

# Unit 16A Predation Management Plan

April 2015



Arizona Game and Fish Department  
5000 West Carefree Highway  
Phoenix, Arizona 85086

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APPROVED:  DATE: 4/9/15  
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## **Introduction**

The Unit 16A Predation Management Plan (Plan) is an area-specific plan that has been developed to address mountain lion and coyote management within Game Management Unit (Unit) 16A for the benefit of mule deer populations. The Plan follows the spirit and guidance of the Arizona Game and Fish Commission (Commission) contained within Species Management Guidelines, the Predation Management Policy (DOM A2.31), and the Arizona Game and Fish Department (Department) Predator Management Team Report. Predation management plans must be dynamic over time, to incorporate changes that occur from environmental biotic and abiotic factors, in addition to new data and technologies.

Specifically, the Department's Predation Management Policy states:

“Actions by the Department should be based on the best available scientific information. Mountain lions and coyotes will be managed to ensure their future ecological, intrinsic, scientific, educational, and recreational values, to minimize conflict with humans, and to minimize adverse impacts on other wildlife populations.

The Department will develop area-specific management plans when either of these two species is considered to be inhibiting the ability of the Department to attain management goals and objectives for other wildlife species.”

Furthermore, the Department's Predator Management Team Report states that “predators and their prey cannot be managed separately” and that “as a Department we must strive to develop the biological and social data necessary to manage predators with a program that is biologically sound and publicly acceptable.”

There are several objectives identified within this Plan which are in concert with the Department's Strategic Plan Wildlife 20/20, current hunt guidelines, the Unit 16A Management Focus Area (MFA) Plan and the Wildlife Habitat Enhancement Initiatives (WHEI) projects to enhance mule deer populations within the project area.

- Wildlife 20/20
- 2014-2016 Hunt Guidelines
- Unit 16A MFA identifies mule deer and bighorn sheep as the focal species for the unit.
- Unit 16A was identified by the Game Program's WHEI as a focus area for enhancing mule deer populations through habitat enhancement projects.

## **Description of Area**

The project area consists of portions of Unit 16A located in Mohave County, Arizona. The unit boundary: beginning at Kingman exit 48 on Interstate 40; south and west on Interstate 40 to AZ Hwy 95 exit 9; southerly on AZ Hwy 95 to the Bill Williams River; easterly along the Bill Williams and Santa Maria Rivers to US Hwy 93; north and west along US Hwy 93 to Interstate 40; west along Interstate 40 to Kingman exit 48.

The unit consists of more than 2,500 mi<sup>2</sup>. Elevation is highly variable throughout the unit, with elevations ranging from less than 1,000' along the Bill Williams River to over 8,400 feet at the top of the Hualapai Mountains. Topography is composed of vertical cliff faces, steep and rugged canyons, mesas, boulder-strewn terrain, rolling hills, scattered grasslands, and high elevation conifer forests.

The Hualapai Mountains form a prominent range that extends southeast of the town of Kingman in Mohave County, Arizona through the central portions of the unit. This mountain range is surrounded by desert plains that drain into the Big Sandy River to the east and the Sacramento Wash to the west. There are a series of small mountain ranges which are spread out from east to west along the southern portions of the unit.

The majority of Unit 16A is made up of the Hualapai Mountains, a sky island habitat which grades from semi-desert grassland on the north end, Mohave Desert scrub on the east and west sides of the mountain range, with a transition to Arizona Upland and Lower Colorado River Sonoran Desert Shrub in the southern mountain ranges (Mohave, Bill Williams, Rawhide and Little Black Mountains), and upper and lower Sonoran Desert in the southern third. The Hualapai Mountains are located southeast of Kingman and are comprised of Interior Chaparral with Petran Montane Conifer Forest in the high elevations.

A large portion of the land is managed by the Bureau of Land Management (BLM) and responsibilities are divided between the Kingman and Havasu field offices. The Havasu field office handles the western portion of the unit, while the Kingman field office handles the north and eastern portions of the unit. Small portions of land are managed by the Arizona State Land Department (ASLD), and the remaining portions are owned and managed by private landowners. There is a large tract of private land (primarily divided into 40 acre parcels) in the northwestern portion of the unit, occupying much of Dutch Flats.

Wilderness areas include Aubrey Peak Wilderness with 24 mi<sup>2</sup>, Arrastra Mountain Wilderness with 203 mi<sup>2</sup>, and Wabayuma Peak Wilderness with 61 mi<sup>2</sup>. The northern section of the Rawhide Mountain Wilderness also lies within Unit 16A, providing an additional 30 mi<sup>2</sup>. The northern Hualapai's feature four major peaks: Hayden, Dean, Aspen, and Wabayuma peaks. The Hualapai topography is rugged with steep, rocky slopes and ridges, with numerous boulder strewn drainages throughout the range.

### **Landcover**

The 375 district contains over 1,012,171.00 acres divided among the following ownership: 71% BLM, 21.6% private land, 7.2% ASLD, and 0.2% State Park. The 376 district contains over 1,820,340.00 acres of land divided among the following ownership: 61% BLM, 19% ASLD, 20% private land, and <1% being comprised of Alamo Lake State Park.

### **Statement of Need**

Declines in mule deer populations have received sufficient attention to merit the focus of the Mule Deer Working Group. This working group has developed science-based assessments detailing shortcomings of certain habitats that once supported abundant populations of mule deer (Heffelfinger et al. 2006, Watkins et al. 2007, Zornes and Bishop 2009). Habitat components are one aspect that influence population dynamics and play a pivotal role in mitigating the effects of other variables.

Unit 16A is part of the WHEI in which a minimum of \$400,000 will be spent each year, for a minimum of three years, to improve habitat for mule deer (these monies are Pittman Robertson funds which cannot be used for predator control). Under the WHEI, a large amount of funding has been earmarked for habitat improvement and water distribution improvements in the unit. While habitat is the focus of WHEI, predation has also been identified as a contributing factor to the declining mule deer population in Unit 16A. Habitat quality and predation must both be addressed if expectations are to increase the mule deer population long term. Unit 16A has a high predator population distributed

throughout the area, so by addressing predation management in the short-term and habitat in the long-term, our objectives for the mule deer population should be met.

Unit 16A supported large numbers of mule deer in the past, offering as many as 1,800 permits in the mid-1980s and harvesting 690 mule deer. Permit levels decreased dramatically from 1,000 in 1989 to 700 in 1990-91 to 150 in 1992 and remained below 500 until the early 2000s. Harvest of mule deer hit a low of 34 in 1998; with no more than 50 deer harvested annually between 1992 and 1998. While permit numbers increased in the early 2000s varying between 500-700 permits, the deer harvest has remained below 150 mule deer per year. Current decreases in permit levels have not been drastic, but only 450 permits were offered in 2014.

### **Management Goals, Strategies and Actions**

#### *Management Goals*

The primary goal of this predation management plan is to aid in the recovery of mule deer through the removal of mountain lions and coyotes. Habitat enhancement projects alone may not have the same impact without predation management. Controlling predation on adult mule deer year round and reducing predation on fawns during peak seasons should result in increased fawn recruitment, measured by the fawn: 100 doe ratio, and an overall increase in the mule deer population.

#### *Strategies and Actions*

Ballard et al. (2001) found several factors common in case studies that dictated when predator reductions were effective and prey populations increased. These factors included:

- Predator control is implemented when prey populations are below habitat carrying capacity
- Predation is identified as a limiting factor
- Control takes place at a focused scale (generally <400 mi<sup>2</sup>)

Prior survey data and harvest levels suggest that Unit 16A has the potential to maintain a larger mule deer population. Therefore, several strategies are outlined within this plan that should contribute to achieving our goal. Actions will be taken based on the best available scientific information and the most effective methods that could be taken to reduce the mountain lion and coyote population in the predation management area. All or some of the following may be implemented.

- A. **Multiple Bag Limit Harvest:** Multiple bag limit (MBL) hunts may be offered in a unit to focus and increase lion harvest in units where prey populations are below management objectives and mountain lion predation is implicated as a contributing factor. A MBL hunt structure for mountain lions was initiated in 2007 for the southern portions of Units 16A and 18B for desert bighorn sheep and will continue until the triggers have been met. Through the regular hunt recommendation process the Department will also recommend a MBL hunt structure for mountain lions in the northern portion of Unit 16A with daylong hours. If approved by the Commission the season would start July 1, 2015.
- B. **Coyote Daylong Seasons:** Coyote daylong seasons may be opened for a unit(s) where a prey species is below management goals and coyote predation is believed to be a major contributing factor. Through the regular hunt recommendation process in April 2015 the Department will recommend a daylong coyote season in all of Unit 16A. The Unit 16A daylong season for coyotes will coincide

with the mule deer fawning season from December 1-August 31. If approved by the Commission the season would start July 1, 2015.

- C. **Contract Houndsman:** A contract houndsman may be used to harvest mountain lions in a targeted area identified by the Wildlife Manager and the Region III Game Specialist. The contract houndsman may be hired to remove lions on public and private lands, where permission is granted, during the legal, year-round mountain lion hunt season.
- D. **Contract Predator Hunter:** Contract predator hunters can be used to target removal of predators in a specific area. A contract hunter may be hired to remove coyotes and/or mountain lions on public and private lands, where permission is granted, during the legal hunt season for that species. Contract hunters will be recommended from January through August. Although coyotes will be targeted it is possible that an occasional predator/furbearer species may be harvested.
- E. **Contract Trapper:** Contract trappers can be very successful in targeting removal of certain predators from an area (Conover 2001, Rohwer and Fisher 2007). A contract trapper may be hired to remove coyotes on public and private lands, where permission is granted. Trapping strategies may include leg-hold traps on those private lands exempt from restrictions imposed by A.R.S. 17-301D (where the use of leg-hold traps is allowed). Contract trappers may be utilized year round, outside of the Commission approved trapping seasons, based on the needs determined by the WHEI steering committee but will certainly be recommended from January through August. Although coyotes will be targeted it is possible that an occasional non-target predator/furbearer species may be trapped.
- F. **Aerial Gunning:** Aerial gunning service providers have been successful in targeting removal of coyotes in open grasslands in Arizona to benefit pronghorn (Smith et al. 1986). The Department will contract U.S. Department of Agriculture, Animal and Plant Health Inspection Service-Wildlife Services (WS) to target removal of coyotes on public and private lands, where permission is granted, during structured timeframes (between January 1 and August 31). Only portions of the area would be open enough to attempt aerial gunning. While there are few grassland sections in which to remove coyotes from Unit 16A aerial gunning should be successful in those portions of the habitat that are less dense and visibility of coyotes is increased (Mason et al. 2002).
- G. **Promote Unit 16A Predator Removal:** Predator hunting organizations are often interested in aiding the Department in reducing predator numbers to benefit other wildlife species. The Predator, Furbearer, and Large Carnivore Biologist, Region III Game Specialist, and Unit 16A Wildlife Manager will work with local hunting groups to advise their members of this project and encourage hunters to aid in predator reductions in Unit 16A.

#### **Intensity and Duration of Management Actions**

Predator control, in any combination of the strategies described above, will be in place for no less than three years post WHEI project completion. Predator control will be removed when the prey populations meet the management objectives identified below for two consecutive years. The seasons will be monitored by the Region III Game Specialist and the Unit 16A Wildlife Manager to determine if the seasons need to continue beyond that. If additional years are necessary, hunt recommendations will reflect this direction.

To effectively reduce mountain lion populations, sustained harvest of >40% of a mountain lion

population over several years may be required (Stoner et al. 2006). Therefore, the contract houndsman, hunters and/or trappers, if hired, should be contracted for a minimum of three years. McKinney et al. (2006) experimentally removed mountain lions from bighorn sheep habitat in Unit 22 also found that short-term removal of mountain lions by lethal harvest contributed to higher growth and productivity and decreased mortalities of a small, isolated population of bighorn sheep. Short-term predator removal will be focused within Unit 16A from January through August to curb the growth of the predator populations before fawning and limit predation on mule deer fawns during fawning season.

Aerial gunning coyotes from a fixed wing aircraft will also be planned for a 3-year period, with follow-up treatments occurring in subsequent years if the mule deer population in Unit 16A has not met the management objectives identified below. Predator control flights will occur during just before and during fawning, with 2-3 consecutive days flown the first week then returning at least two weeks later to fly an additional 2-3 consecutive days. Coyote control flights may be flown during coyote denning season and/or mule deer fawning season. The amount of time actually flown will be dependent upon the weather and number of coyotes observed while flying. WS will record the number of coyotes harvested in the treatment area and report it to the Department each year. During fall surveys in subsequent years, mule deer population and fawn survival data will be compared between the project area before and after the treatment.

### **Measurable Objectives**

Standard winter mule deer surveys will be conducted annually to assess mule deer populations in Unit 16A. Population trend, buck and fawn to doe ratios, total number of deer observed, number of deer seen per hour, number of permits, and harvest levels will be evaluated to determine effectiveness of predator control treatments in the unit.

Specific objectives will be set to evaluate the effectiveness of the strategies and actions outlined in this Plan. The following triggers will be used to evaluate the project:

1. Increase the fawn to doe ratio to at least 40 fawns per 100 does by 2017. The 3-year average (2011-2013) fawn to doe ratio is 22 and the long term average (1980-2013) is 40, showing the potential to reach this objective. Current guidelines for the fawn to doe ratio are 30-40:100.
2. Maintain the buck to doe ratio within or above current hunt guidelines of 20-30:100.
3. Increase the number of deer seen per hour of survey to 16 which is the average number of deer seen per hour before 2006 (1990-2005).

### **Public Outreach**

The predator control described in this plan will be conducted on BLM, ASLD, and private properties. The Department will coordinate with all appropriate landowners within Unit 16A. The area Wildlife Manager will contact landowners annually, at least one month prior to the activity.

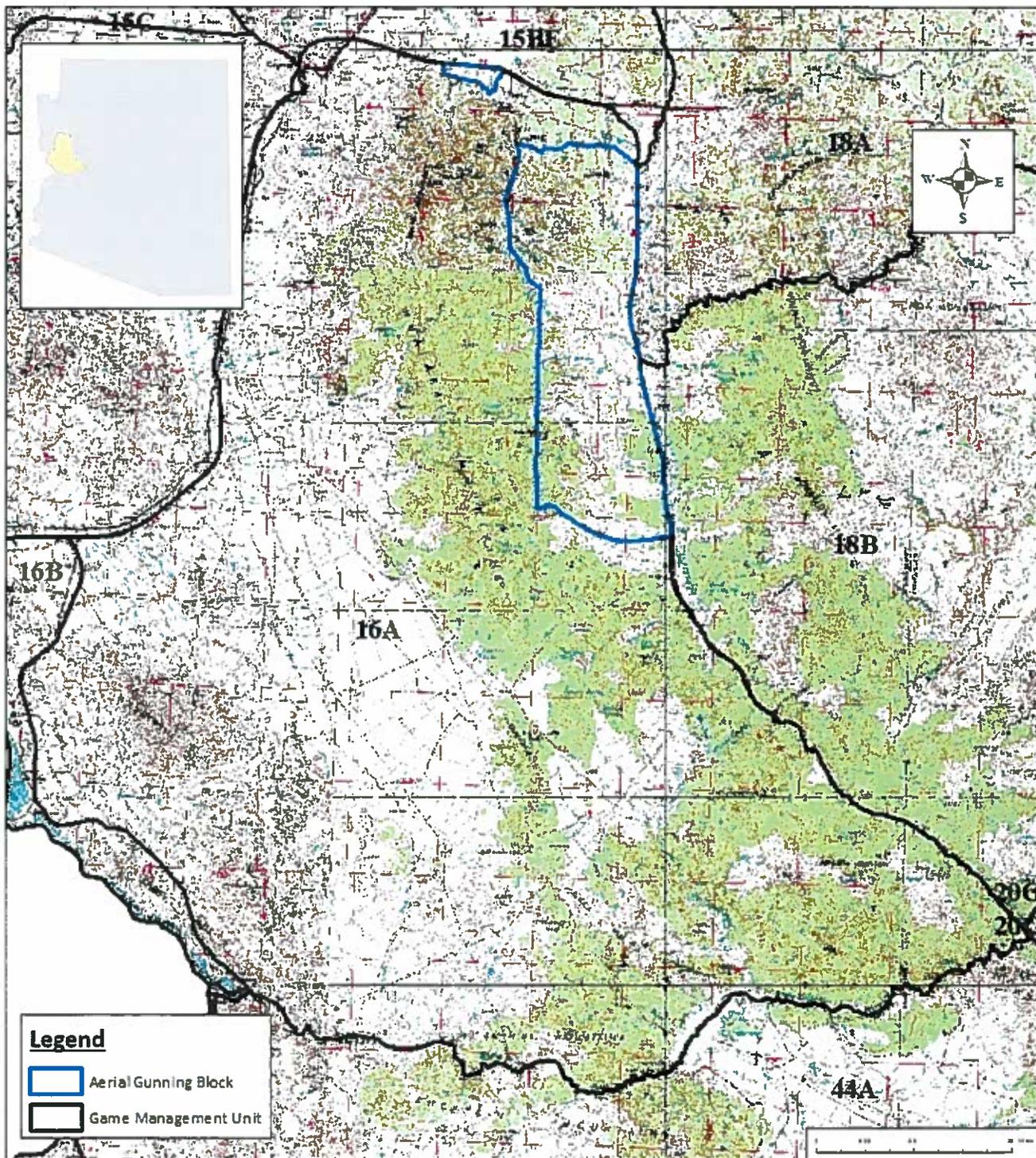
The Region III Public Information Officer (PIO) will be responsible for all routine public information coordination including news postings on the AZGFD website. The PIO will seek opportunities to periodically highlight progress in the execution of the Plan through press releases, website postings, and other appropriate media venues.

MBL hunt recommendations for Unit 16A will be presented to the public at the annual regional public meeting. The public will have the opportunity to comment on proposed mountain lion hunt recommendations in person at the meetings, via email, or during scheduled Commission meetings in

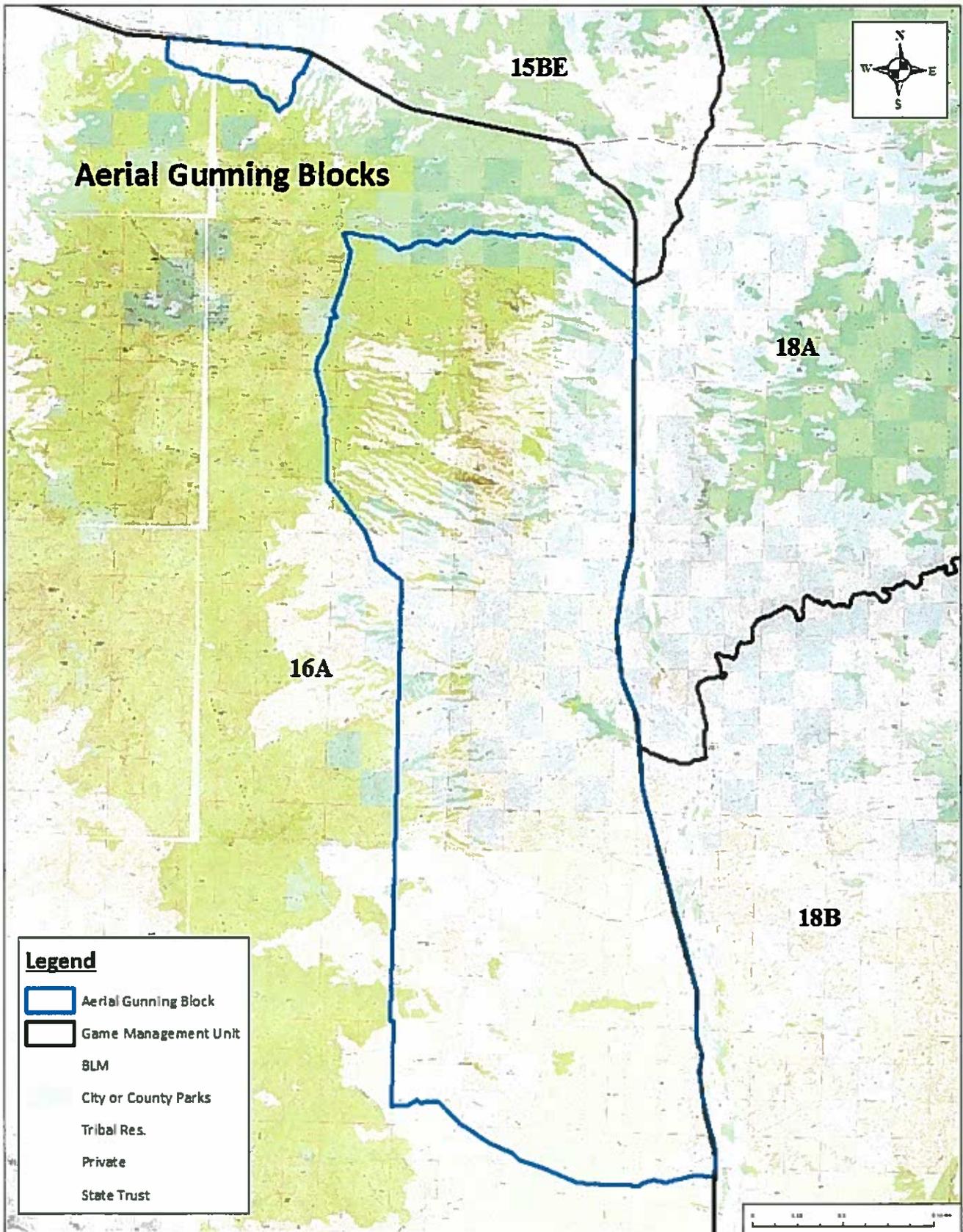
accordance with Arizona Open Meeting Laws.

**Project Maps**

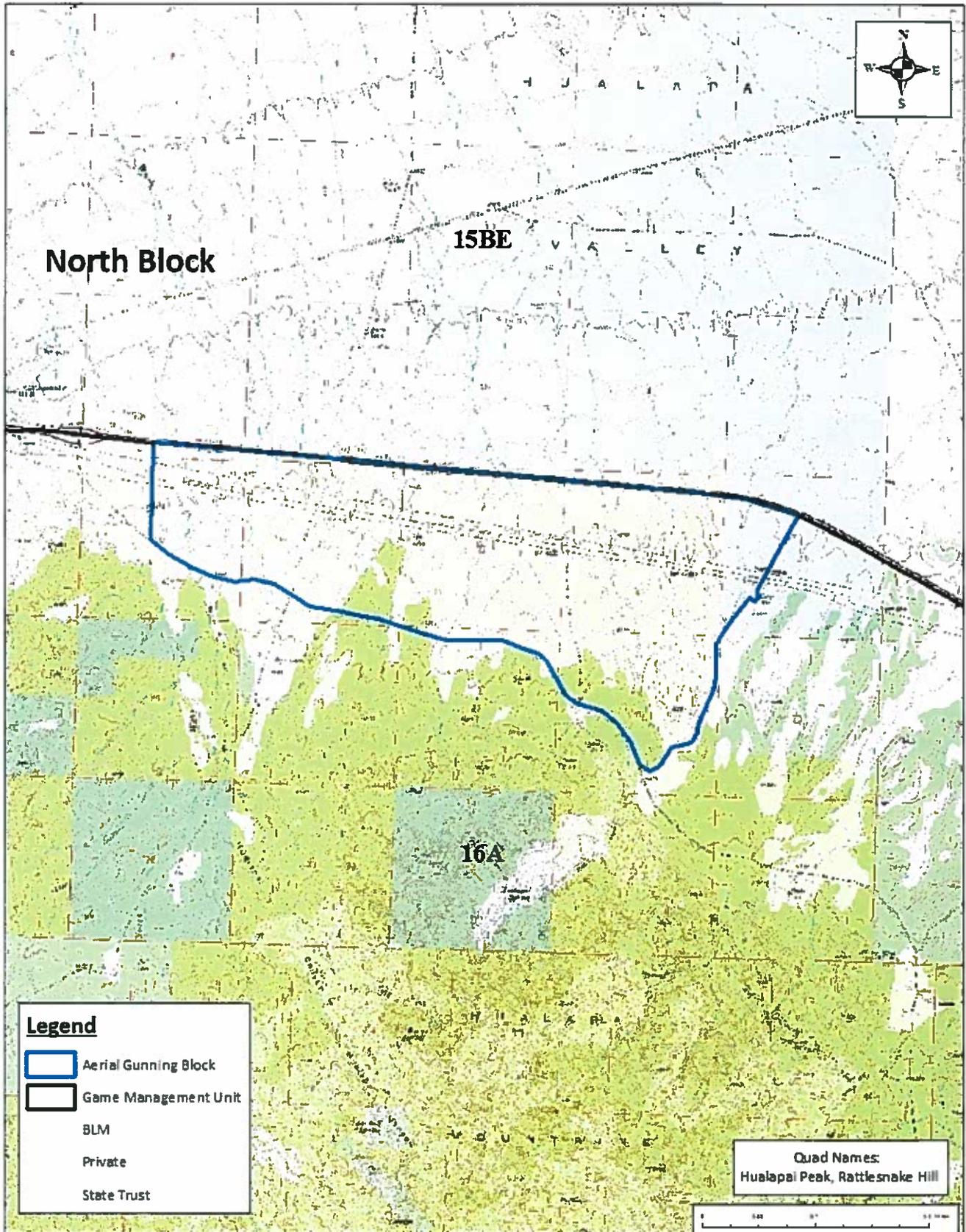
***Game Management Unit 16A***



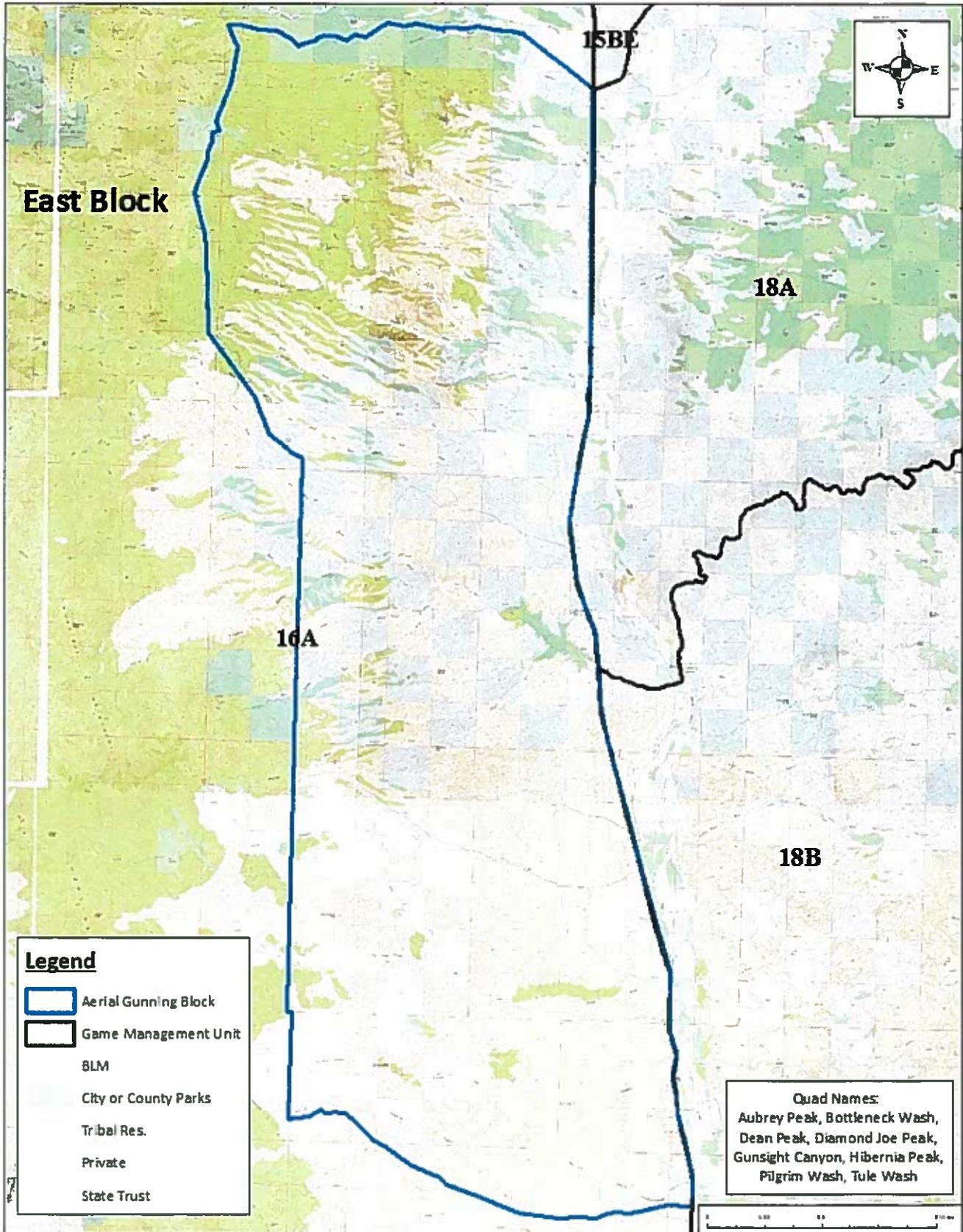
*Aerial Gunning Project Area*



North Block



*East Block*



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