

2004 RAPTOR SURVEY
Federal Parcel, Pinal County, Arizona



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EXECUTIVE SUMMARY

WestLand Resources, Inc. (WestLand) was retained by Resolution Copper Company (Resolution) to conduct a survey for raptors on the approximately 1,224-hectare (3,025-acre) Federal Parcel (the Parcel). The Parcel is in the Tonto National Forest, east of the town of Superior, Pinal County, Arizona.

Resolution proposes to obtain the Parcel by way of a land exchange. In support of this effort, WestLand has been conducting baseline resource investigations on the Parcel. The purpose of this survey was to determine which raptor species could be confirmed on the Parcel.

The environmental conditions found on the Parcel provide a diverse habitat that supports a sufficient prey base for raptors. Small mammals, birds, and an assortment of reptiles were observed living or foraging throughout the site, particularly within the boulder-strewn areas of the Parcel. The various surface water features identified by WestLand (2003) provide adequate water for both raptors and their prey.

In 2003, WestLand identified three active raptor-breeding territories on the Parcel. Two of these breeding areas were again occupied in 2004 with peregrine falcons (*Falco peregrinus anatum*) and zone-tailed hawks (*Buteo albonotatus*). The cliff face at Apache Leap and the forested canyon bottom of Queen Creek provide ideal nesting habitat for raptors. Two oak groves located at Oak Flat Campground and Dry Reservoir also provide potential suitable habitat; however, excessive human disturbance may preclude successful occupancy of these areas by nesting raptors. The balance of the property generally lacks suitable nesting substrates.

1. INTRODUCTION AND BACKGROUND

1.1 STATEMENT OF PURPOSE

WestLand Resources, Inc. (WestLand) was retained by Resolution Copper Company (Resolution) to conduct a survey for raptors on the approximately 1,224-hectare (3,025-acre) Federal Parcel (the Parcel). The Parcel is in the Tonto National Forest, east of the town of Superior, Pinal County, Arizona. The parcel occupies a portion of Section 36, Township 1 South, Range 12 East; portions of Sections 1 and 2, Township 2 South, Range 12 East; portions of Sections 28, 29, 30, 31, and 32, and Section 33, Township 1 South, Range 13 East; and a portion of Section 6, Township 2 South, Range 13 East (Figure 1). The Parcel is currently public land, managed by the US Forest Service.

Resolution proposes to obtain the Parcel by way of a land exchange. In support of this effort, WestLand has been conducting baseline resource investigations on the Parcel. The purpose of this survey was to monitor existing locations of raptors in accordance with established survey protocols and procedures.

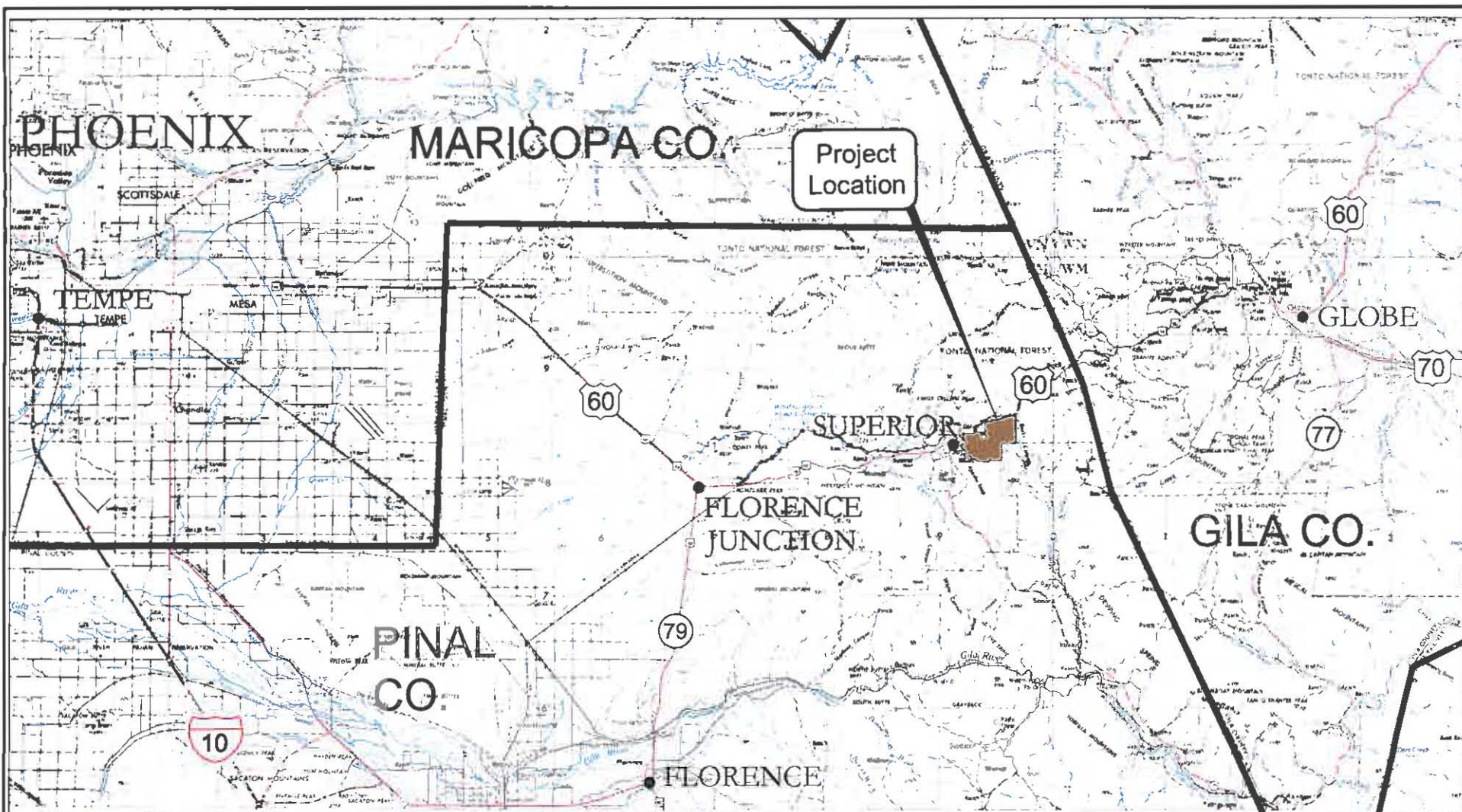
1.2 SITE DESCRIPTION

The Parcel is located in the Pinal Mountains within the Central Highlands Province, a transition zone between the Colorado Plateau and the Basin and Range Provinces. Elevation within the Parcel varies from approximately 900 to 1,500 meters (3,000 to 5,000 feet) above mean sea level.

Over 90 percent of the area of the Parcel is covered by the Apache Leap tuff, the youngest consolidated geologic formation, which forms the cap of the Apache Leap escarpment on the western portion of the Parcel. Underlying units are volcanic and sedimentary rocks exposed at the foot of the Apache Leap escarpment. A late Tertiary/early Quaternary weakly consolidated gravel and conglomerate unit overlies the Apache Leap tuff in a small area on the eastern portion of the Parcel.

The soils associated with the Apache Leap tuff are classified as Lithic Torriorthents (Brown, 1994), and were formed as a residuum weathered from the tuff. These soils are shallow, gravelly, and strongly sloping to very steep soils and, consequently, are well drained.

The Parcel is dominated by plant species associated with Interior Chaparral (east of Apache Leap) and Sonoran Desertscrub biotic communities (west of Apache Leap), as described by Brown (1994). Relatively isolated patches of xeriparian and mesoriparian vegetation are located throughout the Parcel around stock tanks and in association with ephemeral drainages, Rancho Rio Creek, and Queen Creek.



Pinal County, Arizona
Mesa 1:250,000 USGS Map



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0 6.5 13 KM
Approx. Scale 1" = 13 KILOMETERS



**Resolution
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2004 RAPTOR SURVEY,
FEDERAL PARCEL

VICINITY MAP
Figure 1

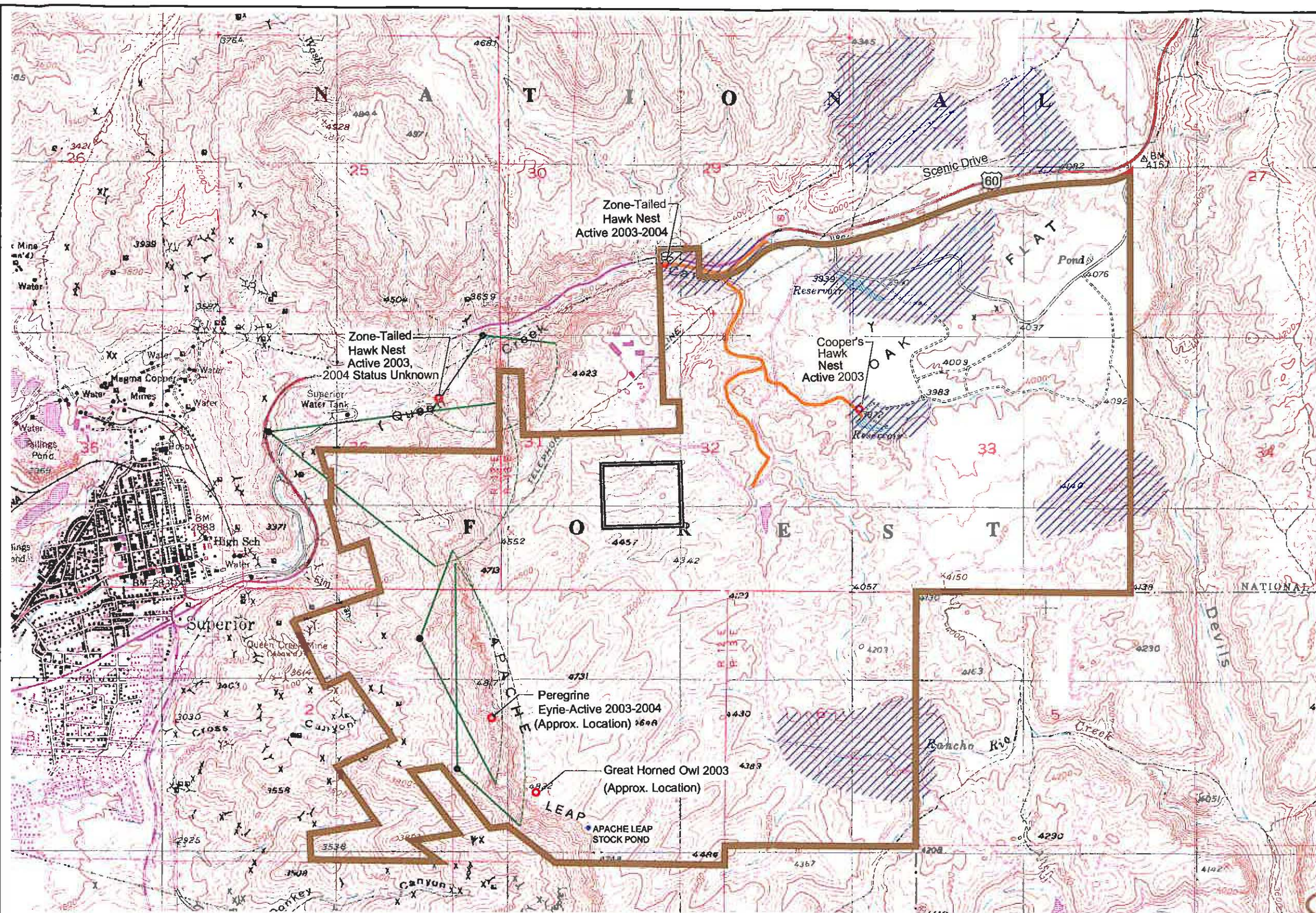
The Apache Leap escarpment provides the best habitat for nesting raptors on the Parcel. High cliffs, canyon walls, and pinnacles are located on both sides of Apache Leap and provide raptors with opportunities for hunting, perching, and nesting. The craggy, competent walls of the Apache Leap escarpment provide stable, shaded areas and protected recesses that are highly suitable for nest sites.

The vegetation structure that occurs on the Parcel provides a diverse habitat that supports a sufficient prey base for raptors. Small mammals, birds, and an assortment of reptiles were observed living or foraging throughout the site, particularly within the boulder-strewn areas of the Parcel. The various surface water features identified by WestLand (2003a and 2003b) provide adequate water for both raptors and their prey. The riparian vegetation within Queen Creek Canyon provides suitable nesting substrates (large sycamore trees, etc.) as well. Opportunities for nesting elsewhere on the Parcel appear limited. Large trees on the Parcel that provide suitable potential raptor nesting habitat are limited to the canyon bottoms and two large oak groves located at Oak Flat Campground and Dry Reservoir. However, excessive human disturbance, particularly at Oak Flat campground, may limit use of these two oak groves by raptors.

Elsewhere on the Parcel there are few, if any, suitable nesting substrates available. Initially, WestLand believed that the numerous rock outcrops, boulder fields, tall spires (or “hoodoos”), and stacked rock “totem” formations that dominate the landscape on the Parcel provided abundant nesting opportunities for raptors. However, WestLand field personnel who conducted intensive surveys for Arizona hedgehog cactus throughout the Parcel report that nearly all of the numerous boulders and rock formations that dominate the site could potentially be accessible to mammalian predators and, therefore, are unsuitable as raptor nesting habitat.

1.3 SUMMARY OF PREVIOUS SURVEYS CONDUCTED IN THE PARCEL VICINITY

WestLand prepared a *Baseline Biology and Land Use Report* (2003a) and a *Biological Assessment and Evaluation* (2003b) describing biological resources affiliated the Parcel. The initial biological baseline work included an inventory of nesting raptors on the Parcel. Three active raptor nests were observed on the Parcel during the 2003 field survey. A Cooper’s hawk (*Accipiter cooperii*) nest was recorded within an Emory oak located immediately down gradient of Dry Reservoir, near the Oak Flat Campground. An active American peregrine falcon (*Falco peregrinus anatum*) was detected on the face of Apache Leap. A single active zone-tailed hawk (*Buteo albonotatus*) nest was observed near the Parcel boundary in Queen Creek Canyon. Although no nest site was located, great horned owls (*Bubo virginianus*) were observed on the Parcel in the vicinity of Apache Leap Pond. The locations of the three active raptor nests and the great horned owl activity center located on the Parcel are depicted in Figure 2. In addition, two other active zone-tailed hawk nests were observed in proximity to the Parcel in 2003: one on Queen Creek down gradient (northwest) of the Parcel and one within Devils Canyon (east of the Parcel).



0 300 600 M

Scale 1" = 600 Meters

LEGEND

- Fixed Point Cliff Survey
- Project Boundary
- Private In-holding Boundary
- Linear Transect Survey
- Lines represent field of view
- Variable Transect Survey

Pinal County, Arizona
Superior 7.5' USGS Map

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**Resolution
Copper Company**

2004 RAPTOR SURVEY,
FEDERAL PARCEL

RAPTOR INVENTORY MAP

Figure 2

1.4 DESCRIPTION, STATUS, RANGE, AND HABITAT

Four raptor species were identified on-site during the 2003 surveys (summarized in Section 1.3). The following paragraphs provide brief species accounts for these birds. All raptor species are afforded protection under the Migratory Bird Treaty Act (MBTA). The MBTA prohibits the “take” of migratory birds. The regulatory definition of *take*, as defined by 50 CFR 10.12, means to *pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.*

1.4.1 American Peregrine Falcon

The peregrine falcon is a raven-sized bird, weighing just over 900 grams (2 pounds), with pointed wings with a span of approximately 1 meter (3 ft). The plumage of adult peregrines is variable in color and pattern. Most birds are dark blue-grey or brownish on the back with dark brown to black barring and streaking on a buffy breast (Glinski, 1998).

In Arizona, peregrines occur statewide during the migration season as well as in suitable habitat statewide as resident breeders and winter visitors. This species may be found at elevational ranges from 122 to 2,750 meters (400 to 9,000 ft.) (Glinski, 1998). Peregrine falcons live mostly along mountain ranges and river valleys. The presence of cliffs is essential, and open expanses are preferred. Plant communities surrounding breeding cliffs in Arizona are extremely variable and range from Sonoran and Mohave Desertscrub through mixed conifer forest (Glinski, 1998).

On August 25, 1999, the American peregrine falcon, formerly an endangered species, was delisted from the federal list of endangered species. The American peregrine falcon was designated as “Delisted Taxon, Recovered, Being Monitored in the Entire Range.”

1.4.2 Cooper's Hawk

The Cooper's hawk is a medium-sized woodland raptor with a very long tail and relatively short, rounded wings. Mature males are a uniform blue-gray in the crown and upperparts and have rich rufous transverse barring underneath. Adult females are basically brown above with barring similar to that of males underneath (Glinski, 1998).

Cooper's hawks appear year round throughout the entire state of Arizona. Cooper's hawks usually breed in woodland and forest habitats ranging from well-developed mesquite bosques and cottonwood-willow riparian forest to spruce-fir forests at the highest available peaks. The species is also known to commonly breed in urban areas (Glinski, 1998).

The Cooper's hawk has never been federally listed as threatened or endangered, nor is it a species of special concern in the state of Arizona.

1.4.3. Zone-Tailed Hawk

The zone-tailed hawk has long, slender wings. The body is almost entirely black above and below; the cere is yellow and there is a nearly naked patch of pale skin between the bill and the eyes. The tail has bands of dusky white that alternate with gray (Glinski, 1998).

Zone-tail hawks in Arizona breed mostly over the southern two-thirds of the state and rarely winter in the state. Those that do winter in Arizona do so in lower desert areas. This hawk is found in habitats from low deserts to high conifer forests. The species is commonly seen foraging over fairly open, rocky and brushy slopes of mountains and foothills. Nests can be found in a variety of habitats from palo verde trees to Douglas firs (Glinski, 1998).

This hawk has never been federally listed as threatened or endangered, nor is it a species of special concern in the state of Arizona.

1.4.4. Great Horned Owl

The great horned owl is Arizona's largest owl with a wingspan of 1.3 to 1.4 meters (52 to 56 in). This owl has a large, heavy body, striking eyes and conspicuous ear tufts. Adults are generally grayish with undertones of buff on the wings and tail. The breast is uniformly covered with horizontal dark barring and a bib, or throat patch ranging from white to orange. The legs and feet of this owl are large and fully feathered (Glinski, 1998).

The great horned owl is common in most of Arizona. This species is common in high-elevation forests, along cool riparian canyon streams and in dry creosote bush flats of the desert lowlands (Glinski, 1998).

This owl has never been federally listed as threatened or endangered, nor is it a species of special concern in the state of Arizona.

2. METHODS

The raptor survey conducted in 2004 included both a general survey of the Parcel and ongoing monitoring of the sites known to contain raptor nests in 2003. Incidental observations of raptors were also recorded by WestLand during the course of other field activities. The general raptor survey was conducted according to the methodology outlined in the *Baseline Biology and Land Use Report* (WestLand, 2003a). This included repeating the linear transects, variable transects, and cliff surveys. A detailed description of these methods is contained in the WestLand 2003a report and is not repeated here. WestLand conducted the surveys on May 19 and 20, 2004. The transect locations are depicted on Figure 2.

3. RESULTS AND DISCUSSION

3.1 GENERAL FINDINGS

The 2004 field surveys identified two active raptor-breeding territories on the Parcel. These included a peregrine falcon eyrie located on the face of Apache Leap as well as an active zone-tailed hawk nest located in a sycamore tree in Queen Creek Canyon (Figure 2). Both of these territories were also active in 2003. The Cooper's hawk nest identified in 2003 was unoccupied this year. The great horned owls noted in 2003 were not observed during the 2004 inventory. However, no focused effort was made to find these nocturnal birds. Numerous turkey vultures (*Cathartes aura*) were observed soaring along Apache Leap and throughout the Parcel in general¹. Also observed on the site was a single red-tailed hawk.

The first 2004 monitoring visit of the 2003 Cooper's hawk nest site occurred on March 17, 2004. The nest site and its vicinity were examined for signs of current occupancy. Although the nest was still present, there was no evidence of recent activity: no Cooper's hawks were observed, no signs of recent nest maintenance were observed, and no Cooper's hawk feathers, prey remains, or whitewash was noted beneath the nest. The entire canyon bottom in the nest vicinity was searched for the possible presence of an alternate nest. This search failed to detect any signs of Cooper's hawks or their nests. The reason(s) for the absence Cooper's hawks in this territory in 2004 are unknown. However, WestLand field personnel noted a high degree of human disturbance throughout the canyon bottom that forms the core of this breeding territory. There is a well-used campsite with a large fire ring directly below the nest tree. The canyon bottom is covered with human and dog foot prints. Moderate amounts of trash were also noted. At the time of WestLand's field observations, there were three groups of people present in the canyon. It is possible that the human activity disturbed the Cooper's hawks enough for them to disperse from the area.

Monitoring of the peregrine falcon eyrie located on the face of Apache Leap was conducted on March 17 and 18, 2004. The cliff face was observed in the afternoon of March 17 and during the morning of March 18. No peregrines were observed. This species is migratory, and some pairs do not return to their nest areas until mid-March. It is possible that the pair of birds observed in 2003 had not yet arrived from their wintering grounds.

On April 20, 2004, WestLand field personnel conducting surveys for Arizona hedgehog cactus (*Echinocereus triglochidiatus* var. *arizonicus*) atop Apache Leap observed a pair of peregrine falcons displaying territorial defense and courtship behavior in the immediate vicinity of the eyrie. The following description from the field crew details:

¹ There is a well known turkey vulture communal roost located at the nearby Boyce Thompson Arboretum where up to 100 individuals congregate nightly (Glinski 1998).

*The male was conspicuous both in plumage and behavior. The female was overall browner and originally thought to have been a juvenile bird. She may have been younger or retained some juvenile coloration. The male was first noticed aggressively pursuing a red-tailed hawk (*Buteo jamaicensis*, from south to north along the Apache Leap crest. After the red-tailed hawk was chased to over a mile away, the female joined the male. Both birds seemed to vocalize wildly overhead with a series of calls including an almost constant kak kak kak kak. These calls were mixed with whining wails and multiple prolonged series of kaaak kaaak kaaak kaaak calls. The birds displayed wild acrobatic flights that brought them very close together and finally locked talons plummeting towards the ground and screaming an almost constant series of vocalizations. The pair tumbled with locked talons nearly to the ground and separated less than 30 meters from the surface whereby they flew over the crest of the Apache leap to the west and were not seen again.*

It should be noted that in 2003, Michael Cross and John Ginter noted an active eyrie along the west face of the Apache leap formation just west of where these observations were made.

A second monitoring visit of the peregrine eyrie occurred on May 19 and 20, 2004. No peregrines were observed during this visit, but fresh whitewash was noted on the same perches that the male peregrine was observed upon in 2003. The timing of this visit coincided with the probable incubation period. Peregrine falcons are especially cryptic during this phase in the breeding cycle; therefore, the lack of peregrine observations at this time is not unusual (Rich Glinski, personal communication; Michael Cross, personal observation). Because courtship behavior was observed near the nesting cliff and evidence of recent activity was noted on subsequent visits, WestLand suspects that this site was occupied during the 2004 breeding season.

On May 20, 2004, WestLand located an active zone-tailed hawk nest in a sycamore tree within Queen Creek Canyon, immediately adjacent to Highway 60. An incubating female zone-tailed hawk occupied the nest. When the nest was approached to determine its activity status, the female became agitated and vocalized at the observer. To prevent possible disruption of breeding behavior, the observer quickly left the area. This nest was located in the same area where zone-tailed hawks were detected in 2003.

4. CONCLUSIONS

The Parcel supports several species of breeding raptors. The initial baseline inventory (2003) and ongoing monitoring of the site has documented occupied breeding territories of zone-tailed hawks, Cooper's hawks, and peregrine falcons. Great horned owls were observed on-site in 2003. The area also supports large concentrations of turkey vultures. During the 2004 survey, two active raptor-breeding territories were observed on the Parcel: a peregrine falcon eyrie and a zone-tailed hawk nest. Ideal nesting habitat for raptors occurs along the face of Apache Leap, along Queen Creek, and within two oak groves near Oak Flat Campground and Dry Reservoir. Recreation pressures may limit the use of these two oak groves by nesting raptors.

5. REFERENCES

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