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In Reply Refer To:
AESO/SE
22410-2006-FE-0318

December 5, 2008

Mr. Alan Quan
Forest Supervisor
Prescott National Forest
344 South Cortez Street
Prescott, Arizona 86303

RE: Emergency Hazard Vegetation Treatment in Utility Corridors on Arizona Forests

Dear Mr. Quan:

Thank you for your request for formal emergency consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was received in our office electronically on April 28, 2008. At issue are impacts that resulted from Emergency Hazard Vegetation Treatment in Utility Corridors on Arizona Forests located in the Apache-Sitgreaves (ASNF), Coconino (CNF), Kaibab (KNF), Prescott (PNF), and Tonto National Forests (TNF), Arizona. You concluded that these emergency actions, which occurred between May 2006 and June 5, 2007, “likely adversely affected” the Mexican spotted owl (*Strix occidentalis lucida*) (MSO) and its designated critical habitat and the bald eagle (*Haliaeetus leucocephalus*). We note that the bald eagle was a federally listed species under the Act throughout the lower 48 states during the time these emergency actions occurred.

We concur with your determinations of “may affect, not likely to adversely affect” for the lesser long-nosed bat (*Leptonycteris curasoae verbabuenae*); California condor (*Gymnogyps californianus*) (outside of its non-essential experimental boundaries); and the southwestern willow flycatcher (*Empidonax traillii extimus*), loach minnow (*Tiaroga cobitis*), and their designated critical habitat. Additionally, you concluded that the proposed action “is not likely to jeopardize” the continued existence of the experimental non-essential populations of Mexican gray wolf (*Canis lupus baileyi*), California condor, and the candidate yellow-billed cuckoo (*Coccyzus americanus*). Our rationales for concurrence are provided at the end of this document (Appendix A).

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This Biological Opinion (BO) is based on information provided in your April 21, 2008, Biological Assessment (BA) and other sources of information. Literature cited in this BO is not a complete bibliography of all literature available on the species of concern or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

The consultation history of this emergency action began with the collective efforts of the Forest Service (FS) and utilities to develop strategies to protect power lines from hazard vegetation and to have a long-term plan for vegetation management in power line corridors throughout Arizona National Forests. Please see the consultation histories in completed biological opinions for Phase I and Phase II consultations (USFWS 2007, USFWS 2008) for a broader background on this effort.

- April 28, 2008: We received a final Biological Assessment from the FS.
- September 10, 2008: We requested an extension to complete the draft and final BOs.
- September 26, 2008: We transmitted a draft BO to the FS.
- December 2, 2008: We received comments on the draft BO from the FS.

DESCRIPTION OF THE EMERGENCY ACTION

Arizona Public Service (APS), Navopache Electric Co-op (NEC), and Garkane Energy have numerous transmission and distribution lines that cross U.S. National Forest System (NFS) lands in Arizona. Salt River Project was included in the initial requests for emergency consultation, but they conducted no emergency actions and as a result, are not included in this biological opinion. The utility lines lie within existing rights-of-way (ROW) corridors and are authorized under FS special use permits. As part of the special use permit conditions, the FS authorizes the utility companies to conduct maintenance and emergency-related activities within an established ROW. The utility companies are permitted to work within and outside the established corridors (or ROW) to maintain their structures and manage vegetation. Utility maintenance that occurs on private land or other non-FS in-holdings is not part of the special use permit or part of this consultation because the FS does not authorize these maintenance activities or have jurisdiction on non-FS lands.

Hazard vegetation is defined as a live or dead standing tree or vegetation having defects, singly or combined, in the roots, butt, bole, or limbs, which predispose it to imminent mechanical failure to the whole or part of a utility line, pole, or tower. The tree or vegetation must be located such that a failure of the tree or vegetation (or any part of the tree or vegetation) has a probability of causing damage to the utility line, pole, or tower. A "defect" is an injury or disease that seriously weakens the stems, roots, or branches of the tree or vegetation, predisposing it to fail (e.g., broken branches, split top) to continue standing. "Imminent" implies that damage resulting to the utility line, pole, or tower from the tree or vegetation could occur at any time. This definition applies to any vegetation that poses an immediate threat to a utility line. Hazard vegetation can include vegetation with arc potential. Trees or vegetation with arc potential may be healthy with no defects predisposing them to imminent mechanical failure, but if vegetation is within arcing potential from a transmission or distribution line, it may pose a hazard. In order to eliminate hazards, pruning or removal of the hazard would be necessary.

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The need for this emergency action and the purpose of hazard vegetation removal was to: 1) allow utility companies to provide uninterrupted service to customers, and 2) provide protection against wildfires that could result from hazard vegetation coming into contact with power lines.

Hazard Vegetation Identification and Removal Methods

The emergency actions associated with hazard vegetation removal involved aerial and ground surveys and removal and disposal of vegetation on NFS lands. The tasks associated with these emergency actions are summarized below (Table 1). Because hazard vegetation was considered an “imminent” emergency, species-specific conservation measures were not implemented while removing vegetation.

Utility Action	APS	NEC	Garkane
Aerial Survey	Yes	No	No
Ground Survey	Yes	Yes	Yes
Removal	Yes	Yes	Yes
Disposal	Yes	Yes	Yes

Aerial Survey

- All flights were operated during daytime hours.
- Helicopters cruised at 2,000 to 3,000 feet above the ground from the point of origin (airport) to the utility line.
- Helicopters flew above and along utility lines for hazard vegetation identification, ranging from 50 to 300 feet above the ground.
- At any time during the flight the helicopter may have hovered or circled over possible hazard vegetation locations.

Ground Survey

- Crews located and confirmed the hazard vegetation identified during aerial surveys.
- Crews identified additional hazard vegetation not noted during the aerial survey.
- Crews identified hazard vegetation during routine ground surveys (independent of aerial surveys).
- After hazard vegetation was confirmed or located, crews recorded the line name/number, species, size class, and marked the hazard vegetation for future removal or pruning (NEC may have removed or pruned hazard vegetation at this time).
- Surveys occurred during daytime hours.
- Travel included the following: 4x4 trucks, all-terrain vehicle (ATV), or walking.

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- Only classified roads and/or FS authorized roads were used to locate hazard vegetation. If road access to the hazard vegetation was not available, crews walked to the area.

Removal or Pruning

- Removal and pruning occurred only after hazard vegetation was identified and marked.
- Crews made an effort to avoid damaging any other trees when felling, but damage to other trees or vegetation may have occurred. If a tree was damaged or removed as a result of felling hazard trees, the species, size class, and location of the tree was recorded.
- Travel included the following: 4x4 trucks, bucket truck, ATV, or walking.
- Equipment used included the following: chainsaw, handsaw, climbing saddles, and rope.

Disposal

- Crews disposed of hazard vegetation according to FS direction.

Recording and Reporting Hazard Vegetation Removal

- Location of trees or vegetation treated
- Powerline name and/or number
- Identification if the treated vegetation was inside or outside the vegetation clearance corridor
- Status of the vegetation (alive or dead)
- Species of tree(s) or vegetation
- Size class and number of treated trees(s) and/or vegetation [measured in diameter-at-breast height (dbh)]
- Date inventoried/identified and date treated
- Other trees or vegetation damaged or removed due to hazard vegetation treatment

Hazard Vegetation Removal Summary

Hazard vegetation treatments occurred on the ASNF, CNF, PNF, KNF, and TNF from May 2006 to June 2007. A total of 2,640 trees and 3 cacti were treated (removed or pruned) under the emergency action (Table 2). Nearly all trees treated were simply removed, but some were pruned (Table 3). APS treated 2,019 trees and additional vegetation (Table 4), Garkane treated 415 trees (Table 5), and NEC treated 209 trees (Table 6). A detailed description of FS, power line, trees, and other notes can be found at the end of this BO in Appendix B and in the BA.

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National Forest	Total Trees Treated (pruned or removed)
Apache Sitgreaves NF	235
Coconino NF	997
Kaibab NF	921
Prescott NF	49
Tonto NF	441
Total	2,643

Hazard Treatment	APS	Garkane	NEC	Total Trees Treated
Pruned	89	1	0	90
Removed	1930	414	209	2553
Total	2019	415	209	2643

National Forest	5 to 12 inches dbh	12 to 18 inches dbh	18 to 24 inches dbh	24 inches+ dbh	Total Trees Treated (pruned or removed)
Apache Sitgreaves NF	1	10	6	9	26
Coconino NF	423	323	127	124	997
Kaibab NF	228	173	60	45	506
Prescott NF	17	17	14	1	49
Tonto NF	261	103	31	46	441
Total	930	626	238	225	2,019

National Forest	4 to 11 inches dbh	12 to 23 inches dbh	24 inches+ dbh	Total Trees Treated (pruned or removed)
Kaibab NF	190	195	30	415

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National Forest	5 to 12 inches dbh	12 to 18 inches dbh	18 to 24 inches dbh	24 inches+ dbh	Total Trees Treated (pruned or removed)
Apache Sitgreaves NF	0	36	104	69	209

Summary of Hazard Vegetation Removal by Utility

Arizona Public Service

APS conducted aerial flights to inspect all transmission power lines a single time on the ASNF, CNF, PNF, and TNF over the months of May, June, and July 2006, and over most of the northern transmission lines (transmission lines on the South Kaibab) at the end of March, end of May, and beginning of June 2007. Hazard vegetation ground patrols and surveys occurred throughout the year.

APS treated a total of 2,019 trees or other vegetation along 46 power lines (13 transmission and 33 distribution lines) (Table 7). Eighty-nine trees were pruned and 1,930 trees were removed. A total of 508 trees and other vegetation were in the ROW and 1,511 were outside of the ROW.

Tree Species	Status	Removed or Pruned	5 to 12 inches dbh	12 to 18 inches dbh	18 to 24 inches dbh	24 inches dbh	Total
Alligator juniper	Live	Pruned	16	-	-	-	16
Arizona cypress	Live	Pruned	2	1	-	-	3
Arizona sycamore	Live	Pruned	1	-	-	-	1
Pinyon pine	Live	Pruned	27	9	1		37
Ponderosa pine	Dead	Pruned			2		2
Ponderosa pine	Live	Pruned	7	14	4		25
Alligator juniper	Dead	Removed	4	-	-	4	8
Alligator juniper	Live	Removed	32	1	-	-	33
Arizona sycamore	Live	Removed	3	2	-	-	5
Arizona walnut	Dead	Removed	1	-	-	-	1
Ash	Live	Removed	-	1	-	-	1
Box elder	Dead	Removed	10	-	-	-	10
Cottonwood	Dead	Pruned	-	-	1	-	1
Cottonwood	Live	Pruned	-	-	-	1	1
Cottonwood	Live	Removed	4	-	-	-	4
Douglas fir	Dead	Removed	27	20	25	20	92
Douglas fir	Live	Removed	7	1	-	1	9
Emory oak	Dead	Removed	1	-	-	-	1
Emory oak	Live	Removed	1	-	-	-	1

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Gambel oak	Dead	Removed	31	1	1	-	33
Gambel oak	Live	Removed	24	23	8	-	55
Live oak	Live	Removed	2	-	-	-	2
One-seed juniper	Live	Removed	21	2	-	3	26
Palmer oak	Live	Removed	3	-	-	-	3
Pinyon pine	Dead	Removed	8	28	2	-	38
Ponderosa pine	Dead	Removed	524	435	179	183	1321
Ponderosa pine	Live	Removed	135	52	11	12	210
Quaking aspen	Dead	Removed	28	32	1	1	62
Quaking aspen	Live	Removed	1	-	-	-	1
Saguaro	Live	Pruned	-	1	2	-	3
Thinleaf alder	Dead	Removed	-	2	-	-	2
Thinleaf alder	Live	Removed	2	1	1	-	4
Utah juniper	Live	Removed	8	-	-	-	8
Total			930	626	238	225	2019

APS disposed of hazard vegetation in a variety of ways. In most cases, the limbs were lopped off the trunk and scattered no higher than 24 inches to the ground, and logs were cut to manageable lengths and moved to the edge or off of the power line corridor. In some cases, the FS asked APS to pile slash away from the corridor to be burned at a later date. For some projects, the FS asked APS to haul logs off-site to a designated dump location. This was requested near residential areas or major roads, and a logging truck was used to haul the logs. For some projects, the FS asked APS to chip slash less than 9 inches dbh rather than lop and scatter.

Garkane Energy

Garkane treated a total of 415 hazard trees along the Big Springs Circuit distribution line (Table 8). At the end of August 2006, hazards were treated on the North Kaibab Ranger District between Blowdown Tank and North Blowdown Tank west of the Kaibab Lodge. From November 13 to 30, 2006, hazard trees were treated at a second location on the Forest near the Grand Canyon National Park Boundary entrance station on the North Rim. Two-hundred seventy of the trees were dead (65%) and 144 were live (35%). One hundred sixteen trees were in the ROW (28%) and 299 were outside of the ROW (72%) (Table **Error! Reference source not found.8**).

Garkane disposed of vegetation by chipping all slash less than 9 inches in diameter and scattering the chips throughout the ROW corridor. Larger logs were bucked into manageable lengths of eight feet or less and scattered at the edge or just outside of the ROW.

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Table 8. Number of trees (by dbh class) treated by Garkane emergency actions, Kaibab National Forest, May 2006 to June 2007.

Species	Status	Removed or Pruned	4 to 11 inches dbh	12 to 23 inches dbh	24 inches + dbh	Total Treated
Aspen	Dead	Removed	45	102	10	157
Aspen	Live	Removed	76	8	0	84
Fir	Dead	Removed	29	66	15	110
Fir	Live	Removed	40	18	2	60
Pine	Dead	Pruned	-	-	1	1
Pine	Dead	Removed	-	-	2	2
Pine	Live	Removed	-	1	-	1
Total			190	195	30	415

Navopache Electric Co-op

NEC treated a total of 209 trees along two distribution lines (Table 9). Line 51 was treated from the end of May through June 2007, and line 131 was treated during the end of May 2007. All 209 of the trees were removed, with 207 being dead and two alive. Thirty-six trees were in the ROW (17%), and 173 were out of the ROW (83%). NEC disposed of hazard vegetation by lopping off the branches and scattering them on-site. The logs were bucked into manageable lengths of eight feet or less and moved to the edge of the ROW.

Table 9. Number of trees (by dbh class) treated by Navopache emergency actions, Apache Sitgreaves National Forest, May 2006 to June 2007.

Species	Status	Removed or Pruned	5 to 12 inches dbh	12 to 18 inches dbh	18 to 24 inches dbh	24 inches+ dbh	Total Treated
Aspen	Dead	Removed	-	6	22	9	37
Blue spruce	Dead	Removed	-	6	16	20	42
Douglas fir	Dead	Removed	-	2	2	1	5
Ponderosa pine	Dead	Removed	-	15	46	32	93
Ponderosa pine	Live	Removed	-	-	2	-	2
White fir	Dead	Removed	-	7	16	7	30
Total			0	36	104	69	209

STATUS OF THE SPECIES AND CRITICAL HABITAT

Bald eagle

The bald eagle south of the 40th parallel was listed as endangered under the Endangered Species Preservation Act of 1966, on March 11, 1967 (USFWS 1967), and was reclassified to threatened status on July 12, 1995 (USFWS 1995). No critical habitat has been designated for this species. The bald eagle was proposed for delisting on July 6, 1999 (USFWS 1999). The Center for Biological Diversity (CBD) (Silver 2004) petitioned the FWS in October 2004 to determine that the Sonoran Desert nesting bald eagle was a distinct population segment, reclassify the population to endangered status, and designate critical habitat. On February 16, 2006, the FWS proposed to remove the bald eagle from the list of threatened and endangered species throughout

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its range (USFWS 2006a). The FWS responded to the petition on August 30, 2006 (USFWS 2006b). We found that the petition provided substantial information for discreteness, but did not provide substantial information with respect to significance or threats (USFWS 2006b). During the time this emergency action occurred, the bald eagle was still listed as a threatened species in Arizona, and was proposed for delisting.

The bald eagle is a large bird of prey that historically ranged and nested throughout North America except extreme northern Alaska and Canada, and central and southern Mexico. The bird occurs in association with aquatic ecosystems, frequenting estuaries, lakes, reservoirs, major river systems, and some seacoast habitats. Generally, suitable nesting habitat for bald eagles includes those areas that provide an adequate food base (quantity, quality, continuity, accessibility) (Stalmaster 1987) of fish, waterfowl, and/or carrion, with large trees for perches and nest sites. In winter, bald eagles often congregate at specific wintering sites that are generally close to open water and offer good perch trees and protected night roosts (USFWS 1995). Bald eagles will lay between one to three eggs, typically fledging one to two eaglets. Three eaglet broods occur (i.e. Lake Mary breeding area in 2006), but are not typical.

Since listing, bald eagles have increased in number and expanded in range due to the banning of DDT and other persistent organochlorine compounds, habitat protection, and additional recovery efforts. Surveys in 1963 indicated 417 active nests in the lower 48 states with an average of 0.59 young produced per nest. Surveys in 1974 resulted in a population estimate of 791 occupied breeding areas in the lower 48 states (USFWS 1999). In 1994, 4,450 occupied breeding areas were reported with an estimated average of 1.16 young produced per occupied nest (USFWS 1995). We estimated that the breeding population exceeded 5,748 occupied breeding areas in 1998 (USFWS 1999) and may be closer to 10,000 territories in 2007 (G. Beatty, FWS, pers. comm.).

Hunt *et al.* (1992) summarized the earliest records from the literature for bald eagles in Arizona. Coues (1866) noted bald eagles in the vicinity of Fort Whipple (now Prescott) in 1866, and Henshaw (1875) reported bald eagles south of Fort Apache in 1875. The first bald eagle breeding information was recorded in 1890 near Stoneman Lake by S.A. Mearns. Additionally, Bent (1960) reported breeding eagles at Fort Whipple in 1866 and on the Salt River Bird Reservation (since inundated by Roosevelt Lake) in 1911. Additionally, there are reports of bald eagles along rivers in the White Mountains from 1937, and reports of nesting bald eagles along the Salt and Verde rivers as early as 1930. However, the historical distribution and abundance of bald eagles in Arizona is largely unknown (Hunt *et al.* 1992).

During the time of this emergency action, the 53 territories (48 occupied) bald eagle breeding areas in Arizona (Jacobson *et al.* 2007) were predominantly located in the upper and lower Sonoran life zones. The Luna Lake Breeding Area, and recently discovered Crescent Lake, Canyon de Chelly, Lynx Lake, Greer Lakes, and reoccupied Lake Mary breeding areas, are the few territories in Arizona where eagles have been found nesting and foraging in coniferous forests or high elevations, as opposed to the majority of breeding areas where Sonoran vegetation communities are part of their territories. Nearly all breeding areas in Arizona are located in close proximity to a variety of aquatic habitats including reservoirs, regulated river systems, and free-flowing rivers and creeks. The alteration of natural river systems has had both beneficial and detrimental effects to the bald eagle. While large portions of riparian forests were inundated or otherwise destroyed following construction of dams and other water developments, the reservoirs

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created by some of these structures enhanced habitat for the waterfowl and fish species (often nonnative species) on which bald eagles prey.

Bald eagles in Arizona consume a diversity of food items. However, their primary food is fish, which are generally consumed twice as often as birds, and four times as often as mammals. Bald eagles are known to catch live prey, steal prey from other predators (especially osprey), and use carrion. Carrion constitutes a higher proportion of the diet for juveniles and subadults than it does for adult eagles. Diet varies depending on what species are available locally. This can be affected by the type of water system on which the breeding area is based (Hunt *et al.* 1992).

The Arizona Game and Fish Department (AGFD) (1999) concluded that

...evidence from the banding and identification of breeding adults defends the theory that Arizona's breeding population is not supported or maintained by immigration from other states or regions. Because adults return to the vicinity of their natal origin to breed, the large distance between small populations in the Southwest decreases the chance for movement between neighboring populations. Probably most convincing are the results from banding 256 nestlings over 20 years and identifying 372 breeding adults over 8 years. Only one individual from out-of-state entered the breeding population and one left. Additionally, the proportion of breeding adults with color bands (placed on as nestlings in Arizona) has steadily increased, while the presence of unmarked eagles has decreased. Thus, continued attention to the survivorship of all Arizona bald eagles is vital to the maintenance of our breeding population. We can not depend on immigration to Arizona from nearby states to make up for poor management in Arizona.

In addition to breeding bald eagles, Arizona provides habitat for wintering bald eagles, which migrate through the state between October and April each year. Bald eagles can be found statewide, and unlike some other states or areas, Arizona does not tend to have traditional concentrations of hundreds of bald eagles annually. Rather, concentrations tend to be smaller and less predictable, occurring in areas like Mormon Lake/Lake Mary, San Carlos Lake, or the Black River. The average number of wintering bald eagles counted along standardized routes since 1995 is 332 birds (Jacobsen *et al.* 2005). In 2005, the standardized statewide Arizona winter count totaled 224 bald eagles (Jacobsen *et al.* 2005).

Past Consultations

During the time of this emergency action and since 2001, there had been nine Federal agency actions that had undergone (or were currently under) formal section 7 consultation in Arizona that resulted in incidental take. In all of these projects, loss of breeding opportunities, disturbance, and in some cases direct mortality was anticipated. Reasonable and prudent measures were developed to minimize the take of bald eagles.

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Mexican spotted owl

The MSO was listed as a threatened species in 1993 (USDI 1993). The primary threats to the species were cited as even-aged timber harvest and stand-replacing wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the MSO population. The FWS appointed the Mexican Spotted Owl Recovery Team in 1993, which produced the Recovery Plan for the Mexican Spotted Owl (Recovery Plan) in 1995 (USDI 1995).

A detailed account of the taxonomy, biology, and reproductive characteristics of the MSO is found in the Final Rule listing the MSO as a threatened species (USDI 1993) and in the Recovery Plan (USDI 1995). The information provided in those documents is included herein by reference. Although the MSO's entire range covers a broad area of the southwestern United States and Mexico, the MSO does not occur uniformly throughout its range. Instead, it occurs in disjunct localities that correspond to isolated forested mountain systems, canyons, and in some cases steep, rocky canyon lands. Surveys have revealed that the species has an affinity for older, uneven-aged forest, and the species is known to inhabit a physically diverse landscape in the southwestern U.S. and Mexico.

The U.S. range of the MSO has been divided into six recovery units (RU), as discussed in the Recovery Plan. The primary administrator of lands supporting the MSO in the U.S. is the Forest Service. Most owls have been found within FS Region 3 (including 11 national forests in Arizona and New Mexico). FS Regions 2 and 4 (including two national forests in Colorado and three in Utah) support fewer owls. According to the Recovery Plan, 91 percent of MSO known to exist in the U.S. between 1990 and 1993 occurred on lands administered by the FS.

A reliable estimate of the numbers of owls throughout its entire range is not currently available (USDI 1995) and the quality and quantity of information regarding numbers of MSO vary by source. USFWS (1991) reported a total of 2,160 owls throughout the U.S. Fletcher (1990) calculated that 2,074 owls existed in Arizona and New Mexico. However, Ganey *et al.* (2000) estimates approximately $2,950 \pm 1,067$ (SE) MSOs in the Upper Gila Mountains RU alone. The FS Region 3 most recently reported a total of approximately 1,025 PACs established on NFS lands in Arizona and New Mexico (B. Barrera, FS Southwest Region, pers. comm. June 18, 2007). These data are the most current compiled information available to us; however, survey efforts in areas other than NFS lands have resulted in additional sites being located in all RUs.

Researchers studied MSO population dynamics on one study site in Arizona ($n = 63$ territories) and one study site in New Mexico ($n = 47$ territories) from 1991 through 2002. The Final Report, titled "Temporal and Spatial Variation in the Demographic Rates of Two Mexican Spotted Owl Populations," (*in press*) found that reproduction varied greatly over time, while survival varied little. The estimates of the population rate of change ($\Lambda = \text{Lambda}$) indicated that the Arizona population was stable (mean Λ from 1993 to 2000 = 0.995; 95 percent Confidence Interval = 0.836, 1.155) while the New Mexico population declined at an annual rate of about 6 percent (mean Λ from 1993 to 2000 = 0.937; 95 percent Confidence Interval = 0.895, 0.979). The study concludes that spotted owl populations could experience great (>20 percent) fluctuations in numbers from year to year due to the high annual variation in recruitment. However, due to the high annual variation in recruitment, the MSO is then likely very vulnerable

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to actions that impact adult survival (e.g., habitat alteration, drought, etc.) during years of low recruitment.

Since the owl was listed, we have completed or have in draft form a total of 197 formal consultations for the MSO. These formal consultations have identified incidences of anticipated incidental take of MSO in 408 PACs. The form of this incidental take is almost entirely harm or harassment, rather than direct mortality. These consultations have primarily dealt with actions proposed by FS Region 3. However, in addition to actions proposed by FS Region 3, we have also reviewed the impacts of actions proposed by the Bureau of Indian Affairs, Department of Defense (including Air Force, Army, and Navy), Department of Energy, National Park Service, and Federal Highway Administration. These proposals have included timber sales, road construction, fire/ecosystem management projects (including prescribed natural and management ignited fires), livestock grazing, recreation activities, utility corridors, military and sightseeing overflights, and other activities. Only two of these projects (release of site-specific owl location information and existing forest plans) have resulted in biological opinions that the proposed action would likely jeopardize the continued existence of the MSO. The jeopardy opinion issued for existing Forest Plans on November 25, 1997, was rendered moot as a non-jeopardy/no adverse modification BO was issued the same day.

In 1996, we issued a biological opinion on FS Region 3 adoption of the Recovery Plan recommendations through an amendment to their Land and Resource Management Plans (LRMPs). In this non-jeopardy biological opinion, we anticipated that approximately 151 PACs would be affected by activities that would result in incidental take of MSOs. In addition, on January 17, 2003, we completed a reinitiation of the 1996 Forest Plan Amendments biological opinion, which anticipated the additional incidental take of five MSO PACs in Region 3 due to the rate of implementation of the grazing standards and guidelines, for a total of 156 PACs. Consultation on individual actions under these biological opinions anticipated take in the form of harm and/or harassment of owls associated with 243 PACs on Region 3 NFS lands. FS Region 3 reinitiated consultation on the LRMPs on April 8, 2004. On June 10, 2005, the FWS issued a revised biological opinion on the amended LRMPs. We anticipated that while the Region 3 Forests continue to operate under the existing LRMPs, take is reasonably certain to occur to an additional 10 percent of the known PACs on NFS lands. We expect that continued operation under the plans will result in harm to 49 PACs and harassment to another 49 PACs. To date, consultation on individual actions under the amended Forest Plans, as accounted for under the June 10, 2005, biological opinion, has resulted in the incidental take of owls associated with 39 PACs. Incidental take associated with FS fire suppression actions, which was not included in the LRMP proposed action, has resulted in the incidental take of owls associated with 14 PACs.

Critical habitat

The final MSO critical habitat rule (USDI 2004) designated approximately 8.6 million acres of critical habitat in Arizona, Colorado, New Mexico, and Utah, mostly on Federal lands (USDI 2004). Within this larger area, critical habitat is limited to areas that meet the definition of protected and restricted habitat, as described in the Recovery Plan. Protected habitat includes all known owl sites and all areas within mixed conifer or pine-oak habitat with slopes greater than 40 percent where timber harvest has not occurred in the past 20 years. Restricted habitat includes mixed conifer forest, pine-oak forest, and riparian areas outside of protected habitat.

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The primary constituent elements for proposed MSO critical habitat were determined from studies of their habitat requirements and information provided in the Recovery Plan (USDI 1995). Since owl habitat can include both canyon and forested areas, primary constituent elements were identified in both areas. The primary constituent elements which occur for the MSO within mixed-conifer, pine-oak, and riparian forest types that provide for one or more of the MSO's habitat needs for nesting, roosting, foraging, and dispersing are in areas defined by the following features for forest structure and prey species habitat:

Primary constituent elements related to forest structure include:

A range of tree species, including mixed conifer, pine-oak, and riparian forest types, composed of different tree sizes reflecting different ages of trees, 30 percent to 45 percent of which are large trees with diameter-at-breast height (dbh) of 12 inches or more;

A shade canopy created by the tree branches covering 40 percent or more of the ground; and,

Large, dead trees (snags) with a dbh of at least 12 inches.

Primary constituent elements related to the maintenance of adequate prey species include:

High volumes of fallen trees and other woody debris;

A wide range of tree and plant species, including hardwoods; and

Adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration.

The forest habitat attributes listed above usually are present with increasing forest age, but their occurrence may vary by location, past forest management practices or natural disturbance events, forest-type productivity, and plant succession. These characteristics may also be observed in younger stands, especially when the stands contain remnant large trees or patches of large trees. Certain forest management practices may also enhance tree growth and mature stand characteristics where the older, larger trees are allowed to persist.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

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Bald eagle

The number of breeding bald eagles in the Southwestern Recovery Region, specifically in Arizona, is on an upward trend. In 1990, 28 breeding areas were known in Arizona, and at the end of 2006, we knew of 50 breeding areas (43 occupied) (Jacobson *et al.* 2006). In 2007, a total of 53 breeding areas were known, and 48 of them were occupied by a pair of eagles (Jacobson *et al.* 2007). This baseline reflects what existed in 2006 and 2007, when the emergency action occurred.

Over half of all known Arizona bald eagle breeding areas are on FS land. In general, this provides protection for the long-term persistence of eagles from such activities as landscape changing development. However, the Arizona population is small and under threat from a variety of factors.

Human disturbance of bald eagles is a continuing threat, which may increase as numbers of bald eagles increase and human development continues to expand into rural areas (USFWS 1999). The bald eagle population in Arizona is exposed to increasing hazards from the regionally increasing human population, resulting in modification of riparian breeding and foraging habitat through clearing of vegetation, changes in groundwater levels, groundwater pumping, surface water diversion, alteration of natural hydrologic regimes, changes in water quality, and alteration of prey base. Threats persist in Arizona due to the proximity of bald eagle breeding areas to major human population centers and recreation areas. Additionally, because water is a scarce resource in the Southwest, recreation is concentrated along available water courses. Some of the continuing threats and disturbances to bald eagles include entanglement in monofilament fish line and fish tackle; overgrazing and related degradation of riparian vegetation; malicious and accidental harassment including shooting, off-road vehicles, recreational activities (especially watercraft), and low-level aircraft overflights; alteration of aquatic and riparian systems for water distribution systems and maintenance of existing water development features such as dams or diversion structures; collisions with transmission lines; poisoning; and electrocution (Driscoll *et al.* 2006; Stalmaster 1987).

At the time of this emergency action in 2006-2007, there were 30 bald eagle breeding areas that had nest areas within NFS lands in Arizona, and another four breeding areas where a portion of the territory likely occurred on NFS lands. Ten bald eagle breeding areas occurred near APS and NEC lines, and eight had a nest area within 0 to 0.5 mile of a power line possibly involved in an emergency action (Table 10). A single nest area exists on the ASNF, while three apiece are located on the CNF, PNF, and TNF. Three nest areas are found adjacent to relatively isolated coniferous forest-lined lakes (Luna Lake, Lower Lake Mary and Lynx Lake). Five nest areas are along or very near the Verde River, one is along Tonto Creek, and one is very near the Salt River at Roosevelt Lake. Bald eagles breeding at Luna Lake, Lower Lake Mary and Lynx Lake perch and nest in coniferous trees. The remaining territories have nests either placed on cliffs (Bartlett, Tower, Ladders, Coldwater, Pinal), or cottonwood trees/snags (Oak Creek, Sheep). Occupancy is high at these breeding areas, with all territories having eagles present in recent years (Driscoll *et al.* 2006). The Lake Mary eagles occupied the breeding area in 2007 but did not lay eggs (Jacobson *et al.* 2007).

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Table 10. Arizona bald eagle breeding areas where utility lines occur within ½ mile of a known nest, five Arizona national forests, May 2006 to June 2007.				
Bald Eagle Breeding Area	Forest	Power Line Name/Number	Utility Company	Voltage
Luna	ASNF	Nutrioso-Alpine 131	NEC	345 kV
Lower Lake Mary	CNF	CQ-12	APS	Distribution
Oak Creek	CNF	QS-2	APS	Distribution
Coldwater	CNF	NW-2	APS	345 kV
Tower	PNF	230-2	APS	230kV
Lynx	PNF	SDG-1	APS	Distribution
Ladders	PNF	NW-2	APS	345 kV
Bartlett	TNF	345-1	APS	345 kV
Sheep	TNF	TT-14	APS	Distribution
Pinal	TNF	500-3	APS	500 kV

Wintering eagles can be found anywhere within Arizona; however some of the largest concentrations of wintering eagles in Arizona can be found near Lake Mary on the CNF (Driscoll *et al.* 2006). Wintering eagles are more commonly detected on the CNF and along the Mogollon Rim east to the White Mountains perching, foraging, and roosting in coniferous forested habitat.

Mexican spotted owl

MSO habitat within the action area consists predominately of ponderosa pine/Gambel oak and mixed conifer forest, and is located within all five national forests included in this consultation.

There are approximately 88 PACs and approximately 7,336 acres of protected steep-slope and restricted habitat within the entire action area (all power line corridors). However, two PACs were located within 0.25 mile of APS transmission lines flown, 46 PACs were within 0.25 mile of utility lines where ground patrols were conducted, and 23 PACs were within 0.25 mile of hazard vegetation removal activities during the emergency consultation timeframe. We do not know whether a nest core has been determined for these PACs, or, if a nest core exists, or where it is located within the PAC. However, information for one PAC on CNF (Aqueduct PAC, #040734) that is bisected by a distribution line has been studied in detail and was part of a prior APS vegetation clearing consultation (file number 02-21-02-F-0197 R1). The line occurs on top of a ridge dominated by pure ponderosa pine, and the habitat within the ROW was found not to contain suitable MSO nesting or roosting habitat (*Id.*). All these designated PACs are located within the Upper Gila Mountains and Basin and Range West RU. Where this project overlays the Colorado Plateau RU, there are no designated PACs.

Critical habitat for the action area was determined by overlaying the utility line corridor map on the designated critical habitat map. The actual estimate of critical habitat was then narrowed to areas that met the definition of protected or restricted habitat (USDI 2004). There are approximately 2,543 acres of critical habitat within the action area.

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Historical and current anthropogenic uses of MSO habitat within the action area include both domestic and wild ungulate grazing, recreation, fuels reduction treatments, resource extraction (e.g., timber, oil, gas), and development. These activities have the potential to reduce the quality of MSO nesting, roosting, and foraging habitat, and may cause disturbance during the breeding season. Livestock and wild ungulate grazing is prevalent throughout Region 3 NFS lands and has the potential to negatively affect the availability of grass cover for prey species. Recreation impacts are increasing on all NFs, especially in meadow and riparian areas. Recreation has been shown to affect MSO (Swarthout and Steidl 2001). With increased recreation across the Forest, there may be other PACs adversely affected by recreationists. Fuels reduction treatments, though critical to reducing the risk of wildfire, can have short-term adverse effects to MSO through habitat modification and disturbance. Accumulating effects related to population growth, especially in Arizona, have resulted in small communities within and adjacent to NFS lands being developed. This trend may have detrimental effects to MSO by further fragmenting habitat and increasing disturbance during the breeding season. Furthermore, West Nile Virus also has the potential to adversely impact the MSO. The virus has been documented in Arizona (along with New Mexico and Colorado) and preliminary information suggests that owls may be highly vulnerable to this disease (Courtney *et al.* 2004). Unfortunately, due to the secretive nature of owls and the lack of intensive monitoring of banded birds, we will most likely not know when owls contract the disease or the extent of its impact to MSO range-wide.

Currently, high-intensity, stand-replacing fires are influencing ponderosa pine and mixed conifer forest types in Arizona. Uncharacteristic, severe, stand-replacing wildfire is probably the greatest threat to MSO within the action area. As throughout the West, fire severity and size have been increasing within this geographic area.

EFFECTS OF THE 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.

Bald eagle

During the time frame of this emergency consultation, May 2006 through June 2007, aerial reconnaissance flights and tree removal occurred during the bald eagle nesting and wintering season. Aerial reconnaissance flights occurred in May, June, and July 2006 near the Oak Creek, Coldwater, Ladders, Tower, Bartlett, and Pinal bald eagle breeding areas. Hazard tree removal activities occurred during the fall/winter/spring of 2006-2007 near winter roosting and foraging sites along the CQ-12 power line on the CNF at upper and lower Lake Mary and Mormon Lake.

Aerial reconnaissance flights

Bald eagle breeding attempts are typically most at risk from disturbance during the early pre-incubation, incubation, and young nestling stages prior to the bird's investing significant resources into nesting. Reconnaissance flights occurred during the end of the breeding season

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when successful nesting attempts were either near completion or when breeding attempts had already failed from other causes. During the end of breeding season, nestlings are safer from the deleterious adverse effects of disturbance because eaglets have hatched, are capable of thermoregulation, and/or are nearly full grown. Bald eagles nested successfully at five of the six breeding areas in 2006 where there were nearby reconnaissance flights.

The eagles at the Pinal Breeding Area were the only nesting pair within the action area that failed in 2006. The lone eaglet was discovered missing from the nest in early May. The nesting location for Pinal nest #2 is just over 0.5 miles from the power line and near the opening of a canyon. Because the helicopter could not likely be heard or seen from the eagle nest at this distance, we believe no adverse effects occurred to nesting Pinal eagles from these emergency aerial reconnaissance flights.

Aerial reconnaissance flights may have briefly distracted, or at worst caused eagles to flush from a perch or prey item at locations away from their nests. For example, in 2006, bald eagle nestwatchers at the successful Bartlett, Ladders, and Tower breeding areas recorded a combined 12 instances where helicopters caused eagles to change behavior (11 instances of watching) and elicited a single significant response (1 flushed) (Jacobson *et al.* 2006). Reconnaissance flights typically follow a power line, do not linger or wander, and occurred only a single time during the end of the 2006 breeding season. Because of the low number of flights, the short amount of time these flights were near bald eagles, the reproductive success of eagles near these power lines, and the minimal effects observed at other nest areas; we believe that the effect of any elicited behavior was insignificant.

Therefore, aerial reconnaissance flights that occurred in May, June, and July 2006, associated with emergency hazard removal, are not believed to have caused adverse effects to breeding bald eagles. We believe this was the likely outcome because, 1) flights occurred during the end of the breeding season when failure from disturbance is less likely; 2) five of six nesting attempts were successful; and 3) flights were infrequent in abundance and short in duration.

Hazard tree removal and disposal and winter roost sites

APS removed and disposed of hazard vegetation along the CQ-12 power line in the vicinity of four known bald eagle winter roost sites near Lake Mary and Mormon Lake on the CNF between December 2006 and March 2007 (Table 10). Work crews removed trees during daylight hours. Overall, 556 hazard trees were treated (532 were removed and 24 were pruned) along the CQ-12 line that follows upper and lower Lake Mary and Mormon Lake under this emergency consultation. Not all of the trees were considered roost/perch trees.

Removal and disposal of potential roost/perch trees greater than 12 inches dbh occurred at four known bald eagle roost areas (Table 11). At Roost #1 two ponderosa pine trees between 18 to 24 inches dbh were removed. At Roost #3 two large ponderosa pine trees were removed, and at Roost #4 three large pine trees were also removed. The greatest number of trees was removed at Roost #2 (43 trees). In the 18 to 24 inches dbh + category, there were 16 trees removed. Not all roost areas are known or mapped on the CNF and along Lake Mary and Mormon Lake and more are believed to exist (S. Hedwall, FWS, pers. comm.).

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Ponderosa pine trees removed (dbh)	Roost #1	Roost #2	Roost #3	Roost #4	Total
12 to 18 inches	0	27	0	0	29
18 to 24 inches	2	10	1	2	15
24 + inches	0	6	1	1	8
Total	2	43	2	3	52

Tree removals along the CQ-12 power line occurred during the middle of the 2006-2007 bald eagle wintering season. Stalmaster and Newman (1978), Stalmaster and Gessman (1984), and Stalmaster and Kaiser (1998), described effects to wintering bald eagles from human activities. Stalmaster and Kaiser (1998) wrote, “the effects of such interactions (recreationists and eagles) vary with the number of eagles involved; season of the year; proximity; type; intensity; and cumulative number of human disturbances; and availability of food and habitat.” But, “disturbance during winter has the potential to reduce the use of forage areas and limit food intake, increase activity levels and associated energy costs, and force eagles to live in areas where resources are less adequate, thus lowering the carrying capacity of the site.”

Due to the amount, duration, and timing of hazard vegetation removal and proximity to important foraging/roosting/perching areas, eagles were likely prevented from using specific areas to find food, eat, loaf, and roost. The result of this disruption in bald eagle activities and tree removal likely increased the bird’s metabolic energetic costs (by being flushed or prevented from using preferred foraging, perching, loafing, and roosting sites) that wintering eagles attempt to conserve (Stalmaster and Gessaman 1984). The result of these increased energetic costs, depending on its severity, could lead to higher mortality and lowered productivity (Stalmaster and Kaiser 1998).

Because there are at least 24 separate bald eagle roosting locations in the approximately 15 miles of aquatic habitat between Lake Mary and Mormon Lake (identified in the maps found in the BA), we are not reasonably certain that the overall hazard vegetation removal activity and long-term loss of trees within known roost sites resulted in harm or harassment of wintering bald eagles. Tree removal occurred in only four known roosting areas, and three trees or less were removed from three roost locations. Eagles likely had other nearby areas to visit without traveling far and leading to significant energetic/metabolic costs. Additionally, the few number of trees removed at the three roost locations did not render these roosts unsuitable for eagles in the future. Conversely, the 43 trees removed at Roost #2 (Table 11) are likely to cause that location to be unsuitable for stable or traditional use by eagles in the future. Yet, this location is only one of many known locations across a 15-mile stretch of forest that eagles are able to use. Therefore, while we believe these emergency hazard treatment and disposal activities adversely affected wintering bald eagles, we can not conclude that these actions led to harm or harassment due to the amount of remaining habitat in the area and the abundance of other perches/roosts in close proximity.

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Hazard tree removal and disposal and the Lake Mary Bald Eagle Breeding Area

The Lake Mary Breeding Area is believed to encompass the same areas at Lake Mary and Mormon Lake where hazard vegetation treatment and disposal occurred throughout the winter of 2006-2007. As a result, human activity and habitat alteration could similarly cause reduced activity, foraging success, and health, leading to reduced productivity and/or survivorship of these breeding eagles (Stalmaster and Kaiser 1998).

Breeding bald eagles at Lake Mary are relatively new (discovered breeding in 2005); therefore we do not have a good understanding of the limitations to the bird's success or a long history of their reproductive performance. Lake Mary bald eagles failed during egg incubation in 2005, successfully fledged three eaglets in 2006, and did not attempt to lay eggs in 2007 (Jacobson *et al.* 2005, 2006, 2007). During this emergency work in the winter of 2006-2007, Lake Mary bald eagles were likely preparing for the 2007 breeding season. We do not anticipate that eagles were impacted at their nest area from these emergency actions because no hazard vegetation removal took place any closer than about 0.75 mile.

Similar to our analysis for wintering eagles, it is likely that due to four months of tree-cutting and disposal activities adjacent to an important perching/foraging area, the Lake Mary breeding bald eagles were to some degree, adversely affected. This eagle pair was likely disturbed while perching and/or foraging at locations away from the known nest area. Yet, eagles were likely able to move to other nearby perching and foraging locations without significant energetic costs due to the immediate availability of trees and aquatic habitat. And, while it is likely that some perching and/or foraging trees were removed, the remaining abundance of forest and aquatic habitat would seem to be of high enough quality to overcome the loss of these trees. Also, because these emergency actions occurred during the winter time when human activity is limited, it is not likely that the effects of this action were exacerbated due to other potential concurrent stresses to the eagles, such as recreation (or poor habitat quality).

Therefore, while we believe it is reasonable to conclude that the Lake Mary breeding eagles were disturbed by this emergency action, we are not reasonably certain, due to 1) our limited understanding of this breeding site, 2) avoidance of work near the nest area, 3) abundance of nearby trees and aquatic habitat, and 4) lack of concurrent stressors; that harm or harassment occurred to these eagles from these hazard vegetation removal and disposal activities in winter 2006-2007.

Mexican spotted owl

Aerial Reconnaissance

APS was the only utility to conduct aerial reconnaissance during the emergency action. APS conducted flights over all of the transmission lines during May, June, and July of 2006, and over most of the northern transmission lines (transmission lines on the south KNF) at the end of March, end of May, and beginning of June 2007. All flights occurred during the MSO breeding season (March 1 through August 31). Helicopter flights over the transmission lines occurred at 50 to 300 feet off the ground at 50 to 95 miles per hour. During the helicopter flights, the helicopter typically made one pass over the area, but may have circled or hovered briefly to obtain a closer look at the vegetation. Cruising flight between survey areas occurred at 2,000 to 3,000 feet above the ground.

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Noise from all air operations, especially low-flying aircraft, can contribute to the disturbance of MSO. Low-level flights have the greatest potential to disturb owls because these aircraft move slowly and are relatively noisy (Delaney *et al.* 1997). Although the effects of over-flights may vary with location, specific conditions, and aircraft type, Delaney *et al.* (1999) found that a 345-foot hemispherical management protective zone should minimize, and possibly eliminate, spotted owl flush response and negative effects to prey delivery rates associated with helicopter over-flights. The flights associated with this action occurred during the MSO breeding season at altitudes of 50 to 300 feet above the ground, which is within this 345-foot hemispherical management protective zone, and could have resulted in disturbance to MSO.

Flushing and/or disrupting incubating, breeding, or foraging owls can adversely affect breeding attempts by damaging or breaking eggs; and reducing foraging success and prey deliveries to incubating adults, fledglings, and/or nestlings. There was the potential from these flights to disrupt breeding MSO during the emergency action. According to the BAE (Table 13, page 25), only two PACs (Dry Lake #040231, Colcord #120501) were within 0.25 mile of APS transmission lines flown during the emergency consultation timeframe. These PACs may have been affected as a result of the aerial flights. However, due to the small number and short duration of emergency reconnaissance flights over these two PACs, the effects from this action did not likely affect MSO breeding attempts or success within these PACs.

Ground Crew Activities

APS, Garkane, and NEC all conducted ground patrols on their power lines. Ground patrol activities conducted by APS and NEC occurred within 0.25 mile of 46 PACs on the ASNF (6 PACs), CNF (29 PACs), PNF (9 PACs), and TNF (2 PACs) (see BAE Table 14, pages 25-26). Approximately 29 PACs had ground patrols conducted within 0.25 mile during the breeding season and one PAC on the CNF was visited twice by ground crews because two power lines occur within 0.25 mile of this PAC. Both utilities conducted ground patrol surveys with either one or two people driving a pick-up truck, using an ATV (NEC), and/or walking. Garkane also conducted ground patrols and inspections in August and September 2006, but their activities occurred on the North Kaibab Ranger District, where there are currently no designated MSO PACs.

Although there is the potential for ground crew activities to have caused disturbance to MSO within these PACs during the breeding season, it is highly unlikely that these activities rose to the level of significantly disrupting normal behavior patterns, due to the timing, duration, and magnitude of the activities (one to two people, walking or driving during daylight hours). Furthermore, in most cases, the power lines have Forest or County roads or trails that approach and/or follow along the corridor. In these areas crews traveled the established roads/trails and would not have contributed noise to above ambient road noise levels. In areas where crews traveled within the ROW corridor, noise and/or human presence may have startled MSO. However, due to the short duration (only a few minutes in any one location), low frequency (once during the breeding season for all but one PAC), visits to PACs outside the breeding season, and low levels of noise, it is not expected that MSO breeding success was impacted by this action.

Hazard Vegetation Removal

As part of the emergency action, APS and NEC conducted hazard tree removal within a ¼ mile of 13 PACs during the breeding season and an additional 10 PACs outside the breeding season

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(see Table 15 in BA, page 28). Hazard vegetation was also removed from restricted habitat, and removal occurred within and outside the power line corridor. For hazard vegetation trimming and removal treatments, the crews accessed the areas via motorized vehicle or foot and used chainsaws to perform the work. Hazard vegetation treatment requires 2 to 6 people and may take a few hours to several weeks to complete for a particular area. Chainsaw sound levels ranged from 106 to 117 dBA, which exceeds the sound level for MSO flushing in response to disturbance (Delaney *et al.* 1997). However, hazard tree removal work was conducted over a relatively short period of time in PACs during the breeding season, and though owls may have alerted to the noise, it is unlikely that the frequency or magnitude of the chainsaw use near these PACs was significant enough to result in owls flushing from nests or abandoning young.

The removal of trees from within protected and restricted habitat may have resulted in a loss of large dbh trees, reduced canopy closure within and adjacent to the utility line corridor, and reduced numbers of snags. Removal of vegetation likely also reduced the canopy cover, altered the multi-storied canopy structure, reduced and removed snags, created openings, and increased the amount of large downed logs inside and outside the corridor. Removal of large trees and snags may result in reduced availability of nesting and roosting habitat within the 23 PACs listed above (see Table 15 in BA, page 28). However, these habitat alterations involved a small portion of the surrounding habitat and were concentrated within a previously disturbed power line ROW that is currently different than surrounding habitat (i.e. power line corridors have been treated at least once during construction or have been continually maintained). The BA states (page 29) that vegetation removals were generally widely dispersed over the power line corridors and involved only a small portion of trees along the entirety of the power line. While vegetation removal may have decreased the overhead canopy by removing tall growing species (e.g., trees), the understory cover and residual plant cover were likely not directly altered by hazard vegetation removal. Based upon the information provided, there are several PACs in which trees were removed during this action. Our calculations indicate that the PAC with the most trees removed was Viet (#040234) with 13 trees. Most of the trees removed from protected habitat were >12 inches dbh (with most larger than 18 inches dbh) and likely did result in modification of the habitat. However, because of the small special extent of this modification, it is unlikely that the removal of these trees has impacted the ability of the habitat within the 23 PACs to support MSO into the future.

Hazard vegetation work for Garkane was limited to the Big Springs Circuit on the KNF. It is not expected that any of the tree removal activities resulted in disturbance to breeding MSO because there are no known PACs on the North Kaibab Ranger District where the Big Springs Circuit power line is located. Approximately 415 trees were removed from protected steep-slope and restricted habitat along roughly eight miles of power line. Effects to habitat were likely similar to those described above.

In summary, hazard vegetation removal likely resulted in some level of disturbance to MSO associated with 13 PACs during the breeding season and modified protected and restricted habitat through removal and/or alternation of important habitat components within and just outside the power line ROWs.

Hazard Vegetation Disposal

Once the tree or vegetation and/or branches had been cut, the utilities used various, but similar means to dispose of slash. APS most often lopped and scattered slash to no higher than 24

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inches to the ground. For some areas near residential areas or major roads, the FS asked APS to haul logs off site to a designated dump location. In other areas, the FS requested that APS chip slash less than nine inches dbh rather than lop and scatter it. Garkane chipped all slash nine inches or less dbh and scattered the chips throughout the corridor. Logs were bucked into manageable lengths of eight feet or less and scattered at the edge or just outside of the ROW. NEC lopped and scattered slash on site, and bucked logs into lengths of eight feet or less and moved material to the edge of the ROW.

Disposal activities occurred immediately following cutting the tree and/or branches, so this activity is really part of the hazard vegetation removal activity, with the same disturbance effects as described above. Though the use of chainsaws in and/or within 0.25 mile of known PACs may have resulted in disturbance to MSO, based upon the low frequency and wide spatial distribution of hazard trees, this activity likely did not result in harm or harassment of MSO.

Mexican spotted owl critical habitat

This biological opinion does not rely on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statute and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to critical habitat.

Within the action area, the critical habitat is limited to areas that meet the definition of protected steep slope and restricted habitat in the Recovery Plan (USDI 1995). These areas incorporate most of the mixed conifer, ponderosa pine/Gambel oak and higher elevation riparian forest types found within the five national forests. The critical habitat analysis was conducted by overlaying protected steep slope and restricted habitat layers with designated MSO critical habitat boundaries to estimate the quantity of critical habitat in the action area that has habitat components suitable for MSO. Canyon habitat, as defined in the critical habitat rule (USDI 2004), was not impacted by the emergency action. Therefore, we will not analyze the effects of this project on the primary constituent elements of canyon habitat. All discussion below referring to critical habitat only considers the protected steep slope and restricted habitat within MSO critical habitat units.

We identified primary constituent elements in the final rule designating critical habitat (USDI 2004). The importance of each of these components to MSO habitat is described in the final rule (USDI 2004) and the Recovery Plan (USDI 1995). The information provided in those documents is included herein by reference. The effects on the primary constituent elements of MSO critical habitat as a result of the emergency hazard tree removal project are summarized below by forest structure and prey species habitat.

Forest Structure

Range of trees species, tree size

In forested critical habitat, a range of tree species, composed of different tree sizes reflecting different ages of trees, 30 percent to 45 percent of which are large trees with dbh of 12 inches or more, is desired. Diversity in tree size distributions is typical of MSO habitat and provides the vertical structure that is thought to be important to owls (Seamans and Gutierrez 1995). As a

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part of this action, the utilities removed 2,643 trees total (both dead and alive) ranging in size from five to greater than 24 inches dbh. Some of these trees were removed from MSO critical habitat. Removal of this hazard vegetation likely resulted in impacts to the size and species structure of MSO critical habitat along utility corridors. This impact to tree species diversity and loss of certain sized trees may have resulted in a short-term adverse effect to this primary constituent element. Large, live trees are an important element of MSO habitat, and owl use is often correlated with a medium-to-large tree component (USFWS 1995). Large trees and snags take many years to develop and are very difficult to replace, even over the long-term. However, only single trees or small clumps of trees were removed across the project area. In addition, a great majority of the trees removed were dead (snags).

A shade canopy created by the tree branches covering 40 percent or more of the ground

We expect that shade canopy was reduced in small patches of MSO habitat following hazard tree removal. However, the relatively small openings created during this action likely will aid in increasing the understory herbaceous and forb production along utility corridors and in adjacent MSO habitat, which may benefit MSO prey species.

Large, dead trees (snags) with a dbh of at least 12 inches

Large snags were most likely reduced in some areas following hazard tree removal. The reduction of this habitat component may be significant in terms of maintaining MSO and prey habitat within the immediate vicinity of the power line corridors. However, since snag removal was relatively small in scale in any one location along the power line corridors, the effects from this action were likely not significant in terms of modifying the habitat throughout the project area.

Maintenance of adequate prey species

High volumes of fallen trees and other woody debris

After vegetation was removed, the branches of the trees were cut away from the trunks and lopped and scattered off of the power line corridor. In general, felled trees were lopped in manageable lengths and scattered throughout the immediate area, within or adjacent to the power line corridors. These actions likely resulted in an increase in slash and short (eight feet or less) logs on the ground. In general, the larger the diameter and the greater the length of a log (minimum 12 inches at midpoint diameter and 12 feet or more in length), the more useful it is to wildlife (Maser *et al.* 1979), which includes MSO prey species. By cutting the trees into smaller lengths, the logs may be less attractive habitat for prey species. However, because slash created from this action is relatively insignificant across the project area, the effect of cutting the slash into smaller segments likely did not adversely impact the quality of logs available to prey species. The action did increase the quantity of woody debris across the project area to some extent, but likely not enough to modify current fire risk or behavior in MSO habitat.

A wide range of tree and plant species, including hardwoods

Though a variety of tree species were removed as part of the emergency hazard tree removal (e.g., aspen, Gambel oak, ponderosa pine, blue spruce, Douglas fir, white fir, juniper species), due to the relatively small number of trees removed across the project area, we do not believe that this primary constituent element was adversely affected by the emergency hazard tree removal.

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Adequate levels of residual plant cover to maintain fruits and seeds, and allow plant regeneration

Across the entire project area, the removal of the 2,643 hazard trees and snags (some of which were within MSO critical habitat) likely created small gaps in the canopy. These openings may have resulted in increased herbaceous plant growth within the corridor. The mosaic effect created by opening up patches of forest within protected and restricted habitat is also expected to increase herbaceous plant species diversity and, in turn, assist in the production and maintenance of the MSO prey base. The function and conservation role of this primary constituent element was not compromised by the emergency action.

In summary, MSO critical habitat primary constituent elements may have been adversely affected by the emergency action. Snags, large trees, and hardwoods were lost during hazard tree removal. However, we find that the effects to the function and conservation role of critical habitat relative to the Basin and Range West, Colorado Plateau, and Upper Gila Mountains RUs and the entire designation are not significant because the impacts occur in a very small area relative to the three RUs and the overall critical habitat designation. Of 3.2 million acres of critical habitat on NFS lands in Arizona, the emergency action resulted in removal of 2,643 live and dead trees over the entire project area (some of which were within MSO critical habitat). There is a total of 2,543 acres of MSO critical habitat within the action area, which is less than one percent of the total critical habitat designated on FS lands in Arizona. Therefore, we conclude that the primary constituent elements of MSO critical habitat will continue to serve the intended conservation role for the species with the implementation of the proposed action.

CUMULATIVE EFFECTS

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

Bald eagle

Non-Federal activities that are reasonably certain to occur and that could impact eagles include clearing vegetation around power lines, road use, road maintenance, recreation, agriculture, development, water diversion, and groundwater pumping. These activities may reduce the quantity and quality of eagle nesting, roosting, and foraging habitat; result in disturbance to eagles; and contribute as cumulative effects to the proposed action.

Mexican spotted owl

Future non-Federal activities within the action area that are reasonably certain to occur include the modification of habitat and disturbance from actions occurring on adjacent ownerships and in-holdings (e.g., road construction, land clearing, logging, fuelwood gathering, recreation). These activities may reduce the quality and quantity of MSO nesting, roosting, and foraging habitat; result in disturbance to breeding MSOs; and contribute as cumulative effects to the proposed action. However, because MSOs occur predominantly on Federal lands, and because of the role of the respective Federal agencies in administering MSO habitat, actions implemented in the future by non-Federal entities on non-Federal lands are considered to be of minor impact

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to the overall MSO population, but may have significant impacts on individual MSO PACs and critical habitat.

CONCLUSION

Bald eagle

After reviewing the current status of the bald eagle, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that the “Emergency Hazard Vegetation Treatments in Utility Corridors on Arizona Forests” did not likely jeopardize the continued existence of the bald eagle. There is no designated critical habitat for the bald eagle, therefore none was affected.

We present this conclusion for the bald eagle for the following reasons:

- The emergency actions are not believed to have impacted the short or long-term breeding success of any known nesting bald eagle pair or any known nest trees or tree stands surrounding nests.
- The emergency actions are not believed to have significantly altered the short or long-term use of Lake Mary and Mormon Lake for wintering bald eagles.
- The emergency actions are not believed to have altered aquatic habitat that bald eagles rely on for food.

Mexican spotted owl and critical habitat

After reviewing the current status of the MSO and its critical habitat, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that “Emergency Hazard Vegetation Treatments in Utility Corridors on Arizona Forests” did not likely jeopardize the continued existence of the MSO, and is not likely to destroy or adversely modify designated critical habitat of the species.

We present this conclusion for the MSO for the following reasons:

- The emergency actions are not believed to have impeded the survival and recovery of the MSO within the Basin and Range West, Colorado Plateau, and Upper Gila Mountains RUs. The emergency actions removed a total of 2,643 trees across a wide area, with the greatest number of large trees, those greater than 12 inches, on the CNF, ASNF, and KNF. Because the nature of hazard vegetation removal is typically a small/local action that is widely distributed across the landscape, the impact of the action to MSO occupying the action area did not impede the survival or recovery of the species within these RUs.
- Though emergency hazard vegetation treatment in critical habitat resulted in the reduction and/or loss of some primary constituent elements, and treatments in protected and restricted habitat reduced key habitat components, the emergency action may have provided some level of protection to MSO habitat by reducing the threat of a severe, stand-replacing wildfire starting along utility corridors on NFS lands.

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- The implementation of the emergency action did not impede the survival or recovery of MSO within the Basin and Range West, Colorado Plateau, and Upper Gila Mountains RUs. The action area included approximately 2,543 acres of critical habitat. Due to the relatively small size of the area in comparison to the 3.2 million acres of critical habitat designated on FS lands, the impacts to primary constituent elements did not appreciably reduce the value of critical habitat for the species' conservation, and did not rise to the level of destruction or adverse modification.
- While large dbh trees and snags were removed by the emergency action, which may have resulted in short-term disturbance and loss of primary constituent elements, we do not believe that this action destroyed the habitat for use by MSO or their prey species.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and 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 Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

AMOUNT OR EXTENT OF TAKE

Bald eagle

Using available information as summarized within this document, we have identified conditions of possible adverse effects to both wintering (roost site habitat modification and potential disturbance) and breeding bald eagles (disturbance) associated with the emergency hazard tree removal actions. However, based upon the best available information concerning the bald eagle, habitat needs of the species, the project description, and information furnished in the BA, we are not reasonably certain that actions associated with the emergency hazard vegetation removal resulted in harm or harassment causing incidental take of either nesting or roosting eagles from these hazard vegetation removal and disposal activities from May 2006 to June 2007.

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Mexican spotted owl

Using available information as summarized within this document, we have identified conditions of possible adverse effects to MSOs within the PACs associated with emergency hazard tree removal actions. However, based on the best available information concerning the MSO, habitat needs of the species, the project description, and information furnished in the BA, we do not believe that the short-term disturbance from ground and aerial based reconnaissance operations within and adjacent to the PACs or the removal of 2,643 snags and trees in restricted, protected, designated critical habitat, and other forest and woodland habitat was reasonably certain to effect spotted owls to the point where incidental take occurred. This is based upon the relatively short duration of the disturbance within each PAC affected by and the small spatial effects to habitat resulting from hazard tree removal.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species, initial notification must be made to our Law Enforcement Office, 2450 West Broadway Road, Suite 113, Mesa, Arizona 85202 (telephone: 480/967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

CONSERVATION RECOMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

Bald eagle

1. We recommend that the FS evaluate how the Lake Mary eagles exploit the resources surrounding them to better understand the key elements to management of this breeding area, such as maintenance of prey resources and their continuity, management of eagle access to prey, protection of foraging perches, etc.
2. We recommend that the FS review how recreational activity may be impacting the Lake Mary eagles in order to take appropriate management actions to minimize those impacts.
3. We recommend that the FS record and map all wintering bald eagle roosts and foraging areas to better understand site-specific impacts of forest and recreation management.

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Mexican spotted owl

1. We recommend that the FS work with us to determine if additional acreage may need to be added to PACs bisected by utility corridors.
2. We recommend that the FS work with us and the utilities to minimize the effects of utility corridor management on listed species and their habitats.
3. We recommend that the FS conduct surveys for the next five years in all PACs impacted by utility corridors in order to determine nest core areas and potential effects of vegetation management in the utility corridors.
4. We recommend that the FS work with us to plan and implement actions to improve and create MSO habitat across the national forests in Region 3.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in your request for consultation on the Emergency Hazard Vegetation Treatment in Utility Corridors on Arizona Forests. 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.

The FWS appreciates your consideration for the bald eagle, MSO, and other listed species, and your continued cooperation in managing hazard and vegetation treatments at power line ROWs through Arizona national forests.. For further information please contact Greg Beatty at (602) 242-0210 (x247) or Brenda Smith at (928) 226-0614 (x101).

Please refer to the consultation number, 22410-2006-FE-0318, in future correspondence concerning this project.

Sincerely,

/s/ Brenda Smith for

Steven L. Spangle
Field Supervisor

cc (hard copy):

Field Supervisor, Fish and Wildlife Service, Albuquerque, NM
Ron Maes, Southwestern Regional Aquatics Biologist, Albuquerque, NM

Mr. Alan Quan

Bobbi Barrera, Southwestern Regional T&E Biologist, Albuquerque, NM
Forest Supervisor, Apache-Sitgreaves National Forest, Springerville, AZ
Forest Supervisor, Coconino National Forest, Flagstaff, AZ
Forest Supervisor, Prescott National Forest, Prescott, AZ
Forest Supervisor, Kaibab National Forest, Williams, AZ
Forest Supervisor, Tonto National Forest, Phoenix, AZ
Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Habitat Specialist, Arizona Game and Fish Department, Region 1, Pinetop, AZ
Habitat Specialist, Arizona Game and Fish Department, Region 2, Flagstaff, AZ
Habitat Specialist, Arizona Game and Fish Department, Region 3, Kingman, AZ
Habitat Specialist, Arizona Game and Fish Department, Region 6, Mesa, AZ

cc (electronic copy):

Shaula Hedwall, Fish and Wildlife Service, Flagstaff, AZ
Assistant Field Supervisor, Fish and Wildlife Service, Flagstaff, AZ

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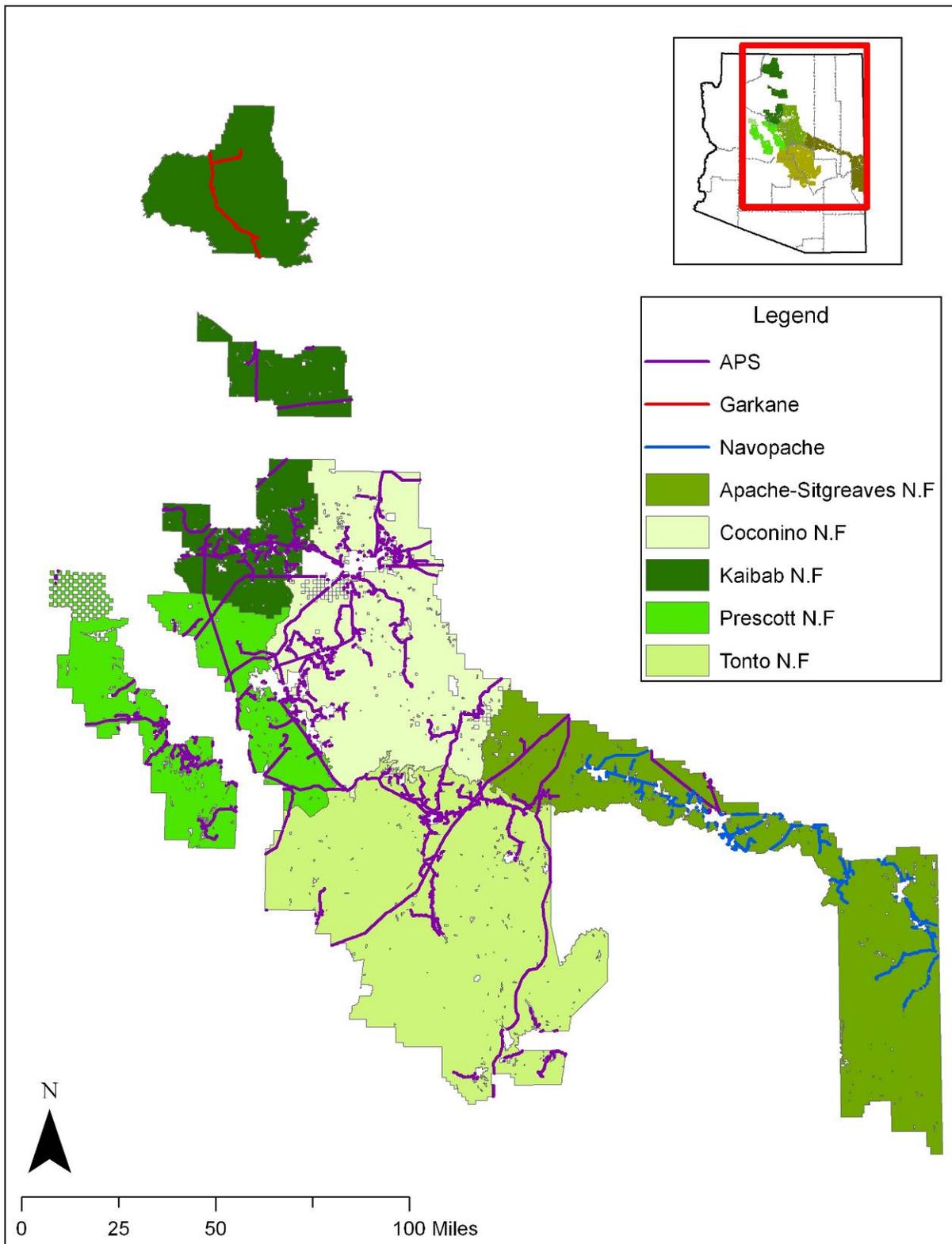
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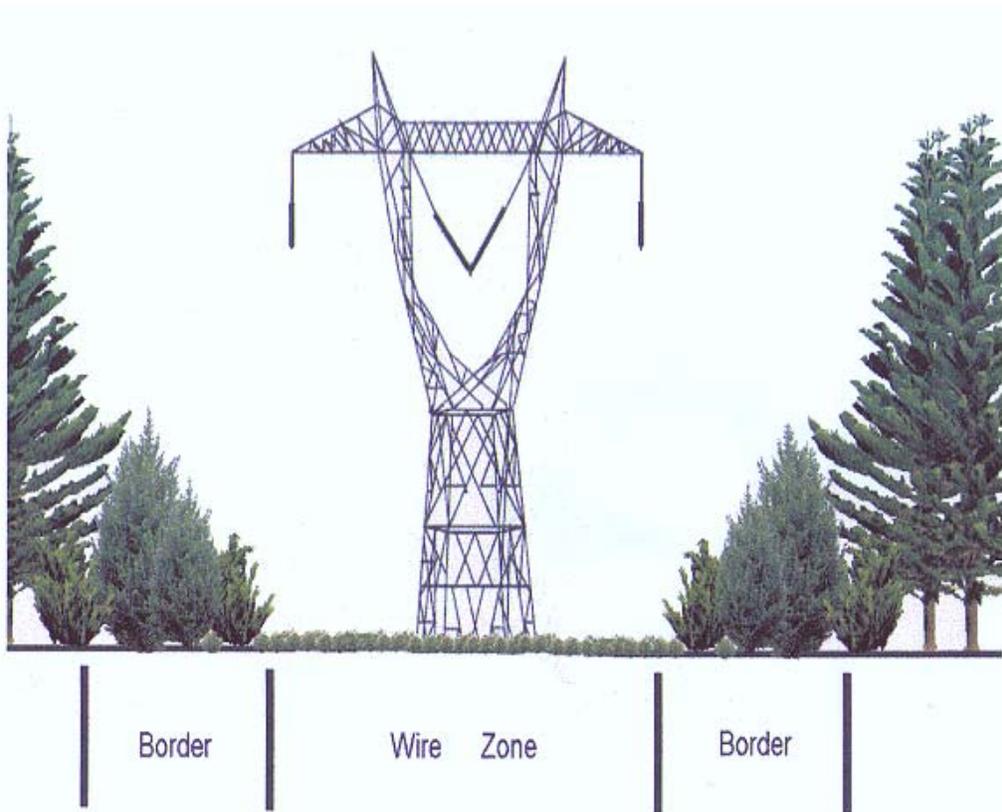
FIGURES

Figure 1. Overview Map of Project Area: Utility Lines and Forest Boundaries



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Figure 2. Representation of Wire Zone Border Model (a general description of a typical ROW consisting of the powerline corridor and immediate bordering lands)



*See Table 1 for line voltage and corresponding ROW widths.

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APPENDIX A

We concur with your determinations that the proposed action may affect, but is not likely to adversely affect, the endangered lesser long-nosed bat, threatened California condor, endangered southwestern willow flycatcher and its critical habitat, and the threatened loach minnow and its critical habitat. We also concur with your determinations that the proposed action is not likely to jeopardize the continued existence of the experimental non-essential populations of the California condor and the Mexican gray wolf, as well as the candidate yellow-billed cuckoo. We base these concurrences on the following:

Lesser long nosed bat

- The lesser long-nosed bat and roosting or maternity colonies are not known to occur on any of the National Forests covered under this consultation.
- Lesser long-nosed bat foraging habitat is known to occur within the action area; however, agave was not a target species for removal or pruning, and only three saguaro cacti were pruned. No saguaro cacti were removed as a result of the action. Any effects to forage availability were insignificant.
- All helicopter flights, field reconnaissance, and vegetation removal occurred between 6:00 a.m. and 5:30 p.m. Lesser long-nosed bats are not known to forage during this period of the day.

California condor (outside non-essential experimental boundaries)

- APS aerial reconnaissance flights occurred over condor habitat outside non-essential experimental boundaries; however these flights occurred as single passes over these areas of habitat. The flights did not pass over foraging or breeding areas; no condors were disturbed by these short, limited flights. No aerial surveys were conducted by NEC or Garkane.
- Hazard vegetation removal work involved small crews of not more than six people in pickup trucks, ATVs, or bucket trucks, and only a small number of trees that could be used as condor roost trees were removed outside of the experimental non-essential area for condors. This limited loss of potential roost trees is not expected to result in a loss of roosting habitat for condors.

California condor (inside non-essential experimental boundary)

- Because of the condor's status as an experimental non-essential population, these condors are treated as though they are proposed for listing for section 7 consultation purposes. By definition, an experimental non-essential population is not essential to the continued existence of the species. Thus, no proposed action impacting a population so designated could lead to a jeopardy determination for the entire species.

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Southwestern willow flycatcher and critical habitat

- No hazard tree removal or disposal activities occurred within or near occupied breeding sites or designated critical habitat for the southwestern willow flycatcher. The nearest known occupied sites were over two miles from any emergency actions. Therefore, no direct effects to this species occurred as a result of these actions, and any indirect effects from vegetation removal or disposal were insignificant.
- Ground patrol crews did not enter any suitable flycatcher habitat, so no disturbance to flycatchers in any of these areas occurred from inspection activities.
- No APS aerial reconnaissance flights occurred over occupied southwestern willow flycatcher habitat. The nearest known nest site to any aerial reconnaissance flights was approximately 2.6 miles from the flight path. Garkane and NEC did not conduct aerial reconnaissance flights on their power lines.

Loach minnow and critical habitat

- No vehicles or personnel associated with vegetation removal activities entered occupied habitat. Therefore, no direct effects resulting from vegetation removal activities occurred in loach minnow habitat or critical habitat.
- Only dead ponderosa pine trees were removed (19 total along four miles); therefore, no shade-providing habitat was removed along occupied or critical habitat.
- Due to the small number of trees removed within the floodplain, soil disturbance from vegetation removal was minimal and did not result in additional sedimentation entering occupied or critical habitat that could alter the food base for loach minnow.

Mexican gray wolf

- Because of the wolf's status as an experimental non-essential population, wolves found in Arizona are treated as though they are proposed for listing for section 7 consultation purposes. By definition, an experimental non-essential population is not essential to the continued existence of the species. Thus, no proposed action impacting a population so designated could lead to a jeopardy determination for the entire species.

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Yellow-billed cuckoo

- No hazard vegetation was removed in known occupied yellow-billed cuckoo habitat on NFS lands.
- APS aerial reconnaissance flights occurred over small patches of yellow-billed cuckoo habitat and were, generally, perpendicular to the habitat. Additionally, aerial reconnaissance flights occurred as a single pass over these small patches of habitat. These short, limited disturbances did not jeopardize the continued existence of the yellow-billed cuckoo. No aerial surveys were conducted by NEC or Garkane.

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APPENDIX B

Table 12. Utility hazard vegetation projects list, emergency actions, five Arizona national forests, May 2006 to June 2007.								
Utility	Waypoint Numbers	Project Number	Forest	Line Number	Species Treated	Hazard Total	Dates Worked	Comments
APS	1 - 12	1	CNF	230-1	Ponderosa Pine	12	8/15, 8/16/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	13 - 37	2	CNF	230-2	Ponderosa Pine	33	7/10, 7/11, 7/12, 7/13, 7/17, 7/18, 7/19, 7/21/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	38 - 62	3	CNF	230-2	Alligator Juniper, Arizona Walnut, Ponderosa Pine	52	10/23, 10/24, 10/25, 10/26/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	63 - 65	4	CNF	230-2	Ponderosa Pine, Gambel Oak	3	12/20, 12/21/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	66 - 73	5	ASNF	345-1	Douglas Fir, Ponderosa Pine	9	3/21, 3/22, 4/2/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	74 - 92	6	TNF	345-1	Douglas Fir, Palmer Oak, Pinyon Pine, Ponderosa Pine, Saguaro, Utah Juniper	28	3/28, 3/29, 4/2, 4/4, 4/16, 4/19, 4/23, 4/24, 4/25, 4/30, 5/1/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	93 - 99	7	KNF	500-1	Pinyon Pine, Ponderosa Pine, Utah Juniper	25	4/26, 4/30, 5/1/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	100 - 101	8	ASNF	500-3	Ponderosa Pine	3	3/26, 3/27/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	102 - 109	9	CNF	BR-12	Douglas Fir, Gambel Oak, Ponderosa Pine	33	10/5/2006	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.

Mr. Alan Quan

Table 12. Utility hazard vegetation projects list, emergency actions, five Arizona national forests, May 2006 to June 2007.								
Utility	Waypoint Numbers	Project Number	Forest	Line Number	Species Treated	Hazard Total	Dates Worked	Comments
APS	110 - 134	10	CNF	BR-12	Ponderosa Pine	15	10/3, 10/4, 10/5/2006	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	135 - 137	11	PNF	CDS-1	Ponderosa Pine	5	09/26/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	138	12	CNF	CQ-12	Ponderosa Pine	1	08/28/06	The CQ-12 power line has dense ponderosa pine and/or Gambel oak vegetation along much of the corridor. The lack of recent corridor maintenance, drought, and beetle kill resulted in numerous hazards along the line. Slash treatment and work activities were similar for each of the CQ-12 hazard vegetation reports. Limbs were chipped using a chipper where access conditions allowed. Where access or conditions (wet and muddy conditions) did not allow, limbs were lopped and scattered no higher than 24". Logs were cut to manageable lengths of 8 feet or less and moved to the edge or off of the corridor. Trees that were pruned were pruned using a bucket truck where access routes were available. Where road access did not allow for pruning of trees using bucket truck, a tree worker climbed the tree and removed branches in pieces. The corridor was accessed on foot, using a bucket truck, or using a 6x6 ATV. Work conducted during January and March 2007 was delayed due to wet and muddy conditions.
APS	139 - 152	13	CNF	CQ-12	Gambel Oak, Ponderosa Pine	21	11/8, 11/9/06	
APS	153 - 172	14	CNF	CQ-12	Ponderosa Pine	36	12/20, 12/21/06	
APS	173 - 198	15	CNF	CQ-12	Ponderosa Pine	37	1/9, 1/10, 1/11/2007	
APS	199 - 245	16	CNF	CQ-12	Ponderosa Pine	119	2/26, 3/1, 3/5 3/6, 3/7, 3/8, 3/13, 3/14/07	
APS	246 - 263	17	CNF	CQ-12	Ponderosa Pine	43	3/13, 3/14/07	
APS	264 - 278	18	CNF	CQ-12	Ponderosa Pine	23	3/19, 3/20/07	
APS	279 - 287	19	CNF	CQ-12	Ponderosa Pine	11	3/29, 4/2, 4/3/07	
APS	288 - 425	20	CNF	CQ-12	Douglas Fir, Gambel Oak, Ponderosa Pine	266	2/19, 2/22, 2/27, 3/5-8 3/21 3/22, 3/26, 4/3, 4/16-17, 4/26 4/27/07	
APS	426 - 427	21	CNF	CU-6	Cottonwood	2	9/13/2006	
APS	428 - 433	22	KNF	DA-1	Ponderosa Pine	7	4/12/2007	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	434 - 436	23	KNF	DA-1	Ponderosa Pine	4	04/17/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.

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Table 12. Utility hazard vegetation projects list, emergency actions, five Arizona national forests, May 2006 to June 2007.								
Utility	Waypoint Numbers	Project Number	Forest	Line Number	Species Treated	Hazard Total	Dates Worked	Comments
APS	437	24	PNF	DE-10	Ponderosa Pine	16	5/15, 5/16/07	These trees were in a prescribed burn area that resulted in the dead of the trees close enough to the line to be a hazard. Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	438 - 478	25	CNF	ELN-1	Douglas Fir, Ponderosa Pine, Quaking Aspen	52	12/27, 12/28/06, 1/2, 1/3, 1/4, 1/8, 1/9, 1/10/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved outside of the corridor.
APS	479 - 484	26	CNF	FS-1	Ponderosa Pine	9	10/03/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	485 - 486	27	KNF	GA-1	Ponderosa Pine	2	04/23/07	These trees were pruned. The slash from the pruned trees was chipped and scattered within the corridor.
APS	487 - 494	28	KNF	GA-1	Ponderosa Pine	12	4/18, 4/30, 5/1, 5/24/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	495	29	CNF	MP-5	Ponderosa Pine	1	08/28/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	496	30	KNF	NE-10	Ponderosa Pine	1	7/18/2006	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	497 - 502	31	ASNF	NE-2	Ponderosa Pine	6	8/28, 8/29/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	503 - 507	32	ASNF	NE-2	Ponderosa Pine	8	5/14/2007	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	508 - 520	33	KNF	NE-6	Ponderosa Pine	13	7/31, 8/1, 8/2/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	521	34	CNF	NE-6	Ponderosa Pine	2	8/16/2006	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.

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Utility	Waypoint Numbers	Project Number	Forest	Line Number	Species Treated	Hazard Total	Dates Worked	Comments
APS	522 - 540	35	KNF	NE-7	Ponderosa Pine	20	7/19, 7/20, 7/24, 7/25, 7/26, 7/27, 7/31/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	541	36	CNF	NE-7	Ponderosa Pine	3	8/16/2006	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	542 - 545	37	CNF	NE-7	Ponderosa Pine	4	12/19, 12/20/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	546 - 578	38	CNF	NP-1	Alligator Juniper, Gambel Oak, Ponderosa Pine	63	1/10, 1/11, 3/28, 3/29/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	579 - 581	39	PNF	NW-3	Ponderosa Pine, Quaking Aspen	3	1/24/2007	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	582 - 602	40	CNF	NW-5	Pinyon Pine, Ponderosa Pine	29	8/3, 8/15/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	603 - 604	41	CNF	NW-5	Ponderosa Pine	2	06/14/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	605 - 606	42	CNF	NW-5	Ponderosa Pine	4	06/14/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	607 - 610	43	KNF	NW-6	Ponderosa Pine	4	7/7/2006	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	611	44	PNF	NW-9	Douglas Fir	3	08/15/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	612	45	PNF	NW-9	Pinyon Pine	1	8/15/2006	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.

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Utility	Waypoint Numbers	Project Number	Forest	Line Number	Species Treated	Hazard Total	Dates Worked	Comments
APS	613 - 643	46	KNF	PK-1	Ponderosa Pine	245	12/4-12/7, 12/11-12/14, 12/18/2006	The trees removed for this project were killed in early October by a prescribed burn in the Forest. Trees less than 18" were piled on the north side of the line away from the prevailing winds for the Forest to burn at a later date. For trees greater than 18" dbh, slash was lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to the edge of off of the corridor.
APS	644 - 646	47	KNF	PK-14	Ponderosa Pine	3	03/22/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	614 - 653	48	KNF	PK-14	Ponderosa Pine	7	03/27/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	654 - 655	49	KNF	PK-14	Ponderosa Pine	6	4/5, 4/9/2007	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	656 - 663	50	KNF	PK-14	Ponderosa Pine	17	4/10, 4/11/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	664 - 668	51	KNF	PK-14	Ponderosa Pine	5	4/10, 4/11/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	669 - 670	52	KNF	PK-14	Ponderosa Pine	2	04/12/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	671 - 672	53	KNF	PK-14	Ponderosa Pine	2	04/12/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	673 - 678	54	KNF	PK-14	Ponderosa Pine	12	4/12, 4/16/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	679 - 683	55	KNF	PK-14	Ponderosa Pine	5	04/28/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.

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Utility	Waypoint Numbers	Project Number	Forest	Line Number	Species Treated	Hazard Total	Dates Worked	Comments
APS	684 - 685	56	TNF	PR-2	Ponderosa Pine	6	6/6, 6/7/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	686 - 690	57	TNF	PR-2	Alligator Juniper, Emory Oak, Ponderosa Pine	89	11/9, 11/16, 11/17/06	A total of 76 extra trees were removed beyond the initial 13 trees reported. 3 of the additional trees were removed to remove the other trees safely. The other additional trees (73) were hazards identified in the area while crews were performing work on the initial 13 trees. All limbs and logs were hauled off site using a logging truck to the Ponderosa Pit located along Highway 260 about 15 miles east of Payson. This was done according to TNF requests because of the close proximity of the line to a major road. The logging truck remained on major roads. Logs were left in lengths of 15 to 20 feet long.
APS	691	58	TNF	PR-2	Ponderosa Pine	2	01/10/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	692 - 693	59	TNF	PR-2	Alligator Juniper, Pinyon Pine	17	2/6, 2/14/2007	These trees were all pruned. Limbs were lopped and scattered no higher than 24" high.
APS	694	60	TNF	PR-6	Ponderosa Pine	21	8/7, 8/10, 8/16/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	695 - 697	61	TNF	PR-6	Ponderosa Pine	5	2/12, 2/13, 2/14/07	All limbs and logs were hauled off site using a logging truck to the Ponderosa Pit located along Highway 260 about 15 miles east of Payson. This was done according to TNF requests because of the close proximity of the line to private properties. The logging truck remained on major roads. Logs were left in lengths of 15 to 20 feet long.

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Utility	Waypoint Numbers	Project Number	Forest	Line Number	Species Treated	Hazard Total	Dates Worked	Comments
APS	697 - 700	62	TNF	PR-6	Emory Oak, Ponderosa Pine	6	02/22/07	For these removals, a tree caused an outage on the line, and as the crews were sent out to remove the tree that caused the outage, they also removed these 6 dead trees in the same area that were hazards. Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	701 - 703	63	TNF	PR-6	Arizona Sycamore, Ponderosa Pine	7	04/05/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	704 - 720	64	TNF	PR-6	Alligator Juniper, Box Elder, Douglas Fire, Ponderosa Pine	58	5/23, 5/24, 5/29, 5/30, 5/31/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	721 - 729	65	KNF	RL-1	Ponderosa Pine	9	4/18, 4/25, 4/30, 5/1, 5/24/07	The trees removed for this project were killed by a prescribed burn in the Forest. The limbs were lopped off and dragged outside of the corridor no higher than 24" and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	730 - 735	66	CNF	SE-14	Douglas Fir, Ponderosa Pine, Thinleaf Alder	11	4/17, 4/19/2007	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor. One of these trees that was reported actually fell on the line and caused an outage before crews could remove the tree.
APS	736 - 745	67	CNF	SE-6	Arizona sycamore, Ash, Thinleaf Alder	10	03/05/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	746 - 747	68	TNF	STR-2	Arizona Cypress, Cottonwood	7	5/31, 6/5/07	All limbs and logs were hauled off site using a logging truck to the Ponderosa Pit located along Highway 260 about 15 miles east of Payson. This was done according to TNF requests because of the close proximity of the line to private properties. The logging truck remained on major roads. Logs were left in lengths of 15 to 20 feet long.

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Utility	Waypoint Numbers	Project Number	Forest	Line Number	Species Treated	Hazard Total	Dates Worked	Comments
APS	748 - 749	69	CNF	SV-04	Live Oak, Ponderosa Pine	3	10/31/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	750 - 753	70	CNF	SV-04	Ponderosa Pine	6	11/1/2006	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	755 - 757	71	CNF	SV-04	Ponderosa Pine	7	11/8, 11/9/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	758	72	CNF	SV-04	Ponderosa Pine	1	11/14/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	759	73	CNF	SV-04	Ponderosa Pine	1	11/27/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	760 - 761	74	CNF	SV-10	Pinyon Pine, Ponderosa Pine	2	11/28/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	762 - 766	75	CNF	SV-10	Pinyon Pin, Ponderosa Pine	5	12/01/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	767 - 773	76	CNF	SV-10	Pinyon Pine	12	12/4, 12/5, 12/6, 12/7/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	774 - 777	77	CNF	SV-10	Pinyon Pine	4	1/3, 1/4/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	778 - 779	78	CNF	SV-14	Ponderosa Pine	2	04/04/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	780 - 781	79	CNF	SZ-13	Ponderosa Pine	4	6/6/2006	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.

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Utility	Waypoint Numbers	Project Number	Forest	Line Number	Species Treated	Hazard Total	Dates Worked	Comments
APS	782 - 803	80	CNF	SZ-13	Gambel Oak, Pinyon Pine, Ponderosa Pine	31	10/9, 10/10, 10/11, 10/12, 10/16, 10/17, 10/18/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	804 - 811	81	CNF	SZ-13	Alligator Juniper, Pinyon Pine, Ponderosa	10	10/23/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	812 - 842	82	TNF	TT-14	Douglas Fir, Ponderosa Pine	53	11/2, 11/6, 11/7, 11/13, 11/15, 11/17/06	All logs and limbs were piled for later burning according to the TNF requests.
APS	843 - 848	83	TNF	TT-14	Ponderosa Pine	8	11/17, 12/5, 12/7, 12/18/06	All logs and limbs were piled for later burning according to the TNF requests.
APS	849 - 868	84	TNF	TT-14	Douglas Fir, Ponderosa Pine	23	02/20/07	All logs and limbs were piled for later burning according to the TNF requests.
APS	869 - 889	85	TNF	TT-14	Gambel Oak, One-seed Juniper, Ponderosa pine	86	1/10, 1/17, 1/31/06, 2/6, 2/13, 2/15, 2/21, 2/22/07	All logs and limbs were piled for later burning according to the TNF requests. 73 Trees were initially reported, but it took the crews 4 months for crews to get to the work after initial reporting and additional trees died during this time. The 13 additional trees for this project were trees identified while crews were removing the initial 73 trees.
APS	86 - 901	86	TNF	TT-14	Alligator Juniper, Gambel Oak, Ponderosa Pine	25	2/22, 2/26, 2/27, 2/28, 3/1/07	All logs and limbs were piled for later burning according to the TNF requests.
APS	902 - 908	87	KNF	WH-1	Ponderosa Pine	10	04/18/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	909 - 910	88	KNF	WM-13	Ponderosa Pine	2	6/16/2007	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.

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Utility	Waypoint Numbers	Project Number	Forest	Line Number	Species Treated	Hazard Total	Dates Worked	Comments
APS	911 - 963	89	KNF	WM-20	Douglas Fir, Ponderosa Pine, Quaking Aspen	93	5/1, 5/2, 5/3, 5/7, 5/8, 5/9, 5/10, 5/17/07	Some of the trees (about 10 to 12 trees) removed for this project was killed by a prescribed burn in the Forest. The burned tree branches were lopped and scattered within the burned area no higher than 24". The burned logs were moved to the edge of or off of the corridor in the burned area. The non-burned trees were dragged to the north side of the line. The limbs were lopped off and scattered no higher than 24" and the logs were cut to 8 feet or less lengths.
APS	964 - 965	90	CNF	WMT-10	Ponderosa Pine	2	03/05/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	966 - 972	91	CNF	WMT-14	Ponderosa Pine	9	9/12, 9/13/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	973	92	CNF	WN-1	Ponderosa Pine	1	01/02/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	974 - 976	93	PNF	WSP-02	Ponderosa Pine	13	5/15, 5/16/07	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	977	94	PNF	WSP-10	Ponderosa Pine	1	08/28/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	978 - 980	95	PNF	WSP-12	Douglas Fir, Ponderosa Pine	4	09/26/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	981 - 982	96	PNF	WSP-12	Gambel Oak, Ponderosa Pine	2	09/27/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.
APS	983	97	PNF	WSP-12	Ponderosa Pine	1	10/27/06	Limbs were lopped and scattered no higher than 24" high and logs were cut to manageable lengths of 8 feet or less and moved to edge or off of corridor.

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Garkane	1 – 16 on North KNF Map	98	KNF	Big Springs Circuit	Aspen, Fir	37	8/21-8/24, 8/28-8/30/2006	Logs were bucked and scattered at edge of or just outside of ROW. All limbs smaller than 9" dbh were chipped and broadcast spread on-site. Work involved 3 people driving a 4x4 truck hauling a chipper.
Garkane	17 – 222 on North KNF Map	99	KNF	Big Springs Circuit	Aspen, Fir, Pine	378	11/13-11/16, 11/20, 11/21, 11/27-11/30/2006	Logs were bucked and scattered at edge of or just outside of ROW. All limbs smaller than 9" dbh were chipped and broadcast spread on-site. Work involved 3 people driving a 4x4 truck hauling a chipper.
NEC	47 - 65 on NEC ASNF Map	100	ASNF	51	Aspen, Blue Spruce, Douglas Fir, Ponderosa Pine, White Fir	37	5/24, 5/29, 6/12/2007	Work involved access with Polaris or Truck. Equipment involved saw and rope. Slash was lopped and scattered on site. Logs were cut to manageable lengths of 8 feet or less and moved to edge of corridor.
NEC	1-46, 66 - 117 on NEC ASNF Map	101	ASNF	131	Aspen, Blue Spruce, Ponderosa Pine	172	<u>1-46</u> = 6/14, 6/19, 6/21, 6/22/2007 <u>66-117</u> = 5/21, 5/24-25, 6/11, 6/12, 6/13, 6/14/2007	Work involved access with a Ranger 6x6 ATV. Equipment involved saw and rope. Slash was lopped and scattered on site. Logs were cut to manageable lengths of 8 feet or less and moved to edge of corridor.
					Total	2643		