not expected to have a significant effect on the overall abundance, distribution, or reproductive potential of any listed species.

3. The habitat preservation proposed by the Applicant will compensate for the destruction of habitat during the proposed action.

4. The habitat directly affected by the proposed action is a relatively small proportion of the total habitat for these species in the region.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including 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 section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with this Incidental Take Statement.

Sections 7(b)(4) and 7(o)(2) of the ESA, which refer to terms and conditions and exemptions on taking listed fish and wildlife species do not apply to listed plant species.

However, section 9(a)(2) of the ESA prohibits removal or reduction to possession and malicious damage or destruction of such species on Federal lands and the removal, cutting, digging up, or damaging or destroying such species in knowing violation of any State law or regulation, including State criminal trespass law. Actions funded, authorized or implemented by a Federal agency that could result in the removal or destruction of such species on Federal lands are not a violation of the ESA, provided the actions are not likely to result in jeopardy to the species. The California Native Plant Protection Act prohibits the take of state-listed plants.

The measures described below are non-discretionary, and must be implemented by the agency so that they become binding conditions of any grant or permit issued to BLM, as appropriate, in order for the exemption in section 7(o)(2) to apply. The BLM has a continuing duty to regulate the activity covered by this incidental take statement. If the BLM (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

We anticipate that the following take in the form of harm or harassment, as defined in 50 CFR § 17.3, could occur as a result of the proposed action:

- One (1) pair of kit foxes within the 72.5-acre project footprint;
- All giant kangaroo rats within the 19.7 acres of habitat for this species that will be disturbed during construction of the proposed transmission line;
- All leopard lizards within the 7.4 acres of habitat for this species that will be disturbed during construction of the proposed transmission line;

We anticipate that the following take in the form of death or injury could occur as a result of the proposed action:

- One (1) Aleutian Canada goose from collision and/or electrocution along the 19 miles of transmission line.
- One (1) bald eagle from collision and/or electrocution along the 19 miles of transmission line.
- One (1) mountain plover from collision and/or electrocution along the 19 miles of transmission line.

We do not anticipate any take of Tipton kangaroo rats or California condors during the proposed action.

Effect of the Take

We determined in the accompanying biological opinion that this level of anticipated take is not likely to result in jeopardy to the kit fox, giant kangaroo rat, Tipton kangaroo rat, leopard lizard, Aleutian Canada goose, bald eagle, California condor, or mountain plover.

Reasonable and Prudent Measures

We believe that the following reasonable and prudent measure is necessary and appropriate to minimize take of the listed species considered in this biological opinion:

- Complete the final project design and implement best management practices and conservation measures during construction, operation, and maintenance activities.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Bureau and the District must comply with the following terms and conditions, which implement the reasonable and prudent measure described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

The BLM and/or Applicant will implement the reasonable and prudent measure through the following terms and conditions:

1 The BLM and/or Applicant will notify the Sacramento Fish and Wildlife Office in writing, at least 5 working days prior to the initiation of vegetation clearing or ground disturbance activities, and at least 5 working days prior to the completion of these activities. The BLM and/or Applicant will photo-document the pre- and post-construction conditions of the sites.

2 The BLM and/or Applicant will reduce the footprint of the project, and disturbance within this footprint, to the maximum extent possible.

3 Prior to the initiation of any activities associated with the proposed project, the BLM and/or Applicant will acquire the appropriate acreage (currently estimated as 99.2 acres) either as a conservation easement or in fee title, and deed it to a land manager approved by our agency (e.g., CNLM). The preserved lands must be located within the Lokern Natural Area. The BLM and/or Applicant will provide written confirmation from the land manager

that adequate funding and endowment (i.e., $1,500 per acre) has been provided to manage the preserved habitat in perpetuity.

4 Prior to the initiation of any activities associated with the proposed project, the BLM and/or Applicant will develop and implement a BRMIMP approved by our agency that, at a minimum, includes all of the conservation measures proposed in the project description and terms and conditions of this biological opinion and accompanying incidental take statement.

5 Prior to the initiation of any activities associated with the proposed project, the BLM and/or the Applicant will have a biologist approved by us conduct surveys for vernal pools and vernal pool fairy shrimp (*Branchinecta lynchi*) along the proposed transmission line route during appropriate hydrological conditions. If a federally-listed fairy shrimp species is detected within the action area during pre-construction surveys, then the BLM must reinitiate formal consultation with us to determine if the proposed action is likely to jeopardize the continued existence of this species.

6 For the life of the project, the BLM and/or Applicant will ensure that the "Worker Environmental Awareness Program" is required for all employees, contractors, subcontractors, and their employees, and other personnel working in the project area. The training must occur prior to any activities by workers within areas that may affect federally listed or proposed species. At a minimum, the "Worker Environmental Awareness Program" must include the following information: 1) requirements of the Act, 2) identification of sensitive habitats and all federally listed and proposed species that may occur in the action area, 3) habitat needs of all federally listed and proposed species, and areas where they are known to occur, or could potentially occur, within the action area, 4) reasons for protecting biological resources, 5) measures that will be taken to avoid and minimize incidental take during construction, operation, and maintenance activities, 6) location of preserves and protected areas within the action area, 7) reporting procedures for observations of listed and proposed species, 8) reporting procedures for incidents involving the take or potential for take of listed and proposed species, 9) information regarding whom to contact if personnel have further comments or questions about the material presented during training, and 10) information regarding whom to contact at our agency to report non-compliance with the conservation measures in the biological opinion and terms and conditions of the accompanying incidental take statement (or other potential violations of the Act). The contents of the "Worker Environmental Awareness Program" and the qualifications of the proposed instructor(s) must be submitted to our agency for approval no later than 60 days prior to the proposed initiation of training.

7 To minimize the incidental take of listed animals, the BLM and/or the Applicant will ensure that a wildlife biologist approved by our agency conducts surveys for federally listed and proposed animals and birds using survey guidelines approved by our agency. Surveys must be performed no more than 14 days prior to initiation of construction in any portion of the project area. If vegetation clearing and/or ground disturbance activities are not initiated within 14 days following surveys for kit foxes, then the area must be re-surveyed. The biologist must ensure that 100 percent coverage of the disturbance area and a 500-feet-wide buffer is attained during the surveys.

8 The BLM and/or Applicant will designate a field contact representative (i.e., Designated Biologist) who, subject to our approval, will be responsible for overseeing compliance with protective measures for the listed species. The BLM and/or Applicant will ensure that the Designated Biologist is present during all activities that result in the clearing or grading of habitat for listed species, or adjacent areas, to fully minimize the amount of disturbance by detecting any individuals or sign of these species occurring within the project area, assuring restrictive markers are obeyed, and construction guidelines and best management practices are followed. The biologist must be experienced with the vegetation communities and listed species in the Lokern Area. The Designated Biologist will have the authority to halt/suspend all associated project activities which may be in violation of the terms and conditions of this biological opinion, or to avoid or minimize the unanticipated incidental take of listed species, for as long as necessary to resolve the situation through consultation with us.

9 The BLM and/or the Applicant will ensure that potential dens that are within the direct project footprint and cannot be avoided during construction activities are carefully excavated to ensure that no kit foxes or other federally listed species are inside. Prior to excavation, vegetation will be scraped away from the den entrances, and a thin layer of fine dust will be spread in approximately a 1-meter diameter circle around each entrance. The entrances will then be examined on 2 consecutive mornings to detect tracks or other sign of listed species. If no sign of listed species is detected during 2 consecutive days of monitoring during which track detection and identification is not precluded by forces such as wind, rain, vehicles, or foot traffic, then the potential den may be carefully excavated using hand tools. If kit fox(es) are found inside a den during excavation, then they will be allowed to escape unharmed and our office will be immediately notified of the incident. Each den excavation will be conducted or supervised by the Designated Biologist.

Potential dens that are within construction areas or their 500-feet-wide buffer zones, but can be avoided during construction activities, will be examined for occupancy of kit foxes and other listed species as described in the preceding paragraph. If the dens are determined to be unoccupied, then they will be covered with plywood that is firmly secured to prevent access by kit foxes or leopard lizards. The covers will not be installed more than 14 days prior to the start of construction. These dens will be periodically inspected by the Designated Biologist to ensure that no kit foxes have dug under the plywood and entered the den. The covers will remain in place for the duration of construction activity in the area, after which time they will be removed.

Dens known or suspected to be used by kit foxes (i.e., either currently or previously) will not be disturbed and/or excavated without prior verbal or written concurrence from our agency. If it is necessary to destroy a known or suspected den that is currently unoccupied, and our agency concurs with this action, then the den will be examined for occupancy of kit foxes and other listed species as described above. If the den is determined to be unoccupied, then the den will be completely excavated under supervision of the Designated Biologist.

10 To minimize the incidental take of Tipton kangaroo rats and giant kangaroo rats in the form of death or injury, the BLM and/or Applicant will conduct a live-trapping program prior to vegetation clearing or ground disturbance of habitat in areas suspected to be occupied, or known to be previously occupied (e.g., apparently abandoned precincts), by these species. During a 3-night period immediately preceding the clearing or disturbance habitat in these areas, the Designated Biologist will conduct live-trapping for these species in areas where burrows will be disturbed by construction activities. Trapping locations will be selected at the discretion of the Designated Biologist, in coordination with this office. The Applicant will immediately notify us of any captures of listed or sensitive species, and all captured animals will be held in captivity for later release at their capture site or the nearest appropriate site. No vegetation clearing or construction activities will occur until 2 working days (i.e., Monday through Friday, discounting Federal holidays) after our biologists acknowledge the receipt of these data.

If Tipton kangaroo rats or giant kangaroo rats are still being captured on the third night of live-trapping, trapping will continue until there are two consecutive nights of trapping with no captures. Kangaroo rats will be captured using Sherman™ live traps modified to reduce tail injury or equivalent traps authorized by our agency. Captured animals will be weighed, sexed, and examined for reproductive condition.

Following trapping, all potential kangaroo rat burrows within the direct project footprint will be excavated using hand tools to ensure that they are unoccupied. It is possible that kangaroo rats from adjacent areas will move into the work area once resident kangaroo rats have been trapped and removed. Therefore, barrier fencing will be erected to exclude these species from the work area. The fence will be constructed of 0.5-inch (or smaller) hardware cloth, aluminum or plastic flashing, or similar material approved by our agency. Barrier fencing will be supported by metal stakes and extend at least 2.5 feet above the surrounding ground surface. Six inches of the barrier fencing will be buried extend below ground level. Barrier fences must be kept in place until construction has moved at least 100 feet distant. Each morning the Designated Biologist will inspect the area prior to the initiation of construction activities to verify that no kangaroo rats moved onto the working area during the preceding night. If kangaroo rat sign is observed in the working area, construction will be suspended until these animals are trapped and removed. Night time project traffic will be prohibited in the working area (except traffic necessary for conducting biological surveys or associated research).

All captured Tipton kangaroo rats and giant kangaroo rats will be temporarily housed in ventilated containers of at least 12 inches long by 12 inches wide by 4 inches high. The containers will be partially filled with substrate material and will be kept in the shade or indoors where ambient temperature will not exceed 35 degrees Centigrade or be allowed to drop lower than 20 degrees Centigrade. Likewise, temperatures will not exceed 35 degrees Centigrade during transport. Appropriate food items will be provided. The animals will be transferred within 24 hours to a permitted facility approved by our agency. Animals will be kept in appropriate temperature conditions and fed each day.

All captured Tipton kangaroo rats and giant kangaroo rats will be released in their place of capture (or as close as possible) once construction is completed in the area and the nearest construction activity is at least 100 feet away from the release site. In any case, animals will be held for no longer than 30 days or until 10 percent body weight has been lost, whichever period is shorter. Released animals will be placed in natural or artificial burrows constructed according to specifications approved by our agency. Soil compaction, topsoil replacement, and grooming will be completed before animals are released.

Prior to their release, captured kangaroo rats will be marked with monel eartags and/or passive integrated transponder tags (PIT) tags to enable their subsequent identification. This marking will allow the Applicant to

monitor the survival, reproduction, and site fidelity of released animals, and enable us to assess the effectiveness of this capture/release technique for minimizing the effects of incidental take to kangaroo rats.

11 Prior to vegetation clearing or ground disturbance, the BLM and/or Applicant will establish avoidance areas around dens of kit foxes, burrows of federally listed kangaroo rats and leopard lizards, listed populations of plants, and areas containing wetlands and/or vernal pools. Avoidance areas will be identified by metal stakes connected by rope, or by other fencing approved by our agency. Flagging will be used to increase the visibility of the avoidance areas. Each avoidance area will be circular with the radius extending outward from the den or burrow entrances, nests, or the edge of the plant population for a distance approved by our agency (see the project description section of the accompanying biological opinion). Final staking and marking of avoidance areas will be completed within the 14-day period before construction is initiated in an area. Each of the avoidance areas will be maintained until nearby construction activities have been completed, after which the staking and marking materials will be removed. If specified avoidance areas cannot be observed for any reason, our office will be contacted for guidance prior to vegetation clearing or ground disturbance activities on or near sensitive biological resources.

12 To ensure compliance with the Migratory Bird Treaty Act, the BLM and/or Applicant will ensure that a biologist approved by our agency conducts surveys for nests of native migratory birds prior to the removal of any vegetation during February 15 through August 30. A buffer zone at least 100 feet in diameter will be established around any active nests of non-listed native birds that are located during these surveys. No activities will be allowed within this buffer zone until the nestlings have fledged or the nest has been abandoned. If nest(s) of federally listed or proposed species are located within or nearby the area anticipated to be disturbed by the project, then the Applicant will immediately notify us of this discovery, and no activities will be allowed within one-quarter mile (1,320 feet) of the nests until the nestlings have fledged or the nest has been abandoned and the birds have left the area. The Designated Biologist will closely monitor the behavior of these birds to ensure that nearby construction activities are not disturbing the birds or making them or their nest/young more susceptible to predators. These breeding season restrictions, including the one-quarter mile avoidance zone around active nests, also apply to raptor species that may be found in the action area, including the American peregrine falcon (*Falco peregrinus anatum*), bald eagle (*Haliaeetus leucocephalus*), Swainson's hawk (*Buteo swainsoni*), Cooper's hawk (*Accipiter cooperi*), sharp-shinned hawk (*Accipiter striatus*), golden eagle

(*Aquila chrysaetos*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), merlin (*Falco columbarius*), red-tailed hawk (*Buteo jamaicensis*), and prairie falcon (*Falco mexicanus*). We and/or the Designated Biologist will have the discretion to cease or modify project activities if they are deemed to be altering the birds behavior in a manner that may be detrimental to their survival or reproductive success. The breeding season restrictions will extend throughout the entire operational life of the WMSCC project, including operations and maintenance activities.

13 To minimize the incidental take of leopard lizards in the form of death or injury, the BLM and/or Applicant will conduct surveys and, if necessary, live-trapping prior to vegetation clearing or ground disturbance of habitat in areas with suitable habitat for this species. During periods when most leopard lizards are active (i.e., air temperatures measured 10 centimeters above the ground are between 25 and 35 degrees Centigrade, and soil temperatures measured at a depth of 2 centimeters in shaded areas are between 35 and 50 degrees Centigrade), the Designated Biologist will walk transects that provide 100 percent coverage of the work area, including a 100-foot buffer zone, and attempt to locate leopard lizards. If leopard lizards are observed within the anticipated direct project footprint, then efforts to capture them (e.g., noosing) will begin no earlier than 10 days prior to initiation of construction. Capture efforts will be attempted for a minimum of 3 days and continue until no leopard lizards are observed for 3 consecutive days. All burrows within the anticipated project footprint will be hand-excavated during this effort to remove any unobserved or uncaptured animals and discourage use of the area during construction. Before each burrow is excavated, it will be inspected using a fiber-optic device to ensure that there are no animals inside. Continuous monitoring will be conducted during construction activities. The Applicant will attempt to avoid capturing or disturbing leopard lizards during their breeding season.

In areas where 14-day pre-construction surveys are conducted outside of these seasonal and temperature parameters, all burrows within the construction and buffer zone will be inspected using a fiber-optic device to ensure that there are no leopard lizards in them. Burrows that cannot be avoided during project activities will be hand excavated to remove unobserved animals and discourage use of the area during construction. Habitat for leopard lizards that is within the construction zone, but can be avoided during project activities, will be fenced to exclude animals once each burrow has been inspected to ensure that they are unoccupied.

Captured leopard lizards will be temporarily housed in ventilated containers of at least 12 inches long by 12 inches wide by 4 inches high. The containers will be partially filled with substrate material and kept in the shade or indoors where ambient temperature will not exceed 35 degrees Centigrade, or be lower than 20 degrees Centigrade. Likewise, temperatures will not exceed 35 degrees Centigrade during transport. Food items such as grasshoppers, crickets, and meal worms will be provided. If any leopard lizards are kept in captivity during winter, when they are not normally active, temperatures will be maintained near normal average winter temperature. The leopard lizards will be provided with suitable hibernacula and kept in darkened conditions. No food will be provided.

Captured leopard lizards will be released as soon as practicable in the area where they were captured once construction is completed in the area and the nearest construction activity is at least 100 feet away from the release site. During warm-weather months, leopard lizards will be released in areas providing thermal protection (e.g., under bushes or near existing or artificial small mammal burrow entrances). They will not be released if ambient temperatures are less than 20 degrees Centigrade or greater that 35 degrees Centigrade. If leopard lizards are to be released during cool-weather months, then they will be placed into a chamber in an artificial burrow. The chamber will be backfilled lightly with soil and buried to a depth of 9 to 13 inches to maintain a relatively constant temperature. Artificial burrows will be constructed in suitable habitat near the original burrow or capture sites, using protocols and designs approved by our agency.

Prior to their release, captured leopard lizards will be marked with monel eartags and/or passive integrated transponder tags (PIT) tags to enable their subsequent identification. This marking will allow the Applicant to monitor the survival, reproduction, and site fidelity of released animals, and enable us to assess the effectiveness of this capture/release technique for minimizing the effects of incidental take to leopard lizards.

14 The BLM and/or Applicant will ensure that a sturdy fence, expected to last for the approximately 20-month-long construction period, is erected around the power plant site and adjacent laydown area. Disturbance will be limited to within the fenced area. For the construction of the transmission line and water supply pipeline, construction zones will be designated by wooden or metal stakes connected by fencing or flagging sturdy enough to remain in place until nearby construction is completed.

In areas where leopard lizards, giant kangaroo rats, or Tipton kangaroo rats (or their sign) have been observed within 100 feet of a construction area or access road during earlier project surveys or pre-activity surveys conducted as part of construction for this project, barrier fencing will be erected to exclude these species from the work area. Fencing will be constructed of 0.5-inch (or smaller) hardware cloth, aluminum or plastic flashing, or similar material approved by our agency. Barrier fencing must be supported by metal stakes and extend at least 2.5 feet above the surrounding ground surface. Six inches of the barrier fencing will extend below ground level. Barrier fences must be kept in place until construction has moved at least 100 feet distant.

15 The BLM and/or Applicant will ensure that all movement of employees, construction contractors and equipment, including ingress and egress of equipment and personnel, will be limited to existing roads and designated construction zones, access ramps, and staging areas.

16 The BLM and/or the Applicant will ensure that the use of rodenticides, herbicides, insecticides, or other chemicals that could potentially result in the take of listed species is prohibited unless approved by our agency.

17 The BLM and/or Applicant will ensure that we are given the right to access and inspect any portion of the project site for compliance with the project description and the terms and conditions of this biological opinion at any time during the implementation of the proposed action.

18 The BLM and/or Applicant will notify the Sacramento Fish and Wildlife Office immediately if any emergency repairs that may affect listed species are required to structures that are part of the proposed action. Any leak or spill should be stopped as soon as possible, while ensuring the safety of personnel. Effects to biological resources will be minimized during repair activities and existing regulations on the use and storage of toxic chemicals on site will be followed. As soon as possible following the emergency action, surveys should be conducted to identify and quantify effects to listed and proposed species and their habitats. The BLM and/or Applicant will re-vegetate and implement appropriate conservation measures using the same criteria as agreed upon for disturbances caused by the original proposed action.

19 The BLM and/or Applicant will ensure that sufficient fire-fighting equipment (e.g., extinguishers, shovels, water tankers) is available to employees, contractors, and other construction personnel to help minimize the chance of human-caused wildfires. Shields, protective mats, and/or

other fire preventative methods will be used during grinding, welding, and other spark-inducing activities. Personnel will be trained regarding fire hazards, preventative actions, and responses to fires.

20 The BLM and/or Applicant will ensure that no permanent lighting is installed as part of the transmission line or water supply pipeline. All construction, operation, and maintenance activities on these lines will occur during the day. Project-related traffic will be prohibited in the project area at night, except as necessary for biological monitoring or associated research. Any permanent lighting in the vicinity of the WMSCC generating facility will be hooded to direct illumination toward the project area. Illumination will be as low as reasonable for the safety of personnel.

21 The BLM and/or the Applicant will ensure that the Designated Biologist conducts compliance inspections at least once daily during construction to ensure the following: 1) avoidance area flagging and fencing is in place where needed and has been removed in areas where construction is completed; 2) construction area boundaries are clearly delineated by fencing or staking and flagging and/or rope or cord; 3) speed limit signs and messages are in place and accurate; 4) equipment storage and parking are confined to the designated areas; 5) construction activities on the transmission line and water supply pipeline are limited to daylight hours; 6) all food-related trash items are being disposed of in closed containers and removed at least once a week from the site; 7) deliberate or inadvertent feeding of wildlife is not occurring; 8) no firearms or pets are on the project site; 9) no rodenticides or herbicides are used during project construction, unless previously approved by our agency; 10) vehicles and equipment are not leaking; 11) erosion control mechanisms (e.g., filter fences, surface roughening, hay bales, mulch, water bars) are intact and functioning properly; 12) dust control (water trucks, tarps on dust sources) is adequate; and 13) escape ramps or covers have been installed, and are sufficient, to prevent the entrapment of wildlife. All incidences of non-compliance, as well as other problems that may become non-compliance issues, will be corrected immediately and discussed at the weekly project status meeting. Furthermore, Designated Biologist and other on-site biological/compliance monitors will take every opportunity to discuss sensitive species biology and protection with contracting personnel.

22 The BLM and/or the Applicant will ensure that monthly reports that summarize environmental compliance activities during the previous calendar month are prepared and submitted to our office and the CDFG within 10 days of the end of the month. The first monthly report will be prepared within one month of the beginning of surface-disturbing activities and

subsequent reports will be prepared for any month during which the Environmental Inspector determines that monitoring is necessary for the protection of sensitive biological resources. At a minimum, each monthly report will include the following information: 1) a listing of areas and activities monitored during the reporting month; 2) dates and attendees of worker environmental awareness training; 3) estimates of habitat disturbed, by vegetation type and disturbance type (i.e., permanent, temporary); 4) any observations of listed species or their sign onsite or in the vicinity of construction activities; 5) known occurrences of incidental take; 6) a summary of pre-construction surveys and den/burrow monitoring and excavation; 7) information on captured animals, including their capture location and condition; 8) updates on the condition, current location, and anticipated release dates of any animals held in captivity; 9) information on released animals, including the results of monitoring (e.g., survival, cause of death, site fidelity); 10) updates on the implementation and completion of the proposed action, to include construction and monitoring activities planned for the following month, and any anticipated changes in the project description or implementation schedule; 11) non-compliance/incident reports and the resolution of each reported situation; 12) information regarding the monitoring and effectiveness of revegetation activities, 13) any other pertinent data concerning the Applicant's success in meeting conservation measures outlined in the project description of the biological opinion or the terms and conditions of the incidental take statement, and an explanation of failure to meet such measures, if any, 14) an evaluation of the efficacy of the conservation measures and terms and conditions at avoiding and minimizing incidental take, and 15) pertinent recommendations. The reports will include high-quality, well-labeled maps or GIS coverages that depict the precise location(s) of the project activities to date, the location of known, suspected, or potential biological resources (including dens, burrows, and nests) on or near construction areas, the location of observations of sensitive species or their sign on or near construction areas, and a delineation of the major vegetation communities on and adjacent to construction activities. All maps will have a title, date, scale, legend, and north arrow.

23 The BLM and/or the Applicant will ensure that an annual report that summarizes environmental compliance activities during the previous year is prepared and submitted to our office and the CDFG within 45 days of the anniversary date of the beginning of construction. Each report will summarize the information contained in the monthly reports for that year. This report will also include quantitative estimates of the cumulative amounts of salt and particulate deposition on vegetation surrounding the generating facility, and a discussion of remedial measures that were

implemented to comply with the biological opinion and accompanying incidental take statement.

24 The BLM and/or the Applicant will ensure that all excavated, steep-walled holes or trenches more than 2 feet deep are covered at the close of each working day by plywood, or install one or more escape ramps constructed of earth fill or wooden planks to prevent entrapment of wildlife during construction or maintenance. The ramps will be located at no greater than 500-feet intervals, sloped less than 45 degrees, and be at least one foot in width. Trenches and holes will be inspected for entrapped wildlife each morning prior to the onset of construction. Before holes or trenches are filled, they will be thoroughly inspected for entrapped animals.

Any uninjured animals that are discovered to be trapped in a hole or trench will be allowed to escape voluntarily, with as little harassment as possible, before construction activities resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded. If the entrapped animal appears to be injured, the Environmental Inspector or Designated Biologist will immediately contact our agency for guidance before the animal is allowed to escape (points of contact: Chief, Endangered Species Division; 916/414-6600). If, for some reason, our agency cannot be contacted in a timely manner, then the Applicant will contact the CDFG at 209/243-4017 (business hours Monday through Friday) or 800/952-5400 (non-business hours). Alternatively, the State Dispatch of the CDFG can be contacted at 916/445-0045 for immediate assistance. The Dispatch can then contact a local warden or biologist. If, for some reason, the CDFG cannot be contacted in a timely manner, then a local veterinarian will be contacted to provide guidance and treatment in the interim. Before construction activities are initiated, the Designated Biologist will provide our agency with a list of qualified, on-call veterinarian(s) that can be contacted in the event an injured animal or bird needs care.

25 The BLM and/or the Applicant will ensure that all construction pipes, poles, culverts, or similar structures with a diameter of 1½ inches or greater stored at a construction site for one or more overnight periods will be thoroughly inspected for wildlife before the subject pipe is subsequently buried, capped, or otherwise used or moved in any way. Unburied pipes laid in trenches overnight will be capped. If an animal is discovered inside a pipe, that section of pipe will not be moved until the Designated Biologist has been consulted. If necessary, and under the direct supervision of the Designated Biologist, the pipe may be moved only once to remove it from the path of construction activity, until the animal has escaped.

26 The BLM and/or the Applicant will ensure that the construction area is inspected within 15 days of the completion of construction in each area. All construction debris (e.g., stakes, lathe, flagging, barrels, cans, drums, accidental spills, and any other refuse generated by construction), unnecessary signs, and other trash and litter will be removed within 15 days of the inspection. Disposal of all debris will be at an approved waste facility.

27 The BLM and/or the Applicant will ensure that all areas subject to temporary ground disturbances, including storage and staging areas, temporary routes used for the project, pipeline working areas, and transmission line tower pad sites and pulling areas, are re-contoured to natural lines and original grade without disruption to adjacent, undisturbed habitat. After re-contouring, soils will be compacted to 80 percent of original compaction and salvaged topsoil will be spread, if appropriate (discussed in following paragraph). The soil will then be groomed with a Cultipak or sheep's-foot roller to provide surface micro-relief. In each construction area, re-contouring and re-compaction will occur within 30 days of the completion of construction, unless it must be done earlier to allow the release of Tipton kangaroo rats, giant kangaroo rats, or leopard lizards that are being held in captivity.

The top six inches of soil will be salvaged and stockpiled from all areas where temporary disturbance from construction activities occurs. Stockpiled topsoil will be spread over disturbed areas after re-contouring and re-compaction. If topsoil containing an adequate seed source will be salvaged and subsequently spread over disturbed areas, then the seeding of disturbed areas with a mix of native species may not be necessary. However, topsoil will not be salvaged or spread in areas that are infested with high densities of exotic grass species. In these areas, the topsoil will be disposed at an approved waste facility, and the Applicant will seed the area with a mix of native species approved by our agency.

Mulching of disturbed areas will be conducted in areas where the slope of the terrain is greater than 25 percent to prevent the loss of topsoil. Mulch will consist of agricultural wheat straw that has been certified to be free of noxious weeds by the Kern County Agricultural Commissioner. Straw mulch will be applied to slopes with a blower at a rate of two tons per acre and will be anchored with plastic netting or punched with a mulch crimper on slopes of greater than 3:1. Mulching will occur within 30 days after the completion of construction in each area. To prevent the loss of topsoil, however, the Designated Biologist may require the immediate spreading of mulch on disturbed slopes greater than 25 percent whenever there is the

threat of heavy rain. Similarly, the Designated Biologist may require the immediate placement of bales of straw around stockpiled topsoil prior to rains.

28 The BLM and/or the Applicant will monitor the revegetation of lands disturbed by their construction activities to ensure that these lands successfully regenerate habitat for listed and proposed species that is similar to nearby, undisturbed habitat of the same type (i.e., reference site) in terms of species composition and distribution, and ecological structure and function. The revegetation of areas disturbed by construction activities may be considered successful when the following performance criteria are met: 1) percent ground cover is at least 70 percent that found on a reference site approved by our agency; 2) species composition includes 3 dominant grasses, 3 dominant forbs, and 2 dominant shrubs found on the reference site (the shrub requirement is applicable to shrub or scrub communities only); 3) the 3 dominant grasses and 3 dominant forbs occur in at least 50 percent of sampled plots; 4) plant productivity is at least 70 percent of the approved reference site; 5) the recruitment of seedlings of native plant species is occurring; 6) density of shrubs is at least 70 percent of the approved reference site (applicable to shrub or scrub communities only); and 7) there is a positive trend in the diversity and absolute cover of native plant species.

Regular monitoring will be conducted for at least 5 years after the initiation of restoration. Monitoring will be conducted at least quarterly for 2 years, and annually thereafter. If success criteria are not met and maintained during this period, or if human manipulation is required to meet the success criteria, then additional maintenance and monitoring will be required until these criteria are met. The success criteria must be met and maintained for 3 consecutive years without active manipulation for revegetation to be considered successful. The Applicant or their agent will report annually to us on the status of restoration efforts based on the success criteria. If the Applicant chooses not to maintain these restoration, monitoring, and reporting requirements for the full term, then they will provide sufficient funds to an endowment for the completion of these activities.

29 The BLM and/or Applicant will submit an annual revegetation/restoration report that describes efforts during the previous calendar year to the Sacramento Fish and Wildlife Office by February 15 each year, until all temporarily disturbed areas are successfully restored as habitat for the SBKR and gnatcatcher. At a minimum, each report will include the following information: (1) a description of the restoration activities and when they were conducted; (2) a description of the existing conditions of

restoration sites, including descriptions of vegetation composition, weed species and erosion problems; (3) qualitative and quantitative monitoring data related to performance standards; (4) weather conditions and the response of restoration areas to changes in weather conditions; (5) any observations of listed or proposed species or their sign on restoration areas; (6) a discussion of any problems encountered during restoration; and (7) remedial measures (e.g., weed control, trash removal) that were implemented to correct problems or deficiencies.

30 The BLM and/or Applicant will submit an annual maintenance and operations report that describes activities during the previous calendar year, as well as projected activities and their anticipated effects to listed species and/or alluvial fan scrub habitat during the coming year, to the Sacramento Fish and Wildlife Office by February 15 each year. The contents of this report will be specified in the maintenance and operations plan approved by us prior to any vegetation clearing or ground disturbance associated with the proposed action.

31 The BLM, Applicant, and/or CNLM will submit an annual preserve management report that describes activities during the previous calendar year, as well as projected activities and their anticipated effects to listed species and/or alluvial fan scrub habitat during the coming year, to the Sacramento Fish and Wildlife Office by February 15 each year. The contents of this report will be outlined in the preserve management plan approved by us prior to any vegetation clearing or ground disturbance associated with the proposed action as discussed above under the reasonable and prudent alternative.

32 The BLM, Applicant, and/or CNLM will submit an annual report that quantifies nitrogen oxide emissions, particulate deposition, and effects to habitat for listed species from the WMSCC facility to the Sacramento Fish and Wildlife Office by February 15 each year. The contents of this report will be outlined in a monitoring plan approved by us prior to any vegetation clearing or ground disturbance associated with the proposed action as discussed above under the reasonable and prudent alternative.

33 The BLM, Applicant, and/or CNLM will ensure that any contractor, subcontractor, employee, or other person who inadvertently kills or injures a federally listed or proposed species, or who finds any such animal either dead, injured, or entrapped, immediately reports the incident to the Designated Biologist. If a dead animal or bird of a federally listed or proposed species is killed, injured, or discovered to be dead or injured during project activities, then the Designated Biologist will notify our office

and the CDFG of the discovery within 24 hours, either by phone or in person. Our office and the CDFG will be notified in writing within 3 working days of any accidental death, injury, or discovery of a dead or injured listed species during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. The Service contact is the Chief of the Endangered Species Division, 2800 Cottage Way, Suite W2605, Sacramento, California, 95825-1846, 916/414-6600. The CDFG contact is Mr. Ron Schlorff at 1416 9th Street, Sacramento, California 95814, (916) 654-4262.

The location where the dead or injured animal or bird was found will be marked in an appropriate manner and photographed. Dead specimens should be sealed in an appropriate-sized container and refrigerated to preserve biological material in the best possible state. The remains should be forwarded to the CDFG or, as per their guidance, sent to an educational or research institution holding appropriate State and Federal permits.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the ESA, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases. Actions the BLM can take that are necessary to prevent a species from decreasing irreversibly in the foreseeable future include the following:

1. The BLM should assist the Service in the implementation of recovery plans for the listed plant and animal species addressed in this biological opinion, including the Valley *Recovery Plan* (Service 1998*a*). Specifically, for western Kern County including the Lokern area (which is within the Kern County Valley Floor Habitat Conservation Plan and a Chevron, USA, Inc. mitigation bank), these tasks include:

    a. Encourage and assist local entities in developing and implementing large-area habitat conservation plans;

    b. Conduct pesticide-related research for multiple species in the Lokern;

    c. Conduct systematics and genetics research on Kern mallow;

d. Preserve 80 to 90 percent of the existing natural lands below about 500 meters (1640 feet) between Blackwell's Corner and Maricopa;

e. Restore habitat for San Joaquin Le Conte's thrasher (*Toxostoma lecontei lecontei*); and

f. Prevent disturbances of the oil neststraw (*Stylocline citroleum*) metapopulation.

2. We encourage the BLM to continue existing plant inventory, monitoring, and research pursuits in the CPNA and Lokern areas. Recent inventory and monitoring efforts have been valuable in discovering new populations and contributing to better understanding of the species' status.

3. To minimize the death or injury of listed plants, the BLM and/or the Applicant will have a botanist approved by us conduct surveys for federally listed and proposed plants prior to the initiation of any activities associated with the proposed project. The botanist will survey any area that is anticipated to be subject to vegetation clearing or ground disturbance activities, as well as a 500-feet-wide buffer zone around the area, using botanical survey guidelines approved by our agency. Surveys must be performed during an appropriate time period for positive species identification, and ensure that 100 percent coverage of the disturbance area and 500-feet-wide buffer is attained. Estimates of the appropriate survey periods are April to July for Hoover's woolly-star, March to May for Kern mallow, and March to May for San Joaquin woolly-threads. However, the botanist must monitor the phenological stages of the target species to determine the appropriate timing of the surveys within these general time periods

4. The following measure should be taken to minimize impacts to Hoover's woolly-star and Kern mallow: Ground disturbing activities within Hoover's woolly-star and Kern mallow habitat should be conducted prior to germination or after seed shatter.

5. We encourage the BLM to work with us and the CDFG to improve techniques for the hold and release of leopard lizards, Tipton kangaroo rats, and giant kangaroo rats.

6. The BLM should extend the protective measures being implemented for listed species to all proposed and candidate species, unless coordination between our agencies indicates that these measures are not warranted.

7. If the location of power generation facilities is not essential with regards to delivery, as was maintained by your agency and the CEC during this consultation,

then the BLM should ensure that all future plants and transmission/distribution facilities be located on sites that will not affect listed species or their habitat.

8. Due to the importance of burrows to the survival and recovery of leopard lizards, we recommend that the BLM request all Applicants to compensate for the disturbance or destruction of potential and known burrows by preserving in perpetuity 0.1 acre of habitat occupied by leopard lizards for each potential burrow that is excavated, and 0.5 acre of occupied habitat for each known or suspected burrow that is excavated.

9. Several artificial kit fox dens were constructed in the mid-1980's for the existing MSCC power plant as part of an agreement to address impacts to the kit fox. The current project will require the removal of two of these dens. As part of a Safe Harbor Agreement (64 FR 32717), the Environmental Defense Fund, Washington, D.C., and Endangered Species Recovery Program, Fresno, California, have proposed to install artificial dens and/or escape structures on agricultural lands owned by Paramount Farms, Lost Hills, California. We recommend that the BLM and/or Applicant contact the Endangered Species Recovery Program to determine if they would be interested in using these artificial dens.

For us to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation and conference on the actions outlined in your request. 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 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.

You may ask us to confirm the conference opinion as a biological opinion issued through the formal consultation if gnatcatcher critical habitat is designated within the proposed project site. The request must be in writing. At that time, the project will be reviewed to determine whether the proposed action will result in adverse modification of designated

critical habitat. If after reviewing the proposed action, and finding that the proposed action or the information used during the conference has not changed significantly, we will confirm the conference opinion as the biological opinion on the project and no further section 7 consultation will be necessary. No adverse modification of the gnatcatcher critical habitat may occur between the designation of the gnatcatcher critical habitat and the adoption of the conference opinion through formal consultation, or the completion of a subsequent formal consultation.

Please contact Peter Cross of this office at (916) 414-6655, if you have any questions.

Cay C Goude

cc: MSCC, Fellows
EPA, San Francisco
California Energy Commission, Sacramento (Attn: R. York)
California Department of Fish and Game, Fresno Attn: M. Mulligan)

APPENDIX A: INDIRECT EFFECTS

The following findings and supporting evidence summarize our evaluation of the potential facilitation of private development from additional electricity generated by the proposed project. Unless otherwise indicated, the evidence was obtained from CEC's July 18, 2000, *Responses, Western Midway Sunset Cogeneration Company, USF&WS "Indirect Growth Impacts" Questions (99-AFC-9),* or an August 2, 2000, report from the State's Electricity Oversight Board (EOB) and Public Utilities Commission (CPUC) to the Governor of California (Kahn and Lynch 2000).

Finding 1: The demand for additional electricity generated by the proposed WMSCC plant is based, at least in part, on forecast population growth.

The December 1999 *Application for Certification for the Western Midway Sunset Cogeneration Company Project* (*99-AFC-9*, p. 1-2) states that "[t]he controlling document for this application is ER 96, the most recent Electricity Report" by the CEC. Although Senate Bill 110 has since eliminated the use of the demand conformance criteria (i.e., needs assessment) therein, the project was justified as contributing to a forecast need of 6,737 MW during CEC's 12-year forecast period.

Finding 2: Plans for local or regional growth and development assume sufficient power generation plants and delivery infrastructure will be built to serve forecast development. This is a rational assumption because regulated franchised utility distribution companies (UDCs; i.e., San Diego Gas and Electric [SDG&E], Pacific Gas and Electric [PG&E], and Southern California Edison [SCE]) are legally required to provide service to all customers who request it within their service areas.

Finding 3: Including imports, supplies of electricity exceed demand (i.e., load) in California. If imports are excluded, however, then California has insufficient generating capacity to meet peak demand. This situation is expected to continue through year 2002 when the proposed WMSCC plant should become operational.

Under normal operating conditions, all areas in California have sufficient local generation and transmission capacity to serve local loads. California has approximately 1,000 generation plants with 55,500 MW of maximum generating capacity. Approximately 45,565 MW of this capacity is available to meet the load and operating reserve (i.e., the buffer capacity needed at all times to keep the electric system stable and functioning), which is approximately 49,209 MW. In addition, the State imports approximately 8,000 MW of electricity, of which approximately 4,500 MW are under contract as firm supplies. In other words, California currently relies on imports of electricity to meet demand. This situation is expected to continue until approximately the year 2003, when generation by new power plants may increase the maximum available in-state generating capacity to a level that exceeds the load forecast and operating reserve.

The California Independent System Operator (Cal-ISO), the quasi-private, nonprofit agency that was set up under a 1996 deregulation law to manage about 75 percent of the state's high-voltage transmission system, has estimated that growth in California's booming economy could cause shortages of from 5,000 to 8,000 MW of electricity during summer 2001. However, the CEC recently reported that even in the "worst likely" scenario of sizzling summer temperatures, which in turn drive up demand for energy-hungry air conditioning, the State will have enough electricity to avoid power emergencies (D. McSwain, *Energy Commission Projects Adequate Power Supply*, North County Times, November 21, 2000). Likewise, a report by the EOB and CPUC to the Governor of California indicates that electricity supplies are sufficient to meet demand in the near future.

Finding 4: Although supplies of electricity currently exceed demand, California is experiencing shortages in some areas (e.g., San Francisco, San Diego) and in some hours of the year owing to the following factors: 1) generator breakdowns and maintenance shutdowns; 2) transmission congestion; 3) decisions by local generators to sell out of state; 4) decisions by out-of-state generators to sell elsewhere; and 5) a dysfunctional electricity market.

The Cal-ISO declared at least 17 Stage Two alerts in California during summer 2000. A Stage Two alert is declared when the State has used 95 percent of available electricity, and causes officials to interrupt supplies to major users in an effort to prevent rolling blackouts. At least 10 of these once-rare alerts also occurred during November and December 2000, when the State lost 12,000 MW of electricity (i.e., one quarter of the State's total capacity; enough electricity to power 12 million homes) due to a number of unpredicted power plant breakdowns. Eighty-three percent of California's steam-driven power plants are more than 30 years old (D. McSwain, *Investigators Inspect Idled Power Plants*, North County Times, December 7, 2000). Older plants need to be taken out of service for maintenance and repairs more often than modern plants. Also, deregulation of generation may motivate owners to run plants longer and harder, leading to subsequent reductions in reliability.

Electricity is delivered to many areas (e.g., San Francisco, San Diego) via old transmission systems consisting of very few lines. Such systems are prone to congestion (i.e., line loaded to its maximum rating under normal operating conditions), which occurs anytime there is less expensive generation in one area and not enough transmission capability to send it to an area where the generation is more expensive. This type of constraint is a normal part of the electricity market that results in more expensive electricity, but does not directly contribute to blackouts or a failure to serve loads. Congestion may indirectly contribute to local shortages, however, if buyers decide not to purchase expensive, local power and inadequate transmission capacity prohibits them from obtaining less expensive power from a more-distant source.

Decisions by generators to sell their electricity elsewhere may have contributed to shortages of electricity in some areas. California has been, and is currently, a net importer of electricity; primarily from the Pacific northwest and southwestern United States (e.g., Arizona, New Mexico). The amount of out-of-state imports is driven by the amount of surplus power that is available and the price of this power. In recent years, economic and population growth in the northwest and southwest has reduced the amount of surplus energy these areas have for export to California. Also, low hydroelectric production in the northwest and high temperatures in the southwest have limited California's ability to import electricity. During summer 2000, for example, an average of approximately 1,500 MW that used to be sold to California from out-of-state suppliers went elsewhere. There is also evidence that power exports from California may be increasing (D. McSwain, *Investigators Inspect Idled Power Plants*, North County Times, December 7, 2000). Since wholesale price caps were lowered during summer 2000, in-state generators have more frequently opted to sell electricity outside California when higher profits can be attained elsewhere (e.g., Pacific northwest). During summer 2000, an average of approximately 1,000 MW that was generated, and used to be sold, in California instead flowed out of the State each day (C. Peyton, *Worst Yet to Come in State's Power Woes, Experts Say*, The Sacramento Bee, August 6, 2000, pages 1 and A4). As a result, the Department of Energy asked the Federal Energy Regulatory Commission (FERC) to extend price controls to California and surrounding western states in an effort to prevent generators in California from exporting electricity to chase profits (D. McSwain, Energy Secretary Calls For Re-regulation of Electricity, North County Times, November 23, 2000).

Tight electricity supplies, driven by a mysterious number of power plant shutdowns and accompanied a doubling of the wholesale power price, have led to speculation that sellers of electricity have held back generating capacity (i.e., restricted supply) to lift prices since deregulation (D. McSwain, *Investigators Inspect Idled Power Plants*, North County Times, December 7, 2000). In October 2000, Portland-based economist and utility industry consultant Robert McCullough presented evidence that generators and trading companies had manipulated the production of power from June through August 2000 to create a false shortage and elevate prices. Mr. McCullough's investigation indicated that the State had a 32 percent operating reserve margin even as wholesale prices soared and the State's power manager declared 36 separate "power emergencies" (D. McSwain, *Study Says State Had Power Surplus*, North County Times, October 13, 2000). In an independent report, the CEC suggested that a failure of the State's partly deregulated power markets, rather than a real shortage of electricity, was to blame for tight supplies that have threatened the State with blackouts (D. McSwain, *Energy Commission Projects Adequate Power Supply*, North County Times, November 21, 2000). Similar concerns were echoed in a recent report by the EOB and CPUC to the Governor of California. More recently, the CPUC indicated its investigators had found circumstantial evidence that generators withheld electricity production during critical periods of summer 2000 in an effort to cut power supplies and raise prices. Under deregulation, 79 percent of the

State's generators are free to operate their plants any way they choose (D. McSwain, *Investigators Inspect Idled Power Plants*, North County Times, December 7, 2000).

Finding 5: Local shortages will increase in extent and frequency unless new supplies are obtained, existing plants are run at higher generation levels, the importation of electricity is increased, transmission efficiency is increased, and/or conservation programs are developed and implemented to reduce demand.

Several factors will likely contribute to a narrowing of the electric system's margins and exacerbate local shortages. It is anticipated that during the next 4 years imports of electricity from out-of-state generators to California will continue to decline. Also, California's aging generator and transmission system will contribute to increased, unexpected breakdowns and maintenance shutdowns. In addition, California has made only limited investments in new power plants during the past 20 years and, as a result, net generation capacity has not kept pace with load growth (Kahn and Lynch 2000). Between 1996 and 1999, for example, only 672 MW of net generation capacity was added to California's electric generation capacity, whereas peak load growth increased 5,522 MW. In other words, California's demand for electricity is increasing faster than new supplies. This trend is expected to continue into the near future because of California's growing digital economy which is highly dependent on electricity. Furthermore, the State has reduced the role of energy efficiency and construction of renewable energy resources in recent years. Current funding for energy efficient renewable resources is almost 70 percent less than during the early 1980's, despite the demonstrated economic benefits that energy efficiency brings to the California economy. Hence, alternative energy sources generally will not be available to alleviate local shortages.

Finding 6: Although the proposed WMSCC plant will generate a maximum of 500 MW, it is conceivable that the overall supply of electricity in California will still approximate demand when the plant is completed. Because the proposed plant may not result in an overall increase in the availability of electricity, we cannot conclude at this time that private development in areas occupied by listed species is reasonably certain to be facilitated by the proposed action.

According to the CEC, "[i]f new power plants are licensed throughout the state and old ones are not retired, you can generally conclude there will be an increase in the amount of power available to the interconnected western grid." The proposed WMSCC plant will generate 500 MW of electricity that could be generated in California. However, 55 percent of California's existing generation plants are more than 30 years old and subject to repeated breakdowns and maintenance shutdowns. Although owners are reluctant to decommission plants at this time given high wholesale electricity prices, it is reasonably certain that many aging plants will cease generating owing to economic, air quality, and reliability factors. Also, imports of electricity from out-of-state generators will likely continue to decrease. Hence, some portion of the apparent increase in generating

capacity from the proposed WMSCC plant will likely be negated by further reductions in imports, decreased production from existing plants, and the decommissioning of older plants. As a result, the proposed WMSCC plant may actually contribute little to the overall, existing capacity. Estimates by the Cal-ISO indicate that the maximum available generating capacity in California (i.e., excluding imports) during the year 2002, when the proposed WMSCC plant is expected to begin generating power, will approximate 50,011 MW, as compared to a forecast load and operating reserve of 51,463 MW. Because the proposed plant may not contribute to an overall increase in the availability of electricity, we cannot conclude at this time that private development in areas occupied by listed species is reasonably certain to be facilitated by the proposed action.

Finding 7: The proposed increase in capacity of generating plants, transmission lines, and distribution systems over the next 10 years is reasonably certain to result in supplies substantially in excess of demand; thereby providing the potential for the facilitation of private development in areas occupied by listed species.

California recently implemented streamlined review procedures and market incentives (e.g., exempting new generating plants from bid caps) to encourage the construction of additional generation plants that will meet forecast loads plus operating reserves (D. McSwain, Energy Secretary Calls For Re-regulation of Electricity, North County Times, November 23, 2000). Almost 3,000 MW of additional generating capacity have been approved and are under construction, while more than 4,000 MW of additional electricity generation is under review in the regulatory process. As a result, in 5 to 10 years California will have built sufficient electric supplies to meet anticipated demands. However, the generation of sufficient supply to meet demand may be inadequate to allow true competition and, theoretically, lower prices in the deregulated California electricity market. As outlined in the CEC's *Options for Modifying the ER96 "Need Cap" Integrated Assessment of Need Conformance Test*, "until there is a substantial amount of excess supply in a market (perhaps on the order of 140 percent of demand), robust competition among suppliers would not exist ..." Using this rationale, the CEC recommended that the State allow an excess amount of merchant power plants to be built, and accept that "there may be times when more plants are available than are necessary to serve demand." In response, at least 18 additional generation plants that could produce a total of 15,000 MW have been proposed (J.A. Savage and E. McCarthy, *Power Hungry: In the Rush to Approve New Power Plants, Activists Say Cumulative Impacts Are Being Given Short Shrift*, Sacramento News & Review, Volume 12, No. 17, July 27, 2000).

At this time, no policy maker or agency is investigating the cumulative environmental effects of constructing more than two dozen generation plants. Instead, the new plants are being approved by the CEC on a case-by-case basis (J.A. Savage and Elizabeth McCarthy, *Power Hungry: In the Rush to Approve New Power Plants, Activists Say Cumulative Impacts Are Being Given Short Shrift*, Sacramento News & Review, Volume 12, No. 17, July 27, 2000, pages 12, 13, and 14). Under deregulation, the CEC does not

develop projections of how additional generation will be distributed throughout the State or determine where an increase in electricity supply might be consumed. Also, the CEC's responsibilities no longer include a primary regulatory role in determining need when licensing generating plants in the State. Instead, meeting the need for electricity in California has been relegated largely to market forces under restructuring. Furthermore, the CEC has no regulatory authority to obtain relevant information for assessing cumulative impacts or potential indirect effects. Rather, oversight responsibilities in the restructured electricity market are held by the State's EOB and the FERC, which regulates the operation of interstate or bulk transmission lines and related services (Senate Bill 110 Report to the Legislature: The California Energy Commission's Reporting, Forecasting, & Data Collection Responsibilities, CEC, March 2000). Despite their legislative mandate, these agencies have been unable to obtain necessary data regarding the generation and distribution of electricity from the Cal-ISO, Power Exchange (PX), or private industry. Also, the FERC has not consulted with our agency regarding any proposed increases in interstate or bulk transmission of electricity. Given this lack of data collection authority and/or consultation, it is likely that there will be significant, unmitigated environmental impacts (including indirect effects from the facilitation of private development) from this vast increase in generating capacity.

Finding 8: It is reasonably certain that forecast growth would be curtailed within the next 5 to 10 years without an increase in available electricity.

The CEC maintains that development does not hinge on electricity supply because local planning boards do not consider the availability of electricity supply when making decisions about zoning and approving requests for new land development. This lack of consideration occurs because local UDCs have an obligation to provide power to all customers who request it within their service areas. If reliable electricity could not be guaranteed, however, then it seems reasonably certain that forecast growth would be curtailed because the lack of reliable utilities or necessary resources in a given area can retard development or force it to other areas which are already served. This would be especially true in California, given that it's high technology economy depends on high-quality, 24-hour power to operate successfully. Power interruptions are extremely costly, often costing millions of dollars per hour. Hence, increases in availability or reliability of electricity could facilitate private development.

Finding 9: It is possible to anticipate where new or upgraded transmission and/or distribution facilities will be required in the future and, thereby, reasonably assess the potential indirect effects to listed species from an increase in the maximum availability generating capacity of electricity.

The CEC maintains that it is not reasonable to anticipate that electricity generated by a particular power plant will facilitate private development in areas occupied by listed species because generated electricity is placed on the power grid rather than delivered

within a particular service area. Hence, the CEC asserts that there are no indirect effects to listed species resulting from an increase in the maximum available generating capacity. Furthermore, the CEC does "not believe that there are indirect effects of a new substation or when there are increases in capacity at existing substations," even though they acknowledge that distribution substations have well-defined service areas in which effects to listed species could be reasonably anticipated.

We acknowledge that it is difficult to evaluate the potential indirect effects of power generation from electricity placed on the power grid because there is no direct link between increased power generation by a given plant and private development in a given area. However, the lack of a well-defined service area and ability to track electrons from source to end-user does not translate into a lack of indirect effects to listed species or, by itself, preclude a reasonable assessment of potential indirect effects. As outlined above, it is reasonably certain that a lack of generating capacity to supply electricity to new areas would retard forecast growth or force it to other areas which are already served. Hence, we maintain that increases in generating capacity could facilitate private development and, in turn, contribute to indirect effects to listed species. Similar analyses are conducted for Federal water actions, even though each molecule of water cannot be tracked from source to end-user.

New information and analyses are needed to adequately evaluate the location, scope, and extent of potential indirect effects resulting from increases in maximum available generating capacity. Under deregulation, the data needed to assess supply and distribution behavior is controlled by the Cal-ISO, PX, and private industry. Although the EOB has a legislative mandate to oversee these institutions, they have been unable to obtain the relevant data owing to an apparent lack of regulatory authority and unwillingness on the part of the sellers to release what they consider to be confidential information. The two most important institutions controlling the sale and transmission of electricity in California's market, the Cal-ISO and the PX, are private, autonomous entities that are not accountable to the State or to the ultimate consumers of electricity. Also, their governing boards include a large number of market participants that are likely to profit the most from high electricity prices.

Once adequate generation and distribution information becomes available, we maintain that it is feasible and reasonable to anticipate the potential indirect effects to listed species from the increased availability of electricity by monitoring long-term contracts and market transactions, and identifying where new or upgraded transmission and/or distribution facilities will be built to meet projected demand. The UDCs, which remain as regulated monopolies under restructuring, have retained an obligation to distribute electricity to all customers who request it within their service areas. As a result, their system planners evaluate local and regional growth plans to determine where potential new distribution facilities may be required in the future. The UDCs coordinate plans to upgrade or install new substations and transmission lines with the Cal-ISO and other

stakeholders in annual and 5-year Grid Planning Assessments. These assessments conservatively assume only existing power plants and those with CEC-approval, or a proposed decision by the CEC indicating approval, with loads based on a 1 in 5 year peak load forecast. Projects are generally proposed and constructed to increase the local capacity of the grid so that anticipated increases in loads can be served without violating reliability criteria.

Once the proposed WMSCC plant is approved, Grid Planning Assessments should enable us to evaluate where distribution of any increased availability of electricity is reasonably likely to occur (i.e., where the local capacity of the grid will be increased). Also, system simulation studies, similar to those conducted by the CEC in the past, could be conducted to show how the total system generation and distribution of electricity changes in response to new plants being built. In combination, this information could be used to reasonably assign a proportional share of the responsibility for effects to listed species from generating plants contributing electricity to these areas.

In our opinion, the upgrade or construction of distribution substations and transmission lines is an appropriate scale to assess the potential indirect effects of electricity generation because such infrastructure is necessary to distribute electricity to new areas, and their service areas are generally well-defined. Smaller substations are proposed by the local UDC or any of the municipal utilities and are not under Cal-ISO authority. The UDCs must get approval from the CPUC, which is responsible for the environmental analysis of the facilities. Municipal utilities approve their own facilities and are responsible for their own environmental analysis. Local agencies also review, as part of their General Plans, substations that distribute electricity to new developments. Larger substations, capacitors, and new and rebuilt transmission lines are approved by the Cal-ISO, which also must seek approval from the FERC through a tariff amendment procedure. The CPUC is responsible for the State's environmental analyses. Hence, the potential indirect effects to listed species can be reasonably anticipated and evaluated.

Conclusion: Under some circumstances, an increase in the maximum available generating capacity of electricity could facilitate private development and, in turn, indirectly affect listed species. At this time, however, we cannot conclude with reasonable certainty that such effects will result from the proposed WMSCC plant because it is conceivable that the overall supply of electricity in California will still approximate demand when the plant is completed. Hence, the proposed plant may not result in an overall increase in the availability of electricity in California. This uncertainty does not translate into a demonstrated lack of indirect effects, however, or indicate that it is not possible to assess indirect effects resulting from an increase in the maximum available generating capacity. To the contrary, once adequate generation and distribution information becomes available, we maintain that it is feasible and reasonable to anticipate the potential indirect effects to listed species from the increased availability of electricity by monitoring long-term contracts and market transactions, and identifying where new or

upgraded transmission and/or distribution facilities will be required in the future. If subsequent information indicates that the additional generating capacity provided by the WMSCC plant is reasonably certain to result in indirect effects to listed species (e.g., proposals to increase the local capacity of the grid via transmission or distribution upgrades or construction), then the BLM will need to reinitiate consultation. In our opinion, the upgrade or construction of distribution substations and transmission lines is an appropriate scale to assess potential indirect effects because such infrastructure is necessary to distribute electricity to new areas, and their service areas are generally well-defined. Hence, the potential indirect effects to listed species can be reasonably anticipated and evaluated.