

**2011 RAPTOR SURVEYS
OF MINE AREA AND VICINITY**

RESOLUTION COPPER MINING

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July 2012
Project No. 807.50

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	1
1.1. Study Area Description.....	1
1.1.1. Apache Leap	1
1.1.2. Queen Creek Canyon	2
1.1.3. Mine Area	2
1.1.4. Devils Canyon.....	2
1.1.5. Mineral Creek	3
2. METHODS	3
3. RESULTS AND DISCUSSION	5
3.1. Apache Leap	5
3.2. Queen Creek Canyon.....	5
3.3. Mine Area	6
3.4. Devils Canyon	6
3.5. Mineral Creek	6
3.6. Previous Surveys of the Mine Area and Vicinity	7
4. REFERENCES	8

TABLES

(follow text)

Table 1.	List of Raptor Species Observed at Each of the Five Study Areas
Table 2.	Raptor Observations and Breeding Status by Study Area
Table 3.	Dates of Sightings of Species of Raptors Detected During Planned Surveys and Incidental Observations
Table 4.	Summary Categories of Raptor Observations in the Study Area 2003 – 2011

FIGURES

(follow text)

Figure 1.	Vicinity Map
Figure 2.	Vegetation Communities in Study Area
Figure 3.	Raptor Survey Locations and Observations at the Mine Area, Queen Creek & Apache Leap
Figure 4.	Raptor Survey Locations and Observations at Devils Canyon (Aerial Base)
Figure 5.	Raptor Survey Locations and Observations at Devils Canyon (USGS Quadrangle Base)
Figure 6.	Raptor Survey Locations and Observations at Mineral Creek (Aerial Base)
Figure 7.	Raptor Survey Locations and Observations at Mineral Creek (USGS Quadrangle Base)

APPENDICES

(follow text)

Appendix A.	Raptor Observation Record Cards (USFWS 1989)
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ATTACHMENTS

(follow text)

Attachment 1. Data sheets from 2011 Raptor survey

EXECUTIVE SUMMARY

WestLand Resources, Inc. (WestLand) was retained by Resolution Copper Mining, LLC (RCM) to conduct a raptor survey near Superior, Pinal County, Arizona. The survey was conducted on lands administered by the Arizona State Land Department (State Lands), lands administered by the US Forest Service (Tonto National Forest [TNF]), and private lands owned by RCM. These areas are being studied as sites for facilities that may be needed to develop the Resolution Copper Mine. Apache Leap, the Mine Area, Queen Creek, Devils Canyon, and Mineral Creek comprise the Study Area. The purpose of the survey was to locate raptor nesting territories and to monitor existing locations of raptors in the Study Area in order to contribute to baseline of information that will be available to analyze potential impacts of proposed mine features. This report provides an inventory of the birds observed as well as a discussion of results from the field surveys. Also included are the results of several years of raptor surveys that WestLand has conducted as part of the multi-year baseline study effort.

During the 2011 survey, eight active breeding territories and four breeding raptor species were observed in the Study Area: a Peregrine Falcon (*Falco peregrinus*) eyrie on Apache Leap, a Zone-tailed Hawk (*Buteo albonotatus*) breeding area in Queen Creek Canyon, a Peregrine Falcon eyrie, Zone-tailed Hawk nest, and Common Black-hawk (*Buteogallus anthracinus*) breeding area in Devils Canyon, and a Cooper's Hawk (*Accipiter cooperii*) breeding territory, a Zone-tailed Hawk nest, and a Common Black-hawk breeding territory along Mineral Creek. No active breeding territories were identified in the Mine Area.

A possible Prairie Falcon (*Falco mexicanus*) breeding area was suggested from an observation in lower Devils Canyon in 2008. In the same location in 2011, a fledgling falcon was heard screeching, which may have been either a Prairie Falcon or a Peregrine Falcon.

The initial baseline inventory and ongoing monitoring of the Study Area have documented occupied breeding territories of five raptor species: Cooper's Hawks, Common Black-hawks, Zone-tailed Hawks, Peregrine Falcons, and Western Screech-owls (*Megascops kennicottii*). Nine additional species of unknown breeding status have been observed, including Turkey Vultures (*Cathartes aura*), which are abundant throughout the Study Area.

1. INTRODUCTION

WestLand Resources, Inc. (WestLand) was retained by Resolution Copper Mining, LLC (RCM) to conduct a raptor¹ survey near Superior, Arizona. The survey was conducted on lands administered by the Arizona State Land Department (State Lands), lands administered by the US Forest Service (the Tonto National Forest [TNF]), and private lands owned by RCM. These areas are being studied as sites for facilities that may be needed to develop the Resolution Copper Mine. Apache Leap, the Mine Area, Queen Creek Canyon, Devils Canyon, and Mineral Creek comprise the Study Area (**Figure 1**). This study is one of several conducted to understand baseline biology of the Resolution Copper Study Area and to support licensing for the proposed future mining operation.

The purpose of the survey was to locate raptor nesting territories and to monitor locations of previous raptor sightings in the Study Area to contribute to the baseline of information that will be available to analyze potential impacts of proposed mine features. This report provides an inventory of the birds observed as well as a discussion of results from the field surveys. The 2011 findings are also compared with the results of several years of raptor surveys that WestLand has conducted as part of the multi-year baseline study effort.

1.1. STUDY AREA DESCRIPTION

The Study Area is situated in foothills of the Pinal Mountains immediately east of Superior (**Figure 1**). The major biotic communities in the Study Area include Interior Chaparral, Madrean Evergreen Woodland, the Arizona Upland Subdivision of Sonoran Desertscrub (Arizona Upland Desertscrub), and Interior Riparian Deciduous Forest (Brown 1994). The Study Area is composed of five locations: 1) Apache Leap, 2) Queen Creek Canyon, 3) The Mine Area, 4) Devils Canyon, and 5) Mineral Creek (**Figure 2**).

1.1.1. Apache Leap

The Apache Leap formation rises abruptly to the east of the town of Superior (**Figure 3**). These west-facing cliffs attain a maximum height of approximately 600 ft (180 m) and extend for approximately 6 mi (10 km) in a north-south direction. The highest elevation in the Study Area is 4,817 ft (1,469 m) at a high point on Apache Leap (**Figure 2**). Interior Chaparral vegetation is present at this point and east of Apache Leap generally. West of Apache Leap, very steep headwaters of ephemeral channels drain west through Arizona Upland Desertscrub vegetation toward Superior and Queen Creek.

The vertical cliff faces of Apache Leap provide nesting sites for raptors. In 2003, WestLand identified a Peregrine Falcon (*Falco peregrinus*) eyrie on Apache Leap that has been active during all subsequent raptor surveys. Due to the height of these steep cliffs, this eyrie is virtually inaccessible to mammalian predators.

¹ Raptors in this report are defined as birds of prey that use sight or sound to hunt and kill prey, typically including hawks and eagles (Falconiformes) and owls (Strigiformes). These birds have sharp talons and curved beaks that are adapted for killing and tearing apart prey. Using a broader definition of this term to include groups of scavenging birds, new world vultures (Cathartidae) are also included in our study.

1.1.2. Queen Creek Canyon

Queen Creek Canyon, an east-west trending canyon paralleled by US 60, runs from the Mine Area west to the town of Superior. This canyon is about 3,800 ft (1,160 m) in elevation near the Mine Area and descends to approximately 3,000 ft (910 m) in Superior (**Figure 3**). Within this steep-walled canyon, Queen Creek flows ephemerally and supports a stand of Interior Riparian vegetation. Outside of the riparian zone of the canyon, Arizona Upland Desertscrub vegetation is present at lower elevations and Madrean Evergreen Woodland and Interior Chaparral vegetative communities are present at higher elevations (**Figure 2**). Within Queen Creek Canyon, large Arizona sycamores (*Platanus wrightii*) provide nesting substrates for raptors. There is also much evidence of disturbance from prior road construction and sediment transport.

1.1.3. Mine Area

The Mine Area, the location of the East Plant and underground mine, is bounded on the north by US 60 and Queen Creek Canyon, on the east by the cliff top of Devils Canyon, on the south by Rancho Rio Creek, and on the west by the crest of Apache Leap. This area includes Oak Flat, where a TNF campground is located. Parallel ridges and drainages trend toward the northeast from the Apache Leap ridgeline, becoming relatively level in the northeastern portion near Oak Flat. A subtle topographic divide separates these channels into those that drain north through Oak Flat to Queen Creek and those that drain east through Rancho Rio Creek and Hackberry Creek to Devils Canyon (**Figure 3**).

The Mine Area is dominated by Interior Chaparral vegetation, though elements of Madrean Evergreen Woodland are present at several ponds and reservoirs in the area (**Figure 2**). Unlike the west face of Apache Leap and Queen Creek, which have numerous nest site locations for raptors, the Mine Area has only a few large trees in scattered locations. The low vegetation structure of Interior Chaparral does not provide suitable nest sites for raptors.

1.1.4. Devils Canyon

Devils Canyon is a steeply walled north-south oriented drainage located east of the Mine Area (**Figures 4 and 5**). Surface water in the canyon is seasonally intermittent in the north and perennial in the south. Cliff faces occur intermittently along both sides of this drainage from its confluence with Rancho Rio Creek downstream for approximately six miles. These cliffs attain a maximum height of approximately 400 ft (120 m). Two reaches of Devils Canyon can be accessed on foot. The northern reach extends from the confluence of Rancho Rio Creek south for approximately 1.2 mi (1.9 km). The southern reach extended approximately 1.1 mi (1.8 km). Between these segments, the canyon is not easily accessible because of narrow canyon walls and vertical drops that make it unsafe to traverse without climbing gear. Elevations within the two segments of Devils Canyon surveyed for this study range from a maximum of approximately 4,000 ft (1,219 m) on a high ridge near the northern limit of the surveyed area to a minimum of roughly 3,000 ft (914 m) at the canyon bottom near the southern limit of the surveyed area (**Figures 4 and 5**).

In Devils Canyon, there are numerous nesting locations for raptors, including Saguaro cactus (*Carnegiea gigantea*), large trees, and vertical cliff faces. Stands of Arizona alder (*Alnus oblongifolia*), scattered

Arizona sycamore, and velvet ash (*Fraxinus velutina*) dominate the riparian zone in the canyon bottom. In the lower reaches of Devils Canyon, alders give way to stands of Goodding willow (*Salix gooddingii*) and a few scattered Fremont cottonwoods (*Populus fremontii*). Large specimens of any of these riparian species may be used as nesting sites for riparian-nesting raptors.

1.1.5. Mineral Creek

Mineral Creek is a largely perennial creek defining the eastern and southern extent of the Study Area. This drainage flows southwest from the Pinal Mountains and joins Devils Canyon at the Big Box Dam site. The stretch of Mineral Creek included in the Study Area extends from Government Spring near the junction of Lyons Fork Road to the southern edge of State Lands. The segment of Mineral Creek in our study area on Government Springs Ranch is 0.4 mi (0.6 km) in length, and the segment of Mineral Creek traversing the State land is 3.9 mi (6.2 km) in length. Elevations in the Mineral Creek site range from roughly 2,800 ft (853 m) at the camping location on Government Spring Ranch to approximately 2,400 ft (732 m) at the lower boundary of the State land (**Figures 6 and 7**). Along Mineral Creek, Interior Riparian vegetation provides suitable nesting substrate for raptors. Riparian species composition includes a diverse mixture of Bonpland willow (*Salix bonplandiana*), Goodding willow, velvet ash, Fremont cottonwood, Arizona sycamore, and Arizona walnut (*Juglans major*). Steeply sloping hillsides along the creek rise rapidly through velvet mesquite (*Prosopis velutina*) groves into Arizona Upland Desertscrub vegetation. Nearby cliffs may provide suitable nest sites for raptors, including Peregrine Falcons, Prairie Falcons (*Falco mexicanus*), and Golden Eagles (*Aquila chrysaetos*).

2. METHODS

WestLand conducted linear transects, point transects, variable transects, cliff surveys for diurnal raptor species, nighttime passive listening surveys for owls, and made opportunistic sightings to document occurrence, breeding, and nesting status of raptorial birds. Surveys were timed during the season to encompass the range of territorial, breeding, and nesting activities of the raptor species known to occur in the area and other species that might potentially occur in the area. Before initiating surveys, maps were prepared of the study sites. Suitable observation locations that provided a representative sample of each study site and that provided sufficient spacing to minimize overlapping observations (about 1640 ft [500 m] depending on terrain) were selected in advance.

Linear transects were conducted on foot along Queen Creek from the bridge crossing below Queen Creek Tunnel to the Magma Mine Road turnoff, and along two tributary drainages within the western portion of the Mine Area (**Figure 3**). Transects were walked along an easily accessible route such as a road or trail to sample large areas in a relatively short period of time (Cooperrider et al. 1986). Within these narrow canyon bottoms, groves of Arizona sycamore, velvet ash, and Emory oak (*Quercus emoryi*) provide potential nest trees for raptors. Linear transects were also conducted along approximately 5 mi (8 km) of roads and trails in the Mine Area that afforded wide views for detecting soaring raptors. Surveyors proceeded on foot along transects, scanning the treetops with binoculars for evidence of raptors or their nests.

Point transects were also used in Queen Creek Canyon and in the Mine Area to sample large areas. Using this method, surveyors drove to specified locations and surveyed for raptors from outside of their vehicle. Surveyors scanned the treetops and sky with binoculars and a spotting scope for 10 minutes at each location. Survey points were selected at regularly spaced intervals along roads. This survey method was employed at 14 points in the Mine Area and one point in Queen Creek Canyon (**Figure 3**). These daytime surveys were conducted mostly in the early morning or evenings, which coincided with the greatest activity periods for diurnal raptors.

Variable transects were conducted in Devils Canyon and Mineral Creek, where larger areas containing groves of Fremont cottonwood, Arizona sycamore, and other trees and areas with steep topography and rocky outcrops provided potential nest sites (**Figures 4 and 5**). Observers conducting variable transects moved through the survey areas in a meandering fashion, scanning all appropriate nest sites with binoculars. This method was employed to locate nests when activities of raptors in the vicinity suggested a potential nesting pair of hawks or owls.

Cliff surveys were conducted of the face of Apache Leap from four fixed points located at intervals along the length of the cliff (**Figure 3**) and at three points in Devils Canyon (**Figures 4 and 5**). These surveys were conducted primarily to detect breeding activity and nests of Peregrine Falcons (or possibly Prairie Falcons [*Falco mexicanus*]) that are known to use these cliffs for nesting. Peregrine survey protocol (US Fish & Wildlife Service [USFWS] 2003) was followed. Surveyors scanned the cliff face with the aid of binoculars and a spotting scope for a period of 2 hours. Observations took place during the early morning hours from one-half hour before sunrise until 4 hours after sunrise or during the late afternoon. The exception was one survey on April 6, 2011 at the lowest Devils Canyon observation point, which was conducted during midday. Evidence of Peregrine Falcon habitation (including stick nests, whitewash, and visual observations of birds) was recorded on data forms. If Peregrine Falcons were present, behavioral observations were made to determine breeding status. Specific indicators of breeding activities include the following (Postupalsky 1974).

- Presence of a nest or eyrie²
- Young in nest
- Adult in nest in incubation posture
- Mating behavior
- Prey deliveries
- Nest maintenance
- Adult near nest

Nighttime owl surveys were conducted in Queen Creek Canyon and the Mine Area. Surveys took place in the first three hours after sunset. Equipped with sound amplifying headphones (Action Ear[®] Sport, Silver Creek Industries), surveyors listened quietly for owl calls from outside of their vehicle for 10 minutes at each survey location. The survey locations were the same as the diurnal point transect survey locations.

² The eyries of cliff nesting raptors can consist of a stick nest, scrape, ledge, or cavity.

When an owl was detected, the species of the owl, a true bearing, and an estimated distance to the owl were recorded.

Surveys in 2011 were conducted over four periods that were timed to coincide with the breeding, nesting, and fledgling periods for most raptors in the area. The first surveys were conducted on March 15, 16, 17, and 25; the second on April 4, 5, 6, 25, 26, and 27; the third on May 11, 24, 25, 26, and 27; and the fourth on June 20, 21, 28, and 29. Approximately 23 person-hours of survey time were conducted at Apache Leap, five person-hours in Queen Creek Canyon, 24 person-hours in the Mine Area, 21 person-hours in Devils Canyon, and 21 person-hours in Mineral Creek. Opportunistic observations of raptors were also recorded by WestLand field personnel during the course of other field activities. These observations are reported and identified accordingly.

Nest record cards were completed for all species where nests were located (USFWS 1989) (*Appendix 1*).

3. RESULTS AND DISCUSSION

A total of 220 observations of raptor individuals belonging to 12 species were made during this survey (*Tables 1 and 2*). Data recorded included the number of observations of individual raptor species by study site, the numbers of pairs observed, and whether breeding behaviors, nests were located, and juvenile birds were observed (*Table 2*). *Table 3* presents the species, the dates they were observed, and comments by study site. All data sheets and incidental observation reports are compiled in *Attachment 1*.

A large proportion of raptor observations ($143/220 = 65\%$) were of Turkey Vultures (*Cathartes aura*), which are ubiquitous in the skies over each of the study sites (*Table 2*). A well-known Turkey Vulture communal roost is located near the Boyce Thompson Arboretum, where up to 100 Turkey Vultures roost nightly. None of the individuals observed during the survey displayed any behaviors that would suggest that they were breeding nearby (e.g., courtship flight or carrying nest material).

3.1. APACHE LEAP

Six raptor species were observed along Apache Leap during this survey (*Table 1*). Peregrine Falcon adults were observed engaged in breeding behaviors and visiting the previously occupied Peregrine eyrie. Because these birds prefer to build nests in recessed locations in cliffs, the location of the nest is known but no nest was seen directly. None of the five other raptor species observed along Apache Leap: Turkey Vultures, Zone-tailed Hawks (*Buteo albonotatus*), Red-tailed Hawks (*Buteo jamaicensis*), Great Horned Owls (*Bubo virginianus*), and Elf Owls (*Micrathene whitneyi*) were observed displaying behaviors that would indicate they were breeding at Apache Leap (*Table 2; Figure 3*).

3.2. QUEEN CREEK CANYON

Three raptor species were observed in Queen Creek Canyon (*Table 1*). On multiple occasions, Zone-tailed Hawks observed in the canyon exhibited breeding behaviors, such as carrying nesting material, though no nest was located in the canyon. None of the numerous Turkey Vultures or the single American Kestrel (*Falco sparverius*) observed in the canyon exhibited any behaviors that indicated they were breeding in Queen Creek Canyon (*Table 2; Figure 3*).

3.3. MINE AREA

Seven raptor species were observed in the Mine Area (**Table 1**). Turkey Vultures were observed during all daytime surveys and represented 91% (84/92) of all raptor observations (**Table 2**). Great Horned Owls (possibly a pair) were heard on the first survey night in March, but not on subsequent survey nights in April and June. Cooper's Hawks (*Accipiter cooperii*) were observed in the vicinity of the previously identified Cooper's Hawk nest near Dry Reservoir (WestLand 2009a), but no breeding behaviors were recorded and neither nests nor young were observed. A Common Black-hawk (*Buteogallus anthracinus*) seen roosting on a pole in the middle of a stock tank likely came from Devils Canyon where a pair nested (**Table 2**). An individual Sharp-shinned Hawk (*Accipiter striatus*), Zone-tailed Hawk, and Red-tailed Hawk were each observed once. No nests were located or breeding behaviors were observed for any of the raptors observed in the Mine Area (**Figure 3**).

3.4. DEVILS CANYON

Surveys in 2011 in Devils Canyon identified seven species of raptors (**Table 1**), three of which were documented breeding in the canyon (**Table 2**). A pair of adult Peregrine Falcons was observed engaged in breeding behavior and visiting suspected nest sites near the confluence of Rancho Rio Creek. As with the eyrie along Apache Leap, the location of the nest is known but no nest was seen directly because the nest was recessed in the cliff. Additionally, young birds were heard at the time of fledging, confirming the location of this eyrie and the successful breeding of this pair of falcons. The screams of a fledgling falcon, which might have been either a Prairie Falcon or a Peregrine Falcon, were also heard in lower Devils Canyon. These observations were made near a potential Prairie Falcon breeding area that was tentatively identified in 2008 (**Figures 4 and 5**).

A pair of Common Black-hawks and a pair of Zone-tailed Hawks were also documented breeding in Devils Canyon in 2011. The Zone-tailed Hawk nest identified in 2008 was active in 2011 and a pair of Common Black-hawks was observed at the Zone-tailed Hawk nest in a territorial interaction with the Zone-tailed Hawk pair indicative of an active breeding territory. Two recently fledged Cooper's Hawks were seen near the confluence of Rancho Rio Creek, suggesting that Cooper's Hawks breed in the area, though no nest was located in the canyon. Turkey Vultures, Red-tailed Hawks, and a Golden Eagle was spotted in Devils Canyon, but no breeding behaviors were observed and no nests of these species were located (**Figures 4 and 5**).

3.5. MINERAL CREEK

Surveys in Mineral Creek identified nine species of raptors (**Table 1**), including a pair of Cooper's Hawks, a pair of Common Black-hawks, and a pair of Zone-tailed Hawks (**Table 2**). The Cooper's Hawk nest and young were seen incidentally while conducting a plant survey near a spring, just to the north of the creek. Also observed were Red-tailed Hawks, a Golden Eagle, and Great Horned Owls along Mineral Creek. On one occasion a Red-tailed Hawk that appeared to be sick or injured was noted. During the course of studies conducted in Mineral Creek, WestLand biologists identified Western Screech-owls (*Megascops kennicottii*) six times and Elf Owls eight times based on vocalizations near the north end of

the Mineral Creek on Government Spring Ranch (*Figures 6 and 7*). These repeated observations suggest that these owl species were breeding in the area.

3.6. PREVIOUS SURVEYS OF THE MINE AREA AND VICINITY

WestLand prepared a *Baseline Biology and Land Use Report* (2004a) describing the Study Area's overall biological resources. Three active raptors nests were observed during the 2003 survey. A Cooper's Hawk nest was recorded in an Emory oak located near Dry Reservoir in Oak Flat Campground. An active Peregrine Falcon eyrie was detected on the face of Apache Leap. In addition, three active Zone-tailed Hawk nests were observed: two on Queen Creek and one in Devils Canyon. Although no nest sites were located, Great Horned Owls were observed in the vicinity of Apache Leap Pond (*Table 4*).

In 2004, WestLand repeated the raptor surveys in the Study Area (WestLand 2004b). These surveys verified the continued occupancy of the Peregrine Falcon eyrie on Apache Leap as well as a single Zone-tailed Hawk nest at Queen Creek. The Cooper's Hawk nest observed near Dry Reservoir in 2003 was vacant in 2004 (*Table 4*).

The 2008 raptor survey documented the continued occupancy of the Peregrine Falcon eyrie on Apache Leap as well as the Zone-tailed Hawk breeding area in Queen Creek (WestLand 2009). A Western Screech-owl activity center was noted in the vicinity of Oak Flat Campground in 2008. Although no nest was observed, a pair of these small owls was repeatedly observed, both visually and aurally, during the course of the breeding survey. It is WestLand's opinion that this activity center represented an active breeding territory. Opportunistic observations in Devils Canyon in 2008 identified an active Zone-tailed Hawk nest and Common Black-hawk, Peregrine Falcon, and a possible Prairie or Peregrine Falcon sighting was based on a call by a juvenile bird (*Table 4*).

The Maricopa Audubon Society commissioned two surveys of the vegetation and wildlife of Devils Canyon. In 2007, the first survey identified a pair of Common Black-hawks and two pairs of Zone-tailed Hawks nesting in the canyon. A Peregrine Falcon, a Red-tailed Hawk pair, and numerous Turkey Vultures were also observed in the canyon, though no evidence suggested these species were breeding in the area (Jacobs and Flesch 2007). In 2009, the second survey identified a pair of Common Black-hawks and a pair of Zone-tailed Hawks nesting in the canyon. The behavior of a pair of Peregrine Falcons suggested that they were likely nesting in the canyon as well. A Cooper's Hawk, Western Screech-owl, Elf Owl, and numerous Turkey Vultures were also observed (Jacobs 2009) (*Table 4*).

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TABLES

Table 1. List of Raptor Species Observed at the Each of the Five Study Areas

Table 1a. Apache Leap

Turkey Vulture (<i>Cathartes aura</i>)	Peregrine Falcon (<i>Falco peregrinus</i>)
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	Great Horned Owl (<i>Bubo virginianus</i>)
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	Elf Owl (<i>Micrathene whitneyi</i>)

Table 1b. Queen Creek Canyon

Turkey Vulture (<i>Cathartes aura</i>)	American Kestrel (<i>Falco sparverius</i>)
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	

Table 1c. Mine Area

Turkey Vulture (<i>Cathartes aura</i>)	Zone-tailed Hawk (<i>Buteo albonotatus</i>)
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	Red-tailed Hawk (<i>Buteo jamaicensis</i>)
Cooper's Hawk (<i>Accipiter cooperii</i>)	Great Horned Owl (<i>Bubo virginianus</i>)
Common Black-hawk (<i>Buteogallus anthracinus</i>)	

Table 1d. Devils Canyon

Turkey Vulture (<i>Cathartes aura</i>)	Red-tailed Hawk (<i>Buteo jamaicensis</i>)
Cooper's Hawk (<i>Accipiter cooperii</i>)	Golden Eagle (<i>Aquila chrysaetos</i>)
Common Black-hawk (<i>Buteogallus anthracinus</i>)	Peregrine Falcon (<i>Falco peregrinus</i>)
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	

Table 1e. Mineral Creek

Turkey Vulture (<i>Cathartes aura</i>)	Golden Eagle (<i>Aquila chrysaetos</i>)
Cooper's Hawk (<i>Accipiter cooperii</i>)	Great Horned Owl (<i>Bubo virginianus</i>)
Common Black-hawk (<i>Buteogallus anthracinus</i>)	Western Screech-owl (<i>Megascops kennicottii</i>)
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	Elf Owl (<i>Micrathene whitneyi</i>)
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	

Table 2. Raptor Observations and Breeding Status by Species.

Raptor	Location	Number of Sightings	Number of Pairs	Breeding Behaviors	Nest Location Observed	Young Observed
Turkey Vulture (<i>Cathartes aura</i>)	Apache Leap	34				
	Queen Creek	13				
	Mine Area	84				
	Devils Canyon	12				
	Mineral Creek	No data collected				
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	Mine Area	1				
Cooper's Hawk (<i>Accipiter cooperii</i>)	Mine Area	2				
	Devils Canyon	2				Yes
	Mineral Creek	3	1			Yes
Common Black-hawk (<i>Buteogallus anthracinus</i>)	Mine Area	1				
	Devils Canyon	4	1	Yes		
	Mineral Creek	6	2	Yes	Yes	Yes
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	Apache Leap	1				
	Queen Creek	4	1	Yes		
	Mine Area	1				
	Devils Canyon	3	1	Yes	Yes	Yes
	Mineral Creek	1	1	Yes		
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	Apache Leap	5	1			
	Mine Area	1				
	Devils Canyon	6				
	Mineral Creek	6				
Golden Eagle (<i>Aquila chrysaetos</i>)	Devils Canyon	2				
	Mineral Creek	1				
Peregrine Falcon (<i>Falco peregrinus</i>)	Apache Leap	2	1	Yes	Yes	Yes
	Devils Canyon	5	1	Yes	Yes	Yes
American Kestrel (<i>Falco sparverius</i>)	Queen Creek	1				
Great Horned Owl (<i>Bubo virginianus</i>)	Apache Leap	1				
	Mine Area	2				
	Mineral Creek	1				
Western Screech-owl (<i>Megascops kennicottii</i>)	Mineral Creek	6				
Elf Owl (<i>Micrathene whitneyi</i>)	Apache Leap	1				
	Mineral Creek	8				

Table 3. Dates of sightings of species of raptors detected during planned surveys and incidental observations in 2011.

Table 3a. Apache Leap

Species	Sighting ¹							Comments
	1	2	3	4	5	6	7	
Turkey Vulture (<i>Cathartes aura</i>)	3/16	4/4	4/27	5/11	6/20			Numerous individuals were seen flying over the sites during all daytime visits.
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	4/4	6/20						Birds were seen soaring along the northern portion of Apache Leap.
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	4/4	5/11						Pair observed flying together over Apache Leap on 5/11.
Peregrine Falcon (<i>Falco peregrinus</i>)	5/27	6/20						Repeated observations of two falcons vocalizing and flying into a possible eyrie were made.
Great Horned Owl (<i>Bubo virginianus</i>)	4/4							One was heard during peregrine survey of Apache Leap on 4/4.
Elf Owl (<i>Micrathene whitneyi</i>)	4/27							One individual observed in Cross Canyon below Apache Leap on 4/27.

1 - Empty cells indicate that no further sightings were made following the last date entered.

Table 3b. Queen Creek

Species	Sighting ¹							Comments
	1	2	3	4	5	6	7	
Turkey Vulture (<i>Cathartes aura</i>)	3/16	3/25	4/4	4/25	5/11	6/20	6/21	Numerous individuals were seen flying over the sites during all daytime visits.
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	3/25	4/26						Birds were seen soaring along Queen Creek.
American Kestrel (<i>Falco sparverius</i>)	4/25							One individual was seen on 4/25.

1 - Empty cells indicate that no further sightings were made following the last date entered.

Table 3c. Mine Area

Species	Sighting ¹							Comments
	1	2	3	4	5	6	7	
Turkey Vulture (<i>Cathartes aura</i>)	3/16	3/25	4/4	4/25	5/11	6/20	6/21	Numerous individuals were seen flying over the sites during all daytime visits.
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	4/25							A single bird was seen flying over Mine Area on 4/25.
Cooper's Hawk (<i>Accipiter cooperii</i>)	3/16	3/25						Cooper's Hawks were seen on 3/16 and 3/25 in same drainage as historic Cooper's Hawk nest.
Common Black-hawk (<i>Buteogallus anthracinus</i>)	4/25	6/21						The bird seen on 6/21 was sitting on a post in the middle of a stock tank.
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	3/25	4/4	4/25	6/20				Birds were seen soaring near Queen Creek.
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	6/20							Juvenile observed at Mine Area on 6/20.
Great Horned Owl (<i>Bubo virginianus</i>)	3/15							Birds were heard from two stations on the March 15 survey night but no other birds called during April and June owl surveys.

1 - Empty cells indicate that no further sightings were made following the last date entered.

Table 3d. Devils Canyon

Species	Sighting ¹							Comments
	1	2	3	4	5	6	7	
Turkey Vulture (<i>Cathartes aura</i>)	4/5	4/6	5/24	6/20	6/21			Numerous individuals were seen flying over the canyon during all daytime visits.
Common Black-hawk (<i>Buteogallus anthracinus</i>)	4/5	4/6	5/24	5/25	5/26	6/21		Heard vocalizations. We witnessed a territorial interaction with a pair of Zone-tailed Hawks.
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	5/25	6/20						Two birds found defending a nest in the northern reach. We witnessed a territorial interaction with a pair of Common Black-hawks.
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	4/5	4/6	5/26	6/21				Birds were seen soaring in the canyon on multiple daytime surveys.
Golden Eagle (<i>Aquila chrysaetos</i>)	4/6							One bird was seen soaring over the south reach of the canyon on one occasion.
Peregrine Falcon (<i>Falco peregrinus</i>)	4/6	5/24	6/13	6/20	7/26			A pair of birds was seen multiple times at the north end of the north each 1 and juveniles were heard calling on more than two occasions. We observed what we suspected was an eyrie on a cliff along the south reach. On another date in reach 2 we heard calling from a juvenile falcon, which could have been a Peregrine Falcon or a Prairie Falcon.

1 - Empty cells indicate that no further sightings were made following the last date entered.

Table 3e. Mineral Creek

Species	Sighting ¹							Comments
	1	2	3	4	5	6	7	
Turkey Vulture (<i>Cathartes aura</i>)	6/9	6/28	6/29	7/25				Numerous individuals were seen flying over the creek during all daytime visits.
Cooper's Hawk (<i>Accipiter cooperii</i>)	6/28	6/29	7/25					Nest located in the large spring halfway down the length of the creek. Adult birds were seen. Two juvenile birds were seen in grove of trees.
Common Black-hawk (<i>Buteogallus anthracinus</i>)	6/29							Birds were seen multiple times during visits.
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	6/9	6/28	6/29	7/25				Birds were seen multiple times during visits. Nest at camp near Government Spring Ranch successfully fledged one young.
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	6/28	6/29						Adults were seen on two occasions and a sick or injured bird was seen on 6/28 and 6/29. An adult was observed drinking from the creek and a juvenile bird was also were seen near the creek.
Golden Eagle (<i>Aquila chrysaetos</i>)	6/9							One Golden Eagle was observed soaring over the cliffs northwest of the creek.
Great Horned Owl (<i>Bubo virginianus</i>)	6/29							One bird flushed from a grove during a daytime survey.
Western Screech-owl (<i>Megascops kennicottii</i>)	6/28	6/29	7/25					Two owls calling around camp on one occasion.
Elf Owl (<i>Micrathene whitneyi</i>)	6/9	6/28	6/29	7/25				Two owls calling around camp on several occasions.

1 - Empty cells indicate that no further sightings were made following the last date entered.

Table 4. Summary of categories of raptor observations in the Study Area 2003 – 2011¹.

Raptor	WestLand 2011	WestLand 2008	WestLand 2004	WestLand 2003	Jacobs 2009	Jacobs and Flesch 2007
Turkey Vulture (<i>Cathartes aura</i>)	O	O	O	O	O	O
Sharp-shinned Hawk (<i>Accipiter striatus</i>)	O					
Cooper's Hawk (<i>Accipiter cooperii</i>)	Y	O		Y	O	
Northern Gray Hawk (<i>Buteo nitidus maximus</i>)		O				
Common Black- hawk (<i>Buteogallus anthracinus</i>)	B	N		O	N	Y
Swainson's Hawk (<i>Buteo swainsoni</i>)		O				
Zone-tailed Hawk (<i>Buteo albonotatus</i>)	B	N	N	Y	N	Y
Red-tailed Hawk (<i>Buteo jamaicensis</i>)	O	O				O
Golden Eagle (<i>Aquila chrysaetos</i>)	O					
American Kestrel (<i>Falco sparverius</i>)	O					
Peregrine Falcon (<i>Falco peregrinus</i>)	Y	N	N	Y	B	O
Prairie Falcon (<i>Falco mexicanus</i>)		O*				
Western Screech- owl (<i>Megascops kennicottii</i>)	O	B			O	
Great Horned Owl (<i>Bubo virginianus</i>)	O	O		O		
Northern Pygmy- owl (<i>Glaucidium gnoma</i>)		O				
Elf Owl (<i>Micrathene whitneyi</i>)	O				O	

Key: O – observed in the Study Area; B – breeding in the Study Area based on behavioral indicators; N – nest or eyrie located in the Study Area; Y – young (nestlings or fledglings) located in the Study Area; Each category in this sequence implies all other categories above it, such that Y assumes O, B, and N, etc.

* - identification was not confirmed.

1- For comparison, data from two surveys of Devils Canyon commissioned by the Maricopa Audubon Society (Jacobs and Flesch 2007; Jacobs 2009) are provided alongside data collected by WestLand during the 2003 Baseline Biological Investigations, 2004 Raptor Survey, 2008 Raptor Survey and Bird Census, and 2011 Raptor Survey. Every species observed during these two surveys of Devils Canyon has also been observed by WestLand during one or more raptor survey of the area. Species that have been documented breeding in the area between 2003 and 2011 are shaded. The Mineral Creek site was added to the survey area in 2011.

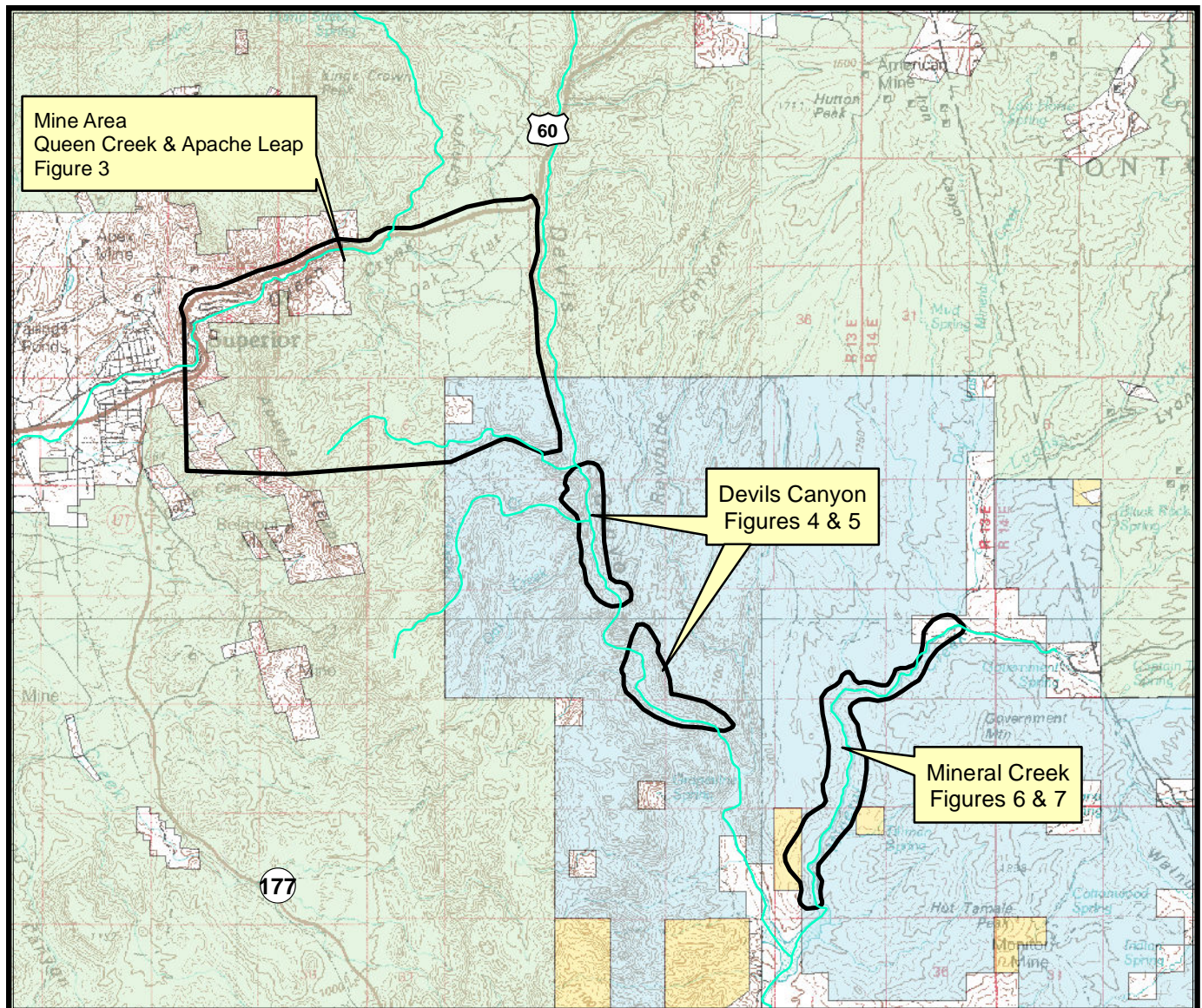
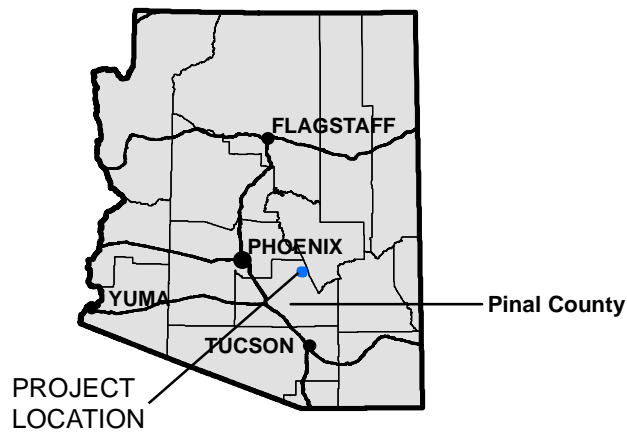
FIGURES

ARIZONA

Legend

Surface Management (BLM 2011)

- Bureau of Land Management (BLM)
- Private Land (No Color)
- State Trust Land
- US Forest Service (USFS)



Pinal County, Arizona,
Superior, Pinal Ranch, Teapot Mtn., &
Hot Tomale Peak USGS 7.5' Quadrangles

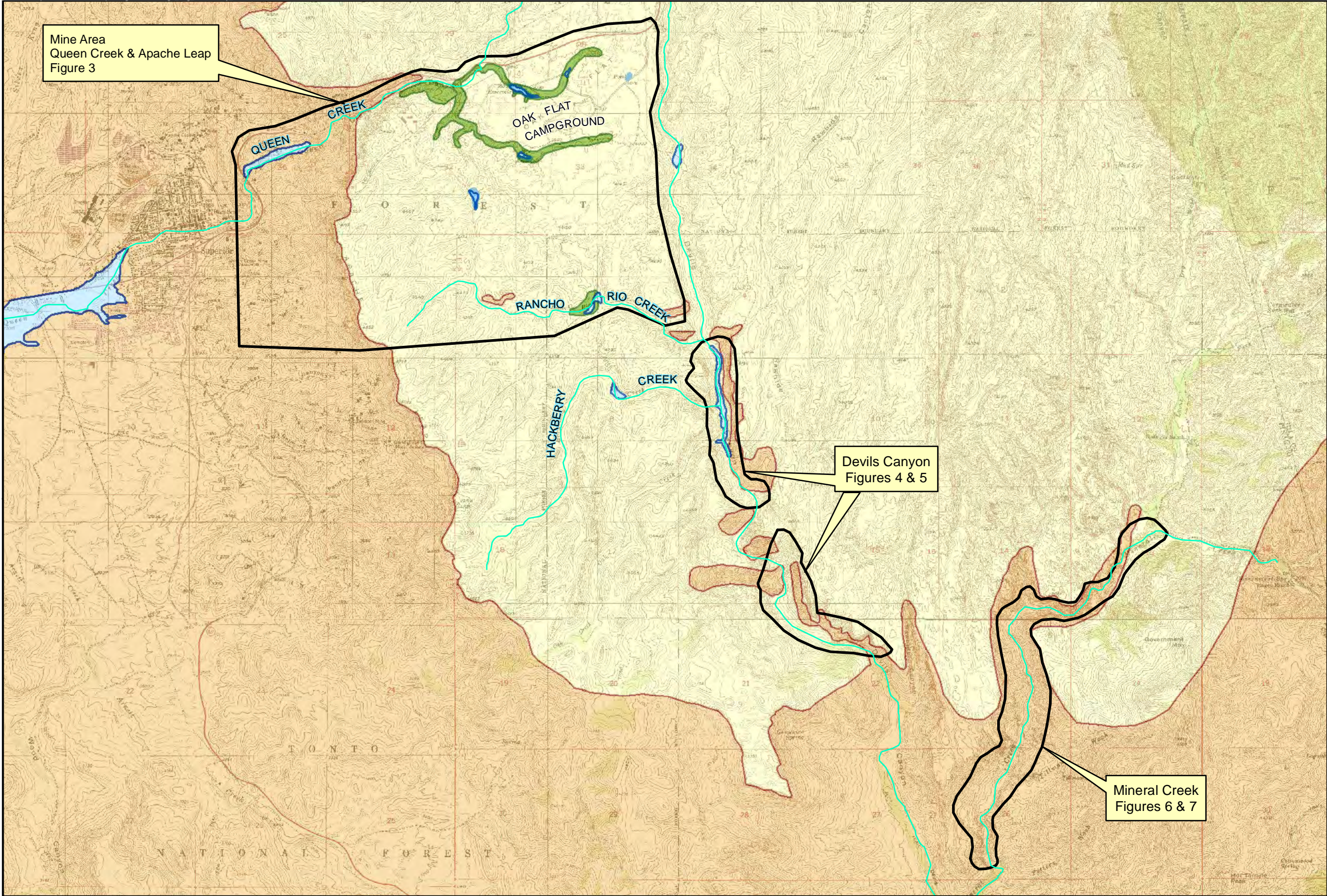
RESOLUTION COPPER MINING

Raptor Surveys in the Resolution Copper Study Area

VICINITY MAP

Figure 1

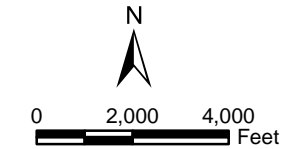




Legend

Vegetation Communities

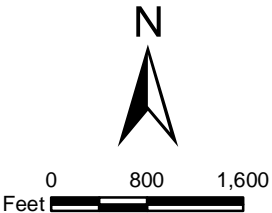
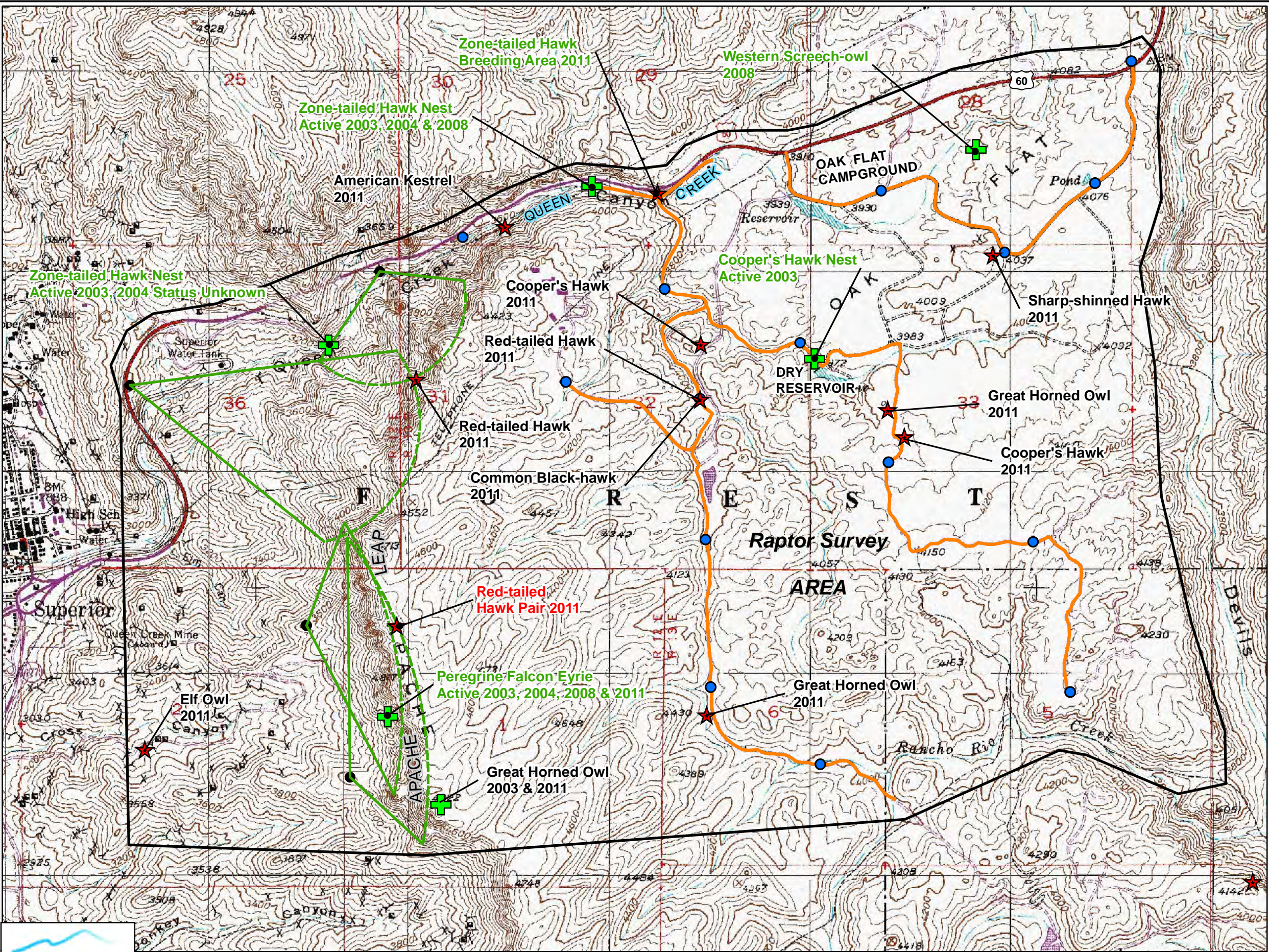
- Arizona Upland Subdivision of Sonoran Desertscrub
- Madrean Evergreen Woodland
- Interior Chaparral
- Interior Riparian Deciduous Forest



RESOLUTION COPPER MINING

Raptor Surveys in the
Resolution Copper Study Area

VEGETATION COMMUNITIES
IN STUDY AREA
Figure 2



Legend

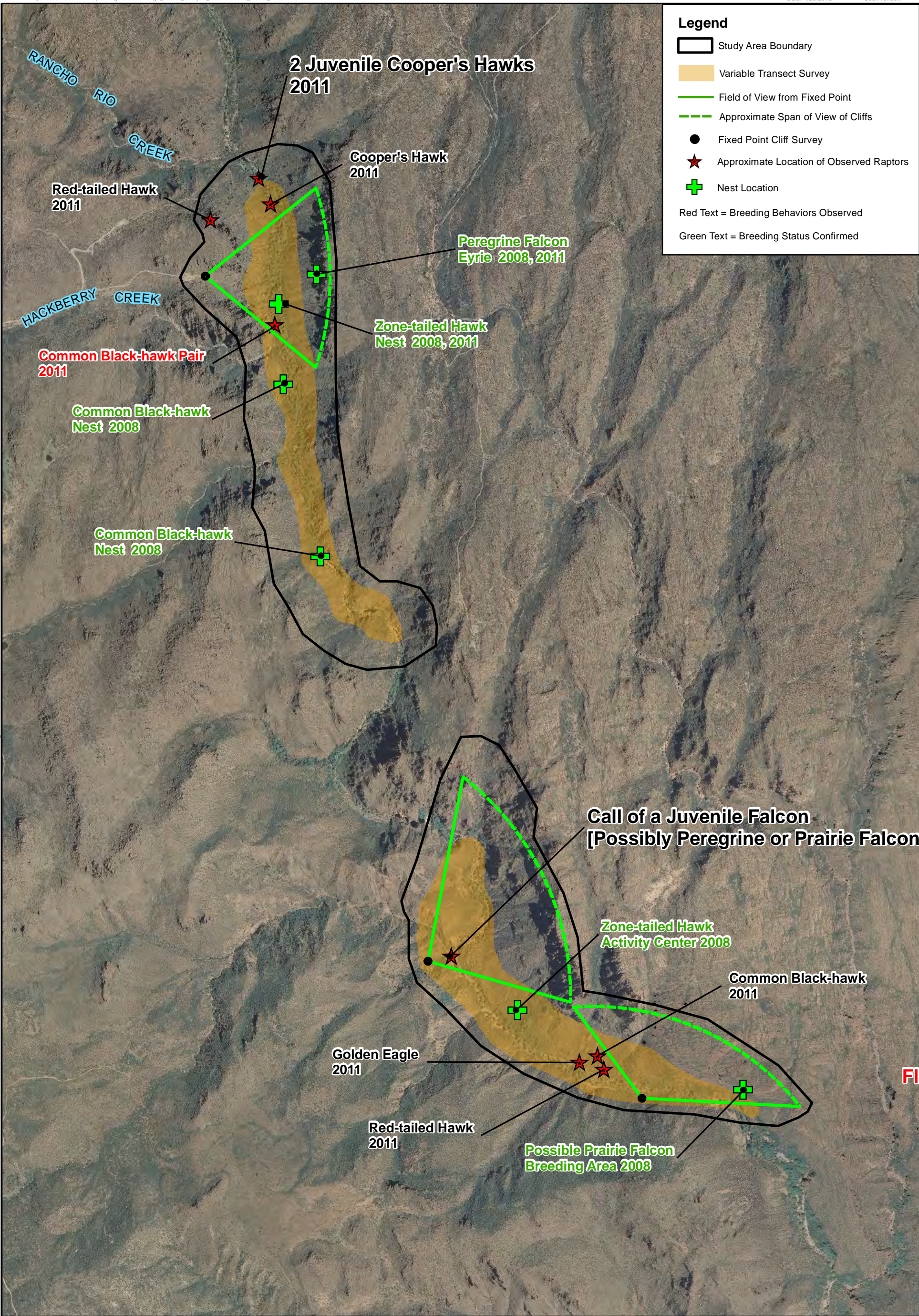
- Study Area Boundary
- Linear Transect Survey
- Field of View from Fixed Point
- Approximate Span of View of Cliffs
- Fixed Point Cliff Survey
- Owl and Hawk Station
- Approximate Location of Observed Raptors
- Nest Location

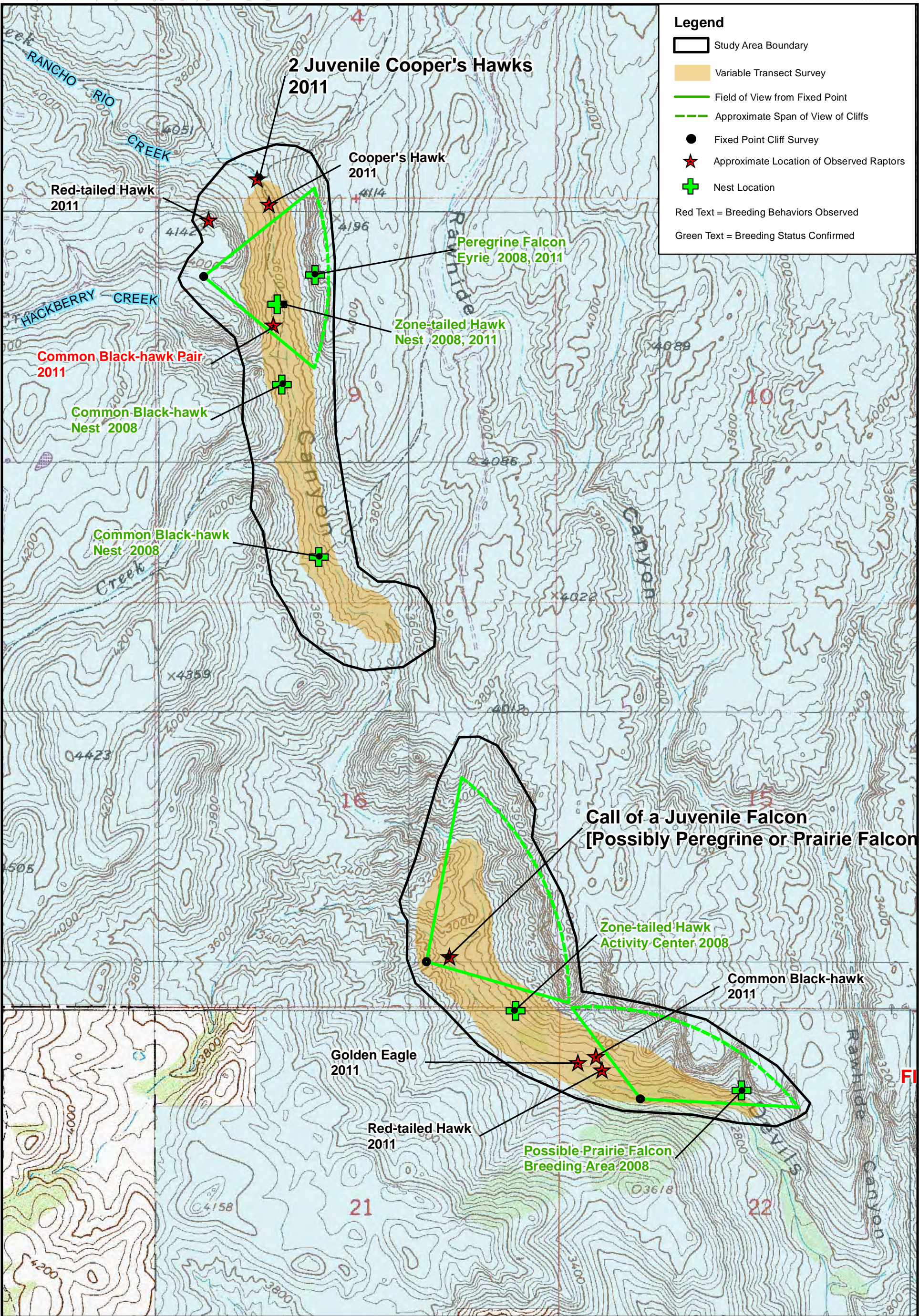
Red Text = Breeding Behaviors Observed
Green Text = Breeding Status Confirmed

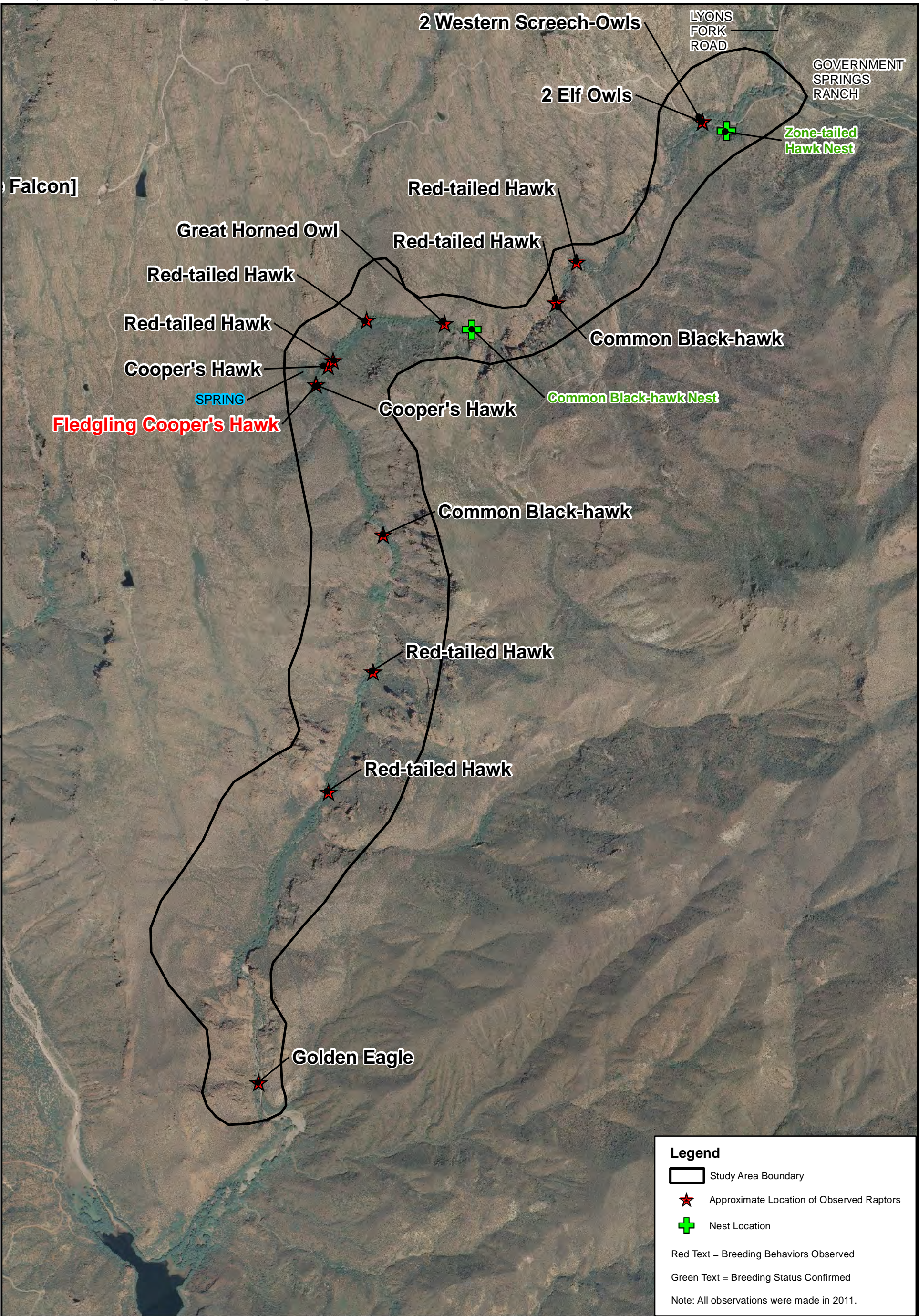
RESOLUTION COPPER MINING
Raptor Surveys in the
Resolution Copper Study Area

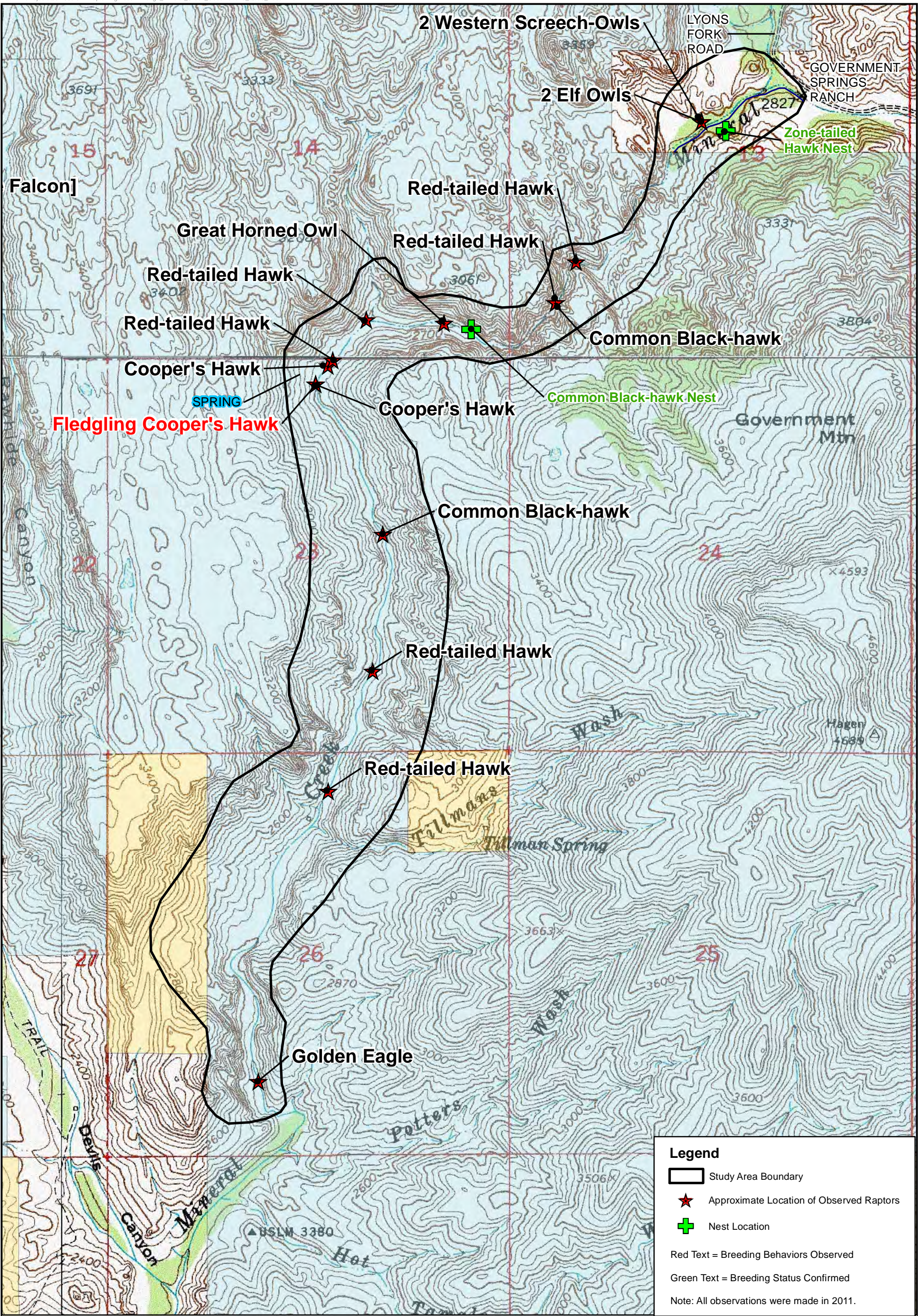
RAPTOR SURVEY LOCATIONS
& OBSERVATIONS AT THE MINE AREA,
QUEEN CREEK & APACHE LEAP
(Including data from previous surveys)

Figure 3









APPENDIX A

APPENDIX A. RAPTOR OBSERVATION RECORD CARDS (USFWS 1989)

<p>TREE NEST-SPECIES: Zone-tailed Hawk</p> <ol style="list-style-type: none"> LIVE TREE SNAG NEST BOX/PLATFORM ARTIFICIAL CAVITY IN TREE OTHER 	<p>GROUND NEST – SITUATION:</p> <ol style="list-style-type: none"> LEDGE ON CLIFF STICKNEST ON CLIFF CAVITY (POTHOLE) ON CLIFF OPEN HILLSIDE LEVEL GROUND OTHER
	<p>CLIFF ROCK TYPE: 1. SED 2. IGN. 3. MET SPEC. FORMATION:</p>
<p>TREE HEIGHT (M): 50 (estimated)</p>	<p>CLIFF HEIGHT (M):</p>
<p>TREE DIAMTER (CM): 40 (estimated)</p>	<p>CLIFF LENGTH (KM):</p>
<p>HEIGHT OF NEST IN TREE (M): 40 (estimated)</p>	<p>HEIGHT OF NEST ON CLIFF (M):</p>
<p>DOMINANT HABITAT TYPES (up to three within .5 km of nest)</p> <ol style="list-style-type: none"> CLIFF UNVEGETATED GROUND WET MEADOW DWARF SHRUB MEADOW (tundra dominated by grasses or sedges) GRASS MEADOW DWARF SHRUB MAT (dwarf shrubs <0.4 m high) LOW SHRUB THICKET (shrubs 0.5 – 1.1 m high) MED. SHRUB THICKET (shrubs 1.2 – 2.4 m high) TALL SHRUB THICKET (shrubs 2.5 – 5.0 m high) DECIDUOUS FOREST CONIFEROUS FOREST MIXED DECIDUOUS-CONIFER FOREST SCATTERED WOODLAND AND DWARF FOREST ARTIFICIAL HABITAT OTHER MARINE RIPARIAN LACUSTRINE (LAKE) RIVER / STREAM OTHER PERRENIAL WATER <p>FOR CLIFF NESTS (habitat types):</p> <ol style="list-style-type: none"> ABOVE CLIFF: BELOW CLIFF: 	<p>ELEVATION OF NEST ABOVE SEA LEVEL (FT): unknown</p> <p>ASPECT OF SLOPE: N/A</p> <p>ASPECT OF NEST: N/A</p> <p>NEST CONDITION:</p> <ol style="list-style-type: none"> GOOD FAIR POOR/REMNANT <p>NEST ACCESSIBILITY (to ground predators):</p> <ol style="list-style-type: none"> EASY MOD. DIFFICULT VERY DIFFICULT <p>DISTANCE TO HUMAN ACTIVITY (KM): 5 (estimated)</p> <p>HUMAN ACTIVITY VISIBLE FROM NEST?</p> <ol style="list-style-type: none"> YES NO <p>TYPE(S) OF HUMAN ACTIVITY:</p> <ol style="list-style-type: none"> TRAIL ROAD BOATING AIRCRAFT BUILDING(S) AGRICULTURE CONSTRUCTION RESEARCH MINING OIL / GAS LOGGING OTHER:
<p>CIRCLE ANY THAT APPLY:</p> <ol style="list-style-type: none"> PHOTO OF CLIFF TAKEN PHOTO OF EYRIE TAKEN EYRIE DESCRIP. ATTACHED PREY REMAINS COLL. EGG(S) COLLECTED 	<ol style="list-style-type: none"> EGG SHELLS COLLECTED WHITEWASH AT EYRIE OTHER WHITEWASH ON CLIFF OVERHANG AT EYRIE AFTERNOON SHADING? <p>A. YES B. NO C. UNKNOWN</p>
<p align="center">UTMs (NAD 83, 12S): 497414 E 3681827 N</p>	

<p>TREE NEST-SPECIES: Cooper's Hawk</p> <ol style="list-style-type: none"> 1. LIVE TREE 2. SNAG 3. NEST BOX/PLATFORM 4. ARTIFICIAL 5. CAVITY IN TREE 6. OTHER 	<p>GROUND NEST – SITUATION:</p> <ol style="list-style-type: none"> 1. LEDGE ON CLIFF 2. STICKNEST ON CLIFF 3. CAVITY (POTHOLE) ON CLIFF 4. OPEN HILLSIDE 5. LEVEL GROUND 6. OTHER <p>CLIFF ROCK TYPE: 1. SED 2. IGN. 3. MET SPEC. FORMATION:</p>
<p>TREE HEIGHT (M): unknown</p>	<p>CLIFF HEIGHT (M):</p>
<p>TREE DIAMTER (CM): unknown</p>	<p>CLIFF LENGTH (KM):</p>
<p>HEIGHT OF NEST IN TREE (M): unknown</p>	<p>HEIGHT OF NEST ON CLIFF (M):</p>
<p>DOMINANT HABITAT TYPES (up to three within .5 km of nest)</p> <ol style="list-style-type: none"> 1. CLIFF 2. UNVEGETATED GROUND 3. WET MEADOW 4. DWARF SHRUB MEADOW (tundra dominated by grasses or sedges) 5. GRASS MEADOW 6. DWARF SHRUB MAT (dwarf shrubs <0.4 m high) 7. LOW SHRUB THICKET (shrubs 0.5 – 1.1 m high) 8. MED. SHRUB THICKET (shrubs 1.2 – 2.4 m high) 9. TALL SHRUB THICKET (shrubs 2.5 – 5.0 m high) 10. DECIDUOUS FOREST 11. CONIFEROUS FOREST 12. MIXED DECIDUOUS-CONIFER FOREST 13. SCATTERED WOODLAND AND DWARF FOREST 14. ARTIFICIAL HABITAT 15. OTHER 16. MARINE 17. RIPARIAN 18. LACUSTRINE (LAKE) 19. RIVER / STREAM 20. OTHER PERRENIAL WATER <p>FOR CLIFF NESTS (habitat types):</p> <ol style="list-style-type: none"> 1. ABOVE CLIFF: 2. BELOW CLIFF: 	<p>ELEVATION OF NEST ABOVE SEA LEVEL (FT): 2500</p> <p>ASPECT OF SLOPE: unknown</p> <p>ASPECT OF NEST: unknown</p> <p>NEST CONDITION:</p> <ol style="list-style-type: none"> 1. GOOD 2. FAIR 3. POOR/REMNANT <p>unknown</p> <p>NEST ACCESSIBILITY (to ground predators):</p> <ol style="list-style-type: none"> 1. EASY 2. MOD. DIFFICULT VERY DIFFICULT <p>unknown</p> <p>DISTANCE TO HUMAN ACTIVITY (KM): 5 (estimated)</p> <p>HUMAN ACTIVITY VISIBLE FROM NEST?</p> <ol style="list-style-type: none"> 1. YES 2. NO <p>TYPE(S) OF HUMAN ACTIVITY:</p> <ol style="list-style-type: none"> 1. TRAIL 2. ROAD 3. BOATING 4. AIRCRAFT 5. BUILDING(S) 6. AGRICULTURE 7. CONSTRUCTION 8. RESEARCH 9. MINING 10. OIL / GAS 11. LOGGING 12. OTHER:
<p>CIRCLE ANY THAT APPLY:</p> <ol style="list-style-type: none"> 1. PHOTO OF CLIFF TAKEN 2. PHOTO OF EYRIE TAKEN 3. EYRIE DESCRIP. ATTACHED 4. PREY REMAINS COLL. 5. EGG(S) COLLECTED 	<ol style="list-style-type: none"> 6. EGG SHELLS COLLECTED 7. WHITEWASH AT EYRIE 8. OTHER WHITEWASH ON CLIFF 9. OVERHANG AT EYRIE 10. AFTERNOON SHADING? <p>A. YES B. NO C. UNKNOWN</p>
<p>UTMs (NAD 83, 12S): 500957 E 3678901 N</p>	
<p>Notes: No nest observed, but occupancy of grove and breeding confirmed. One very young fledgling observed at coordinates; Adults observed in area throughout season.</p>	

<p>TREE NEST-SPECIES: Great Horned Owl</p> <ol style="list-style-type: none"> LIVE TREE SNAG NEST BOX/PLATFORM ARTIFICIAL CAVITY IN TREE OTHER 	<p>GROUND NEST – SITUATION:</p> <ol style="list-style-type: none"> LEDGE ON CLIFF STICKNEST ON CLIFF CAVITY (POTHOLE) ON CLIFF OPEN HILLSIDE LEVEL GROUND OTHER <p>CLIFF ROCK TYPE: 1. SED 2. IGN. 3. MET SPEC. FORMATION:</p>
<p>TREE HEIGHT (M): 10 (estimated)</p>	<p>CLIFF HEIGHT (M):</p>
<p>TREE DIAMTER (CM): 50 (estimated)</p>	<p>CLIFF LENGTH (KM):</p>
<p>HEIGHT OF NEST IN TREE (M): 8 (estimated)</p>	<p>HEIGHT OF NEST ON CLIFF (M):</p>
<p>DOMINANT HABITAT TYPES (up to three within .5 km of nest)</p> <ol style="list-style-type: none"> CLIFF UNVEGETATED GROUND WET MEADOW DWARF SHRUB MEADOW (tundra dominated by grasses or sedges) GRASS MEADOW DWARF SHRUB MAT (dwarf shrubs <0.4 m high) LOW SHRUB THICKET (shrubs 0.5 – 1.1 m high) MED. SHRUB THICKET (shrubs 1.2 – 2.4 m high) TALL SHRUB THICKET (shrubs 2.5 – 5.0 m high) DECIDUOUS FOREST CONIFEROUS FOREST MIXED DECIDUOUS-CONIFER FOREST SCATTERED WOODLAND AND DWARF FOREST ARTIFICIAL HABITAT OTHER MARINE RIPARIAN LACUSTRINE (LAKE) RIVER / STREAM OTHER PERRENIAL WATER <p>FOR CLIFF NESTS (habitat types):</p> <ol style="list-style-type: none"> ABOVE CLIFF: BELOW CLIFF: 	<p>ELEVATION OF NEST ABOVE SEA LEVEL (FT): 2000 (estimated)</p>
	<p>ASPECT OF SLOPE: N/A</p>
	<p>ASPECT OF NEST: North</p>
	<p>NEST CONDITION:</p> <ol style="list-style-type: none"> GOOD FAIR POOR/REMNANT
	<p>NEST ACCESSIBILITY (to ground predators):</p> <ol style="list-style-type: none"> EASY MOD. DIFFICULT VERY DIFFICULT
	<p>DISTANCE TO HUMAN ACTIVITY (KM): 0.5 (estimated)</p>
	<p>HUMAN ACTIVITY VISIBLE FROM NEST?</p> <ol style="list-style-type: none"> YES NO
<p>CIRCLE ANY THAT APPLY:</p> <ol style="list-style-type: none"> PHOTO OF CLIFF TAKEN PHOTO OF EYRIE TAKEN EYRIE DESCIP. ATTACHED PREY REMAINS COLL. EGG(S) COLLECTED 	<p>TYPE(S) OF HUMAN ACTIVITY:</p> <ol style="list-style-type: none"> TRAIL ROAD BOATING AIRCRAFT BUILDING(S) AGRICULTURE CONSTRUCTION RESEARCH MINING OIL / GAS LOGGING OTHER:
	<ol style="list-style-type: none"> EGG SHELLS COLLECTED WHITEWASH AT EYRIE OTHER WHITEWASH ON CLIFF OVERHANG AT EYRIE AFTERNOON SHADING? <p>A. YES B. NO C. UNKNOWN</p>
<p>UTMs (NAD 83, 12S): 473086 E 3677400 N</p>	

<p>TREE NEST-SPECIES: Peregrine Falcon</p> <ol style="list-style-type: none"> 1. LIVE TREE 2. SNAG 3. NEST BOX/PLATFORM 4. ARTIFICIAL 5. CAVITY IN TREE 6. OTHER 	<p>GROUND NEST – SITUATION:</p> <ol style="list-style-type: none"> 1. LEDGE ON CLIFF 2. STICKNEST ON CLIFF 3. CAVITY (POTHOLE) ON CLIFF 4. OPEN HILLSIDE 5. LEVEL GROUND 6. OTHER <p>CLIFF ROCK TYPE: 1. SED 2. IGN. 3. MET SPEC. FORMATION: Apache Leap Tuff</p>
<p>TREE HEIGHT (M): _____</p>	<p>CLIFF HEIGHT (M): 125 (estimated)</p>
<p>TREE DIAMTER (CM): _____</p>	<p>CLIFF LENGTH (KM): 4.8 (estimated)</p>
<p>HEIGHT OF NEST IN TREE (M): _____</p>	<p>HEIGHT OF NEST ON CLIFF (M): 100 (estimated)</p>
<p>DOMINANT HABITAT TYPES (up to three within .5 km of nest)</p> <ol style="list-style-type: none"> 1. CLIFF 2. UNVEGETATED GROUND 3. WET MEADOW 4. DWARF SHRUB MEADOW (tundra dominated by grasses or sedges) 5. GRASS MEADOW 6. DWARF SHRUB MAT (dwarf shrubs <0.4 m high) 7. LOW SHRUB THICKET (shrubs 0.5 – 1.1 m high) 8. MED. SHRUB THICKET (shrubs 1.2 – 2.4 m high) 9. TALL SHRUB THICKET (shrubs 2.5 – 5.0 m high) 10. DECIDUOUS FOREST 11. CONIFEROUS FOREST 12. MIXED DECIDUOUS-CONIFER FOREST 13. SCATTERED WOODLAND AND DWARF FOREST 14. ARTIFICIAL HABITAT 15. OTHER 16. MARINE 17. RIPARIAN 18. LACUSTRINE (LAKE) 19. RIVER / STREAM 20. OTHER PERRENIAL WATER <p>FOR CLIFF NESTS (habitat types):</p> <ol style="list-style-type: none"> 1. ABOVE CLIFF: Interior Chaparral 2. BELOW CLIFF: Arizona Upland Desertscrub 	<p>ELEVATION OF NEST ABOVE SEA LEVEL (FT): 4000 (estimated)</p>
	<p>ASPECT OF SLOPE: West</p>
	<p>ASPECT OF NEST: West</p>
	<p>NEST CONDITION:</p> <ol style="list-style-type: none"> 1. GOOD 2. FAIR 3. POOR/REMNANT
	<p>NEST ACCESSIBILITY (to ground predators):</p> <ol style="list-style-type: none"> 1. EASY 2. MOD. DIFFICULT VERY DIFFICULT
	<p>DISTANCE TO HUMAN ACTIVITY (KM): 0.3 (estimated)</p>
	<p>HUMAN ACTIVITY VISIBLE FROM NEST?</p> <ol style="list-style-type: none"> 1. YES 2. NO
	<p>TYPE(S) OF HUMAN ACTIVITY:</p> <ol style="list-style-type: none"> 1. TRAIL 2. ROAD 3. BOATING 4. AIRCRAFT 5. BUILDING(S) 6. AGRICULTURE 7. CONSTRUCTION 8. RESEARCH 9. MINING 10. OIL / GAS 11. LOGGING 12. OTHER:
<p>CIRCLE ANY THAT APPLY:</p> <ol style="list-style-type: none"> 1. PHOTO OF CLIFF TAKEN 2. PHOTO OF EYRIE TAKEN 3. EYRIE DESCIP. ATTACHED 4. PREY REMAINS COLL. 5. EGG(S) COLLECTED 	<ol style="list-style-type: none"> 6. EGG SHELLS COLLECTED 7. WHITEWASH AT EYRIE 8. OTHER WHITEWASH ON CLIFF 9. OVERHANG AT EYRIE 10. AFTERNOON SHADING? A. YES B. NO C. UNKNOWN
<p>UTMs (NAD 83, 12S): 492415 E 3683007 N (observation post)</p>	

<p>TREE NEST-SPECIES: Peregrine Falcon</p> <ol style="list-style-type: none"> 1. LIVE TREE 2. SNAG 3. NEST BOX/PLATFORM 4. ARTIFICIAL 5. CAVITY IN TREE 6. OTHER 	<p>GROUND NEST – SITUATION:</p> <ol style="list-style-type: none"> 1. LEDGE ON CLIFF 2. STICKNEST ON CLIFF 3. CAVITY (POTHOLE) ON CLIFF 4. OPEN HILLSIDE 5. LEVEL GROUND 6. OTHER <p>unknown</p> <p>CLIFF ROCK TYPE: 1. SED 2. IGN. 3. MET</p> <p>SPEC. FORMATION: Apache Leap Tuff</p>
<p>TREE HEIGHT (M):</p>	<p>CLIFF HEIGHT (M): 125 (estimated)</p>
<p>TREE DIAMTER (CM):</p>	<p>CLIFF LENGTH (KM): 1 (estimated)</p>
<p>HEIGHT OF NEST IN TREE (M):</p>	<p>HEIGHT OF NEST ON CLIFF (M): unknown</p>
<p>DOMINANT HABITAT TYPES (up to three within .5 km of nest)</p> <ol style="list-style-type: none"> 1. CLIFF 2. UNVEGETATED GROUND 3. WET MEADOW 4. DWARF SHRUB MEADOW (tundra dominated by grasses or sedges) 5. GRASS MEADOW 6. DWARF SHRUB MAT (dwarf shrubs <0.4 m high) 7. LOW SHRUB THICKET (shrubs 0.5 – 1.1 m high) 8. MED. SHRUB THICKET (shrubs 1.2 – 2.4 m high) 9. TALL SHRUB THICKET (shrubs 2.5 – 5.0 m high) 10. DECIDUOUS FOREST 11. CONIFEROUS FOREST 12. MIXED DECIDUOUS-CONIFER FOREST 13. SCATTERED WOODLAND AND DWARF FOREST 14. ARTIFICIAL HABITAT 15. OTHER 16. MARINE 17. RIPARIAN 18. LACUSTRINE (LAKE) 19. RIVER / STREAM 20. OTHER PERRENIAL WATER <p>FOR CLIFF NESTS (habitat types):</p> <ol style="list-style-type: none"> 1. ABOVE CLIFF: Interior Chaparral 2. BELOW CLIFF: Interior Riparian Deciduous Forest 	<p>ELEVATION OF NEST ABOVE SEA LEVEL (FT): 4000 (estimated)</p>
	<p>ASPECT OF SLOPE: West</p>
	<p>ASPECT OF NEST: unknown</p>
	<p>NEST CONDITION:</p> <ol style="list-style-type: none"> 1. GOOD 2. FAIR 3. POOR/REMNANT <p>unknown</p>
	<p>NEST ACCESSIBILITY (to ground predators):</p> <ol style="list-style-type: none"> 1. EASY 2. MOD. DIFFICULT <p>VERY DIFFICULT</p>
	<p>DISTANCE TO HUMAN ACTIVITY (KM): 0.1 (estimated)</p>
	<p>HUMAN ACTIVITY VISIBLE FROM NEST?</p> <ol style="list-style-type: none"> 1. YES 2. NO
	<p>TYPE(S) OF HUMAN ACTIVITY:</p> <ol style="list-style-type: none"> 1. TRAIL 2. ROAD 3. BOATING 4. AIRCRAFT 5. BUILDING(S) 6. AGRICULTURE 7. CONSTRUCTION 8. RESEARCH 9. MINING 10. OIL / GAS 11. LOGGING 12. OTHER: Climbing
<p>CIRCLE ANY THAT APPLY:</p> <ol style="list-style-type: none"> 1. PHOTO OF CLIFF TAKEN 2. PHOTO OF EYRIE TAKEN 3. EYRIE DESCRIP. ATTACHED 4. PREY REMAINS COLL. 5. EGG(S) COLLECTED 	<ol style="list-style-type: none"> 6. EGG SHELLS COLLECTED 7. WHITEWASH AT EYRIE 8. OTHER WHITEWASH ON CLIFF 9. OVERHANG AT EYRIE 10. AFTERNOON SHADING? <p>A. YES B. NO C. UNKNOWN</p>
<p>UTMs (NAD 83, 12S): 497224 E 3681898 N (observation post)</p>	

<p>TREE NEST-SPECIES: Common Black-hawk</p> <ol style="list-style-type: none"> LIVE TREE SNAG NEST BOX/PLATFORM ARTIFICIAL CAVITY IN TREE OTHER 	<p>GROUND NEST – SITUATION:</p> <ol style="list-style-type: none"> LEDGE ON CLIFF STICKNEST ON CLIFF CAVITY (POTHOLE) ON CLIFF OPEN HILLSIDE LEVEL GROUND OTHER <p>CLIFF ROCK TYPE: 1. SED 2. IGN. 3. MET SPEC. FORMATION:</p>
<p>TREE HEIGHT (M): 25 (estimated)</p>	<p>CLIFF HEIGHT (M):</p>
<p>TREE DIAMTER (CM): 30 (estimated)</p>	<p>CLIFF LENGTH (KM):</p>
<p>HEIGHT OF NEST IN TREE (M): 20 (estimated)</p>	<p>HEIGHT OF NEST ON CLIFF (M):</p>
<p>DOMINANT HABITAT TYPES (up to three within .5 km of nest)</p> <ol style="list-style-type: none"> CLIFF UNVEGETATED GROUND WET MEADOW DWARF SHRUB MEADOW (tundra dominated by grasses or sedges) GRASS MEADOW DWARF SHRUB MAT (dwarf shrubs <0.4 m high) LOW SHRUB THICKET (shrubs 0.5 – 1.1 m high) MED. SHRUB THICKET (shrubs 1.2 – 2.4 m high) TALL SHRUB THICKET (shrubs 2.5 – 5.0 m high) DECIDUOUS FOREST CONIFEROUS FOREST MIXED DECIDUOUS-CONIFER FOREST SCATTERED WOODLAND AND DWARF FOREST ARTIFICIAL HABITAT OTHER MARINE RIPARIAN LACUSTRINE (LAKE) RIVER / STREAM OTHER PERRENIAL WATER <p>FOR CLIFF NESTS (habitat types):</p> <ol style="list-style-type: none"> ABOVE CLIFF: BELOW CLIFF: 	<p>ELEVATION OF NEST ABOVE SEA LEVEL (FT): 3600 (estimated)</p> <p>ASPECT OF SLOPE: N/A</p> <p>ASPECT OF NEST: N/A (in canopy)</p> <p>NEST CONDITION:</p> <ol style="list-style-type: none"> GOOD FAIR POOR/REMNANT <p>NEST ACCESSIBILITY (to ground predators):</p> <ol style="list-style-type: none"> EASY MOD. DIFFICULT VERY DIFFICULT <p>DISTANCE TO HUMAN ACTIVITY (KM): 1 (estimated)</p> <p>HUMAN ACTIVITY VISIBLE FROM NEST?</p> <ol style="list-style-type: none"> YES NO <p>TYPE(S) OF HUMAN ACTIVITY:</p> <ol style="list-style-type: none"> TRAIL ROAD BOATING AIRCRAFT BUILDING(S) AGRICULTURE CONSTRUCTION RESEARCH MINING OIL / GAS LOGGING OTHER:
<p>CIRCLE ANY THAT APPLY:</p> <ol style="list-style-type: none"> PHOTO OF CLIFF TAKEN PHOTO OF EYRIE TAKEN EYRIE DESCIP. ATTACHED PREY REMAINS COLL. EGG(S) COLLECTED 	<ol style="list-style-type: none"> EGG SHELLS COLLECTED WHITEWASH AT EYRIE OTHER WHITEWASH ON CLIFF OVERHANG AT EYRIE AFTERNOON SHADING? A. YES B. NO C. UNKNOWN
<p>UTMs (NAD 83, 12S): 501578 E 3679119 N</p> <p>Notes: Stick nest in large willow along stream. Adult & Juvenile Common Black-hawks observed in immediate area throughout 2011 field season.</p>	

<p>TREE NEST-SPECIES: Zone-tailed Hawk</p> <ol style="list-style-type: none"> LIVE TREE SNAG NEST BOX/PLATFORM ARTIFICIAL CAVITY IN TREE OTHER 	<p>GROUND NEST – SITUATION:</p> <ol style="list-style-type: none"> LEDGE ON CLIFF STICKNEST ON CLIFF CAVITY (POTHOLE) ON CLIFF OPEN HILLSIDE LEVEL GROUND OTHER <p>CLIFF ROCK TYPE: 1. SED 2. IGN. 3. MET SPEC. FORMATION:</p>
<p>TREE HEIGHT (M): 50 (estimated)</p>	<p>CLIFF HEIGHT (M):</p>
<p>TREE DIAMTER (CM): 60 (estimated)</p>	<p>CLIFF LENGTH (KM):</p>
<p>HEIGHT OF NEST IN TREE (M): 45 (estimated)</p>	<p>HEIGHT OF NEST ON CLIFF (M):</p>
<p>DOMINANT HABITAT TYPES (up to three within .5 km of nest)</p> <ol style="list-style-type: none"> CLIFF UNVEGETATED GROUND WET MEADOW DWARF SHRUB MEADOW (tundra dominated by grasses or sedges) GRASS MEADOW DWARF SHRUB MAT (dwarf shrubs <0.4 m high) LOW SHRUB THICKET (shrubs 0.5 – 1.1 m high) MED. SHRUB THICKET (shrubs 1.2 – 2.4 m high) TALL SHRUB THICKET (shrubs 2.5 – 5.0 m high) DECIDUOUS FOREST CONIFEROUS FOREST MIXED DECIDUOUS-CONIFER FOREST SCATTERED WOODLAND AND DWARF FOREST ARTIFICIAL HABITAT OTHER MARINE RIPARIAN LACUSTRINE (LAKE) RIVER / STREAM OTHER PERRENIAL WATER <p>FOR CLIFF NESTS (habitat types):</p> <ol style="list-style-type: none"> ABOVE CLIFF: BELOW CLIFF: 	<p>ELEVATION OF NEST ABOVE SEA LEVEL (FT): 2800 (estimated)</p> <p>ASPECT OF SLOPE: N/A</p> <p>ASPECT OF NEST: N/A (in canopy)</p> <p>NEST CONDITION:</p> <ol style="list-style-type: none"> GOOD FAIR POOR/REMNANT <p>NEST ACCESSIBILITY (to ground predators):</p> <ol style="list-style-type: none"> EASY MOD. DIFFICULT VERY DIFFICULT <p>DISTANCE TO HUMAN ACTIVITY (KM): 0.02 (estimated)</p> <p>HUMAN ACTIVITY VISIBLE FROM NEST?</p> <ol style="list-style-type: none"> YES NO <p>TYPE(S) OF HUMAN ACTIVITY:</p> <ol style="list-style-type: none"> TRAIL ROAD BOATING AIRCRAFT BUILDING(S) AGRICULTURE CONSTRUCTION RESEARCH MINING OIL / GAS LOGGING OTHER:
<p>CIRCLE ANY THAT APPLY:</p> <ol style="list-style-type: none"> PHOTO OF CLIFF TAKEN PHOTO OF EYRIE TAKEN EYRIE DESCIP. ATTACHED PREY REMAINS COLL. EGG(S) COLLECTED 	<ol style="list-style-type: none"> EGG SHELLS COLLECTED WHITEWASH AT EYRIE OTHER WHITEWASH ON CLIFF OVERHANG AT EYRIE AFTERNOON SHADING? A. YES B. NO C. UNKNOWN
<p>UTMs (NAD 83, 12S): 502596 E 3679912 N</p> <p>Notes: Nest active at camp. One young fledged. Birds continuously visible and audible.</p>	

ATTACHMENT 1

APACHE LEAP CLIFF SURVEY

Personnel: Jack Zitter
 Survey Location: Tunnel 1
 Visit #: 1
 Date: 3-16-2011
 Start Time: 16:59 End Time: 18:59

Temperature: 78°
 Cloud Cover (%): 45%
 Wind Code (Beaufort scale): 012345

General Site Comments: (049 2724 / 3685212) 300M EAST OF QUEEN CREEK TUNNEL, NORTH OF CREEK OBSERVING NORTHWEST FACING PORTION OF APACHE LEAP, TO BOTTOM OF QUEEN CREEK.

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
17:05, 17:14, 17:25 17:32, 17:40	3 T.V.'s CIRCLING ON RIDGE WEST OF LEAP	T.V.	VISUAL	NONE
17:45, 17:52	14 T.V.'s CIRCLING OVER APACHE LEAP PEAKS	T.V.	VISUAL	NONE
17:55, 18:22 18:31, 18:43	21 T.V.'s CIRCLING OVER LEAP.	T.V.		

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

APACHE LEAP CLIFF SURVEY

Personnel: Mike Cross
 Survey Location: Tunnel 2
 Visit #: 1
 Date: 3-16-2011
 Start Time: 1704 End Time: 1904

Temperature: ≈ 80°F
 Cloud Cover (%): 1.1
 Wind Code (Beaufort scale): 0 1 2(3) 4 5

General Site Comments: 0491835/3684943; just west of tunnel. Go to WP, then hike to top of knob (450m) Go to WP, then hike to old road bed toward drainage. Observe from road bed above water tank.

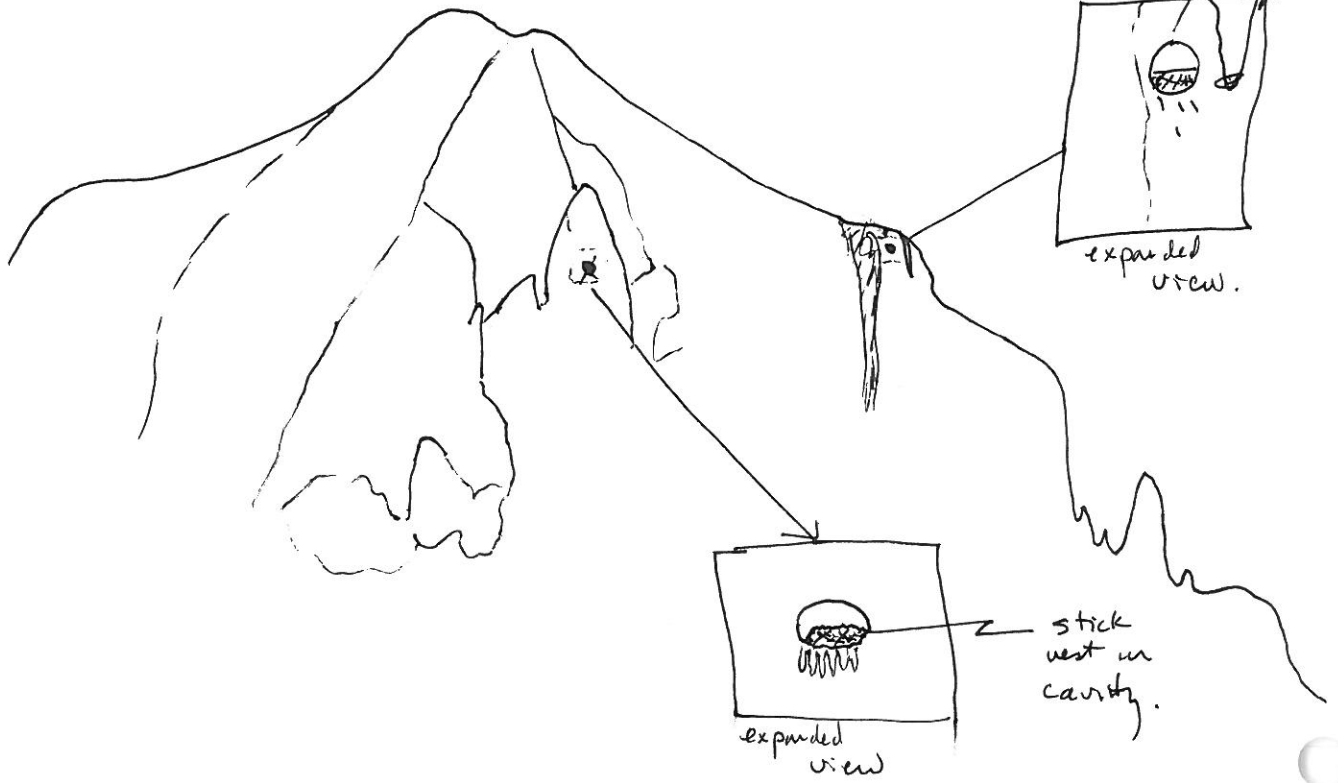
OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
1710 → 1904	TUVUs observed soaring in area and flying over the water tank	TUVU	None	None
1750	Stick nest located in hole on cliff face. Partial (see sketch on reverse)	undetermined	stick nest, white wash	No birds present.
1822	large "Kettle" of TUVUs soaring over leap	TUVU	None	None
1829	2nd stick nest on cliff (see back)	undetermined	stick nest white wash.	No birds present

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

Apache lamp



Personnel:

JACK ZIT TERE

Survey Location: A-LEAP# NORTH, (491929-3683825)

Visit #:

/

Date:

3.17.2011

Start Time:

07:24 End Time: 09:24

Temperature:

54^o

Cloud Cover (%):

15%, 20%, 35%

Wind Code

~~(Beaufort scale):~~

0-1 2 3 4 5

General Site Comments: APACHE LEAP - N.W. RIDGE TOP VIEW 95%+!
(NAD 83 = E = 0491929, N = 3683825) ELE = 3234, FULL VIEW OF LEAP.
BEST TO ARRIVE EARLY SO SUN NOT IN EYES... 08:43 TODAY FOR
SUNRISE OVER ROCKS

[illegible]

Field Biologist Signature

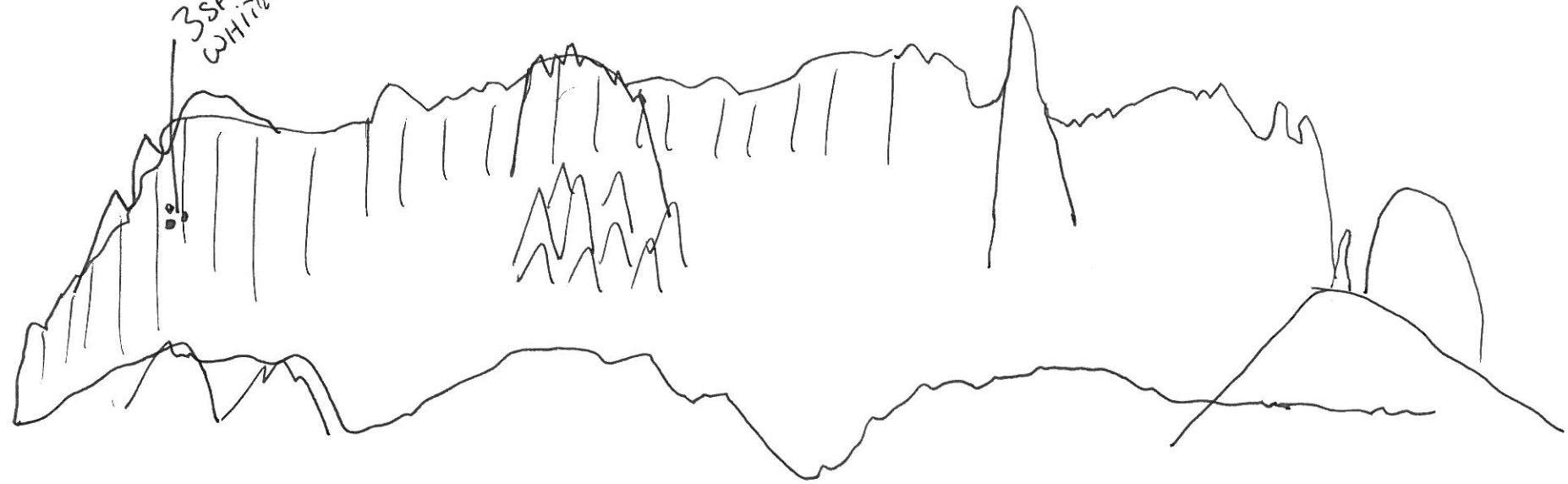
John R. Zitter

Supervisor Signature

Data Entry Signature

Data Proofing Signature

3 SPOTS
WHITE WASH



Personnel: Mike Cross
Survey Location: South Loop
Visit #: 1
Date: 3-17-2011
Start Time: 0750 End Time: 0950

Temperature: 60°F
 Cloud Cover (%): 10
 Wind Code 0 1 2 3 4 5
 (Beaufort scale):

General Site Comments: Observation Station below heap near well site (new). Site has history of Peregrine Falcon occupancy. UTM's 0492415 / 3683007 WP = "South Leaps" first well construction ongoing right below historical eyre; drilling machinery operating around the clock. Lights on at night.

[illegible]

Field Biologist Signature _____ Supervisor Signature _____
Data Entry Signature _____ Data Proofing Signature _____

Personnel: Mike Cross
 Survey Location: South Leap
 Visit #: 2
 Date: 4-4-2011
 Start Time: 1645 End Time: 1900

Temperature: 80°F
 Cloud Cover (%): 0
 Wind Code: 0 ① 2 3 4 5
 (Beaufort scale):

General Site Comments: The base of Apache Leap on South side.
 Site is location of historic peregrine falcon eyre.

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
1925	one TV soaring overhead.	TUVU	1	NA
1931	Two Turkey Vultures soaring off face of leap	TUVU	1	NA
1835	Red tail Hawk flies along top of leap; S to N.	RTHA	1	/
1836	10 Turkey Vultures flying along Leap	TUVU	1	/
1840-1844	RTHA hovering over leap for extended period.	RTHA	1	/
1852	3 TUVU flying along crest of Leap	TUVU	1	/
1900	Great Horned Owl calling from South side of Leap	GRHO	1	/

Chain of Custody

Field Biologist Signature



Supervisor Signature

Data Entry Signature

Data Proofing Signature

DEVILS CANYON CLIFF SURVEY

Personnel:

Survey Location:

Visit #:

Date:

Start Time:

Temperature:

Cloud Cover (%):

Wind Code

(Beaufort scale):

JACK ZITLER APACHE LEAP

APACHE LEAP - NORTH

2

04-APRIL-2011

16:45 End Time: 18:50

82°

0%

0 1 2 3 4 5

General Site Comments:

NAO 83(N=3683826-E=0491928)

OBSERVATION POINT TOP OF RIDGE WEST OF NORTH END
OF LEAP. GOOD OVERVIEW OF LEAP

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
16:45 → 18:50	TUVU...2 TO 8 BIRDS VISIBLE MOST OF THE TIME	TUVU	NONE OBSERVED 1	NONE OBSERVED
17:40	ZTHA VISABLE 1/2 mi AWAY FROM OBSERVER NORTH OF LEAP NEAR GROUP OF TUVU	ZTHA	NONE 1 OBSERVED	NONE OBSERVED
18:10-18:17	NO OBSERVATIONS	NONE	NONE	NONE
18:42-18:50	STATIONARY TUCKED HOVERING OVER SOUTH LEAP	RTHA	1	NONE
	IMPRESSIVE SAILING			

Chain of Custody

Field Biologist Signature

Data Entry Signature

Supervisor Signature

Data Proofing Signature

807.50

APACHE LEAP CLIFF SURVEY

Personnel: Mike Cross, Ben Backham
 Survey Location: Apache Leap - Cross Canyon
 Visit #:
 Date: 4-27-11
 Start Time: 0526 End Time: 0602

Temperature: 54°F
 Cloud Cover (%): 0
 Wind Code: 0 1 2 3 4 5
 (Beaufort scale):

General Site Comments:

Breezy & chilly; Sunrise at 543. Elf owl observed before survey near bottom of Cross Canyon Road.

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
	NO FALCONS	OBSERVED		

Chain of Custody

Field Biologist Signature Ben Backham Supervisor Signature
 Data Entry Signature Data Proofing Signature

807.50

APACHE LEAP CLIFF SURVEY

Personnel: Mike Cross, Ben Rackham
 Survey Location: Apache Leap - west of Queen Creek Tunnel
 Visit #: -
 Date: 4-27-11
 Start Time: 624 End Time:

Temperature: 58°F
 Cloud Cover (%): 0
 Wind Code: 0 1 2 (3) 4 5
 (Beaufort scale):

General Site Comments:

breezy & chilly; TUVU & CORA observed

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
<u>NO</u>	<u>FALCONS</u>	<u>OBSERVED</u>		

Chain of Custody

Field Biologist Signature Ben Rackham Supervisor Signature
 Data Entry Signature Data Proofing Signature

APACHE LEAP CLIFF SURVEY

Personnel: Cross / Archer
 Survey Location: Apache Leap South
 Visit #: 3
 Date: 5-11-2011
 Start Time: 0615 End Time: _____

Temperature: 82°F
 Cloud Cover (%): 0
 Wind Code: 0 1 2 3 4 5
 (Beaufort scale): _____

General Site Comments: Base of Apache Leap on South side
below historic Peregine eye

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
0620	3 TUVU Soaring	TUVU	1	NA
0650	1 TUVU Soaring	" "	1	NA
0659	2 TUVU Soaring	" "	1	NA
0704	1 RTHA stationary, hovering over leap for 10 minutes	RTHA	1	NA
0710	2nd RTUT Joins 1st.	RTHA	1	NA
0716	TUVU Soaring	TUVU	1	NA

Chain of Custody

Field Biologist Signature [Signature]
 Data Entry Signature _____

Supervisor Signature _____
 Data Proofing Signature _____

APACHE LEAP CLIFF SURVEY

Personnel: M. Cross
 Survey Location: Apache Leap
 Visit #: 21
 Date: 5-27-2011
 Start Time: 0450 End Time: _____

Temperature: 65°F
 Cloud Cover (%): 0
 Wind Code: 0 1 2 3 4 5
 (Beaufort scale): _____

General Site Comments: Apache Leap. Observation post at drill pad directly beneath a historic eyrie (peregrine)

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
0454	PEFA Vocalization on cliffs above observers. Still dark	PEFA	1	7,1
0532	PEFA Vocalization	"	1	7,1
0537	" "	"	1	7,1
0542	" "	"	1	7,1
0550	" "	"	1	7,1
0555	PEFA Vocalizes and comes out. Perches on top of cliff	"	1	7,1
* 0605 (OVER)	2nd PEFA Vocalizes. Flies across cliff top and out of view	"	1	7,1
0632	1st PEFA Leaves perch and flies into eyrie!	"	1	7,1
0632	2nd PEFA Returns, flying high over cliff toward west	"	1	7,1
0633	1st PEFA leaves eyrie and follows 1st to west. Both birds lost from view	"	1	7,1

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

x 0605 cont.

2nd PEFA vocalized. Left cliff face,
flew past perched peregrine then
south along heap out of view.

DEVILS CANYON CLIFF SURVEY

Personnel: Mike Cross / Jack E. Hare
 Survey Location: North Pipe Springs Cliffs
 Visit #: 1
 Date: 4-6-2011
 Start Time: 0914 End Time: 1014

Temperature: 80°
 Cloud Cover (%): 100
 Wind Code: 0 1 2 3 4 5
 (Beaufort scale):

General Site Comments: Cliffs on East side of Devils Canyon where Elk Tank trail meets Devils Canyon. No evidence of Raptor habitation (no white wash, nests, etc.)

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
0914-1014	numerous Turkey Vultures soaring over canyon	TUVU	1	

Chain of Custody

Field Biologist Signature

Data Entry Signature

Supervisor Signature

Data Proofing Signature

DEVILS CANYON CLIFF SURVEY

Personnel: Nate Cross
 Survey Location: South Pipe Springs Cliffs
 Visit #: 1
 Date: 4-6-2011
 Start Time: 1210 End Time: 1310

Temperature: 80
 Cloud Cover (%): 100
 Wind Code: 0 1 2 (3) 4 5
 (Beaufort scale):

General Site Comments: A series of sheer cliffs on East side of Devils Canyon between Pipe Springs and Rawhide Canyon confluence. Evidence of breeding raptors (Prairie Falcon) observed here in prior years.

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
1215	1 adult golden eagle seen soaring over cliff. Disappears up side canyon	GOEG	1	/
1216	1 adult red-tailed hawk seen soaring over cliff	RTHA	1	
1215-1310	Obvious eyrie visible on cliff. Whitewash No birds observed must be eyrie on ledge. Too small for GOEG. Suspect Falcon	?	2	1
cont...				

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

APACHE LEAP CLIFF SURVEY

Personnel: Mike Cross / Mike Winder
 Survey Location: Devils Canyon Cliff 1 CDC Cliff 1 OP
 Visit #: 1
 Date: 5-24-2011
 Start Time: 1730 End Time: 1930

Temperature: 82
 Cloud Cover (%): 0
 Wind Code: 0 1 2 3 4 5
 (Beaufort scale):

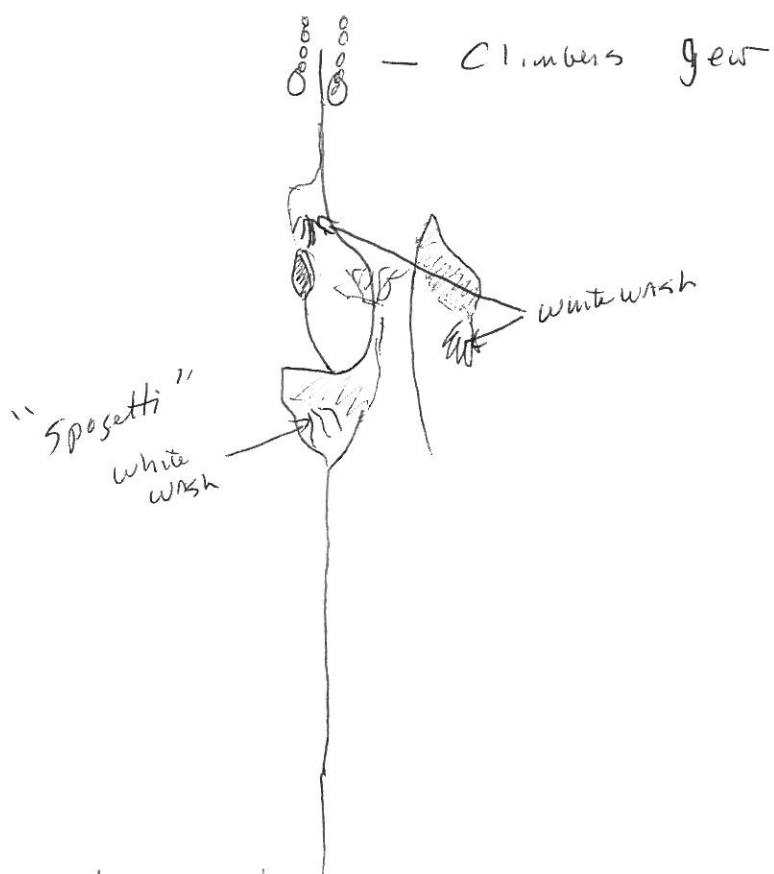
General Site Comments: ~~Observed~~ 497224 / 3681898 is location of observation post

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
1735	1 TUVU soars in canyon	TUVU	1	/
1740	white wash atop rock in Hondo crevasse on W side of canyon	?	2	/
1803	2 TUVU flying along canyon at tree top level	TUVU	1	/
1807	6 TUVU flying over canyon	TUVU	1	/
1810	Possible eyne on west face of cliff face. (OVER) 90°F	Falco spp.	2, 1	/
1830	Raptor vocalization from canyon bottom ee ee ee ee ...	?	1 (vocalization)	/
1838	Blackhawk flies in canyon	CBHA	1	/
1835	One unidentified (either CBHA or Z+HA) flying in canyon	?	1	/
1902	Peregrine vocalizes, then is visible flying over cliff. (OVER)	CBHA PEFA	1	7

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____



* Site of probable peregrine sign / potential eyrie.
 Classic "spaschetti" white wash pattern indicative of
 Falcons. This white wash is associated
 with suitable potential eyries / ledges.
 Discarded climbers gear visible above possible
 eyrie; strings of carbines. Potential eyrie is 90° E
from DLOP1.

** Peregrine Falcon vocalizes at 1902,
 flies back and forth across cliff
 face, territorial interaction with TUVU which
 is grappled / tumbled by Falcon and then released.
~~Peregrine~~ Peregrine then flies downstream out of site
 then ~~returns~~ returns and ~~possibly~~ possibly disappears
 into a crevasse N of original potential
 eyrie at 1907.


DEVILS CANYON CLIFF SURVEY

Personnel: Mike Cross / Lori Forrest
 Survey Location: Devils Canyon
 Visit #: 2
 Date: 6-20-2011
 Start Time: 1900 End Time: _____

Temperature: _____
 Cloud Cover (%): 0
 Wind Code 0 1 2 3 4 5
 (Beaufort scale): _____

General Site Comments: West facing cliff in Devils Canyon.

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
1905	7 TUVV's Sounding over canyon	TUVV	1	/
1910	3 TUVV's perched on cliff 100 m S of Observers	TUVV	1	/
1911	7 TUVV's Roosting atop cliff ≈ 100 m S of Observers (Roost!)	TUVV	1	/
1916	3 TUVV's Roosting atop cliff on E side of canyon	TUVV	1	/
1918	Z+HA carrying prey	Z+HA		5
1932-1940	PEFA; Peregrin vocalizing from west cliff	PEFA	1, 2, 3	2
1936-1940	2nd PEFA PEFA flies back and forth along cliff. 1st bird continues	PEFA	1, 2, 3	2

*

over

* Young Peregrins heard vocalizing on ~~6-12-2011~~ 6-13-2011

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

KEY:

Wind Code:	0 Calm. Smoke rises vertically.
	1 Smoke drift indicates wind direction.
	2 Wind felt on face; leaves rustle.
	3 Leaves and small twigs moving.
	4 Dust and loose paper raised.
	5 Branches move; small trees sway.
Evidence of Habitation	1 direct observation of a raptor
	2 observation of whitewash
	3 observation of a stick nest
Evidence of Breeding	1 presence of a nest or eyrie
	2 young in nest
	3 adult in nest in incubation posture
	4 mating behavior
	5 prey deliveries
	6 nest maintenance
	7 adult near nest

* 2 Adult peregrines seen flying in area.
Young can be heard vocalizing. Eyrie may
be behind large spire, out of view. ~~Obs~~
Cliff does contain an eyrie, exact
location of Eyrie is unknown

Chain of Custody

Field Biologist Signature



Supervisor Signature

Data Entry Signature

Data Proofing Signature

POINT TRANSECT RAPTOR SURVEY

Biologists Mike Cross
Jack Z. Here.

Date 3-16-2011

Site Oak Flat

Survey Start Time 10:30

Map _____

Survey End Time ~~14:53~~ 1652

Point	Start Time	End Time	Species	Age	Notes
OF1	10:30	10:40	—	—	Photos; 0651, 0652, 0653, 0654 (NESW)
OF2	1047	1057	—	—	Photos; 0656, 0657, 0658, 0659 (NESW)
OF3	1100	1110	TOVU	—	Photos; 0660, 0661, 0662, 0664 (NESW)
			TUVU	A	1 TUVU 400m S
OF6	1138	1148	—	—	Photos; 0665, 0666, 0667, 0668
OF12	1211	1221	—	—	Photos; 0671, 0672, 0673, 0674
			TUVU	A	1 TUVU Soaring over stream; 1 TUVU 300m E
			TUVU	A	1 TUVU 400m N; 1 TUVU 300m W
OF13	1230	1240	—	—	Photos; 0675, 0676, 0677, 0678
OF14	1247	1257	—	—	Photos; 0679, 0680, 0681, 0682
OF3					
OF4	1321	1331	—	—	Photos; 0683, 0684, 0685, 0686
OF5	1334	1344	—	—	Photos; 0687, 0688, 0689, 0690
			COHA	A	1 CO40 300m SE (Same drainage as 2003 nest)
OF7	1346	1356	—	—	Photos; 0691, 0692, 0693, 0694
OF8	1359	1409	—	—	Photos; 0695, 0696, 0697, 0698
			TUVU	A	1 TUVU 200m NE
OF9	1414	1424	—	—	Photos; 0699, 0700, 0701, 0702
			TUVU	A	1 TUVU 500m S
OF10	1428	1438	—	—	Photos; 0703, 0704, 0705, 0706
OF11	1443	1453	—	—	Photos; 0707, 0708, 0709, 0710
OF15	1642	1652	—	—	Photos; 0712, 0713, 0714, 0715
			TUVU	A	1 TUVU overhead;

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

Oak Flat; interior chaparral, Gabilan stream, incised canyons, thick brush
with some large trees in canyon bottoms and flats

Chain of Custody

Field Biologist Signature

Data Entry Signature



Supervisor Signature

Data Proofing Signature

LINEAR TRANSECT RAPTOR SURVEY

Biologists Michael Cross
Jack Zitter

Date 3-17-2011

Survey Start Time 3-17-2 0900
Survey End Time 1300

Site Queen Creek / Oak Flat
Map _____

Transect	Start Time	Start UTM (NAD 83)		Species	Age	End Time	End UTM (NAD 83)		Notes
		Easting	Northing				Easting	Northing	
Queen Cr.	0900	1		/	/	1030			No Raptors
5 to QC	0900					1030			No Raptors
60 to 3	1100					1330			No Raptors
3 to 1	1100					1330			No Raptors

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
Data Entry Signature _____ Data Proofing Signature _____

LINEAR TRANSECT RAPTOR SURVEY

Biologists Ben Rackham
Mike Wendell

Date 3/25/10

Survey Start Time 0905
 Survey End Time 1430

Site Oak Flat
 Map _____

Transect	Start Time	Start UTM (NAD 83)		Species	Age	End Time	End UTM (NAD 83)		Notes
		Easting	Northing				Easting	Northing	
1	0905	494827	368576	TUVU	A	0956	496548	3686185	
2	1046	494362	3684692	2TUVU	A	1215	493850	3685612	4 TUVU at once near Queen Creek
		494212	368550	2 HA	A	nest not located			scoring overhead; one with nesting material; calling to each other near Queen Creek
3	1309	494504	3685085	TUVU	A	1430	496244	3683099	
				COHA	A		495395	3684017	Flying 200m to the south

Chain of Custody

Field Biologist Signature Ben Rackham Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

LINEAR TRANSECT RAPTOR SURVEY

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

Transects are along creeks and roads - Interior Chaparral
vegetation.

SPECIES:

Code	Species Name	Code	Species Name	Code	Species Name
NONE	No Species Detected	HAHA	Harris's Hawk	BAOW	Barn Owl
BLVU	Black Vulture	GRHA	Gray Hawk	FLOW	Flammulated Owl
TUVU	Turkey Vulture	ZTHA	Zone-Tailed Hawk	WSOW1	Western Screech-Owl
		CBHA	Common Black-Hawk	WSOW2	Whiskered Screech-Owl
NOHA	Northern Harrier	RTHA	Red-Tailed Hawk	GHOW	Great Horned Owl
WTKI	White-Tailed Kite	SWHA	Swainson's Hawk	NPOW	Northern Pygmy-Owl
MIKI	Mississippi Kite	FEHA	Ferruginous Hawk	CFPO	Cactus Ferruginous Pygmy Owl
				ELOW	Elf Owl
COHA	Cooper's Hawk	OSPR	Osprey	BUOW	Burrowing Owl
SSHA	Sharp-Shinned Hawk	GOEG	Golden Eagle	MSOW	Mexican Spotted Owl
NOGO	Northern Goshawk	BAEL	Bald Eagle	LEOW	Long-Eared Owl
				NSWO	Northern Saw-Whet Owl
		AMKE	American Kestrel		
		PRFA	Prairie Falcon		
		PEFA	Peregrine Falcon		

AGE:

Code	Definition
A	Adult
J	Juvenile
N	Nestling

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

Queen Creek

DEVILS CANYON RAPTOR SURVEY

Biologists M-CROSS

Date 5-24-2011

Survey Start Time 1315

Site Queen Creek

Survey End Time 1400

Map _____

Transect	Start Time	Start UTM (NAD 83)		End Time	End UTM (NAD 83)		Notes
		Easting	Northing		Easting	Northing	
1315	1315	494167	3685585	1400	493173	3685363	No Observations of Raptors

OBSERVATIONS:

Time	Location (NAD 83)		Species	Age	Number	Notes
	Easting	Northing				

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____

Data Entry Signature _____ Data Proofing Signature _____

POINT TRANSECT RAPTOR SURVEY

Biologists Mike Cross

Date 6-20-2011

Site Duck Flat

Survey Start Time 1338

Map

Survey End Time 1833 (Subtract 1 hr for supper)

[illegible]

* 1 ZTHA seen w/ prey off transect @ Oak Flat & NVS 60 @ 1750

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

Interw. Chaparral; Bulder - straw - flat area between Devils Canyon & Apache Leap.

Chain of Custody

Field Biologist Signature

Supervisor Signature _____

Data Entry Signature

Data Proofing Signature

POINT TRANSECT RAPTOR SURVEY

SPECIES:

Code	Species Name	Code	Species Name
NONE	No Species Detected	BAOW	Barn Owl
BLVU	Black Vulture	FLOW	Flammulated Owl
TUVU	Turkey Vulture	WSOW1	Western Screech-Owl
		WSOW2	Whiskered Screech-Owl
NOHA	Northern Harrier	GHOW	Great Horned Owl
WTKI	White-Tailed Kite	NPOW	Northern Pygmy-Owl
MIKI	Mississippi Kite	CFPO	Cactus Ferruginous Pygmy Owl
		ELOW	Elf Owl
COHA	Cooper's Hawk	BUOW	Burrowing Owl
SSHA	Sharp-Shinned Hawk	MSOW	Mexican Spotted Owl
NOGO	Northern Goshawk	LEOW	Long-Eared Owl
		NSWO	Northern Saw-Whet Owl
HAHA	Harris's Hawk		
GRHA	Gray Hawk		
ZTHA	Zone-Tailed Hawk		
CBHA	Common Black-Hawk		
RTHA	Red-Tailed Hawk		
SWHA	Swainson's Hawk		
FEHA	Ferruginous Hawk		
OSPR	Osprey		
GOEG	Golden Eagle		
BAEL	Bald Eagle		
AMKE	American Kestrel		
PRFA	Prairie Falcon		
PEFA	Peregrine Falcon		

AGE:

Code	Definition
A	Adult
J	Juvenile
N	Nestling

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

POINT TRANSECT RAPTOR SURVEY

Biologists M. J. Cross
Lori Furrest

Date 6-21-2011

Site _____

Survey Start Time 1857

Survey End Time 1907

Map _____

[illegible]

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

numerous TUVU's continuously present. Some soaring over
obscure, other nesting on cliffs south
of Queen Creek near Skyline.

Chain of Custody

Field Biologist Signature

Data Entry Signature

Supervisor Signature

Data Proofing Signature

POINT TRANSECT RAPTOR SURVEY

SPECIES:

Code	Species Name	Code	Species Name
NONE	No Species Detected	BAOW	Barn Owl
BLVU	Black Vulture	FLOW	Flammulated Owl
TUVU	Turkey Vulture	WSOW1	Western Screech-Owl
		WSOW2	Whiskered Screech-Owl
NOHA	Northern Harrier	GHOW	Great Horned Owl
WTKI	White-Tailed Kite	NPOW	Northern Pygmy-Owl
MIKI	Mississippi Kite	CFPO	Cactus Ferruginous Pygmy Owl
		ELOW	Elf Owl
COHA	Cooper's Hawk	BUOW	Burrowing Owl
SSHA	Sharp-Shinned Hawk	MSOW	Mexican Spotted Owl
NOGO	Northern Goshawk	LEOW	Long-Eared Owl
		NSWO	Northern Saw-Whet Owl
HAHA	Harris's Hawk		
GRHA	Gray Hawk		
ZTHA	Zone-Tailed Hawk		
CBHA	Common Black-Hawk		
RTHA	Red-Tailed Hawk		
SWHA	Swainson's Hawk		
FEHA	Ferruginous Hawk		
OSPR	Osprey		
GOEG	Golden Eagle		
BAEL	Bald Eagle		
AMKE	American Kestrel		
PRFA	Prairie Falcon		
PEFA	Peregrine Falcon		

AGE:

Code	Definition
A	Adult
J	Juvenile
N	Nestling

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

Date 3-15-2011

Site Resolution - oak flat
Map

3-16 ↓
2011

Oak flat; water or choppy, boulder stream, mixed canyon, thick
brush with some large trees in canyon bottoms & flats.

Data Proofing Signature

Biologists mite Cross
Ben Rachtgen

Site Oak Flat

Survey Start Time 1920

Survey End Time 2136

Map _____

[illegible]

Field Biologist Signature Brian Kallen
Data Entry Signature _____

Supervisor Signature _____

Data Proofing Signature _____

PASSIVE LISTENING OWL SURVEY

Biologists Mike CROSS
LORE FIREST

Date 6-20-2011

Site Oak Flnt

Survey Start Time 2018

Survey End Time 2218

Map _____

[illegible]

Chain of Custody

Field Biologist Signature _____

Data Entry Signature

Supervisor Signature

Data Proofing Signature

PASSIVE LISTENING OWL SURVEY

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

SPECIES:

Code	Species Name
NONE	No Owl Species Detected
BAOW	Barn Owl
LEOW	Long-Eared Owl
WSOW2	Whiskered Screech-Owl
FLOW	Flammulated Owl
WSOW1	Western Screech-Owl
ELOW	Elf Owl
GHOW	Great Horned Owl
MSOW	Mexican Spotted Owl
NPOW	Northern Pygmy-Owl
CFPO	Cactus Ferruginous Pygmy Owl
BUOW	Burrowing Owl
NSWO	Northern Saw-Whet Owl

DIRECTION:

compass bearing for estimated direction of call (°)

EST. DISTANCE:

estimated distance to calling owl (m)

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
Data Entry Signature _____ Data Proofing Signature _____

PASSIVE LISTENING OWL SURVEY

Biologists Mike Cross
Lori Farrest

Date 6-21-2011

Site Oak Flat

Survey Start Time 2020

Map

Survey End Time 7218


[illegible]

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

Interw. Chaparral interspersed w/ Bulrush.

Chain of Custody

Field Biologist Signature

Data Entry Signature 

Supervisor Signature _____

Data Proofing Signature _____

PASSIVE LISTENING OWL SURVEY

SPECIES:

Code	Species Name
NONE	No Owl Species Detected
BAOW	Barn Owl
LEOW	Long-Eared Owl
WSOW2	Whiskered Screech-Owl
FLOW	Flammulated Owl
WSOW1	Western Screech-Owl
ELOW	Elf Owl
GHOW	Great Horned Owl
MSOW	Mexican Spotted Owl
NPOW	Northern Pygmy-Owl
CFPO	Cactus Ferruginous Pygmy Owl
BUOW	Burrowing Owl
NSWO	Northern Saw-Whet Owl

DIRECTION:

compass bearing for estimated direction of call (°)

EST. DISTANCE:

estimated distance to calling owl (m)

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
Data Entry Signature _____ Data Proofing Signature _____

POINT TRANSECT RAPTOR SURVEY

pp 1 of 3

Biologists Nike Cross
Jane Z. Here

Date 3-15-2011

Survey Start Time 1150
Survey End Time 1809

Site Resolution Far west
Map _____

Point	Start Time	End Time	Species	Age	Notes
1	1150	1200	TUVU	A	Photos 0551, 0552, 0553, 0554 (NESW) One TUVU over Dome Day Peak to East.
2	1205	1215	TUVU	A	Photos 0555, 0556, 0557, 0558 (NESW) 3 TUVU 1000m East.
3	1222	1232	HAAA TUVU	A A	Photos 0559, 0560, 0561, 0562 0562, 0563, 2 HAAA Soaring over truck ~200' high 0564 3 TUVU Soaring over truck ~500' high.
4	1238	1248	TUVU RTHA	A A	Photos: 0565, 0566, 0567, 0568 2 TUVU 1km to East 1 RTHA to SE 400m
5	1251	1301	HAAA TUVU RTHA	A A A	Photos: 0569, 0570, 0571, 0572 2 HAAA 500m SW; flying low & vocalizing 1 TUVU 1km W Soaring over cell station @ ~300'
6	1306	1316	TUVU RTHA	A A	Photos: 0573, 0574, 0575, 0576 1 TUVU 400m S, 3 TUVU 800m E, 1 TUVU 400m W 1 RTHA ~700m SW
7	1319	1329	TUVU	A	Photos: 0577, 0578, 0579, 0580 (NESW) 1 TUVU 100m E; 3 TUVU 1.5km E
8	1333	1343	TUVU	A	Photos: 0581, 0582, 0583, 0584 1 TUVU 200m NE
9	1347	1357	TUVU	A	Photos: 0585, 0586, 0587, 0588 1 TUVU 800m SE; 1 TUVU 500m W

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

Upper Sonoran Desert scrub; Ironwood, Palo Verde, mesquite, chain fru
clothes, triangle leaf cactus etc. Hills on East side, flat
on west dissected by washes flowing E → W.

Chain of Custody

Field Biologist Signature [Signature]
Data Entry Signature _____

Supervisor Signature _____
Data Proofing Signature _____

POINT TRANSECT RAPTOR SURVEY

PD 2 of 3

Biologists Mike Cross
Jodie ZitterDate 3-15-2011Survey Start Time 1150Survey End Time 1809Site Resolution for West

Map _____

Point	Start Time	End Time	Species	Age	Notes
10	1400	1410	_____	_____	Photos 0589, 0590, 0591, 0592 (NE SW)
11	1413	1423	_____	_____	Photos 0593, 0594, 0595, 0596
12	1427	1437	_____	_____	Photos 0597, 0598, 0599, 0600, 0601 * Killer Bees in hive in wash!
13	1455	1505	_____	_____	Photos; 0601, 0602, 0603, 0604 1 RTHA 300m NW ; 1 RTHA 300m NW
14	1516	1526	_____	_____	Photos; 0605, 0606, 0607, 0608 1 TUVU 300m N;
15	1531	1541	_____	_____	Photos; 0609, 0610, 0611, 0612 1 HAWA perched atop Sycamore 300m N 1 TUVU 800m N
16	1555	1605	_____	_____	Photos; 0613, 0614, 0615, 0616 1 RTHA 1200m E 2 TUVU 1500m S
17	1615	1625	_____	_____	Photos; 0618, 0619, 0620, 0621 1 TUVU 600m S
18	1629	1639	_____	_____	Photos; 0622, 0623, 0624, 0625 2 TUVU 300m N; 1 TUVU 1 RTHA 200m S
19	1643	1653	_____	_____	Photos; 0627, 0628, 0629, 0630
20	1657	1707	_____	_____	Photos; 0631, 0632, 0633, 0634
21	1719	1729	_____	_____	Photos; 0635, 0636, 0637, 0638

* See Reverse for info.

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

See pp 1 of 3

Chain of Custody

Field Biologist Signature

Data Entry Signature

Supervisor Signature

Data Proofing Signature

1550 AMKE; American Kestrel incidentally observed
perched atop Roadside saguaro @ 0475345 E, 3676850 N
kestrel flew off.

POINT TRANSECT RAPTOR SURVEY

Biologists Mike Chris
Jack Zitler

Date 3-15-2011

Site Resolution far West

Map _____

Survey Start Time 1150

Survey End Time 1509

[illegible]

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

See pg 1 of 3

Chain of Custody

Field Biologist Signature

Data Entry Signature

Supervisor Signature

Data Proofing Signature

POINT TRANSECT RAPTOR SURVEY

Biologists Mike Cross
Ben Rackman

Date 4-27-11

Survey Start Time 0834
Survey End Time 1413

Site Far West
Map _____

Point	Start Time	End Time	Species	Age	Notes
19	0834	0844	-	-	
20	0848	0858	-	-	
21	0909	0920	-	-	
22	0925	0936	TUVU	A	1 TUVU
23	0942	0952	HAHA	A	1 HAAA perched on saguaro
24	0955	1005	TUVU	A	4 TUVU soaring to the west
1	1018	1028	TUVU	A	1 TUVU
2	1033	1045	-	-	2 men shooting rifles at targets, North of survey point
3	1050	1100	TUVU	A	
4	1107	1117	-	-	
5	1119	1129	-	-	
6	1133	1143	-	-	
7	1146	1156	TUVU	A	1 TUVU
15	1203	1213	-	-	
14	1217	1234	HAHA	A	4 HAAA perched and hovering in a group
13	1237	1247	-	-	
8	1251	1301	TUVU	A	1 TUVU
9	1304	1314	TUVU	A	1 TUVU
10	1316	1326	-	-	
11	1328	1338	TUVU	A	2 TUVU
12	1341	1351	RTHA, TUVU	A, A	1 RTHA, 1 TUVU
16	1403	1413	-	-	

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

Arizona upland desertscrub

Chain of Custody

Field Biologist Signature _____

Data Entry Signature _____

Supervisor Signature _____

Data Proofing Signature _____

POINT TRANSECT RAPTOR SURVEY

Biologists M. Cross
C. Archer

Date 5-13-2011

Site FAR WEST

Survey Start Time 0720
Survey End Time ~~0730~~ 0744

Map

[illegible]

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

Sumner Desert Scrub; flat with moderately increased washes, Clolla & Coccoloba dominate phaner, Saguaro present, Ironwood, Palo Verde, mesquite in washes

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
Data Entry Signature _____ Data Proofing Signature _____

W:\jobs\800's\807.43 Work Plans\Raptor Surveys\

POINT TRANSECT RAPTOR SURVEY

pp 1 of 2

Biologists Mike Cross
Lori Farrent

Date 6-22-2011

Site FAR WEST

Survey Start Time 0713

Map _____

Survey End Time 1317

Point	Start Time	End Time	Species	Age	Notes
1	0713	0723 0723	/	/	No Observations
2	0725				
3	0726	0726	AMKE	A	OFF transect, 475221: 3678486
4	0729	0739	TUVU	A	20 TUVU Soaring 2K @ 170°
5	0745	0755	TUVU	A	2 TUVU Soaring 1K @ 0°
6	0803	0813	TUVU	A	4 TUVU Soaring
7	0817 0817	0827	TUVU	A	1 TUVU Soaring
8	0831	0841	RTHA	A	750m @ 300°
9	"	"	TUVU	A	300m @ 180°
10	"	"	TUVU	A	600m @ 220°
11	0845	0855	TUVU	A	750m @ 300°
12	0900	0910	TUVU	A	2 TUVU @ 600m 300°
13	0916	0926	TUVU	A	1 TUVU @ 1K @ 320°
14	0929	0939	TUVU	A	1 TUVU @ 200° 600m
15	0947	0957	HAHA	A	1 HAHA Soaring at 180°, 300m
16	1004	1014	TUVU	A	1 TUVU @ 500m 210°
17	1022	1032	/	/	No Observations
18	1035	1045	TUVU	A	1 TUVU 1K @ 260°
19	1048	1058	TUVU	A	1 TUVU 500m @ 270°
20	1100	1110	/	/	No Observations
21	1112	1122	/	/	No Observations
22	1124	1124	RTHA	A	Perched on Saguaro, off Transect 100m N of 472640 / 3675302
23	1131	1141	HAHA	A	Perched at Mohave Tank. Flushed by observer

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

flat; traversed w/ washes. Upland Sonoran Desert Scrub.

Chain of Custody

Field Biologist Signature _____

Data Entry Signature _____

Supervisor Signature _____

Data Proofing Signature _____

POINT TRANSECT RAPTOR SURVEY

SPECIES:

Code	Species Name	Code	Species Name
NONE	No Species Detected	BAOW	Barn Owl
BLVU	Black Vulture	FLOW	Flammulated Owl
TUVU	Turkey Vulture	WSOW1	Western Screech-Owl
		WSOW2	Whiskered Screech-Owl
NOHA	Northern Harrier	GHOW	Great Horned Owl
WTKI	White-Tailed Kite	NPOW	Northern Pygmy-Owl
MIKI	Mississippi Kite	CFPO	Cactus Ferruginous Pygmy Owl
		ELOW	Elf Owl
COHA	Cooper's Hawk	BUOW	Burrowing Owl
SSHA	Sharp-Shinned Hawk	MSOW	Mexican Spotted Owl
NOGO	Northern Goshawk	LEOW	Long-Eared Owl
		NSWO	Northern Saw-Whet Owl
HAHA	Harris's Hawk		
GRHA	Gray Hawk		
ZTHA	Zone-Tailed Hawk		
CBHA	Common Black-Hawk		
RTHA	Red-Tailed Hawk		
SWHA	Swainson's Hawk		
FEHA	Ferruginous Hawk		
OSPR	Osprey		
GOEG	Golden Eagle		
BAEL	Bald Eagle		
AMKE	American Kestrel		
PRFA	Prairie Falcon		
PEFA	Peregrine Falcon		

AGE:

Code	Definition
A	Adult
J	Juvenile
N	Nestling

Chain of Custody

Field Biologist Signature _____

Supervisor Signature _____

Data Entry Signature _____

Data Proofing Signature _____

POINT TRANSECT RAPTOR SURVEY

Biologists Nick Gross
Luci Farrest.

Date 6-22-2011

Site FAR WEST

Survey Start Time 0713

Map

Survey End Time 1317

[illegible]

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

See Previous

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____

<u>Data Entry Signature</u>	<u>Data Proofing Signature</u>
-----------------------------	--------------------------------

POINT TRANSECT RAPTOR SURVEY

SPECIES:

Code	Species Name	Code	Species Name
NONE	No Species Detected	BAOW	Barn Owl
BLVU	Black Vulture	FLOW	Flammulated Owl
TUVU	Turkey Vulture	WSOW1	Western Screech-Owl
		WSOW2	Whiskered Screech-Owl
NOHA	Northern Harrier	GHOW	Great Horned Owl
WTKI	White-Tailed Kite	NPOW	Northern Pygmy-Owl
MIKI	Mississippi Kite	CFPO	Cactus Ferruginous Pygmy Owl
		ELOW	Elf Owl
COHA	Cooper's Hawk	BUOW	Burrowing Owl
SSHA	Sharp-Shinned Hawk	MSOW	Mexican Spotted Owl
NOGO	Northern Goshawk	LEOW	Long-Eared Owl
		NSWO	Northern Saw-Whet Owl
HAHA	Harris's Hawk		
GRHA	Gray Hawk		
ZTHA	Zone-Tailed Hawk		
CBHA	Common Black-Hawk		
RTHA	Red-Tailed Hawk		
SWHA	Swainson's Hawk		
FEHA	Ferruginous Hawk		
OSPR	Osprey		
GOEG	Golden Eagle		
BAEL	Bald Eagle		
AMKE	American Kestrel		
PRFA	Prairie Falcon		
PEFA	Peregrine Falcon		

0590
0630
1400

AGE:

Code	Definition
A	Adult
J	Juvenile
N	Nestling

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

PASSIVE LISTENING OWL SURVEY

Biologists	Mike Cross
	Ben Rackham

Date 1-Mar-2011

Site Area D

Map _____

Survey Start Time 1847

Survey End Time 2150

[illegible]

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

Sonoran uplands; saguaro, palo verde, large ironwoods

Chain of Custody

Field Biologist Signature 

Supervisor Signature_____

Data Entry Signature _____

PASSIVE LISTENING OWL SURVEY

Biologists

Date _____

Survey Start Time

Site

Map

[illegible]

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

Chain of Custody

Field Biologist Signature _____

Data Entry Signature

Supervisor Signature

Data Proofing Signature

PASSIVE LISTENING OWL SURVEY

Biologists

Mike Cross
Jack Zitter

Date _____

4-4-2011

Site

Resolution West

Map

Survey Start Time

1948

Survey End Time

2302

[illegible]

* compass malfunction (Estimate)

Chain of Custody

Field Biologist Signature

Data Entry Signature

Supervisor Signature

Data Proofing Signature

PASSIVE LISTENING OWL SURVEY

Biologists	Mike	Cross
	Jack	Zithare


Date 4-5-2011

Survey Start Time 1847
Survey End Time 2137

Site Resolution FAR WEST
Map _____

[illegible]

Chain of Custody

Field Biologist Signature 

Data Entry Signature _____

Supervisor Signature_____

Data Proofing Signature _____

* Far West Archaeology Crew
4-27-11

G.H. Owl fledglings X2

Nest high in mature saguaro

Sec 23 N 3677400 E 473086 (NAD83)

(See Adam Marshall Photos)

PASSIVE LISTENING OWL SURVEY

Biologists Mike Cross
Laurie Farrent

Date 6-22-2011

Survey Start Time 2032
Survey End Time 0011

Site FAR WEST
Map _____

Different
birds -

Point	Start Time	End Time	Species	Direction	Est. Distance	Notes
1	2032	2042	/	/	/	No Observation
2	2045	2055	ELow	45	100 m	1 ELow Vocalizing
3	2100	2110	/	/	/	No Observation
4	2114	2124	/	/	/	" "
5	2128	2138	ELow	180	50 m	1 ELow Vocalizing
6	2142	2152	WSow1	200	400 m	1 WSow1 Vocalizing
7	2157	2207	WSow1	150	40 m	" "
8	2210	2220	ELow	340	300	1 ELow Vocalizing
8	2210	2220	ELow	340	300	1 ELow Vocalizing
8	"	"	ELow	45	300	1 ELow Vocalizing
9	2226	2236	/	/	/	NONE
10	2240	2250	ELow	0	500	1 ELow Vocalizing
11	2253	2303	/	/	/	NONE
12	2310	2320	/	/	/	NONE
13	2330	2340	/	/	/	NONE
14	2346	2356	/	/	/	NONE
15	0001	0011	/	/	/	NONE

Chain of Custody

Field Biologist Signature _____
Data Entry Signature _____

Supervisor Signature _____

Data Proofing Signature _____

PASSIVE LISTENING OWL SURVEY

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

SPECIES:

Code	Species Name
NONE	No Owl Species Detected
BAOW	Barn Owl
LEOW	Long-Eared Owl
WSOW2	Whiskered Screech-Owl
FLOW	Flammulated Owl
WSOW1	Western Screech-Owl
ELOW	Elf Owl
GHOW	Great Horned Owl
MSOW	Mexican Spotted Owl
NPOW	Northern Pygmy-Owl
CFPO	Cactus Ferruginous Pygmy Owl
BUOW	Burrowing Owl
NSWO	Northern Saw-Whet Owl

DIRECTION:

compass bearing for estimated direction of call (°)

EST. DISTANCE:

estimated distance to calling owl (m)

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
Data Entry Signature _____ Data Proofing Signature _____

PASSIVE LISTENING OWL SURVEY

Biologists

Mike Cross
Laurie Furrer

Date 6-26-2011

Site FAR WEST

Map _____

Survey Start Time 2010

Survey End Time 2220

[illegible]

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

Chain of Custody

Field Biologist Signature

Data Entry Signature _____

Supervisor Signature _____

Data Proofing Signature

PASSIVE LISTENING OWL SURVEY

SPECIES:

Code	Species Name
NONE	No Owl Species Detected
BAOW	Barn Owl
LEOW	Long-Eared Owl
WSOW2	Whiskered Screech-Owl
FLOW	Flammulated Owl
WSOW1	Western Screech-Owl
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GHOW	Great Horned Owl
MSOW	Mexican Spotted Owl
NPOW	Northern Pygmy-Owl
CFPO	Cactus Ferruginous Pygmy Owl
BUOW	Burrowing Owl
NSWO	Northern Saw-Whet Owl

DIRECTION:

compass bearing for estimated direction of call (°)

EST. DISTANCE:

estimated distance to calling owl (m)

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
Data Entry Signature _____ Data Proofing Signature _____

DEVILS CANYON CLIFF SURVEY

Personnel: Mike Cross / Jack E. Hare
 Survey Location: North Pipe Springs Cliffs
 Visit #: 1
 Date: 4-6-2011
 Start Time: 0914 End Time: 1014

Temperature: 80°
 Cloud Cover (%): 100
 Wind Code: 0 1 2 3 4 5
 (Beaufort scale):

General Site Comments: Cliffs on East side of Devils Canyon where Elk Tank trail meets Devils Canyon. No evidence of Raptor habitation (no white wash, nests, etc.)

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
0914-1014	numerous Turkey Vultures soaring over canyon	TUVU	1	

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

DEVILS CANYON CLIFF SURVEY

Personnel: Nate Cross
 Survey Location: South Pipe Springs Cliffs
 Visit #: 1
 Date: 4-6-2011
 Start Time: 1210 End Time: 1310

Temperature: 80
 Cloud Cover (%): 100
 Wind Code: 0 1 2 (3) 4 5
 (Beaufort scale):

General Site Comments: A series of sheer cliffs on East side of Devils Canyon between Pipe Springs and Rawhide Canyon confluence. Evidence of breeding raptors (Prairie Falcon) observed here in prior years.

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
1215	1 adult golden eagle seen soaring over cliff. Disappears up side canyon	GOEG	1	
1216	1 adult red-tailed hawk seen soaring over cliff	RTHA	1	
1215-1310	Obvious eyrie visible on cliff. Whitewash No birds observed must be eyrie on ledge. Too small for GOEG. Suspect Falcon	?	2	1
cont...				

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

APACHE LEAP CLIFF SURVEY

Personnel: Mike Cross / Mike Wender
 Survey Location: Devils Canyon Cliff 1 CDC Cliff 1 OP
 Visit #: 1
 Date: 5-24-2011
 Start Time: 1730 End Time: 1930

Temperature: 82
 Cloud Cover (%): 0
 Wind Code: 0 1 2 3 4 5
 (Beaufort scale):

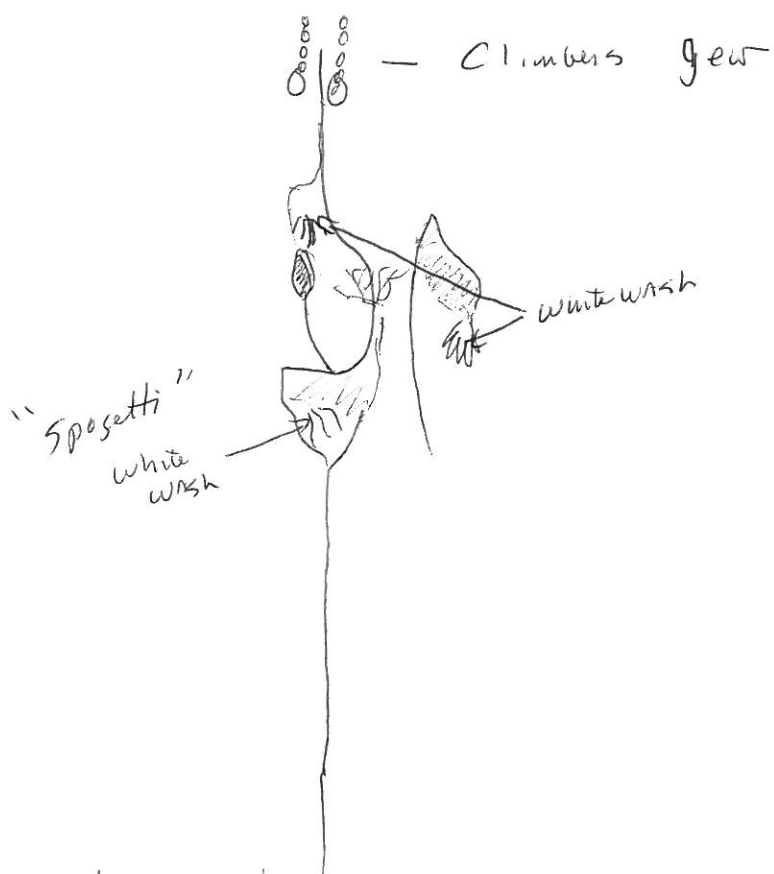
General Site Comments: ~~Observed~~ 497224 / 3681898 is location of observation post

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
1735	1 TUVU soars in canyon	TUVU	1	/
1740	white wash atop rock in Hondo crevasse on W side of canyon	?	2	/
1803	2 TUVU flying along canyon at tree top level	TUVU	1	/
1807	6 TUVU flying over canyon	TUVU	1	/
1810	Possible eyne on west face of cliff face. (OVER) 90°F	Falco spp.	2, 1	/
1830	Raptor vocalization from canyon bottom ee ee ee ee ...	?	1 (vocalization)	/
1838	Blackhawk flies in canyon	CBHA	1	/
1835	One unidentified (either CBHA or Z+HA) flying in canyon	?	1	/
1902	Peregrine vocalizes, then is visible flying over cliff. (OVER)	CBHA PEFA	1	7

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____



* Site of probable peregrine sign / potential eyrie.
 Classic "spaschetti" white wash pattern indicative of
 Falcons. This white wash is associated
 with suitable potential eyries / ledges.
 Discarded climbers gear visible above possible
 eyrie; strings of carbines. Potential eyrie is 90° E
from DLOP1.

** Peregrine Falcon vocalizes at 1902,
 flies back and forth across cliff
 face, territorial interaction with TUVU which
 is grappled / tumbled by Falcon and then released.
~~Peregrine~~ Peregrine then flies downstream out of site
 then ~~returns~~ returns and ~~possibly~~ possibly disappears
 into a crevasse N of original potential
 eyrie at 1907.


DEVILS CANYON CLIFF SURVEY

Personnel: Mike Cross / Lori Forrest
 Survey Location: Devils Canyon
 Visit #: 2
 Date: 6-20-2011
 Start Time: 1900 End Time: _____

Temperature: _____
 Cloud Cover (%): 0
 Wind Code 0 1 2 3 4 5
 (Beaufort scale): _____

General Site Comments: West facing cliff in Devils Canyon.

OBSERVATIONS

Time:	Observation Description:	Species	Evidence of Habitation	Evidence of Breeding
1905	7 TUVV's Sounding over canyon	TUVV	1	/
1910	3 TUVV's perched on cliff 100 m S of Observers	TUVV	1	/
1911	7 TUVV's Roosting atop cliff ≈ 100 m S of Observers (Roost!)	TUVV	1	/
1916	3 TUVV's Roosting atop cliff on E side of canyon	TUVV	1	/
1918	Z+HA carrying prey	Z+HA		5
1932-1940	PEFA; Peregrin vocalizing from west cliff	PEFA	1, 2, 3	2
1936-1940	2nd PEFA PEFA flies back and forth along cliff. 1st bird continues	PEFA	1, 2, 3	2

*
over

PEFA.

* Young Peregrins heard vocalizing on ~~6-12-2011~~ 6-13-2011

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____

KEY:

Wind Code:	0 Calm. Smoke rises vertically.
	1 Smoke drift indicates wind direction.
	2 Wind felt on face; leaves rustle.
	3 Leaves and small twigs moving.
	4 Dust and loose paper raised.
	5 Branches move; small trees sway.
Evidence of Habitation	1 direct observation of a raptor
	2 observation of whitewash
	3 observation of a stick nest
Evidence of Breeding	1 presence of a nest or eyrie
	2 young in nest
	3 adult in nest in incubation posture
	4 mating behavior
	5 prey deliveries
	6 nest maintenance
	7 adult near nest

* 2 Adult peregrines seen flying in area.
Young can be heard vocalizing. Eyrie may
be behind large spire, out of view. ~~Obs~~
Cliff does contain an eyrie, exact
location of Eyrie is unknown

Chain of Custody

Field Biologist Signature



Supervisor Signature

Data Entry Signature

Data Proofing Signature

DEVILS CANYON RAPTOR SURVEY

Biologists Mike Cross
Jack Zitter

Date 4-5-2011

Survey Start Time 0830
Survey End Time 1230

Site Devil's Canyon
Map _____

Transect	Start Time	Start UTM (NAD 83)		End Time	End UTM (NAD 83)		Notes
		Easting	Northing		Easting	Northing	
	0830	496785	3682161	1230	497601	3680807	Canyon has cliff barrier at survey terminus.

OBSERVATIONS:

Time	Location (NAD 83)		Species	Age	Number	Notes
	Easting	Northing				
0844	497009	3682236	RTHA	A	1	1 RTHA soaring over Rando R. o Canyon just upstream of Devils confluence. (10°)
0855	497083	3682249	TUVU (Z)	A A	2	2 TUVU flushed off trail; Perched on cliff 1000, 200 m
1104	497493	3681474	CBHA (Z)	A A	2	2 CBHA flushed from Ash tree. ♂ vocalizes at observers. Pair flies upstream Point saved as HBBLACKHAWKS 4-5-2011

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____
Data Entry Signature _____ Data Proofing Signature _____

DEVILS CANYON RAPTOR SURVEY

Biologists Mike Cross
Jack Zitter.

Date 4-6-2011

Survey Start Time 0730

Site Devils Canyon South

Survey End Time 1236

Map _____

Transect	Start Time	Start UTM (NAD 83)		End Time	End UTM (NAD 83)		Notes
		Easting	Northing		Easting	Northing	
Devils Canyon	0730	496390	3678738	1236			

(see 551)

OBSERVATIONS:

* eye on cliff →
whitewash on ledge →

Time	Location (NAD 83)		Species	Age	Number	Notes
	Easting	Northing				
1215	498734	3678692	GOEG	A	1	1 golden eagle soaring over cliff
1216	" "	" "	RTHA	A	1	1 RTHA soaring over cliff
1228	(See wp BT1) (See wp BT1)		CBHA	A	1	Poached in large cottonwood (WP BT1)

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____

Data Entry Signature _____ Data Proofing Signature _____

DEVILS CANYON RAPTOR SURVEY

Biologists Mike Cross
Mike Wendell

Date 5-25-2011

Survey Start Time 0800

Survey End Time 1400

Site Devils Canyon

Map _____

Transect	Start Time	Start UTM (NAD 83)		End Time	End UTM (NAD 83)		Notes
		Easting	Northing		Easting	Northing	
	0830	see previous		1143	497606	3680815	Cascades/cliffs make further progress impossible

OBSERVATIONS:

Time	Location (NAD 83)		Species	Age	Number	Notes
	Easting	Northing				
1030	497414	3681827	ZTHA	A + N	Z (Nestlings present but uncounted)	ZTHA Pair Defending nest in large Alder tree at Sycamore Spring
1340	"	"	CBHA ZTHA	A A + N	Z Z + N	At Z+HA nest. Part of CBHA Interacting with Z+HA @ Nest.

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____

Data Entry Signature _____ Data Proofing Signature _____

DEVILS CANYON RAPTOR SURVEY

Biologists M. Cross
M. Wendell

Date 5-26-2011

Survey Start Time 1000
Survey End Time 1400

Site Lower Devils Canyon
Map _____

Transect	Start Time	Start UTM (NAD 83)		End Time	End UTM (NAD 83)		Notes
		Easting	Northing		Easting	Northing	
	1000	498097	3679223	1339	498957	3678690	

OBSERVATIONS:

Time	Location (NAD 83)		Species	Age	Number	Notes
	Easting	Northing				
1240	498097 498658	3679223 3678727	CBHA	A	1	CBHA 1st spotted flapping from tree. Lands briefly on Bush, then Flies down out of view
1243	498658	3678727	CBHA	A	1	CBHA Soaring high overhead. Possible same animal as previous. Driven off by RTHA @ 1245
1245	498658	3678727	RTHA	A	1	RTHA Soaring over canyon. Drives off CBHA
1432	498194	3679094	CBHA	A	2	2 CBHA Soaring over canyon; 1 stooping and harassing the other. Territorial dispute?

Chain of Custody

Field Biologist Signature [Signature] Supervisor Signature _____
Data Entry Signature _____ Data Proofing Signature _____

DEVILS CANYON RAPTOR SURVEY

Biologists Nick Cross
Ken Emmert ; Bill Fritz

Date 6-21-2011

Survey Start Time 0730

Survey End Time 1300

Site Devils Canyon

Map _____

Transect	Start Time	Start UTM (NAD 83)		End Time	End UTM (NAD 83)		Notes
		Easting	Northing		Easting	Northing	
	0730	496788	3682161	1300	497601 1300	3680807	

OBSERVATIONS:

Time	Location (NAD 83)		Species	Age	Number	Notes
	Easting	Northing				
08:17	493167	3685358	COBH	A	1	1 Black hawk vocalizing in vicinity of probable nest. Vocalize at close range.
10:30	493174	3685371	COBH	A	1	1 Black hawk vocalizes.
11:15	497112	3682258	RTHA	A	1	1 RTHA soaring, lands on hoodoo out of sight.
11:15	497112	3682258	TUVV	A	3	3 TUVV soaring.

X Perched / Foraging COBH seen at Pond near point 7 (_____)

Chain of Custody

Field Biologist Signature [Signature]

Supervisor Signature _____

Data Entry Signature _____

Data Proofing Signature _____

DEVILS CANYON RAPTOR SURVEY

General Description: Please describe vegetative cover, slope, overall aspect, etc. within area of survey.

SPECIES:

Code	Species Name	Code	Species Name	Code	Species Name
NONE	No Species Detected	HAHA	Harris's Hawk	BAOW	Barn Owl
BLVU	Black Vulture	GRHA	Gray Hawk	FLOW	Flammulated Owl
TUVU	Turkey Vulture	ZTHA	Zone-Tailed Hawk	WSOW1	Western Screech-Owl
		CBHA	Common Black-Hawk	WSOW2	Whiskered Screech-Owl
NOHA	Northern Harrier	RTHA	Red-Tailed Hawk	GHOW	Great Horned Owl
WTKI	White-Tailed Kite	SWHA	Swainson's Hawk	NPOW	Northern Pygmy-Owl
MIKI	Mississippi Kite	FEHA	Ferruginous Hawk	CFPO	Cactus Ferruginous Pygmy Owl
				ELOW	Elf Owl
COHA	Cooper's Hawk	OSPR	Osprey	BUOW	Burrowing Owl
SSHA	Sharp-Shinned Hawk	GOEG	Golden Eagle	MSOW	Mexican Spotted Owl
NOGO	Northern Goshawk	BAEL	Bald Eagle	LEOW	Long-Eared Owl
				NSWO	Northern Saw-Whet Owl
		AMKE	American Kestrel		
		PRFA	Prairie Falcon	AGE:	
		PEFA	Peregrine Falcon	Code	Definition
				A	Adult
				J	Juvenile
				N	Nestling

Chain of Custody

Field Biologist Signature _____ Supervisor Signature _____
 Data Entry Signature _____ Data Proofing Signature _____