Report on Species of Economic Importance, Wildlife Related Recreation and Public Access within the Resolution Copper Mine Project Area

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The Arizona Game & Fish Department

Habitat, Evaluation, and Lands Branch

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To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

RECOMMENDED CITATION

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I. Introduction

Under Title 17 of the Arizona Revised Statutes, the Arizona Game and Fish Department (Department or AGFD), by and through the Arizona Game and Fish Commission (Commission), has jurisdictional authority and public trust responsibilities for the management of state fish and wildlife resources. It is the Mission of the Department "to conserve Arizona's diverse fish and wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations". The following Commission policies apply directly to the management of public lands: A2.18-Multiple Use Management of Public Lands, A2.20-Access To and Upon Public and State Trust Land, A2.22-Consideration of Economic Impact, and A2.38-Travel Management and Access Upon Arizona's Public Lands For The Enjoyment Of Arizona's Wildlife Resources and Outdoor Recreation. It is the policy of the Commission that public lands remain open and accessible to recreation unless there are reasons to deny access founded in sound science and affirmative analysis, and not a presumption of harm (Commission Policy A2.38).

National Forest and Bureau of Land Management (BLM) public lands managed under the principles of multiple use, as well as State Trust lands, play a vital role in Arizona by supporting crucial wildlife habitat and maintaining Arizona's wildlife heritage as well as providing opportunities for wildlife related recreation and associated economic benefits. Motorized dispersed camping and accessibility to motorized routes are critical to distribution of hunters and facilitation of retrieval of large big-game animals to avoid spoilage of edible portions and/or hide used for a variety of non-consumptive uses. Public access to recreate is also important in maintaining funding for Department programs that support wildlife conservation. The Department uses hunting as a wildlife management tool and depends on hunting and angling access on public lands to meet species harvest and wildlife management objectives. Furthermore, the biological diversity of these lands offers a wide array of wildlife viewing opportunities.

This report has been developed by the Department to describe the species of economic and recreational importance (SERI) and quantify levels of wildlife related recreation and public access within the Resolution Copper Mine project area, hereafter referenced as RCM project area. The mine project would be located primarily on U.S. National Forest (USFS) land near Superior, Arizona; however alternative locations for mine tailings storage facilities (TSF) and tailings corridors could be located on other lands described in this report. The majority of the proposed General Plan of Operations (GPO) is located within GMU 24B. The Near West TSF alternatives 2 or 3, and the Silver King TSF alternative 4 are located in GMU 24B; the East Plant Site, zone of subsidence and Skunk Camp TSF alternative 6 locations are in GMU 24A; and the Peg Leg TSF alternative 5 location is in GMU 37B. Several proposed mine features either currently exist, or would be located exclusively on private lands, or are linear features (pipelines, powerlines or substations) in all 3 GMUs.

The area of the proposed mine lies within the geographical convergence between Arizona Upland Sonoran Desertscrub, Semidesert Grassland, and Interior Chaparral biotic communities (Brown 1994). Looking at a more refined vegetation classification (SWReGAP; Lowry et al. 2007) the project areas also include small inclusions of Pine-Oak and Pinyon-Juniper vegetation types. As a result, the area is biologically diverse and critical at a landscape scale for species migration; linking Arizona's Mogollon

Rim and central mountain regions, north with the Rocky Mountains, and south with southeastern Arizona sky islands and the Sierra Madre of Mexico. This region is referred to as the "Spine of the Continent Wildlife Megalinkage" in large landscape conservation planning (Foreman and Wolke 1992; Soule and Terborgh 1999; Hannibal 2012). At a statewide scale the area has been identified as a potential linkage zone (#66 Superior to Miami US60), in Arizona's Wildlife Linkage Assessment (Arizona Wildlife Linkages Workgroup [AWLW] 2006). At a regional scale the US-60 Superior to Globe Linkage Design (Beier et. al. 2006) was developed to inform conservation planning and in 2013 a county level wildlife connectivity assessment was conducted to plan wildlife linkages in Pinal County (Arizona Game and Fish Department 2013).

The Tonto National Forest (TNF) is the most heavily-used National Forest in Arizona for motorized recreation, with nearly a million visitors using off highway vehicles (OHVs) annually (English, et al., 2004). Nearby BLM and State Trust lands offer OHV destinations close to the Phoenix metro area and receive some of the highest use levels in the state (Silberman 2003b). Some of the OHV visitors in the project area are hunters, or are enjoying other outdoor activities and wildlife viewing. Wildlife related recreation includes hunting, trapping, and watchable wildlife type activities (viewing, photography); and often associated camping, OHV and recreational shooting. There are no major sport fish destinations or key access points within the project area; with exception to the Gila River in Game Management Unit 37B, near the proposed Peg Leg TSF alternative 5, where recreational sport fishing is limited along the Gila River due to flows.

II. Wildlife Recreation Economics

Arizona is home to areas of public lands and other open space that provides recreation opportunities for many different user groups, including boating and water sports, hiking, camping, equestrian activities, off-highway vehicles (OHV), wildlife viewing, hunting and angling, mountain biking, and other outdoor activities. Outdoor recreationists, both residential and nonresidential, account for a significant contribution to Arizona's economy. In 2011, state residents and nonresidents spent $2.4 billion on wildlife recreation in Arizona. Of that total, trip-related expenditures were $897 million and equipment expenditures totaled $1.1 billion (US Fish and Wildlife Service, 2011). The remaining $326 million was spent on licenses, contributions, land ownership and leasing, and other items (US Fish and Wildlife Service, 2011). In 2016, Arizona's Governor issued a Proclamation recognizing the importance of hunting and fishing to the state's economy (Appendix 1) and to support wildlife conservation. Table 1 shows a breakdown of expenditures by recreationists in Arizona in 2011.

Table 1. Economic importance of wildlife-related recreation spending in Arizona by recreationists in 2011.

	Wildlife Watching	Hunting	Angling
Number of Participants	1,566,000	269,000	637,000
Trip Related	$391,198,000	$148,623,000	$357,472,000
Equipment and Other	$544,681,000	$189,136,000	$398,006,000
Total Expenditures	$935,880,000	$337,759,000	$755,478,000
Average per/Participant	$583	$1,122	$1,186

Source: 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (US Fish and Wildlife Service, 2011)

The U.S. Fish and Wildlife Service conducted a 2016 national survey, but no state level data were collected. At the national level, 103.7 million participants spent a total of $156.9 billion on wildlife-

related recreation (hunting, fishing and wildlife watching), and the majority did so in the state of their residence. Participants age 16 years and older spent a total of $26.2 billion on hunting (trip and equipment), with an average annual estimate of $2,383 per spender. Another $75.9 billion was spent by 86 million participants on wildlife watching (trip and equipment), an average annual estimate of $1,193 per spender. National participation increased in 2016 by 21% from 2011 levels. These expenditures support thousands of jobs and communities and represent almost 1 percent of the nation's Gross Domestic Product (U.S. Fish and Wildlife Service 2017).

While these analyses provide important information on the 'economic importance' of consumptive and non-consumptive wildlife-associated recreation; they do not measure the non-financial 'economic value' of these activities and benefits to Arizona and communities. These other values are the benefits people place on resources for the option to use them in the future, for the opportunity to preserve them for future generations and for the mere knowledge that the resources exist.

A. Consumptive Wildlife Recreation in the Project Area

The economic importance of fishing and hunting expenditures to Arizona counties is not analyzed routinely. The most recent study was conducted in 2001 (Silberman 2003a), utilizing data from the statewide 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (US Fish and Wildlife Service 2001). The county-level economic importance measures include activity days, trip expenditures, and equipment expenditures. Table 2 shows a breakdown of economic importance of hunting and fishing in Pinal, Maricopa and Gila counties in 2001. Because public lands in the project area are one of the closest destinations (proximity) east of metro Phoenix to which residents of Maricopa County can recreate, the Department determined economic benefits derived from activities in the project area benefit both Maricopa and Pinal counties. Wildlife related activities in the vicinity of the Skunk Camp TSF alternative 6 area also benefit Gila County, however the majority of the mine development is in Pinal County.

Table 2. Economic importance of hunting and fishing in Pinal, Maricopa and Gila counties in 2001 (Silberman 2003a).

Economic Impacts	Pinal	Maricopa	Gila
Total Fishing & Hunting Expenditures	$20,000,000	$409,100,000	$39,400,000
Total Multiplier Effect*	$22,900,000	$515,000,000	$46,800,000
Salaries & Wages	$3,800,000	$103,000,000	$7,500,000
Full-time & Part-time Jobs	296	5,382	769
State Tax Revenue	$933,000	$21,100,000	$1,800,000
Total Hunting Expenditures (trip & equipment)	$6,800,000	$42,200,000	$5,200,000
Total Hunter Days	94,881	210,442	75,510

Data Source: 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (US Fish and Wildlife Service, 2001); *additional indirect and induced impacts commonly called the multiplier effect

Hunting is the principal consumptive wildlife recreation associated with the project area. Deconstructing the economic summary presented above to look at hunters in Pinal County, the data supports that the largest proportion of participants hunting in Pinal County do not reside in the county (Table 3).

Table 3. Residency of participants hunting in Pinal County estimated by total hunter days (Silberman 2003a).

Participant Residency	Big Game Hunting Total Hunter Days	Small Game Hunting Total Hunter Days
Pinal County Resident	3,112	14,029
AZ Resident Traveling to Pinal County	8,173	63,285
Non-AZ Resident	640	5,642

Data Source: 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (US Fish and Wildlife Service, 2001)

B. Non-Consumptive Wildlife Recreation in the Project Area

The diversity of wildlife in Arizona, and especially avian diversity, is extraordinary due to the convergence of various ecoregions and habitat types. This uniqueness and diversity draws both resident and non-resident birders and other wildlife viewing recreationists to Arizona.

The Tucson Chapter of the Audubon Society prepared a study in 2013, The Economic Contributions of Wildlife Viewing to the Arizona Economy: A County-Level Analysis (Southwick Associates, Inc., 2013), based on raw data from the 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (US Fish and Wildlife Service, 2011). This study examined the watchable wildlife economics in Arizona in more detail, broken down by county; and provided an update to an earlier study that estimated the economic contributions of wildlife watching in 2001(Southwick Associates 2003).

In 2011, there were 732,343 watchable wildlife recreationists (residents and non-AZ residents) participating in non-residential activities in Arizona, meaning they were recreating over 1 mile from their home (Southwick Associates, Inc., 2013). Additionally, there were 1,221,654 residential watchable wildlife participants in Arizona; this number represents Arizona residents participating in watchable wildlife recreation within one mile of their home (Southwick Associates, Inc., 2013).

The overall estimate of economic contributions of all watchable wildlife recreation in Pinal, Maricopa and Gila counties, where the recreation occurred, is presented in Table 4 (Southwick Associates, Inc., 2013). The Department determined that economic benefits derived from activities in the project area primarily benefit Maricopa and Pinal counties, and to a lesser extent Gila County. Wildlife watching provides an $89.5 million dollar benefit to Pinal County, and residents from other counties account for the majority of those expenditures (Table 4). In 2011, there were more residents wildlife watching within 1 mile of home than traveling away from home; however the economic contributions to Pinal County from non-residential (traveling >1 mile from home) wildlife watching activities exceeded residential (within 1 mile from home) activities (Table 5).

The most important destination birding area within the Study Area is the Boyce Thompson Arboretum and Arnett-Queen Creeks Important Bird Area (IBA). This IBA encompasses about 4.8 square miles south and west of the Resolution Mine proposed project area (for more information: http://aziba.org/) and is a featured birding hotspot by Audubon (http://www.audubon.org/news/birding-arizona). This site qualified under the landbird criteria, “exceptional seasonal diversity of landbirds”; with at least 275 species recorded since the mid-1970s, and 62 of which are of special conservation status. This site may not be the only local birding destination and birders report to and utilize data from eBird (https://ebird.org/ebird/hotspots) and the Arizona Breeding Bird Atlas (http://www.habimap.org) to

inform their activities. The Oak Flat campground is another important birding destination and considered a birding "hotspot" with approximately 183 different species reported by birders to eBird.org. Lastly, the Pinal Mountains offer a variety of habitats and several birding hotspots from Madera Peak east to Pioneer Pass, between which upwards of 151 species have been observed and reported to eBird.org.

Table 4. Economic contributions of all watchable wildlife recreation in Arizona, by County where the activity occurred; including county residents, in-state residents and non-resident visitors to the county (Southwick Associates, Inc. 2013a).

Economic Contribution	Pinal	Maricopa	Gila
Total Expenditures (trip and equipment)	$52,631,795	$380,888,578	$11,940,372
Total Multiplier Effect*	$89,450,156	$643,549,679	$20,282,515
Salaries & Wages	$28,733,395	$208,165,875	$6,537,975
Full-time & Part-time Jobs	812	5,653	183
State Tax Revenue	$5,826,399	$42,164,798	$1,321,813
Federal Tax Revenue	$6,562,038	$47,488,506	$1,488,704

Data Source: 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation; *includes additional indirect and induced impacts commonly called the multiplier effect.

Table 5. Total economic contributions from watchable wildlife recreation in Pinal County by residents and non-AZ residents (Southwick Associates, Inc. 2013a).

Total Economic Contributions* by Residency in Pinal County	County Resident	Residents from Other Counties	Non-AZ Residents	Total
Within 1 mile of home	$11,273,681	$6,639,336	N/A	$17,913,017
Traveling > 1 mile from home	$27,793,700	$16,368,364	$17,886,501	$62,048,565

Data Source: 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (US Fish and Wildlife Service, 2011); *includes additional indirect and induced impacts commonly called the multiplier effect.

C. Off Highway Vehicle Recreation (OHV)

Off-highway vehicle recreation in Arizona was found to have a statewide economic impact of $4.25 billion, support 36,951 jobs, create $1.1 billion in salaries and wages, and add $187 million to annual state tax revenues (Silberman 2003b).

Data to calculate these benefits for Arizona counties was collected from random telephone surveys and mail questionnaires in 2002 (Silberman 2003b). The county-level economic importance measures include OHV activity days, OHV trip expenditures, and OHVs purchased. Table 6 shows a breakdown of economic importance of OHV by county in Arizona in 2002. Because public lands in the project area are one of the closest destinations east of metro Phoenix to which residents of Maricopa County can recreate, the Department determined that economic benefits derived from activities in the project area benefit Maricopa, Pinal and Gila counties. In fact there is a significant amount of OHV activity within and adjacent to the proposed Resolution Mine project area. National Forest lands north and south of US Highway 60 just west of Superior, the Mineral Mountains on BLM, and the Desert Wells OHV area just west of Superior on State Trust lands receive high levels of activity and are considered hotspots for OHV recreation just outside the metro Phoenix area. Results from economic data collected for OHV recreation in Arizona counties indicates that in 2002, Gila County had the second highest levels of OHV activity days by Arizona residents traveling to Gila County for OHV recreation; and Pinal County had the fifth highest levels. Maricopa County had the highest levels of OHV recreation by county residents and lower

levels of activity from Arizona residents traveling to Maricopa County (Silberman 2003b). It should be noted that interpretation of this data should take in to account that estimates involve some double counting of economic importance with respect to trip expenditures from other outdoor activities such as hunting or fishing.

Table 6. Economic importance of Off-Highway Vehicle (OHV) recreation in Pinal and Maricopa counties in 2002 (Silberman 2003b).

Economic Importance	Pinal	Maricopa	Gila
Total OHV Expenditures (trip, equipment, vehicle)	$135,342,866	$1,358,144,939	$120,539,882
Total Multiplier Effect	$152,700,000	$1,787,100,000	$137,600,000
Salaries & Wages	$24,200,000	$428,900,000	$22,300,000
Full-time & Part-time Jobs	1,099	13,113	1,322
State Tax Revenue	$5,900,000	$78,500,000	$4,200,000
Total Activity Days	600,020	2,086,893	1,262,608
Total Activity Days by AZ Residents Traveling from Another County	402,102	230,334	1,034,536

Data Source: The Economic importance of off-highway vehicle recreation: economic data on off-highway vehicle recreation for the State of Arizona and for each Arizona county (Silberman 2003b)

III. Game Management Unit Summaries

Currently hunting opportunities within the vicinity of the project area in Game Management Units (GMUs) 24A, 24B, and 37B include: six out of Arizona's ten big game species (mule deer, white-tailed deer, javelina, mountain lion, black bear, and bighorn sheep), small game (cottontail, jackrabbit, Gambel's quail, scaled quail), migratory game birds (mourning dove, white-winged dove, and band-tailed pigeon) and furbearing or predatory mammals (e.g. coyote and bobcat). Species such as these are considered Species of Economic and Recreational Importance (SERI) to the Department and citizens of Arizona (Arizona Game and Fish Department 2012). Several of these species currently occupy habitat that has 100% overlap with the proposed RCM project area including the TSF alternatives, tailings pipeline corridors and/or new power lines. Others have only partial habitat overlap (Table 7).

Table 7. Species of Economic Importance (SERI) that occur within or in the immediate vicinity of the Resolution Mine proposed GPO facilities and alternative tailings storage locations.

SERI Species	100% Habitat Overlap	Partial Habitat Overlap
Gambels quail	X	
Mourning dove	X	
White-winged dove	X	
Band-tailed pigeon		X
Desert cottontail rabbit	X	
Black-tailed jackrabbit	X	
Antelope jackrabbit		X
Javelina	X	
Coyote	X	
Mountain lion	X	
Black bear		X
Mule deer	X	
White-tailed deer		X
Bighorn sheep		X

The majority of the proposed RCM project area is located within GMU 24B. The Near West TSF alternatives 2 or 3 and Silver King TSF alternative 4 are located in GMU 24B; the East Plant Site and Skunk Camp TSF alternative 6 locations are in GMU 24A; and the Peg Leg TSF alternative 5 location is in GMU 37B. Several proposed mine features either currently exist, or would be located exclusively on private lands, or are linear features (pipelines or powerlines) in all 3 GMUs. The Filter Plant and portions of the MAARCO corridor are in GMU 26M. The Filter Plant is on private land and the MAARCO is an existing rail corridor and both are excluded from the following GMU summaries and impacts assessment.

A. Hunters and Anglers Value Mapping and Arizona's State Wildlife Action Plan

The Department and the Theodore Roosevelt Conservation Partnership (TRCP) partnered to conduct a survey of 7,500 randomly selected Arizona hunters/anglers, asking them to identify their most valued areas of Arizona for hunting and fishing. Over 1,200 participants responded; highlighting preferred areas for over 35 game and sport fish species and provided the reasons for their most highly valued area preferences. Information and results on a species by species basis can be found at: https://www.azgfd.com/recreation/valuemapping/. The low, moderate and high results of the value map should be interpreted as areas where lower, moderate or higher numbers of people indicated the area was of high value to them for hunting a particular species. So a low value indicates fewer people identified the area as valuable to them. This mapping provides information to assist in prioritizing and ensuring hunting and fishing access for areas; identifies the need for a balance of land uses, promotes highly valued habitats for conservation and restoration; and gives sportsmen a voice in the management of wildlife in Arizona.

Based on the values mapping, the Department notes that a moderate to high number of participants (hunters) found portions of the Near West TSF alternative 2 or 3 west of Superior (GMU 24B) to be of high value for hunting mule deer, white-tailed deer, javelina, quail, dove, and predators. In the area of the Silver King TSF alternative 4 (GMU 24B), a moderate to high number of participants valued the area for mule deer and predator hunting; but a low to moderate number of participants valued it for javelina, quail and dove hunting. As elevations increase to the north and east in the Montana and Peachville Mountain areas near Silver King; more hunters highly valued the area for white-tailed deer hunting.

The area of the Peg Leg TSF alternative 5 in GMU 37B is highly valued by a high to moderate number of participants for quail, javelina and predator hunting; and moderate to low number of participants for dove, mule deer and white-tailed deer hunting.

The area of the East Plant Site in GMU 24A is highly valued by a moderate to high number of participants for quail and predator hunting; and a low to moderate number of participants for dove, javelina, mule deer and white-tailed deer. The area of the Skunk Camp TSF alternative 6 in GMU 24A is highly valued by a high number of participants for quail hunting, but a low number for dove hunting. A moderate number highly value the area for white-tailed deer, mule deer and javelina hunting; and a low number of participants for predator hunting.

Below are composite results for small game (Figure 1; quail, dove and predators) and big game (Figure 2; mule deer, white-tailed deer and javelina) illustrating valued areas by hunters in GMU 24A, 24B and 37B.

Part of the development of the State Wildlife Action Plan System for Arizona (SWAPSAZ) included a web-based interface (GIS tool) known as HabiMap™Arizona (http://www.habimap.org/). Several

wildlife conservation potential models were created to display the spatial data components of the State Wildlife Action Plan (SWAP; AGFD 2007) at a landscape/statewide scale. One of those models, "Species of Economic and Recreational Importance" represents the economic and recreational importance of seven of Arizona's big ten huntable species, seven small game huntable species, and where the importance of game habitat for conservation is highest. Figure 3 illustrates areas surrounding the proposed RCM project area and alternative TSF locations rank as some of the highest areas of importance in Arizona. Portions of GMU 24A are ranked lower than GMU 24B and 37B, due to differences in game species distributions and distribution of consumer spending (SWAP; AGFD 2007).

The Department uses both the TRCP hunter/angler survey results and the SWAP modeling to establish the relative importance of areas from a statewide perspective for wildlife management and conservation investments. The places of highest value are also the places where pursuit of various project (e.g. mining, transportation, urban development, etc.) related mitigation measures to avoid, minimize or mitigate impacts would be of the highest importance to the Department.

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Figure 1 - Theodore Roosevelt Conservation Partnership (TRCP) Arizona hunters/anglers survey results indicating areas where low, moderate or high numbers of people highly valued hunting for small game (quail and dove) in GMU 24A, 24B and 37B.

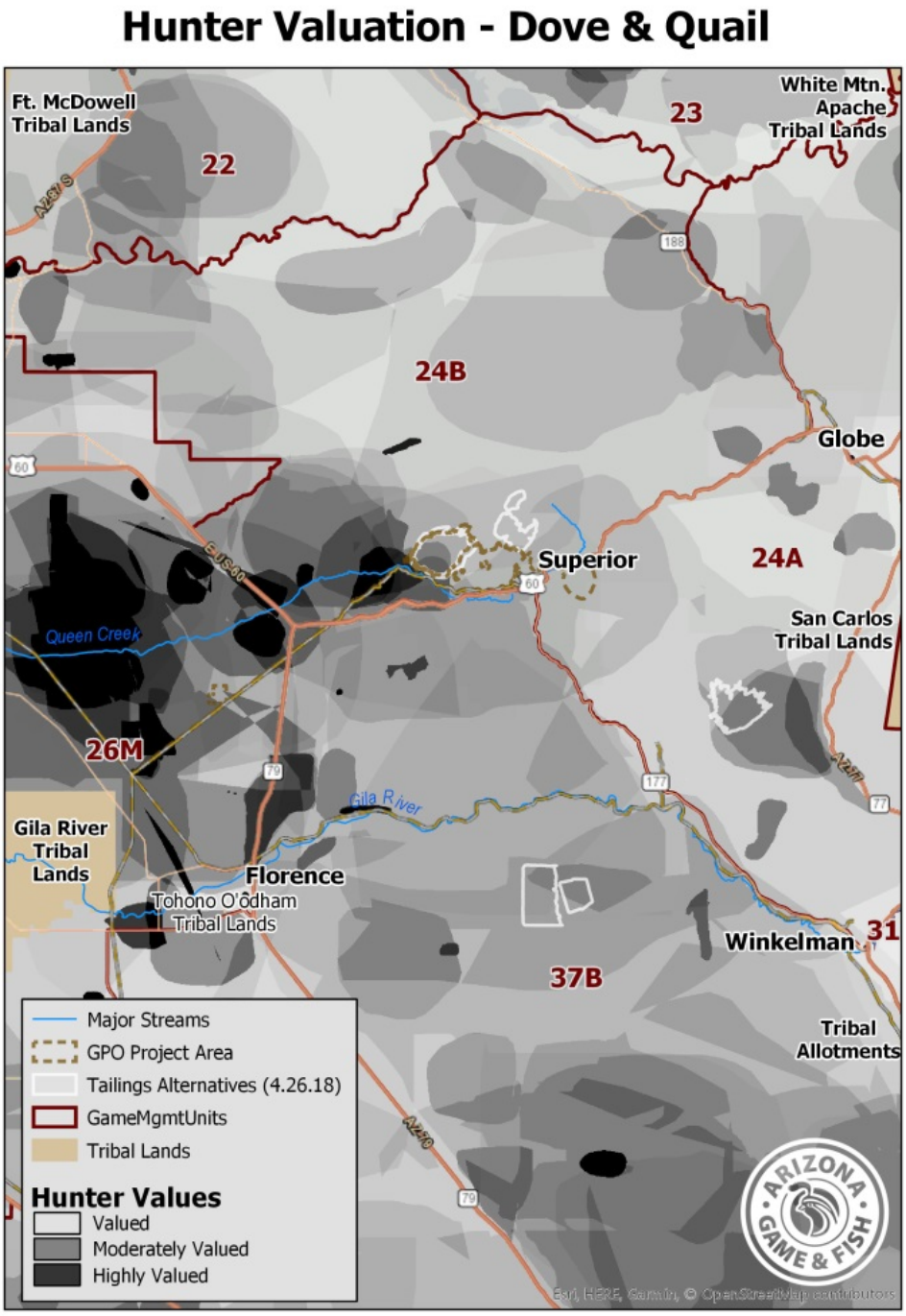


Figure 2 - Theodore Roosevelt Conservation Partnership (TRCP) Arizona hunters/anglers survey results indicating areas where low, moderate or high numbers of people highly valued hunting for big game (mule deer, white-tailed deer, and javelina) in GMU 24A, 24B and 37B.

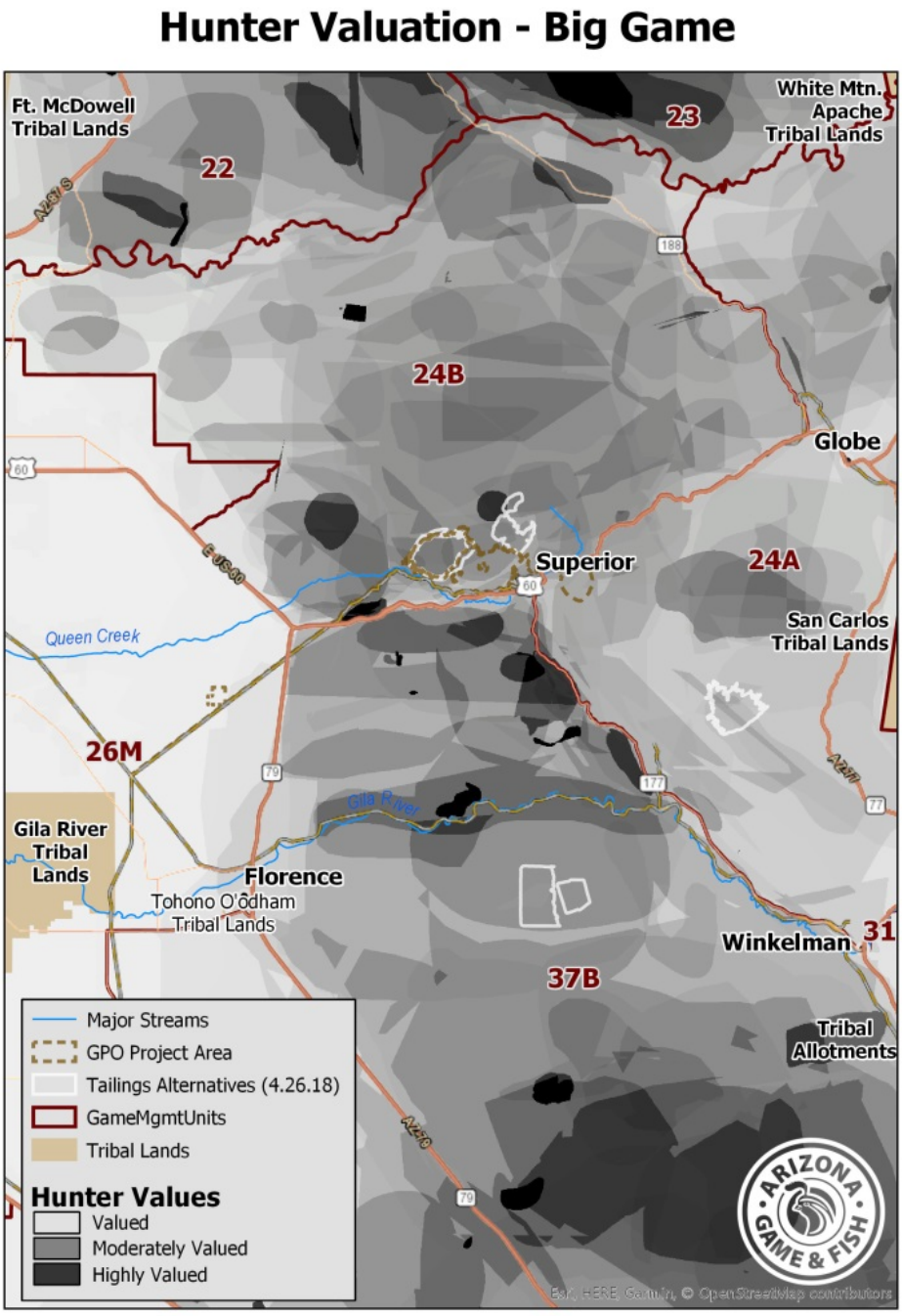
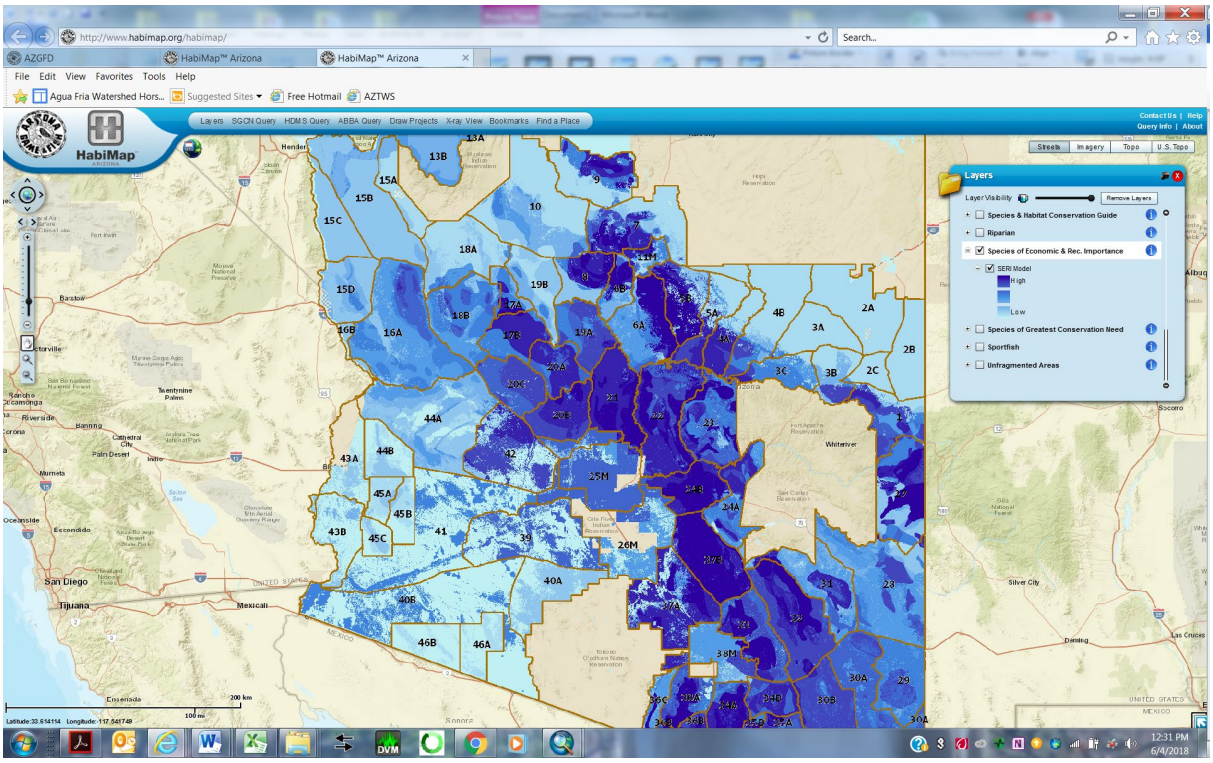


Figure 3 - Species of Economic and Recreational Importance model represents the economic and recreational importance of 13 of Arizona's huntable species and where the importance of game habitat for conservation is highest in Arizona (HabiMapTM; http://www.habimap.org/). This model was developed for Arizona's SWAP (AGFD 2007).



B. Game Management Unit 24B

Hunting in the unit is permitted for several wildlife species. There are migratory bird hunts (mourning and white-winged dove), quail hunts, four white-tailed deer general hunts, one mule deer general hunt, four months of archery deer hunts (any antlered deer), as well as general/ HAM/archery javelina hunts, desert bighorn sheep, mountain lion and black bear hunts in this unit. There is year-round use from wildlife watchers.

The past 10 year hunting permit and hunter activity levels for big game are summarized in Table 14 Appendix 2. Per year there are approximately 400 mule deer tags, 450 javelina tags, 1000 whitetail tags, 500 over-the-counter archery deer hunters and more than 1,700 quail hunters in 24B. There are also predator hunters. The Sonoran desert habitat where the Near West TSF alternatives 2 or 3 and RCM project facilities are proposed is prime mule deer, javelina and Gambel's quail habitat, as well as transitional white-tailed deer habitat. This area supports the highest observed numbers of mule deer in the unit (Map 1; Appendix 5). White-tailed deer and black bear range into this area, but higher quality habitat for these species tends to be in higher elevations of the Superstition mountains where the chaparral plant community begins. Native desert bighorn range throughout the Superstition Mountains and as close as Hewitt Ridge just east of the proposed TSF location and south in the Mineral Mountains. Since this area is located very close to the Phoenix metro area, it also receives a high amount of hunting pressure in comparison to the rest of the unit, especially during the archery hunts. It is a very popular area for mule

deer, javelina, quail and predator hunters. The majority of lands within GMU 24B are not accessible by motorized travel. For this reason hunters tend to concentrate within a few areas in the unit to camp and stage for travel to nearby hunting destinations (Map 2; Appendix 5) including this area. For reasons related to access and high quality habitat for several important game species, the area proposed for future RCM development is very important for hunting opportunity in GMU 24B.

A summary of the 10-year average annual big game permits authorized for hunts in the unit demonstrates a portion of hunting opportunity and hunting permit revenue generated in the unit (Table 8). Hunting revenue from migratory game birds and/or small game is not easily available and therefore estimated as ancillary to other hunting. Revenue generated from the sale of big game hunt permits funds the Department's wildlife management and conservation actions across the state. There are a number of factors that influence big game population numbers including: amount of suitable habitat, habitat quality (forage/water/cover), habitat loss, habitat fragmentation, climate (drought), disease, predators, and numerous anthropogenic disturbances and developments. The Department issues annual big game permits based on annual population trends for growth and reproduction; and hunts are used to manage populations while providing for hunting opportunity.

Based on the 10-year average annual authorized permits issued and current costs for resident permits obtained through the annual application/draw process (Table 8), the estimated annual revenue to the Department for deer and javelina tags in GMU 24B equals $130,564/year (excluding hunting license sales). This estimate does not account for revenue generated from migratory bird hunts (migratory bird stamp costs $5.00/hunter), higher permit fees for non-resident hunters/applicants, or lower permit fees for over-the-counter deer/javelina hunts and youth only hunts. When multiplied over the life of the 60-year mine, the total potential deer and javelina hunt permit revenue generation in GMU 24B would be greater than $7,833,840 million.

Table 8. Summary by species for 10-year average annual authorized permits issued, permit revenue, number of hunters and hunter use days in GMU 24B (AGFD 2017).

Game Management Unit 24B	Mule Deer	Javelina	Whitetail Deer	Any Antlered Deer-Archery
Authorized permits issued	485	581	847	694
Number of Hunters	457	502	773	694
Total Hunter Days	1995	1649	2935	4080
Cost per permit	$58.00	$38.00	$58.00	$45.00
Total annual revenue from permit sales	$28,130	$22,078	$49,126	$31,230

Data Source: Arizona Game and Fish Department. 2017. Hunt Arizona: Survey, Harvest and Hunt Data for Big and Small Game. Phoenix, Arizona. 2009-2017 Editions available at: https://www.azgfd.com/Hunting/surveydata/.

Taking a closer look, the Department has estimated what proportions of hunter activity and associated economic values occur within each RCM project area for each GMU, based on the primary game species that occur within each project area.

The methodology used by the Department is the same as that used to determine the cost/benefit of acquiring access via fee agreements with private parties to maintain hunting opportunity on public and private lands:

# of Hunters (participants) *multiplied by* Average # of Days Hunting *multiplied by* Associated Cost per Day = Total economic value per year per hunter (participant)

The daily financial values and average number of days hunting are based on information from the 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (U.S. Fish and Wildlife Service 2011).

In this report, the Department has used this formula to calculate the economic contribution of wildlife-related recreation in the RCM project areas as:

# of Participants (hunting) *multiplied by* Average # of Days Participating *multiplied by* Associated Cost per Day = Total economic value per year per participant

For example, in theoretical GMU X 140 hunters participated in big game hunts for javelina, mule deer and white-tailed deer in 2016. Based on the USFWS national survey the associated cost per day is $56.00 and the average days spent hunting is five (USFWS 2011). Therefore, the Department calculated the annual economic contribution for big game hunting in GMU X to be:

$$140 \times 5 \times 56.00 = \$39{,}200/\text{year}$$

A detailed breakdown of the complete formulation for big and small game hunts within the RCM project areas (Near West, Silver King, Peg Leg, Skunk Camp TSF alternative locations, and East Plant Site and zone of subsidence) in GMU 24B, 24A and 37B are provided in Appendix 3. Estimates of big game participants were estimated as a proportion of the 2016-2017 hunt permits issued and estimates of small game hunting were derived from small game/predator/furbearer hunter survey data between 2013 and 2015. RCM project area footprints were derived from GIS data for the GPO and final TSF alternatives provided to the Department by the TNF on 8-3-18; and consistent with the Forest's Process Memorandum - Consistent Acres Memo for EIS Analysis (8-7-18; D. Morey). The Department does not collect data on wildlife watching across game management units; therefore we cannot provide an estimated value. We note that wildlife watching destinations occur in the units and that many people are combining recreational experiences, such as OHV or camping with wildlife watching.

<u>Near West TSF Alternatives 2 or 3:</u>

Map 2 (Appendix 5) illustrates the area of highest hunting pressure in GMU 24B. A best approximation of use (# of participants) within the Near West TSF alternative location, which overlaps with the area of highest recreational use in GMU24B, has been developed based on the expertise of the area Wildlife Manager and the hunter survey data for the unit, stated above.

The Department calculated the approximate number of participants for big game and migratory bird hunting at a combined 145 participants; and estimated 490 small game hunter days within the Near West TSF alternative footprint. The associated daily financial value for each participant is $56.00 per day (USFWS 2011). This equates to an estimated value of $66,920/year (Appendix 3). This formula does

not take into account revenue generated for the Department from wildlife hunt permit sales, hunting licenses, inflation, or other ancillary (indirect) effects to hunting in the area adjacent to the proposed RCM project area. It strictly relates to participant trip and equipment expenses (U.S. Fish and Wildlife Service 2011). An estimate of economic benefit to Pinal County from wildlife-related recreation in the vicinity of the Near West TSF alternative location, over the expected 60-year life span of the mine (construction, operation, closure/reclamation; 2014 revised Resolution Copper Mine General Plan of Operations), can therefore be valued at $4,015,200.

This formula does not take into account potential loss of revenue to the Department from hunt permit and license sales over the life of the mine. Taking into consideration the additional revenue generated to the Department from hunt permit and license sales; the estimated economic value would be greater than the formulated $4.0 million over the 60-year life of the mine.

Estimated economic benefit from wildlife related recreation within the Near West TSF alternative 2 or 3 area is valued at >$4.0 million over the 60-year life of the mine.

Silver King TSF Alternative 4:

The proposed Silver King TSF alternative location is transitional habitat in-between more densely populated mule deer habitat to the west; and more densely populated white-tailed deer habitat in the mountains to the north and east. According to the TRCP data, moderate and high numbers of hunters value the area for mule deer and predator hunting; and white-tailed deer hunting as elevations increase to the north and east in the Montana and Peachville Mountain areas. The area is valued for hunting javelina, quail and dove by a low to moderate number of hunters.

The Department calculated the approximate number of participants for big game and migratory bird hunting at a combined 175 participants; and estimated 223 small game hunter days within the Silver King TSF footprint. The associated daily financial value for each participant is $56.00 per day (USFWS 2011). This equates to an estimated value of $60,368/year (Appendix 3). An estimate of economic benefit to Pinal County from wildlife-related recreation within the Silver King TSF alternative, over the expected 60-year life span of the mine can therefore be valued at $3,622,080. This formula does not take into account potential loss of revenue to the Department from hunt permit and license sales over the life of the mine. Taking into consideration the additional revenue generated to the Department from hunt permit and license sales in GMU 24B (presented above); the estimated economic value would be greater than the formulated $3.6 million over the life of the mine.

Estimated economic benefit from wildlife related recreation within the Silver King TSF alternative 4 area is valued at >$3.6 million over the 60-year life of the mine.

C. Game Management Unit 24A

Hunting in the unit is permitted for several wildlife species. There are migratory bird hunts (mourning and white-winged dove), quail hunts, four white-tailed deer general hunts, one mule deer general hunt, four months of archery deer hunts (any antlered deer), as well as general/ HAM/archery javelina hunts, several months of black bear, mountain lion, turkey, elk and bighorn sheep hunts in this unit. There is year-round wildlife watching. The past 10 year permit and hunter activity levels are summarized in Table

15 (Appendix 2). A summary of the 10-year average annual big game permits authorized for hunts in the unit demonstrates a portion of the hunting opportunity and permit revenue generated in the unit (Table 9).

There are three main areas of GMU 24A that supports the highest observed numbers of mule deer in the unit (Map 4; Appendix 5) and the proposed Skunk Camp TSF alternative 6 overlaps one of these areas. White-tailed deer range into this area, but higher quality habitat for these species tends to be in higher elevations of the Pinal Mountains where the chaparral plant community begins. Elk, turkey and bear range in the higher elevations of the Pinal Mountains. Rocky Mountain bighorn range throughout the Dripping Springs and Mescal Mountains near the proposed TSF location. Hunting pressure is not evenly distributed across GMU 24A. The area Wildlife Manager notes that hunting activities tend to be concentrated within a few areas in the unit for specific species, as well as to camp and stage for travel to nearby hunting destinations. These areas have been mapped and characterized similar to GMU 24B as areas with high, moderate and/or low hunter use depending on the species, in this GMU (Map 5; Appendix 5). The area Wildlife Manager notes that the area of the proposed Skunk Camp TSF alternative 6 typically has very high densities of javelina hunters, high densities of quail hunters, and high to moderate densities of mule deer, small game and predator hunters (Map 5). A disproportionate portion of javelina hunters use the area compared to the rest of the unit. The area where the East Plant Site and zone of subsidence would occur is not a concentration area for hunter use.

Based on the 10-year average annual authorized permits issued and current costs for resident permits obtained through the annual application/draw process (Table 9), the estimated annual revenue to the Department for deer and javelina tags in GMU 24A equals $118,613/year (excluding hunting license sales). This estimate does not account for revenue generated from migratory bird hunts (migratory bird stamp costs $5.00/hunter), higher permit fees for non-resident applicants, or lower permit fees for over-the-counter deer/javelina hunts and youth only hunts. When multiplied over the anticipated 60-year mine life, the anticipated deer and javelina hunt permit revenue generation in GMU 24A would be greater than $7,116,780 million.

Table 9. Summary by species for 10-year average annual authorized permits issued, permit revenue, number of hunters and hunter use days in GMU 24A (AGFD 2017).

Game Management Unit 24A	Mule Deer	Javelina	Whitetail Deer	Any Antlered Deer-Archery
Authorized permits issued	251	541	964	613
Number of Hunters	235	469	954	613
Total Hunter Days	1087	1541	4026	3534
Cost per permit*	$58.00	$38.00	$58.00	$45.00
Total annual revenue from permit sales	$14,558	$20,558	$55,912	$27,585

Data Source: Arizona Game and Fish Department. 2017. Hunt Arizona: Survey, Harvest and Hunt Data for Big and Small Game. Phoenix, Arizona. 2009-2017 Editions available at: https://www.azgfd.com/Hunting/surveydata/. *To simplify the calculation costs are based on current fees for resident permits obtained through the application/draw process; non-residents fees are higher and over-the-counter and youth only fees are lower (Arizona Game and Fish Department 2018-19 Arizona Hunting Regulations).

East Plant Site and Zone of Subsidence:

According to the GMU 24A Wildlife Manager the East Plant project area does not encompass a disproportionate amount of any particular game species habitat and overall receives low to moderate hunting use, likely due to rugged road conditions and the boulder dominated habitat. The primary species hunted in this area include quail, predators, javelina, and white-tailed deer. Access to and along the Apache Leap escarpment south of East Plant are destinations for big game hunters.

Similar to GMU 24B, the Department used a formula to determine the cost/benefit of paying for access agreements with private parties to maintain hunting opportunity on public and private lands to calculate the economic benefit of wildlife-related recreation in the East Plant Site and zone of subsidence. The Department estimates the number of participants for big game and migratory bird hunting at a combined 44 participants; and an estimated 10 small game hunter days. The associated daily financial value for each participant is $56.00 per day (Appendix 3). This equates to an estimated value of $10,508/year. An estimate of economic benefit to Pinal County from wildlife-related recreation within the East Plant Site and zone of subsidence, over the estimated 60-year life span of the mine can therefore be valued at $630,480. This formula does not take into account potential loss of revenue to the Department from hunt permit and license sales over the life of the mine. Taking into consideration the additional revenue generated to the Department from hunt permit and license sales in GMU 24A (presented above); the estimated economic value would be greater than the formulated $630,480 over the life of the mine.

Estimated economic benefit from wildlife related recreation within the East Plant Site and zone of subsidence area is valued at >$630 thousand over the 60-year life of the mine.

Skunk Camp TSF Alternative 6:

The proposed Skunk Camp TSF alternative is characterized as excellent mule deer, javelina and Gambel's quail habitat, and transitional white-tailed deer habitat. This area is one of 3 major areas most frequently hunted in GMU 24A (Map 4; Appendix 5) and hunters tend to concentrate within these few areas to camp and stage for travel to nearby hunting destinations. This area is very close to the towns of Globe, Kearney and Winkelman; very accessible on a well-traveled dirt road; and receives a high to very high amount of use in comparison to the rest of the GMU 24A. This is especially true during archery hunts for javelina and quail. The only exception is the Sevenmile Wash area in northern GMU 24A which receives very high use by mule deer hunters. Key to recreation in this area is access via the Dripping Springs Road.

The Department calculated the approximate number of participants for big game and migratory bird hunting at a combined 163 participants; and estimated 500 small game hunter days within the Skunk Camp TSF footprint. The associated daily financial value for each participant is $56.00 per day (USFWS 2011). This equates to an estimated value of $70,554/year (Appendix 3). An estimate of economic benefit to Pinal and Gila counties from wildlife-related recreation within the Skunk Camp TSF alternative footprint, over the expected 60-year life span of the mine can therefore be valued at $4,233,240. This formula does not take into account potential loss of revenue to the Department from hunt permit and license sales over the life of the mine. Taking into consideration the additional revenue generated to the Department from hunt permit and license sales in GMU 24B (presented above); the estimated economic value is greater than the formulated $4.2 million over the life of the mine. This calculation assumes

public access via the Dripping Springs road would be mitigated to preserve public access west towards Government Springs.

Estimated economic benefit from wildlife related recreation within the Skunk Camp TSF alternative 6 is valued at >$4.2 million over the 60-year life of the mine.

D. Game Management Unit 37B

Hunting in the unit is permitted for several wildlife species. The past 10-year permit and hunter activity levels are summarized in Table 16 (Appendix 2). The primary game species in GMU 37B are mule deer, javelina and Gambel's quail. Secondary game species are rabbit, dove; and there is a limited scaled quail and white-tailed deer hunting opportunity. A summary of the 10-year average annual big game permits authorized for hunts in the unit demonstrates a portion of the hunting opportunity and permit revenue generated in the unit (Table 10). There are two months of migratory bird (mourning and white-winged dove) and quail hunts, two general and one youth-only antlered deer hunts, two months of archery deer hunts (any antlered deer), as well as four javelina hunts (general/ HAM/archery/youth-only), and one bighorn sheep hunt in this unit. There is year-round use from wildlife watchers.

The area of the proposed Peg Leg TSF alternative 5 provides habitat for mule deer, javelina, quail and cottontail and jackrabbit. Similarly, since the habitat in this area supports these wildlife populations, the same species are pursued by hunters. The Grayback Mountain area is prime mule deer habitat with jojoba plants that provide crucial evergreen browse during the pre-monsoon drought; a time when other forage is non-existent and when mule deer does are preparing for fawn drop. The Peg Leg area is popular with mule deer, quail and javelina hunters due to easy access from Florence-Kelvin Highway.

Based on the 10-year average annual authorized permits issued and current costs for resident permits obtained through the annual application/draw process (Tables 10), the estimated annual revenue to the Department for deer and javelina tags in GMU 37B equals $198,201/year (excluding hunting license sales). This estimate does not account for revenue generated from migratory bird hunts (migratory bird stamp costs $5.00/hunter), higher permit fees for non-resident applicants, or lower permit fees for over-the-counter deer/javelina hunts and youth only hunts. When multiplied over the life of the 60-year mine, the total potential deer and javelina hunt permit revenue generation in GMU 37B equals $11,881,260 million.

Table 10. Summary of 10-year average annual authorized permits issued, permit revenue, number of hunters and hunter use days in GMU 37B (AGFD 2017).

Game Management Unit 37B	Any Antlered Deer-General	Any Antlered Deer-Archery	Javelina
Authorized permits issued	800	771	3077
Number of Hunters	753	771	2631
Total Hunter Days	3108	4245	9355
Cost per permit*	$58.00	$45.00	$38.00
Total annual revenue from permit sales	$46,400	$34,695	$116,926

Data Source: Arizona Game and Fish Department. 2017. Hunt Arizona: Survey, Harvest and Hunt Data for Big and Small Game. Phoenix, Arizona. 2009-2017 Editions available at: https://www.azgfd.com/Hunting/surveydata/. *To simplify the calculation costs are based on current

fees for resident permits obtained through the application/draw process; non-residents fees are higher and over-the-counter and youth only fees are lower (Arizona Game and Fish Department 2018-19 Arizona Hunting Regulations).

Similar to GMU 24A and B, the Department used a formula to determine the cost/benefit of paying for access agreements with private parties to maintain hunting opportunity on public and private lands to calculate the economic impact of wildlife-related recreation in the Peg Leg TSF alternative location. We calculated the approximate number of participants for big game and migratory bird hunting at a combined 30 participants; and estimated 87 small game hunter days within the Peg Leg TSF alternative footprint. The associated daily financial value for each participant is $56.00 per day (Appendix 3). This equates to an estimated value of $12,254/year. An estimate of economic benefit to Pinal County from wildlife-related recreation within the Peg Leg TSF alternative, over the expected 60-year life span of the mine can therefore be valued at $735,269. This formula does not take into account potential loss of revenue to the Department from hunt permit and license sales over the life of the mine. Taking into consideration the additional revenue generated to the Department from hunt permit and license sales; the estimated economic value is greater than the formulated $735 thousand over the life of the mine.

Estimated economic benefit from wildlife related recreation within the Peg Leg TSF alternative 5 is valued at >$735 thousand over the 60-year life of the mine.

E. Wildlife Water Developments

There are several wildlife water developments within the immediate vicinity of the RCM project. The purpose of Department water developments is to supplement natural water sources in locations that are lacking water and are important habitats for wildlife. Many wildlife species have large home ranges and travel for food and water resources, therefore the benefits of water catchments extend beyond the immediate location. Catchments are developed for the benefit of game and nongame species and the principal objective is to establish reliable year-round water that supports local wildlife population sustainability and growth. Water is a critical component of wildlife habitat. Wildlife habitat, no matter how attractive, will not be utilized if it is not near a source of water. Water sites should be no more than 2-3 miles apart and even closer in rough terrain (Rollins, D.). The Western Association of Fish and Wildlife Agencies (WAFWA) *Habitat Guidelines for Mule Deer Southwest Deserts Ecoregion* support this, suggesting water sources not be more than 3 miles apart, so that all mule deer habitat is within 1.5 miles of a permanent water source (Heffelfinger et al. 2006).

Habitats and road networks surrounding catchments are important to wildlife related recreationists, who hope to increase their chances of intercepting wildlife species for hunting or wildlife watching.

Benson Spring (GMU 24B) is a natural spring that was fenced to exclude livestock to protect the long-term viability of the spring, improve water availability for wildlife, and improve riparian plant regeneration. In 2001 the Department partnered with the TNF and Millsite allotment permittee to fund and construct a steel pipe exclosure fence, install a gate and a gravity fed trough system outside the exclosure (T1S, R11E, Section 35; see Map 3 in Appendix 5). It was agreed that livestock would be allowed to access the spring if water was not available in troughs outside the exclosure. The project was funded with Department funds and donations from the Arizona Bowhunters; the TNF contributed NEPA and archaeological clearances. The spring was a historic transplant site for Gila topminnow in 1983 and they persisted until 1985. The Department Terrestrial Wildlife Nongame and Heritage Data Management System (HDMS) programs have data reporting snails, lowland leopard frogs and Sonoran mud turtles in

the spring pools. Historically, numerous wildlife are drawn to this water source from the surrounding Sonoran desert habitat. The value to endemic wildlife is important due to the scarcity of free flowing surface water in the area. The spring is located within the footprint of the Near West TSF alternative 2 or 3 on the southeastern edge. Access to this spring development for Department maintenance and the public for wildlife related recreation is north from US 60 via FR357 to FR252 to FR1914. Long-term drought has impacted the base flows at Benson Spring over the past two decades.

The second wildlife water development in GMU 24B is Department catchment Superior #2 (AGFD ID#557) located in between the proposed West Plant site and Near West TSF alternative 2 or 3 facilities (T1S R12E, Section 33 NWSW; see Map 3 in Appendix 5). This catchment was constructed in 1960 and redeveloped in 2017 with U.S. Fish and Wildlife Service Pittman-Robertson federal aid in wildlife restoration and Department funding. Access to this catchment for Department maintenance and the public is north from US 60 via FR8 west of Superior and east of Happy Camp Road, and then north on FR2387 (T2S R12E section 38). According to the RCM GPO this catchment would become surrounded by mine facilities. Currently, it benefits wildlife north of US 60 and west of the Town of Superior. The Department requires motorized access to this catchment for monitoring and maintenance.

A third and last wildlife water development in GMU 24B is Department catchment Roblas (AGFD ID#76), located about 1.1 miles north of the proposed Near West TSF alternative 2 or 3 footprints (T1S, R11E, Section 12 SESW; see Map 3 Appendix 5). This catchment was newly constructed January 2018 as part of the Department's Wildlife Habitat Enhancement Initiative, funded with U.S. Fish and Wildlife Service Pittman-Robertson federal aid wildlife restoration and AGFD funding. The primary purpose was to increase water availability and distribution for mule deer, with benefits to many other wildlife as well. Access to this catchment for Department maintenance and the public is north from US 60 via FR 357 to FR 1904 to FR1921.

The fourth wildlife water development is in GMU 37B, immediately north of the Peg Leg TSF alternative 5, on the east side of Grayback Mountain. This catchment is called Grayback Mountain Catchment (AGFD ID#883) and was originally constructed in 1983 (T4S, R12E, Section 13 NWSW; see Map 8 in Appendix 5) for javelina and deer. This catchment was redeveloped in January 2008 with U.S. Fish and Wildlife Service Pittman-Robertson federal aid wildlife restoration and AGFD funding. Access to this catchment for Department maintenance and the public is via the Florence-Kelvin Highway, to Grayback Road and then north along an unnamed four-wheel drive road through sections 25, 24 and 13 (T4S, R12E). The Department requires motorized access to this catchment for monitoring and maintenance.

The fourth wildlife water development is in GMU 37B, west of the Mineral Mountains within the footprint of the proposed Peg Leg tailings corridor "west". The Mineral Mountain Catchment (AGFD ID#882) was originally constructed in 1983 (T3S, R11E, Section 19 SESE; see Map 8 in Appendix 5) for javelina and deer. The proposed tailings corridor also overlaps the only access route to this catchment for Department maintenance and public wildlife related recreation. This catchment was redeveloped (storage tank, steel apron and drinker) June 2011 with U.S. Fish and Wildlife Service Pittman-Robertson federal aid wildlife restoration and AGFD mule deer Special Big Game Tag funds. Access to this catchment is via the Middle Gila Canyon Road east from Florence (north of the Gila River) and along unmaintained dirt routes north to the catchment. The Department requires motorized access to this catchment for monitoring and maintenance.

The fifth wildlife water development is also in GMU 37B, west of the Mineral Mountains within 0.8 miles of the proposed Peg Leg tailings corridor "west". The Cactus Patch Catchment (AGFD ID#989) was originally constructed in 1989 (T3S, R11E, Section 31 SW NW; see Map 8 in Appendix 5) for javelina and deer. Planning for redevelopment is underway. Access to this catchment is also via the Middle Gila Canyon Road east from Florence (north of the Gila River) and along unmaintained dirt routes north to the catchment, very near the Mineral Mountain catchment. Redevelopment of this catchment may occur as soon as April 2019 pending approval of funding in January 2019. The Department requires motorized access to this catchment for monitoring and maintenance.

The last wildlife water development is in GMU 24A, south of Superior and the Apache Leap escarpment on TNF lands. The Superior #1 catchment (AGFD ID#556) was originally constructed in 1960 (T2S, R12E, Section 25 NWSE; see Map 7 in Appendix 5) for javelina and deer. Access to this catchment is east from SR 177 via FR 315. This catchment is located immediately adjacent to the proposed Skunk Camp tailings corridor "south". The Department requires motorized access to this catchment for monitoring and maintenance.

Future Water Development Plans:

The Department has plans underway to fund and construct several new wildlife catchments in GMU 24B proximate to the Near West TSF alternative 2 or 3 and Silver King TSF alternative 4; and to fund improvements to an existing livestock water system (storage, trough, and pipeline) east of the Skunk Camp TSF alternative 6 near Government Springs Ranch. The proposed new catchments in GMU 24B are known as Gonzales Pass, Silver King and Currie Wood (Map 3; Appendix 5). All three of these proposed developments have NEPA clearance and various levels of funding in place.

Currie Wood is scheduled for construction February of 2019. Silver King has been put on hold for implementation pending the NEPA decision for the proposed RCM project. Gonzales Pass has NEPA clearance but no dedicated funding yet. Currie Wood will be located about 0.6 miles west of the Silver King TSF alternative 4 or 1.7 miles north of the Near West TSF alternative 2 or 3 (T1S, R12E, Section 8, NWNW). Motorized access to Currie Wood catchment would be north from US 60 west of Superior via multiple USFS routes that are extremely rugged four-wheel drive routes to the closest existing route FR 2356.

The Silver King catchment would be located (T1S, R12E, Section 22, SESW) within the footprint of the Silver King TSF; or about 0.9 miles northwest of the West Plant facility; or about 2.4 miles east of the proposed Near West TSF alternative. Motorized access to Silver King catchment would be north from US 60 west of Superior via FR 2400, FR 2402A, FR 3152, FR 1053 and FR 2442.

The Government Springs Ranch Pipeline Project will improve an existing livestock water system (storage tank and wildlife-friendly livestock drinker) previously supplied by a spring, by adding a pipeline to an existing solar well as a new water supply. The water system is located along FR 248 about 1.4 miles north of the proposed Skunk Camp TSF alternative footprint. Dripping Springs Road is a primary access route leading to FR 248 for monitoring and maintenance. The alternative is a much longer and rugged route via FR 899 from the north over the Pinal Mountains.

IV. Public Access

Currently, the majority of wildlife related recreation that occurs within the proposed RCM project areas include: OHV, hunting, wildlife watching, camping, recreational shooting, hiking, and horseback riding. The ability for the public to access public lands for recreation is a high priority for the Department and critical to the Department's ability to achieve our Mission. It is the policy of the Arizona Game and Fish Commission to place a high priority on conserving existing access and modes of access for hunting, fishing, trapping, shooting, wildlife watching, off-highway vehicle use, dispersed camping and other responsible forms of outdoor recreation; and to place a high priority on improving access upon such lands in areas of the State where access is currently difficult or nonexistent (Commission Policy A2.20). The following is information on access within the three game management units potentially affected by the proposed RCM project and alternative TSF locations.

A. Game Management Unit 24B

The majority of the proposed project lies within the boundary of Game Management Unit 24B (GMU 24b). The entire GMU includes approximately 497,960 acres, comprised of TNF (USFS) lands (86%); the remaining 14% includes Bureau of Land Management (BLM), state, private, and tribal (Appendix 6 Table) lands. Approximately 190,499 acres (38% of the unit) of the USFS lands are designated as wilderness (Superstition Wilderness) or roadless areas (Map 2, Appendix 5). The remaining 269,407 acres of USFS lands in GMU 24B (48% of the unit) are accessible by motorized means. Out of those remaining USFS lands the proposed RCM facilities (TSF, tailings corridor, barrow, MARRCO) would eliminate approximately 5,165 acres (2.1%) of USFS lands open to motorized access under Near West TSF alternatives 2 or 3. Under the Silver King TSF alternative 4 the proposed RCM facilities (TSF, tailings corridor, barrow, MARRCO) would eliminate approximately 5789 acres (2.4%) of the remaining USFS land open to motorized access in GMU 24B. These lands open to motorized access also provide for dispersed camping along routes within 300 feet of road centerline (USFS proposed TMP decision; Tonto National Forest Travel Management Plan EIS March 2016).

Motorized access into hunting areas for both species of deer, and other hunted species of wildlife, is already limited due to the Superstition Wilderness and roadless areas which are located within the game management unit. Currently, white-tailed deer hunting is stratified into multiple seasons to reduce hunter densities within white-tailed deer habitat. Although mule deer numbers currently support only one general fire arms hunt season; past hunts have been stratified with an early and late season, similar to white-tailed hunts and for the same reason. Most hunters do not utilize the wilderness area and most rely on roads to camp and access their hunting spots.

An analysis of access quantifies the current amount of motorized public access and motorized dispersed camping within GMU 24B (Appendix 6 Table). The Department calculated mileage for motorized routes and acreage for motorized dispersed camping using Geographic Information System (GIS) methods and Tonto National Forest route inventory and dispersed camping data developed for the Tonto National Forest Travel Management Plan EIS (March 2016).

<u>Near West TSF Modified Proposed Action Alternatives 2 and 3</u>:

There are 23.49 miles of TNF motorized routes that currently exist within the proposed Near West TSF alternative 2 and 3 footprints (TSF, Barrows, Tailings Corridor, MAARCO; Map 3 Appendix 5). This

represents 2.4% of all TNF routes currently open to motorized access in GMU 24B. The Department calculated that approximately 1737 acres of dispersed camping opportunity currently exists where these proposed RCM facilities would be developed. Dispersed camping opportunity is calculated as those lands within a 300 foot distance from motorized route centerlines, as proposed in the TNF Travel Management Plan EIS (March 2016). The 1737 acres represents approximately 4.8% of the total motorized dispersed camping opportunity on USFS lands in GMU 24B. The area Wildlife Manager reports that this area is frequently used for dispersed camping due to easier accessibility.

The majority of the motorized routes within the RCM project area are dirt roads that do not require highly technical 4x4 vehicles or skill; which are also popular for dispersed camping because of their accessibility. Starting from staging areas along US Highway 60 there is an extremely popular off-road vehicle route which forms a "4-hour" loop (Map 3). It includes FR8, FR 650 (Happy Camp Road), FR172 (Hewitt Canyon Road), FR 252, and FR357. Historically, the public used FR 357 (Queen Creek Road) to cut between FR172 and FR8 to complete the loop but private land has locked this access. This is a primary OHV and UTV (multi-passenger utility terrain vehicle) destination that receives more seasonal traffic than surrounding or similar areas.

Silver King TSF Alternative 4:

Within the proposed Silver King TSF alternative 4 footprints (TSF, Tailings Corridor, West Plant, Barrow; Map 3 Appendix 5) there are fewer routes and the routes are more rugged and used by a fewer number of people, with exception to FR650 (Happy Camp Road). This route is a primary access loop which traverses USFS lands around the perimeter of the proposed mine. There are 20.11 miles of motorized routes and approximately 1434 acres of dispersed camping opportunity within the footprint of this alternative. This represents 2% of all TNF routes currently open to motorized access in GMU 24B, and 4% of the total motorized dispersed camping opportunity on USFS lands in GMU 24B.

Overall, there is more dispersed camping activity and opportunity in the Near West TSF alternative 2 or 3 location than the Silver King TSF alternative 4 location. The Near West area is more commonly used for motorized dispersed camping with large trailers and OHV transport. The area Wildlife Manager reports that the Silver King area is uncommonly used for motorized dispersed camping.

B. Game Management Unit 24A

The entire GMU 24A includes approximately 519,390 acres, comprised of 59% USFS, 16% BLM, 13% private, 12% State Trust, and 0.16% tribal lands (Appendix 6 Table). Approximately 35,225 acres (6.8% of the unit) of the USFS lands are designated as wilderness (Salt River Canyon and Needles Eye Wilderness) or roadless areas. Out of the remaining 93.2% of lands in GMU 24A, 51.9% (269,407 acres) are USFS lands accessible by motorized means. The remainder, 214,758 acres, are BLM, State Trust, private or tribal lands mostly open to motorized travel. The East Plant Site and zone of subsidence would encompass 1528 acres (0.3%) of USFS lands (pre-land exchange) and another 218 acres of State Trust and private land in GMU 24A.

East Plant Site and Zone of Continuous Subsidence:

Overall the East Plant Site and zone of subsidence lies within the boundary of GMU 24A and encompasses approximately 1747 acres or 0.34% of GMU 24A (Map 5, Appendix 5) on mostly USFS. Overall, the Department estimates 6.18 miles of routes currently open to public motorized access within the future East Plant Site and zone of subsidence footprint, on USFS lands respectively[1]. This represents approximately 0.8% of all TNF routes currently open to motorized access in GMU 24A,

Motorized dispersed camping has historically been limited to the Oak Flat campground area due to the rugged and remote conditions of FR 315 to camp further south. However, the Department calculates approximately 421 acres of motorized dispersed camping opportunity currently exists along these public access routes (Map 4, Appendix 5), which represents 1% of the total motorized dispersed camping opportunity on USFS lands in GMU 24A. As a result of the Southeast Arizona Land Exchange and Conservation Act of 2008, approximately 2407 acres of USFS lands associated with the East Plant Site and subsidence zone would be transferred from public to private ownership controlled by RCM, pending the EIS analysis and decision. This decision would eliminate public access on another 0.9% of USFS lands open to motorized access in GMU 24A. The access impacts on State Trust and BLM are minor comparatively. The primary route for access through this area is FR 315 and it creates a very popular OHV and four-wheel drive loop between US 60 and SR177. Currently, RCM allows public access along FR315, but this would change over the life of the mine.

Skunk Camp TSF Alternative 6:

The proposed Skunk Camp TSF alternative 6 footprint would encompass approximately 10,072 acres or 1.94% of GMU 24A; and 2.08% of all lands potentially open to motorized access (USFS, State Trust, BLM, private and tribal lands) in GMU 24A. Within the Skunk Camp TSF footprint there are an estimated 32 miles of public access routes on BLM, State Trust and private lands; and an estimated 861 acres of dispersed camping opportunity[2]. In addition to the TSF footprint, there will be a tailings corridor with a 500 ft. right of way (ROW), within which there are existing dirt roads available for public access and dispersed camping. There are two alternatives under consideration, north and south. There is an estimated 17.6 miles of public access routes and 823 acres of dispersed camping opportunity within the north tailings corridor footprint. There is an estimated 25.9 miles of public access routes and 1,414 acres of dispersed camping opportunity within the south tailings corridor footprint[3] (Map 7; Appendix 5).

[1] Mileage for motorized routes and acreage for motorized dispersed camping was calculated using Geographic Information System (GIS) methods and Tonto National Forest route inventory and dispersed camping data developed for the Tonto National Forest Travel Management Plan EIS (March 2016). Routes and acres of dispersed camping were calculated strictly within the footprints of proposed mine facilities.

[2] Mileage for motorized routes and acreage for motorized dispersed camping was calculated using GIS methods and Bureau of Land Management – Tucson Field Office 2003 physical access route inventory data and OHV designations from the Middle Gila Canyons Area Travel Management Plan (BLM 2010). Dispersed camping was calculated by AGFD as those acres available within 100 feet from centerline of inventoried routes according to BLM rules and regulations.

[3] Mileage for motorized routes and acreage for motorized dispersed camping was calculated using GIS methods and Bureau of Land Management – Tucson Field Office 2003 physical access route inventory data and OHV designations from the Middle Gila Canyons Area Travel Management Plan (BLM 2010) and Tonto National Forest route inventory and dispersed camping data

Key to recreation in this area is access via the Dripping Springs Road. This road is the only main ingress and egress between the Pinal and Dripping Springs Mountains that allows for motorized dispersed camping with large camp trailers and OHV transport. Access into the area from the north via the Pinal Mountains is steep and narrow which tends to limit access to day users, OHV or high clearance vehicle types.

C. Game Management Unit 37B

The entire GMU includes approximately 755,577 acres, consisting of 60% State Trust land, 16% BLM, 15% private, 3.5% USFS, 3.5% Bureau of Reclamation (BR), and 0.05% tribal (Appendix 6 Table) lands. Approximately 5,886 acres (0.78% of the unit) of the unit is designated as wilderness on BLM lands (White Canyon Wilderness) and there are no roadless areas. Most of the unit is State Trust land which requires a hunting license and/or OHV decal and annual OHV permit from the Arizona State Land Department (ASLD) to recreate for those purposes.

The proposed Peg Leg TSF alternative 5 site lies within the boundary of GMU 37B and encompasses approximately 10,781 acres or 1.43% of GMU 37B (Map 8, Appendix 5). Land ownership within the TSF area is approximately 60% BLM, 38.5% State Trust lands and 1.3% private. Within the Peg Leg TSF footprint there is an estimated 45.18 miles of public access routes and 1,009 acres of dispersed camping opportunity[2]. In addition to the TSF footprint, there will be a tailings corridor with a 500 ft. right of way (ROW), within which there are existing dirt roads available for public access and dispersed camping. There are two alternatives under consideration, east and west. There is an estimated 14 miles of public access routes and 329 acres of dispersed camping opportunity within the east tailings corridor footprint. There is an estimated 19 miles of public access routes and 448 acres of dispersed camping opportunity within the west tailings corridor footprint. Overall, Alternative 5 Peg Leg East (TSF and tailings corridor) totals 12,134 acres or 1.6% of GMU 37B. Alternative 5 Peg Leg West (TSF and tailings corridor) totals 12,503 acres or 1.7% of GMU 37B.

The Middle Gila Canyon Area Travel Management Plan (MGCA TMP; BLM 2010) establishes OHV designations for most of these routes, and includes a few routes on non-federal lands considered essential for access to BLM lands (major public land access routes; Map 8), or travel within intermingled public lands in the area. Wildlife related recreational access to the area is provided from major public access routes surrounding the Peg Leg TSF via Cochran Road to the west, Grayback Road to the north, Florence-Kelvin Highway to the south and along the large wash east of Grayback Mountain. These same routes provide hunters and anglers access to the Gila River. Although there is a road along the river that provides alternative access, adjacent to the Copper Basin Railway, it is usually impassable in several areas.

developed for the Tonto National Forest Travel Management Plan EIS (March 2016). Dispersed camping was calculated by AGFD as those acres available within 100 or 300 feet from centerline of inventoried routes according to BLM and USFS rules and regulations. Camping on private lands was assumed within 100 feet from route centerline, similar to BLM lands.

V. Summary of Anticipated Impacts to Species of Economic Importance, Wildlife Related Recreation, and Public Access

The construction of the proposed RCM project is anticipated to have direct and indirect impacts on wildlife habitat, recreation and public access. These impacts are anticipated to reduce wildlife-related recreation (hunters and watchable wildlife), OHV recreation, and access to other outdoor opportunities such as hiking, biking, horseback riding, camping, and recreational shooting within the area of the proposed mine plan of development. Anticipated changes in outdoor and wildlife related recreation could reduce direct economic benefits to the local community, county and state.

Direct and indirect effects to wildlife populations are difficult to predict as a result of the proposed mine and associated activity. However, the change in habitat and increase in disturbance is expected to alter the distribution and abundance of some species locally and may affect the aesthetics of the area for some recreationists. A project of this size will change how species move across the landscape and access resources necessary for survival (water, forage, etc.). Some local populations would become more fragmented or isolated from the overall population and suitable habitat. Mine operation emissions, noise, lights, traffic, construction, and human activity may have indirect edge effects that negatively influence wildlife behavior and use of adjacent habitats, further compounding the loss of habitat effects on populations. The compounding effects of mine related habitat loss with other factors such as natural topographic barriers, expanding urban development, transportation infrastructure and increasing traffic volumes may affect the local populations ability to recruit and maintain through genetic exchange or dispersal mechanisms. This concern is of particular relevance to the local mule deer population in GMU 24B (see discussion in Game Unit 24B section below).

A. SERI Species and Habitat

A.1 Direct Impacts

The Department used a Geographical Information System (GIS) technology and land cover data sets[4] to calculate acres of habitat by vegetation type within the proposed RCM project facility footprints (Appendix 4). RCM project area footprints were derived from GIS data for the RCM project and final TSF alternatives provided to the Department by the TNF on 8-3-18; and usually consistent with the Forest's Process Memorandum - Consistent Acres Memo for EIS Analysis (8-7-18; D. Morey). Department calculations for tailings corridors presented below in Table 11 include only those portions of the corridor between the West Plant Site and TSF fence lines; but total acres vary slightly from the totals presented in the USFS process memo cited above (see Appendix 6 for differences in calculations). These differences are most likely an artifact from GIS analyses. Department calculations exclude existing mine features (disturbed lands), project facilities exclusively on RCM private lands (Filter Plant, West Plant Site, existing East Plant Site facilities), the MARRCO corridor, transmission lines and power substations.

[4] During the development of the Arizona's State Wildlife Action Plan System (SWAPSAZ) the Southwest Regional GAP (SWReGAP) Land Cover Dataset (Lowry et al. 2007) was used as the basis for developing Arizona SGCN species distributions. The SWReGAP dataset was modified prior to use to more accurately reflect conditions on the ground in Arizona. See the State Wildlife Action Plan (SWAP; AGFD 2007) for additional information on the dataset. In 2018 this dataset was modified a second time to more accurately map arid desert riparian habitat using results from a random forest regression model at a 1 meter resolution (Hickson Model; in Draft AGFD 2018). We used the modified data set for all wildlife habitat calculations by habitat type in this report.

We included East Plant Site and zone of subsidence area USFS exchange lands and State Trust lands in habitat loss estimates. In Table 11, the Department provides a detailed breakdown of anticipated habitat loss or alterations as a result of the RCM project, including all TSF alternatives. A discussion on the anticipated SERI habitat loss and alteration presented by project alternatives follows.

It is impossible for the Department to predict how game populations may change in the future as a result of the RCM development. However, the Department recognizes that combinations of factors influence big game population numbers (amount of suitable habitat, habitat quality [forage/water/cover], habitat loss, habitat fragmentation, climatic patterns, disease, predators, and numerous anthropogenic disturbances and developments). Populations could decline, remain stable or increase in the future as a result of these factors. The cumulative effects of habitat loss over the long-term could contribute to wildlife population declines, reduced hunting opportunity, reduced wildlife watching opportunities, and reduced economic benefits to the county and state.

Table 11. AGFD estimation of SERI Habitat direct losses from proposed development of Resolution Copper Mine GPO facilities and alternative tailings storage facility (TSF) locations based on facility footprints defined in the 2016 2nd revision GPO and final TSF alternatives GIS data provided to AGFD by the TNF (8-7-18; D. Morey).

RCM Project Alternative	Description	Total Acres of Direct Impact	Total Acres of Upland Habitat	Total Acres of Riparian Habitat
Near West Alternative 2 or 3 - Modified Proposed Action	TSF, Borrow, Tailings Corridor	**5077.71**	**4884.23**	**193.47**
Silver King Alternative 4	TSF, Borrow, Tailings Corridor, West Plant Site	**5727.20**	**5503.26**	**223.94**
Peg Leg Alternative 5	West Tailings Corridor, TSF	**12,450.29**	**11,824.38**	**625.91**
Peg Leg Alternative 5	East Tailings Corridor, TSF	**12,096.04**	**11,522.23**	**573.81**
Skunk Camp Alternative 6	North Tailings Corridor, TSF	**11,482.65**	**10,147.75**	**1,334.90**
Skunk Camp Alternative 6	South Tailings Corridor, TSF	**11,950.01**	**10,514.29**	**1435.73**
Common to All Alternatives	East Plant Site & Zone of Subsidence	**1,667.64**	**1,544.58**	**123.06**

Near West TSF alternative 2 or 3:

The Department calculated the total direct SERI habitat loss from implementation of this RCM project TSF alternative (TSF, tailings corridor, and barrow) at approximately 4884 acres of Sonoran desertscrub habitat and 194 acres of riparian (primarily xeric). Implementation of either Near West TSF alternative would result in significant loss of mule deer habitat in one of two areas with the highest densities of mule deer in GMU 24B. The TSF area is also excellent native habitat for several other game species including javelina and Gambel's quail. According to the TRCP survey, a high to moderate number of participants (hunter) highly value the area for mule deer, javelina, quail, dove and predator hunting.

Silver King TSF alternative 4:

The Department calculated the total direct SERI habitat loss from development of the Silver King TSF alternative (TSF, tailings corridor, barrow and USFS portions of the WPS) at approximately 5503 acres of predominantly Sonoran desertscrub habitat and 224 acres of riparian habitat in GMU 24B. Habitat in this area is very similar to the Near West TSF area; but also encompasses higher elevation plant communities including semidesert grassland, interior chaparral, pine-oak and pinyon-juniper woodlands. According to the TRCP survey, this area is highly valued by a moderate to high number of participants (hunters) for deer hunting (mule deer and white-tailed deer).

Peg Leg TSF alternative 5:

Development of the Peg Leg TSF alternative would result in the loss of prime habitat for mule deer, javelina, and Gambel's quail in GMU 37B on the south slope of the Gila River valley. This area is characterized as predominantly Sonoran desertscrub habitat. The Department calculated the total direct SERI habitat loss from implementation of the Peg Leg TSF alternative (within TSF fence line) at approximately 10,327 acres of upland habitat and 455 acres of riparian habitat in GMU 37B. According to the TRCP survey, this area is valued by a moderate to high number of participants (hunters) principally for javelina, quail and predator hunting; but fewer hunters highly value the area for mule deer, dove and small game hunting.

The Peg Leg TSF would require several miles of a 500 foot right-of-way (ROW) to construct a buried tailings pipeline to transport slurry to the TSF location. The pipeline infrastructure would result in additional habitat alteration and loss. The "west" tailings corridor alternative would impact approximately 1,498 acres of predominantly Sonoran desertscrub habitat and 171 acres of riparian habitat (including the Gila River). The ROW would traverse the western foothills of the Mineral Mountains where there is very little human disturbance. The west tailings corridor overlaps the location of the AGFD Mineral Mountain catchment (see further discussion in the Water Developments section to follow). The Mineral Mountains are home to a thriving population of bighorn sheep reintroduced in 2003, and provide important habitat for mule deer, white-tail deer, and javelina. The "east" tailings corridor alternative would impact 1,196 acres of predominantly Sonoran desertscrub habitat and 119 acres of riparian (including the Gila River) habitat. Northern portions of this alternative ROW would traverse habitat that has a fair amount of human disturbance and that runs parallel to SR 177. The southern portions of the ROW would cross less disturbed native habitat and the Gila River.

To summarize, the Peg Leg TSF alternative 5 "west" option would result in a total of approximately 11,824 acres of upland and 626 acres of riparian habitat loss. The Peg Leg TSF alternative 5 "east" option would result in a total of approximately 11,522 acres of upland and 574 acres of riparian habitat loss.

Skunk Camp TSF alternative 6:

The Department calculated the total direct SERI habitat loss from implementation of the Skunk Camp TSF alternative (within TSF fence line only) as approximately 8,971 acres of predominantly semidesert grassland and Sonoran desertscrub habitat, and 1,100 acres of riparian habitat that is excellent mule deer, javelina and Gambel's quail habitat in GMU 24A. According to the TRCP survey, a high number of participants value the area for quail hunting; and a moderate number for javelina, mule deer and white-tailed deer hunting. The proposed TSF area is relatively undisturbed native habitat, with the exception of a few local ranches.

The Skunk Camp TSF alternative would require several miles of a 500 foot right-of-way (ROW) to construct a buried tailings pipeline to transport slurry to the TSF location. The pipeline infrastructure would result in additional habitat alteration and loss. Both tailings corridor ROW alternatives closely parallel unimproved dirt routes currently available for public access. The "north" tailings corridor alternative would impact approximately 1,176 acres of Sonoran desertscrub, semidesert grassland and interior chaparral habitat and 235 acres of riparian habitat (mostly xeric). The "south" tailings corridor alternative would impact approximately 1,543 acres of predominantly Sonoran desertscrub and interior chaparral habitat and 336 acres of riparian habitat (mostly xeric). Both tailings corridor alternatives would traverse Devil's Canyon and Mineral Creek and it is anticipated to result in additional habitat alteration and loss. Both tailings corridors traverse relatively remote and undisturbed native habitats.

To summarize, the Skunk Camp TSF alternative 6 "north" option would result in a total of approximately 10,148 acres of upland and 1,335 acres of riparian habitat loss. The Skunk Camp TSF alternative 6 "south" option would result in a total of approximately 10,514 acres of upland and 1436 acres of riparian habitat loss.

East Plant Site and Zone of Subsidence (all alternatives):

The Department calculated the total direct SERI habitat loss from implementation of the RCM mine, within the East Plant Site and zone of subsidence area USFS exchange lands (USFS and State Trust lands only), at 1,545 acres of predominantly interior chaparral and Sonoran desertscrub habitat and 123 acres of riparian. According to the TRCP survey, a high number of participants value the area for quail and predator hunting; and a moderate to low number for dove, javelina, mule deer and white-tailed deer hunting.

The Department anticipates there may be additional direct impacts to SERI species and habitat in GMU 24A when East Plant Site mining activities lead to subsidence and potential formation of a pit lake. At this time the Department lacks sufficient information to evaluate the potential direct effects of the subsidence, or water quality risks associated with a pit lake on SERI species that may or may not use habitat in this area.

A.2 Indirect Impacts

There may be compounding edge effects (indirect effects) to SERI habitat beyond the footprint of the RCM project from mining activity, human disturbance, lighting, noise, air emissions and runoff/erosion. Indirect effects to wildlife habitat quality would be difficult to evaluate without extensive site specific research and monitoring. Further, it may take years after the project is implemented to fully understand the potential range and scale of effects.

There would be additional indirect impacts to SERI in GMU 24A when East Plant mining activities lead to predicted subsidence, predicted negative effects to regional surface water availability and riparian habitats, and altered ecosystem function for SERI species within the Queen Creek, Devils Canyon and lower Mineral Creek watersheds. Game species distributions, as well as most wildlife, are closely tied to water in the arid southwest and could be significantly impacted by loss of springs and other perennial surface water as a result of the RCM. At this time, the Department does not have sufficient information to further evaluate how these SERI habitat impacts may affect SERI wildlife populations and future wildlife related recreational opportunities beyond the RCM East Plant Site and predicted subsidence zone. Therefore, the Department has limited quantification of direct impacts (acres) resulting from development of RCM project to specific mine features. We recommend development of a monitoring and adaptive management or response strategy that minimizes or offsets indirect impacts to SERI populations and habitat quality from changes in regional surface water availability as part of a RCM wildlife mitigation plan.

Construction of the mine facilities would lead to habitat fragmentation in GMU 24B. With the exception of bighorn sheep, the Department does not have wildlife movement data, for the project area and vicinity that identifies wildlife movement corridors or habitat use patterns. Predictive modeling based on species habitat preferences has been used to define wildlife movement corridors in Arizona. Due to the size and location of the proposed construction of the RCM project west of Superior and north of US 60, the Department is concerned the mine facilities may interfere with mule deer movement east/west within low elevation desert habitat between the Superstition Mountains and US Highway 60This habitat fragmentation may further isolate mule deer herds in western GMU 24B, and have compounding effects with urban development to the west and south of GMU 24B. Habitat fragmentation would also result from the Silver King TSF alternative, but is anticipated to have less impact on mule deer. The Department is also concerned with north/south movement for all wildlife species within the AZ Missing Linkage #66 Globe to Superior (AWLW 2006). The Department recommends analysis at a broader level for all species within the RCM EIS and wildlife movement studies to determine direct and indirect effects to wildlife movement and habitat connectivity. Movement studies can inform mitigation that may be necessary to avoid or minimize impacts.

B. Wildlife Related Recreation

B.1 Direct Impacts 24B, 24A and 37B

Based on the expertise and knowledge of Department Wildlife Managers and annual Department hunt/harvest data, the Department presented economic summaries in *Section III. Game Management Unit Summaries* of this report and formulated the associated annual financial value for big game, small game and migratory bird hunting for each GMU and RCM project alternative. These calculated annual economic benefits from wildlife related recreation were then multiplied over the 60-year life span of the

mine to estimate a portion of the direct economic impacts to wildlife related recreation anticipated as a result of the proposed RCM project. The Department has no specific measure or process to quantify levels of wildlife watching recreation by GMU or destination and therefore does include estimate of economic impacts in estimated values for wildlife related recreation below. Furthermore, the formula does not take into account potential loss of revenue to the Department from hunt permit and license sales over the life of the mine. Therefore taking into account only a portion of the economic impacts from a decrease or loss of wildlife related recreation in each RCM project area, the anticipated economic impacts would be greater than those presented in Table 12 below.

As a result of habitat loss, and/or in response to game population changes, or to ensure a quality experience for hunters there may be a future need to reduce permit levels for hunted species as a result of the development of the proposed Resolution copper mine. The Department cannot estimate potential reductions in permits resulting from future mine impacts and habitat loss since there are other compounding factors that influence big game populations and permitted hunt levels.

Table 12. Summary of a portion of the economic impacts to wildlife related recreation as a result of the proposed RCM project by Game Management Unit (GMU) and RCM project area or alternatives.

GMU 24B	**GMU 24B**	**GMU 37B**	**GMU 24A**	**GMU 24A**
Near West Modified Proposed Action Alternative 2 or 3	Silver King Alternative 4	Peg Leg Alternative 5	Skunk Camp Alternative 6	East Plant Site & Zone of Subsidence
Estimated Annual Value of Wildlife Related Recreation				
$66,920	$60,368	$12,254	$70,554	$10,508
Total Economic Impact over the 60-Year Life of Resolution Copper Mine > Greater Than				
>$4,015,200	>$3,622,080	>$735,269	>$4,233,240	>$630,480

Near West Modified Proposed Action TSF Alternative 2 and 3 (GMU 24B):

The proposed Near West TSF alternatives 2 and 3 overlap the most suitable and highly valued mule deer habitat in GMU 24B along the foothills of the Superstition Mountains. According to the unit Wildlife

Manager, this area is one of two targeted for annual mule deer population surveys, and higher numbers of mule deer are observed in this area compared to the rest of the unit. Nearly half of the GMU 24B hunting opportunity occurs in this area and it has the highest levels of hunter use in unit for mule deer, javelina & quail (Map 2; Appendix 5). Mine traffic and human activity between these features would further effect SERI and wildlife recreation in the area of GMU 24B. The habitat loss and anthropogenic disturbances from a new copper mine development will result in changes to local wildlife distribution and abundance and loss of access to a valued area for outdoor recreational activities. The TRCP survey indicates that a moderate to high number of hunters value this area for mule deer, javelina, quail, dove and predator hunting. For all these reasons, the Department considers that the Near West TSF alternative 2 or 3 will have very high impacts to wildlife related recreation compared to the other TSF alternatives.

Based on the economic summaries presented in Section III for big game, small game and migratory bird hunting; the Department formulated a combined total of 145 participants; and estimated 490 small game hunter days within the Near West TSF area. The associated annual financial value is $66,920/year or $4,015,200 million over the anticipated 60-year life span of the mine. The Department estimated the annual revenue from a portion of the hunt permit sales (deer and javelina) in GMU 24B at $130,564/year or $7.8 million over the 60-year life of the mine. These estimates don't take into account annual hunting/fishing license sales, economic values of wildlife watching or migratory bird hunting, economic values of OHV related wildlife recreation, or the economic value of less frequently hunted species within the project areas in GMU 24B. Therefore, the Department estimates the economic impact from a decrease or loss of a portion of the wildlife related recreation in the Near West TSF alternative 2 or 3 area would be much greater than the estimated value of $4.0 million over the life of the RCM mine.

Total Economic Impact valued at Greater > than $4.0 million over the 60-year life of the mine.

Silver King TSF Alternative 4 (GMU 24B):

The proposed RCM Silver King TSF alternative overlaps an area valued by a moderate to high number of hunters for mule deer, predator, and white-tailed deer hunting. The Department estimates slightly less hunting pressure in this area compared to the Near West TSF alternative 2 or 3 location. The Silver King TSF alternative would have a greater effect on white-tailed deer hunting compared to the Near West alternative, because of the loss of access to the mountains to the north. Few hunters use this area for motorized camping to stage hunts from, compared to the Near West location. The TRCP survey indicates that a moderate to high number of participants valued the area for mule deer and predator hunting; but a low to moderate number valued it for javelina, quail and dove hunting. For all these reasons, the Department considers that the Silver King TSF alternative 4 will have a high to moderate impact to wildlife related recreation compared to the other TSF alternatives.

Based on the economic summaries presented in Section III for big game, small game and migratory bird hunting; the Department formulated a combined total of 175 participants; and estimated 223 small game hunter days within the Silver King TSF area. The associated annual financial value is $60,368/year or $3,622,080 million over the 60-year life span of the mine. The Department estimated the annual revenue from a portion of the hunt permit sales (deer and javelina) in GMU 24B at $130,564/year or $7.8 million over the 60-year life of the mine. These estimates don't take into account annual hunting/fishing license sales, economic values of wildlife watching or migratory bird hunting, economic values of OHV related

wildlife recreation, or the economic value of less frequently hunted species within the project areas in GMU 24B. Therefore, the Department estimates the economic impact from a decrease or loss of a portion of the wildlife related recreation in the Silver King TSF alternative 4 area would be much greater than the estimated value of $3.6 million over the life of the RCM mine.

Total Economic Impact valued at Greater > than $3.6 million over the 60-year life of the mine.

East Plant Site and Zone of Continuous Subsidence (GMU 24A):

The Department anticipates fewer impacts to game species populations or distributions as a result of habitat loss and permitted hunts within the East Plant Site area compared to GMU 24B. The primary impact to hunting in the East Plant Site area would be due to loss of public access via FR 315 and access to the Apache Leap escarpment that are popular destinations for big game hunters (Map 6; Appendix 5). Wildlife watching may be impacted in the Oak Flat campground area; however the Department has no way to quantify these levels of recreation and therefore does not estimate those impacts. The TRCP survey indicates that a moderate to high number of participants highly value the area for quail and predator hunting; and a low to moderate number value the area for dove, javelina, mule deer and white-tailed deer. For all these reasons, the Department considers that the East Plant Site and subsidence zone will result in a lower impact to wildlife related recreation than the proposed RCM project TSF areas.

Based on the economic summaries presented in Section III for big game, small game and migratory bird hunting; the Department formulated a combined total of 44 participants; and estimated 10 small game hunter days within the East Plant Site and zone of subsidence. The associated annual financial value is $10,508/year or $630,480 thousand over the 60-year life span of the mine. The Department estimated the annual revenue from a portion of the hunt permit sales (deer and javelina) in GMU 24A at $118,613/year or $7.1 million over the 60-year life of the mine. These estimates don't take into account annual hunting/fishing license sales, economic values of wildlife watching or migratory bird hunting, economic values of OHV related wildlife recreation, or the economic value of less frequently hunted species within the project areas in GMU 24A. Therefore, the Department estimates the economic impact from a decrease or loss of a portion of the wildlife related recreation in the East Plant Site and subsidence zone would be much greater than the estimated value of $630 thousand over the life of the RCM mine.

Total Economic Impact valued at Greater > than $630 thousand over the 60-year life of the mine.

Skunk Camp TSF Alternative 6 (GMU 24A):

The proposed RCM Skunk Camp TSF alternative is located in the Dripping Springs Wash, and according to the unit Wildlife Manager, this area is one of three high hunter use areas in GMU 24A for hunting quail, javelina and mule deer (Map 5; Appendix 5). The TRCP survey indicates that a low to moderate number of participants highly value the area for mule deer and predator hunting; and a moderate number for white-tailed deer and javelina hunting. A high number of participants valued the area for quail hunting, but a low number for dove hunting. For all these reasons, the Department considers that the Skunk Camp TSF will result in a high impact to wildlife related recreation similar to the Near West TSF alternative.

Based on the economic summaries presented in Section III for big game, small game and migratory bird hunting; the Department formulated a combined total of 163 participants; and estimated 500 small game hunter days within the Skunk Camp TSF area. The associated annual financial value is $70,554/year or $4,233,240 million over the 60-year life span of the mine. The Department estimated the annual revenue from a portion of the hunt permit sales (deer and javelina) in GMU 24A at $118,613/year or $7.1 million over the 60-year life of the mine. These estimates don't take into account annual hunting/fishing license sales, economic values of wildlife watching or migratory bird hunting, economic values of OHV related wildlife recreation, or the economic value of less frequently hunted species within the project areas in GMU 24A. Therefore, the Department estimates the economic impact from a decrease or loss of a portion of the wildlife related recreation in the Skunk Camp TSF alternative 6 area would be much greater than the estimated value of $4.2 million over the life of the RCM mine.

Total Economic Impact valued at Greater > than $4.2 million over the 60-year life of the mine.

Peg Leg TSF Alternative 5 (GMU 37B):

The proposed RCM Peg Leg TSF alternative would result in the loss of 5883 acres of prime habitat for mule deer, javelina, and Gambel's quail in GMU 37B on the south slope of the Gila River valley. According to the TRCP survey, a low to moderate number of hunters value this area for deer hunting. A moderate to high number of hunters value it for small game, predator and javelina hunting as it is accessible. Anglers do access the river via routes currently crossing the TSF site. For all these reasons, the Department considers that the Peg Leg TSF alternative 5 will have a moderate impact to wildlife related recreation compared to the other TSF alternatives.

Based on the economic summaries presented in Section III for big game, small game and migratory bird hunting; the Department formulated a combined total of 30 participants; and estimated 87 small game hunter days within the Peg Leg TSF area. The associated annual financial value is $12,254/year or $735,240 thousand over the 60-year life span of the mine. The Department estimated the annual revenue from a portion of the hunt permit sales (deer and javelina) in GMU 37B at $198,021/year or $11.9 million over the 60-year life of the mine. These estimates don't take into account annual hunting/fishing license sales, economic values of wildlife watching or migratory bird hunting, economic values of OHV related wildlife recreation, or the economic value of less frequently hunted species within the project areas in GMU 37B. Therefore, the Department estimates the economic impact from a decrease or loss of a portion of the wildlife related recreation in the Peg Leg TSF alternative 5 area would be much greater than the estimated value of $735 thousand over the life of the RCM mine.

Total Economic Impact valued at Greater > than $735 thousand over the 60-year life of the mine.

B.2 Indirect Impacts GMU 24B, 24A and 37B

In GMU 24B loss of motorized routes and dispersed camping areas is anticipated to result in concentrated recreation levels, which may lead to congested conditions between different users/activities (e.g. camping, OHV, recreational shooting, hunting, hiking, horseback riding etc.) along remaining low elevation access points close to US Highway 60; thereby decreasing the quality of the wildlife related recreation experience for many users. Development of the RCM project facilities and Near West or Silver King TSF alternatives would greatly impact aesthetics of the area, particularly for users of the "4-hour loop" north and west of Superior and outdoor recreationists who currently enjoy untarnished views of the Superstition

Mountains. These changes would impact the desire of the public to hunt or conduct watchable wildlife activities in and around the mine facilities, resulting in additional and unquantifiable indirect losses and reduced economic benefits to the local community and Department. Therefore, these changes would decrease the overall value for wildlife related recreation in this area. This impact is anticipated to be greater for the Near West TSF alternative location versus the Silver King TSF alternative location, due to the higher levels of access and observed activity in the Near West area.

The Department anticipates fewer indirect impacts in GMU 24A as a result of the East Plant Site development and subsidence zone. Current levels of hunting and wildlife-related recreation are fairly low and the Department does not anticipate that access changes could lead to displacement or congestion between user groups similar to GMU 24B. The Department anticipates that impacts to the aesthetics of the area from a wildlife recreation point of view, as a result of future mine subsidence, would not be the same magnitude as that experienced as a result of TSF development. The RCM would eliminate public access in the East Plant Site and public exposure to the subsidence zone; therefore we anticipate a net loss to wildlife related recreation in the area.

Development of the Skunk Camp TSF alternative would greatly impact wildlife related recreation opportunity and experience within GMU 24A. Loss of motorized access and dispersed camping areas along the Dripping Springs Road is anticipated to result in concentrated recreation levels east of the proposed TSF, which may lead to congested conditions between different users/activities (e.g. camping, OHV, recreational shooting, hunting, hiking, horseback riding etc.). Without mitigation to relocate Dripping Springs Road and preserve access, the Department anticipates greater losses in hunting opportunity west of the TSF towards Government Spring area than estimated in the economic impacts above.

Further, development of the Skunk Camp TSF would greatly impact aesthetics of the area, particularly for outdoor recreationists who currently enjoy untarnished views from the Pinal Mountains (Pinal Peak Recreation Area) and Dripping Spring Mountains. Current access over the Pinal Mountain range allows for "loop" recreation experiences via FR 194 to Dripping Springs Road. This allows the public a significant amount of opportunity to recreate along unimproved two tracks or four-wheel drive routes on the south flank of Pinal Mountains. Access from the east via SR77 along Dripping Springs Road allows for motorized trailers and OHV transport into the Dripping Springs area. Access over the Pinal Mountains via FR 194 is steep, windy and narrow, not maintained and limiting to many recreational users. Development of the Skunk Camp TSF and elimination of the Dripping Springs Road access would significantly change recreation opportunity in the area.

In GMU 37B, development of the Peg Leg TSF alternative would greatly impact aesthetics of the area, particularly for users of the Florence-Kelvin Highway and outdoor recreationists who currently enjoy untarnished views of the Mineral Mountains north of the Gila River. Current levels of hunting and wildlife-related recreation are fairly low and the Department does not anticipate that access changes could lead to displacement or congestion between user groups similar to GMU 24B.

C. *Wildlife Water Developments*

The Department anticipates direct and indirect impacts to wildlife water developments (catchments). The Department considers direct impacts to be elimination of a water development due to mine facility development.

Indirect impacts are diminished value and benefits to wildlife and wildlife recreation as a result of mine facility developments that infringe within 1.5 miles of a water development. Catchments are designed to benefit wildlife within approximately 1.5 miles of the water source. The Department believes the benefits of these catchments to local wildlife populations would be reduced by adjacent RCM project facilities and activity within this 1.5 mile radius. Further, the hunting and wildlife watching values to the public may be reduced if there is a perceived change in the aesthetic appeal of the natural areas in the vicinity of the catchments; and a perceived degradation to the outdoor experience as a result of the RCM. Wildlife water developments are critical to maintaining healthy wildlife populations and meeting the Department's wildlife management objectives. Mule deer habitat guidelines from the Western Association of Wildlife Agencies Mule Deer Working Group (Heffelfinger et al. 2006) support that water sources are a critical component of wildlife habitat, and desert mule deer will readily move 1.5 miles to water, suggesting that all mule deer habitat is primarily within 1.5 miles of a permanent water source. Indirect impacts associated with TSF tailings corridors may be short-term during pipeline construction; or long-term if existing roads are improved or new maintenance roads constructed for the pipeline and there are increases in traffic and human activity in the vicinity of catchments.

Benson Spring development would be directly impacted by the Near West TSF alternative 2 and 3 (Map 3; Appendix 5). The spring is within the southeastern edge of the proposed TSF. The Department expects construction of the TSF would result in removal of the AGFD spring protection development and elimination of the spring source.

Department catchment Superior #2 (AGFD ID #557) is located in between the West Plant Site and proposed Barrow and Near West TSF facilities, north of US Highway 60 and west of Superior (Map 3; Appendix 5). There would be indirect impacts to this catchment if the Near West TSF alternative 2 and 3 or Silver King TSF alternative 4 were implemented. This catchment benefits wildlife north of US Highway 60 and west of the Town of Superior. Development of mine facilities would result in habitat loss and fragmentation around the catchment. The catchment would become isolated by the mine, US Highway 60 and the Town of Superior. Wildlife may not use undeveloped habitat in the vicinity of the catchment to the same degree as pre-mine conditions as a result of fragmentation/isolation and human activity; or may become more hesitant to access the water for these reasons. It does not appear that access to Superior #2 catchment for AGFD maintenance and the public via FR8 west of Superior and then north on FR2387 (T2S R12E section 38) would be impacted. However, habitats and road networks surrounding catchments are important to hunters and wildlife watching; and therefore the Department anticipates indirect impacts to this catchment as a result of the RCM project.

Department catchment Roblas (AGFD ID#76; Map 3 in Appendix 5) is located north of the proposed Near West TSF area by about 1.1 miles. There would be no direct or habitat fragmentation impacts associated with the project for this catchment, however due to the proximity of the catchment to potential mine development and human activity, wildlife may not use the undeveloped habitat in the vicinity of the catchment to the same degree as pre-mine conditions; or may become more hesitant to access the water

for these reasons. Therefore, the Department anticipates indirect impacts to this catchment if the Near West TSF alternatives are implemented.

It appears that access to the Grayback Mountain catchment (AGFD ID#883; Map 8 in Appendix 5) near the Peg Leg TSF alternative 5 for AGFD maintenance and public wildlife related recreation would be impacted by development of the TSF. The Department requires motorized access for monitoring and maintenance via the Florence-Kelvin Highway, to Grayback Road and then north along an unnamed four-wheel drive route through sections 25, 24 and 13 (T4S R12E). Similar to the Superior #2 and Roblas catchments the overall benefits of the catchment to wildlife and the recreating public would be diminished due to the proximity of the proposed Peg Leg TSF, and therefore the Department anticipates indirect impacts to this catchment.

The Mineral Mountain catchment (AGFD ID#882; Map 8 in Appendix 5) is directly within the proposed 500 foot ROW for the Peg Leg "west" tailings corridor; the Cactus Patch Catchment (AGFD ID#989) is within 0.8 miles of the proposed Peg Leg "west" tailings corridor; and the Superior #1 catchment (AGFD ID#556; Map 7) is immediately adjacent to the 500 foot ROW for the Skunk Camp "south" tailings corridor. If construction of the tailings pipeline in either vicinity is limited to the buried pipeline and avoids the water development; and there is no additional development of new maintenance roads or expansion/improvement of existing roads, the Department anticipates limited short-term impacts during construction. Wildlife may become more hesitant to access water during construction, and wildlife related recreation such as big game hunts may be temporarily impacted depending on the season of construction. However, if existing roads are improved or new maintenance roads constructed for the pipeline, the Department anticipates there could be significant increases in motorized recreation and human activity near these catchments. These increases are anticipated to have indirect impact on wildlife habitat quality in the vicinity of the catchments, may influence daily or seasonal wildlife access to the catchment for water, and may result in diminished wildlife related recreation opportunity in the area.

Overall, the Department anticipates that the Superior #2, Roblas, and Grayback Mountain catchments would be indirectly impacted by adjacent TSF development which will result in diminished functions and values for wildlife and wildlife recreation at these catchments. There may be indirect short-term or long-term impacts to the Mineral Mountain, Cactus Patch and Superior #1 catchments depending on RCM plans to improve existing and/or build new roads for TSF tailings corridors and pipeline maintenance. Because the Mineral Mountain catchment is directly within the proposed footprint for the Peg Leg tailings corridor "west", there may be a direct impact and loss of this catchment. The Department anticipates the direct loss of the Benson Spring exclosure and spring development as a result of the Near West TSF. In February of 2019, the Currie Wood catchment is scheduled for construction by the Department (Map 3; Appendix 5). This catchments has been in planning for quite some time and has been partially funded by a private interest. The Silver King TSF alternative would have the greatest indirect impact to the benefits and value of this catchment for wildlife and wildlife recreation. Lastly, there is 1 proposed new wildlife water developments in GMU 24B, Silver King (Map 3), that has been put on hold because it would be located within the proposed Silver King TSF. The benefits of this catchment would extend beyond the proposed RCM project footprints. It is uncertain if delays as a result of the RCM project planning timelines could jeopardize funding and implementation, if the Silver King TSF alternative is not chosen.

D. Public Access

Impacts to public access and wildlife recreation are summarized in Table 13, Appendix 6, Map 3, Map 6, Map 7, and Map 8.

D.1 Direct Impacts GMU 24B

The proposed RCM and TSF alternatives would eliminate motorized vehicle access via multiple modes and dispersed camping opportunity in GMU 24B (Map 3; Appendix 5) and areas of OHV recreation. Using GIS and routes identified in the TNF TMP, the Department calculated there would be 23.49 miles of roads and 1737 acres of dispersed camping opportunity on the TNF lost to the RCM project footprints (TSF, Barrows, Tailings Corridor, MAARCO; Table 13 and Appendix 6). The majority of the routes that would be eliminated are unmaintained routes that do not require technical 4x4 vehicles or skill, and which are also popular for dispersed camping. The motorized routes that would remain open around RCM facilities are more rugged and require more technical 4x4 vehicles and skill. As a result, the motorized routes remaining open would not accommodate all classes of vehicles and would restrict access to those 4x4 only. Map 3 illustrates the access routes around the perimeter of the proposed Near West TSF alternative 2 or 3 and mine facilities suitable for OHV and extreme 4x4 vehicles and users with technical skill levels. The loss of access also equates to elimination of motorized dispersed camping opportunity from the most accessible low elevation portions of the high hunter use area depicted in Map 3 (TRCP survey indicates a moderate to high number of hunters value the area). Loss of motorized routes and dispersed camping areas would likely result in more concentrated recreation levels and congested conditions (e.g. camping, OHV, recreational shooting, horseback riding etc.) along remaining low elevation access points close to US Highway 60.

Table 13. Summary of Direct and Indirect Effects to access, motorized recreation and motorized dispersed camping by alternative TSF locations and other RCM facilities.

Category	Miles of public access - motorized routes	Acres of motorized dispersed camping	Displace recreational shooting destination(s) or create user conflict
Alt 2 or 3 TSF – Near West[a]	23.49	1737	Yes and contribute to multi-use conflicts
Alt 4 TSF – Silver King[a]	20.11	1434	No
Alt 5 TSF – Peg Leg[b]	45.18	1009	No
Alt 5 – Tailings Corridor East	14	329	No
Alt 5 – Tailings Corridor West	19	448	No
Alt 6 – Skunk Camp TSF[c]	32	861	Yes and contribute to multi-use conflicts
Alt 6 – Tailings Corridor North	17.6	823	No
Alt 6 – Tailings Corridor South	25.9	1,414	No
East Plant Site & Zone of Subsidence	6.18	421	No

[a]USFS TNF lands; [b]BLM and State Trust lands; [c] Private and public lands; Dispersed camping is calculated within 100 ft. from route centerline on BLM and State Trust lands and 300 ft. from centerline on USFS lands.

If the Silver King TSF alternative 4 is selected, a portion of FR 650 (Happy Camp Road) would be impacted. This road is part of the "4-hour loop", a primary off-highway vehicle route that receives high levels of use by the public (Map 3; Appendix 5) for all types of recreation in the area. This impact would be easier to mitigate than the access losses attributed to the Near West TSF alternative. The Department

anticipates that an alternative route could be constructed to preserve FR650 loop access. Overall, if the Silver King TSF alternative 4 was implemented there would be a loss of 20.11 miles of unmaintained motorized routes and approximately 1434 acres of dispersed camping opportunity within the alternative footprint (TSF, Tailings Corridor, Barrow and West Plant). However, the GMU 24B Wildlife Manager reports that this area is rarely, if ever, used for motorized dispersed camping due to rugged road conditions, and so impacts to dispersed camping opportunity would be less impactful to the public than the Near West TSF alternative. To summarize, the Silver King TSF alternative location would have direct impacts to motorized access routes, but fewer impacts to dispersed camping opportunity in GMU 24B than the Near West TSF location due to current recreational patterns.

Portions of the Arizona National Scenic Trail transect the Silver King TSF alternative, and the Near West TSF and tailings corridor. Impacts to this non-motorized trail are not addressed in this analysis.

D.2 Direct Impacts GMU 24A

The East Plant Site and predicted zone of subsidence lie within the boundary of GMU 24A and encompasses approximately 1747 acres, the majority of which would become private land controlled by RCM after the land exchange. There would be a loss of approximately 6.18 miles of public access and 421 acres of dispersed camping opportunity as a result of the mine and future subsidence (Map 6; Appendix 5). Forest Road 315 is the primary route for access through this portion of GMU 24A and it creates a very popular OHV and four-wheel drive loop between US Highway 60 and SR177. Currently, RCM allows public access along FR315, but this would change over the life of the mine. Based on limited information at this time, mining activities and subsidence would eliminate portions of FR315 effectively eliminating the popular OHV loop route between US Highway 60 and SR 177.

Motorized dispersed camping has historically been limited to the Oak Flat area. Due to the rugged and remote conditions of FR 315 motorized dispersed camping further south within the project footprint is very rare, and therefore we estimate no measurable losses to motorized dispersed camping opportunity as a result of future mining activities in the East Plant area, with exception to the Oak Flat area. Based on limited information at this time, subsidence could eliminate Oak Flat or portions of. Overall, compared to other future mine facilities there would be fewer impacts to access and motorized dispersed camping in GMU 24A from this facility.

The Skunk Camp TSF Alternative 6 is located in GMU 24A in the Dripping Springs Wash and would encompass approximately 10,072 acres, the majority of which is State Trust and private lands. There would be a loss of approximately 32 miles of public motorized access and 861 acres of dispersed camping opportunity as a result of this alternative (Map 7; Appendix 5). Dripping Springs Road is the primary maintained dirt road access route that allows the public motorized dispersed camping opportunity from the most accessible low elevation portions of this high hunter use area in GMU 24A depicted in Map 5. This route allows the public a significant amount of opportunity to recreate along unimproved two tracks or four-wheel drive routes on the south flank of Pinal Mountains; and allows for "loop" recreation experiences via FR 194 north over the Pinal Mountains to Globe. Access from the east via SR77 along Dripping Springs Road allows for motorized trailers and OHV transport into the Dripping Springs area. Access over the Pinal Mountains via FR 194 is steep, windy and narrow, not maintained and limiting to many recreational users. Development of the Skunk Camp TSF and elimination of the Dripping Springs

Road access would result in significant impacts to wildlife recreation access in GMU 24A; similar to those anticipated in GMU 24B from the proposed Near West TSF location.

In addition to the Skunk Camp TSF there would be a tailings corridor with a 500 foot ROW for a buried pipeline to transport slurry to the TSF. There are two alternatives, "north" and "south" under consideration, and both intersect existing dirt roads available for public access and dispersed camping. The south tailings corridor would impact 25.9 miles of public access routes and 1,414 acres of dispersed camping opportunity; while the north alternative would impact 17.6 miles of access routes and 823 acres of dispersed camping opportunity. There are a few earthen stock tanks along the ROWs and currently road conditions are primitive and four-wheel drive suitable. Construction of the pipeline may result in improvements to these primitive four-wheel drive routes, which could lead to higher levels of public use in the future. The Department does not have sufficient information to determine if pipeline ROWs would eliminate public access and dispersed camping for a short-term construction period, or permanently as a USFS NEPA decision for the ROW.

D.3 Direct Impacts GMU 37B

In GMU 37B The Peg Leg TSF alternative 5 would eliminate some existing routes used by hunters and anglers to access the Gila River, Grayback Mountain and Grayback Mountain catchment (Map 8; Appendix 5). The Department anticipates that alternative routes could be improved to provide access.

The area which includes the Peg Leg TSF alternative as well as the entire surrounding area is a destination area for OHV recreation. The routes removed from the route network would likely be replaced with other connecting routes.

Overall, there would be a loss of approximately 45.18 miles of public access routes and 1009 acres of dispersed camping opportunity within the Peg Leg TSF alternative location (Map 8; Appendix 5). This calculation quantified main connectors called "Public Land Access Routes", maintained two-way roads, and primitive trails identified in the MGCA TMP (2010) and BLM-TFO 2003 physical access route inventory. There are not any regional OHV trails of significance or facilities specific to the footprint of the TSF. There are no non-motorized trails within the Peg Leg TSF footprint. Portions of one main connector or primary "Public Land Access Route" identified by BLM, the Grayback Road, would be eliminated by the TSF footprint.

In addition to the Peg Leg TSF there would be a tailings corridor with a 500 foot ROW for a buried pipeline to transport slurry to the TSF. There are two alternatives, "east" and "west" under consideration, and both intersect existing dirt roads available for public access and dispersed camping. The east tailings corridor would impact 14 miles of public access routes and 329 acres of dispersed camping opportunity and the west alternative would impact 19 miles of access routes and 448 acres of dispersed camping opportunity on BLM and State Trust lands. There are a two earthen stock tanks adjacent to the east tailings corridor ROW and three adjacent to the west tailings corridor. Currently most road conditions are unmaintained dirt roads along the proposed ROW corridors. Construction of the pipeline may result in improvements to these primitive four-wheel drive routes, which could lead to higher levels of public use in the future. It would be important to maintain motorized access to these stock tanks for maintenance. The Department does not have sufficient information to determine if pipeline ROWs would

eliminate public access and dispersed camping for a short-term construction period, or permanently as a USFS NEPA decision for the ROW; or State Trust, BLM, or BOR requirements for the ROW.

D.4 Indirect Impacts GMU 24B, 24A and 37B

A portion of public land access routes would remain around the footprint of the proposed RCM mine facilities in GMU 24B, but these routes do not have the same level of accessibility and would result in loss of access for many recreationists. The local displacement of OHV, wildlife-related recreation and motorized dispersed camping would likely result in indirect effects such as more concentrated recreation levels and congested conditions between different users/activities (e.g. camping, OHV, recreational shooting, hunting, horseback riding etc.) along remaining low elevation access points close to US Highway 60. There is recreational shooting adjacent to the proposed Near West TSF alternative 2 or 3 location in the area of Whitlow Dam. This area could become a congested area with different users and activities as the mine displaces participants from the surrounding area. OHV use occurring within and through the Near West TSF footprint would be redirected outside and around the TSF facility, increasing OHV use in the surrounding area.

These types of indirect impacts are expected to be less in GMU 24A in the East Plant Site area primarily due to lower levels of recreation in this area and fewer changes to the current motorized route network. However, they are expected to be similar in the Skunk Camp TSF alternative 6 area due to the high levels of motorized recreation in the area.

The area displaced by the Peg Leg TSF alternative 5 and the surrounding area receive heavy OHV use. The Department anticipates that OHV use occurring within and through the Peg Leg TSF footprint would be redirected outside and around the TSF facility, increasing OHV use in the surrounding area.

E. Conclusion

Overall there will be direct and indirect impacts to GMU 24A and 24B as a result of the RCM. Impacts to GMU 37B will only occur if TSF alternative 5 is chosen. The magnitude of impacts vary between TSF alternatives and the Department recognizes that RCM project facilities and all TSF alternatives will result in negative impacts to wildlife resources and public access. However taking into account the combination of impacts presented in this report for SERI species and habitat, wildlife related recreation and public access; the Department considers that the Near West and Skunk Camp TSF alternatives would result in the greatest impacts to Sonoran desert SERI species, wildlife related recreation and public access; as compared to the Peg Leg TSF alternative and the East Plant Site and predicted subsidence zone. The Silver King TSF alternative would result in intermediate impacts between the Near West and Skunk Camp TSF alternatives and the Peg Leg TSF alternative. Recreation patterns and distribution of game species are not homogeneous across GMUs; and therefore the size (number of acres) of the TSF alternative footprints is less important than the actual location in our evaluation.

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Appendix 1 – State of Arizona Proclamation

GOVERNOR DOUGLAS A. DUCEY

STATE OF ARIZONA

PROCLAMATION

WHEREAS, Arizona has a rich and storied tradition of hunting and angling, that dates back further than the state itself and carries forward to this day; and

WHEREAS, Arizona's sportsmen and women were among the first conservationists to support the establishment of the Arizona Game and Fish Department to conserve fish, wildlife and their habitat, and through their license fees helped fund state efforts to provide for healthy and sustainable natural resources; and

WHEREAS, upon realizing that license fees alone were insufficient to restore and sustain healthy fish and wildlife populations, sportsmen and women supported self-imposed excise taxes on hunting, fishing and boating equipment to raise additional conservation funds; and

WHEREAS, to this day, the Arizona Game and Fish Department is funded primarily by sportsmen and women, through this American System of Conservation Funding – a "user pays – public benefits" approach that is widely recognized as the most successful System of fish and wildlife management in the world; and

WHEREAS, last year alone, Arizona's sportsmen and women generated $53,799,168 through this System to support the conservation efforts of the Arizona Game and Fish Department; and

WHEREAS, Arizona's 786,000 hunters and anglers support the state's economy through spending more than $1.2 billion while engaged in their pursuits; and

WHEREAS, this spending supports over 18,220 jobs in Arizona and generates $131,755,796 in state and local taxes; and

WHEREAS, National Hunting and Fishing Day was established in 1972 to celebrate and recognize hunters and anglers for their immense contributions to fish and wildlife conservation, and to our society.

NOW, THEREFORE, I, Douglas A. Ducey, Governor of the State of Arizona, do hereby proclaim September 24, 2016 as

HUNTING AND FISHING DAY

and I further recognize the many and varied social, cultural, economic, and ecological benefits of our time-honored traditions of hunting and angling.

IN WITNESS WHEREOF, I have hereunto set my hand and caused to be affixed the Great Seal of the State of Arizona

Douglas A. Ducey

GOVERNOR

DONE at the Capitol in Phoenix on this sixteenth day of September in the year Two Thousand and Sixteen and of the Independence of the United States of America the Two Hundred and Forty-First.

ATTEST:

Michele Reagan

SECRETARY OF STATE

Appendix 2 – Game management unit (GMU) permitted hunt summaries

Table 14. GMU 24B 10-year summary of total permits authorized, number of 1st choice applicants, number of hunters and days spent in the field hunting (AGFD 2017[5]).

GMU Unit 24B	Year	Hunt Type	No. of Authorized Permits	No. of 1st Choice Applicants	Hunters	Hunter Days
24B General Any Antlered MULE DEER [includes general fall firearm hunts; no junior or muzzleloader]						
	2007	General	450	491	435	1883
	2008	General	450	452	427	1450
	2009	General	500	530	464	1952
	2010	General	550	481	526	2298
	2011	General	600	596	555	2564
	2012	General	600	581	542	2533
	2013	General	450	558	442	1979
	2014	General	450	473	417	1927
	2015	General	400	521	378	1551
	2016	General	400	572	383	1813
24B General Any Antlered WHITE-TAILED DEER [includes general fall firearm early and late season hunts; no junior or muzzleloader]						
	2007	General	550	626	504	1955
	2008	General	635	517	602	2157
	2009	General	735	497	670	2573
	2010	General	790	564	730	2590
	2011	General	840	659	752	2811
	2012	General	890	706	796	2784
	2013	General	940	777	846	3251
	2014	General	990	886	934	3458
	2015	General	1050	913	953	4077
	2016	General	1050	1096	945	3695
24B Archery Any Antlered DEER [over-the-counter (OTC) permits for any antlered (AA) deer]						
	2007	AA	OTC		623	3414
	2008	AA	OTC		707	3731
	2009	AA	OTC		718	4303
	2010	AA	OTC		672	4218
	2011	AA	OTC		634	3849
	2012	AA	OTC		679	3492
	2013	AA	OTC		931	5515
	2014	AA	OTC		742	4807

[5] Arizona Game and Fish Department. 2017. Hunt Arizona: Survey, Harvest and Hunt Data for Big and Small Game. Phoenix, Arizona. 2009-2017 Editions available at: https://www.azgfd.com/Hunting/surveydata/.

GMU Unit 24B	Year	Hunt Type	No. of Authorized Permits	No. of 1st Choice Applicants	Hunters	Hunter Days
	2015	AA	OTC			
	2016	AA	OTC		541	3394
24B JAVELINA [includes general, spring HAM, and archery hunts; includes Spring Juniors GMU 24A/B hunt permitted for 60 in 2017]						
	2007	All	775	681	676	2069
	2008	All	770	679	674	2228
	2009	All	540	621	441	1382
	2010	All	545	562	492	1695
	2011	All	550	588	486	1515
	2012	All	550	691	488	1754
	2013	All	550	744	472	1380
	2014	All	560	751	498	1642
	2015	All	510	867	445	1690
	2016	All	510	866	426	1509
	2017	All	535	956	422	1275

Table 15. GMU 24A 10-year summary of total permits authorized, number of 1st choice applicants, number of hunters and days spent in the field hunting (AGFD 2017[1]).

GMU Unit 24A	Year	Hunt Type	No. of Authorized Permits	No. of 1st Choice Applicants	Hunters	Hunter Days
24A General Any Antlered MULE DEER [includes general fall firearm hunts; no junior or muzzleloader]						
	2007	General	140	435	138	660
	2008	General	165	440	156	591
	2009	General	200	559	198	1017
	2010	General	300	540	279	1282
	2011	General	300	598	286	1225
	2012	General	300	510	286	1403
	2013	General	300	512	263	1160
	2014	General	300	571	287	1482
	2015	General	300	563	273	1187
	2016	General	200	565	179	860
24A General Any Antlered WHITE-TAILED DEER [includes general fall firearm early and late season hunts; no junior or muzzleloader]						
	2007	General	650	832	613	2586
	2008	General	140	716	682	2632
	2009	General	965	821	903	3503
	2010	General	965	784	913	3511
	2011	General	1095	902	1034	4364
	2012	General	1420	1078	1356	5802
	2013	General	1125	834	1022	4484

GMU Unit 24A	Year	Hunt Type	No. of Authorized Permits	No. of 1st Choice Applicants	Hunters	Hunter Days
	2014	General	1125	786	1030	4477
	2015	General	1125	835	1042	4821
	2016	General	1025	726	944	4075
24A Archery Any Antlered DEER [over-the-counter (OTC) permits for any antlered (AA) deer]						
	2007	AA	OTC		561	3121
	2008	AA	OTC		698	3767
	2009	AA	OTC		766	4307
	2010	AA	OTC		677	4477
	2011	AA	OTC		584	3231
	2012	AA	OTC		528	2949
	2013	AA	OTC		676	4140
	2014	AA	OTC		662	3796
	2015	AA	OTC			
	2016	AA	OTC		368	2014
24A JAVELINA [includes general, spring HAM, and archery hunts; does not include Spring Juniors GMU 24A/B hunt permitted for 60 and included with GMU24B data only]						
	2007	All	625	654	580	1986
	2008	All	620	638	532	1710
	2009	All	530	551	474	1608
	2010	All	555	527	500	1485
	2011	All	545	608	459	1596
	2012	All	545	510	478	1623
	2013	All	500	607	419	1255
	2014	All	495	573	430	1282
	2015	All	495	604	434	1466
	2016	All	495	555	386	1398
	2017	All	495	582	448	1279

Table 16. GMU 37B 10-year summary of total permits authorized, number of 1st choice applicants, number of hunters and days spent in the field hunting (AGFD 2017[1]).

GMU 37B	Year	Hunt Type	No. of Authorized Permits	No. of 1st Choice Applicants	Hunters	Hunter Days
37B General ANY ANTLERED DEER [includes general fall firearm hunts for any antlered deer AA; no youth or muzzleloader]						
	2007	AA	500	876	476	2213
	2008	AA	500	776	486	1844
	2009	AA	600	980	566	2155
	2010	AA	700	1056	674	2713

GMU 37B	Year	Hunt Type	No. of Authorized Permits	No. of 1st Choice Applicants	Hunters	Hunter Days
	2011	AA	800	1144	752	3064
	2012	AA	900	1206	845	3472
	2013	AA	1000	1300	924	3913
	2014	AA	1000	1320	948	3997
	2015	AA	1000	1308	960	3877
	2016	AA	1000	1242	895	3833
37B Archery ANY Antlered DEER [over-the-counter (OTC) permits for any antlered (AA) deer]						
	2007	AA	OTC		537	2412
	2008	AA	OTC		510	2635
	2009	AA	OTC		650	3377
	2010	AA	OTC		744	3774
	2011	AA	OTC		638	3380
	2012	AA	OTC		689	3840
	2013	AA	OTC		1142	6316
	2014	AA	OTC		1165	6212
	2015	AA	OTC			
	2016	AA	OTC		862	6255
37B JAVELINA [includes general, fall juniors, spring HAM, spring juniors, and spring archery hunts]						
	2007	All	3330	3847	2844	10186
	2008	All	3235	2280	2616	9097
	2009	All	3050	2219	2569	9239
	2010	All	3050	1980	2623	8876
	2011	All	3050	1776	2483	8420
	2012	All	3050	2050	2661	9736
	2013	All	3050	1923	2681	9205
	2014	All	3050	2132	2648	10032
	2015	All	2950	2581	2624	9380
	2016	All	2950	2318	2560	9376
	2017	All	2750	2535	2352	8543

Appendix 3 Economic Impact Analysis Templates

Unit 24B – Alternative 2 or 3 (Near West) and Alternative 4 (Silver King) TSF Areas

The following chart shows the average economic expenditure per day spent by sportspersons; used to calculate the estimated annual economic impact of this project. This worksheet is derived from the worksheet AGFD uses to determine the cost/benefit of maintain access for access agreements with private parties.

The number of participants in the chart below is derived from hunter survey data combined with knowledge and experience of the district Wildlife Manager (Kriselle Colvin) based on yearly average use during: open general hunt seasons, migratory bird hunts, 4 white-tailed deer general hunts, 1 mule deer general hunt, 4 months of archery deer hunts, as well as general/ HAM/archery javelina hunts and year-round use from wildlife watchers. Per year there are approximately 400 mule deer tags, 450 javelina tags, over 1000 white-tail tags, over 500 over the counter archery deer hunters and more than 1700 quail hunters in 24B. The big game hunting calculations are derived from the 2016 tag allocations. The small game hunt calculations are derived from a 3-year average of small game/predator/furbearer hunter survey data from 2013-2015 then multiplied by the percentage of acres in 24B. For the GPO TSF project area, that number was then multiplied by 1/3 to reflect the higher use of this area due to its proximity to the metro area and ease of access. The GPO TSF area consists of excellent primary mule deer, and javelina habitat as well as transitional white-tailed deer habitat that is very close to the metro area so it sees an exaggerated amount of use in comparison to the rest of the unit especially during the mule deer, archery deer and small game hunts. The Silver King TSF alternative project area is more transitional habitat in-between the more densely populated areas to the south and west for mule deer and to the north for white-tailed deer. The Silver King TSF alternative would have an exaggerated impact on white-tail deer hunters as proposed due to the fact that is covers the existing main access to the mountains to the north which are very popular for whitetail hunters.

This worksheet was meant to capture the actual economic cost to the public with regards to wildlife recreation on the footprint of the proposed tailings sites. There is no way to capture the entire cost and the ancillary effects to the use of the area around the tailings piles. I would hypothesize that use by the recreational public around the entire footprint would be greatly reduced due to the drastic change in the aesthetic appeal of the area and the perceived degradation to the outdoor experience, which is not captured with this worksheet.

COST WORKSHEETS:

For Alternatives 2 or 3 Near West Modified Proposed Action (GPO) TSF Areas

Activity	Associated Cost Per Day[1]	Number of Participants[2]	Number of Days	Total Per Year	
Big Game Hunting	$56.00	140	5	$39,200.00	
Small Game/Predator Hunting[3]	$56.00	1	490	$27,440.00	
Migratory Bird Hunting[4]	$56.00	5	1	$280.00	
Wildlife Watching[5]	$33.00			$0.00	
				$66,920.00	

For Alternative 4 (Silver King) TSF Area

Activity	Associated Cost Per Day[1]	Number of Participants[2]	Number of Days	Total Per Year	
Big Game Hunting	$56.00	170	5	$47,600.00	
Small Game/Predator Hunting[3]	$56.00	1	223	$12,488.00	
Migratory Bird Hunting[4]	$56.00	5	1	$280.00	
Wildlife Watching[5]	$33.00			$0.00	
				$60,368.00	

[1] The daily financial values and number of days are based on information from the 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, U.S. Fish & Wildlife Service.

[2]Number of participants is a best approximation of use for the area of 24B that is proposed to be covered by mine tailings.

[3]AGFD small game data does not include number of participants at the unit level, hunter days are used without regard to individual hunters. Hunter days are derived from the AGFD small game/predator/furbearer hunter survey data using a 3-year average for # of hunter days between 2013 and 2015.

[4]Migratory bird hunting (dove) is opportunistic and incidental to quail/small game.

[5]The Department does not collect data on wildlife watching across game management units; therefore we cannot provide an estimated value. We note that wildlife watching destinations occur in the unit and that many people are combining recreational experiences, such as OHV with wildlife watching.

ESTIMATED ECONOMIC IMPACT TO THE PUBLIC AND/OR WILDLIFE FROM THE PROPOSED PROJECT:

$ 66,920 for the Alternative 2 or 3 Near West Proposed Action (GPO) TSF area per year not accounting for inflation

$ 60,368 for the Alternative 4 (Silver King) TSF alternative per year not accounting for inflation

Unit 37B – Alternative 5 (Peg Leg) TSF Area

The following chart shows the average economic expenditure per day spent by sportspersons; used to calculate the estimated annual economic impact of this project. This worksheet is derived from the worksheet AGFD uses to determine the cost/benefit of maintain access for access agreements with private parties.

The number of participants in the chart below is derived from hunter survey data combined with knowledge and experience of the Habitat Program Manager and former District Wildlife Manager (John Windes) based on yearly average use during: open general hunt seasons, quail season, 2 any antlered deer general hunt, 6 weeks of archery deer hunts, as well as general/ HAM/archery javelina hunts. Per year there are approximately 1000 general deer tags, 450 javelina tags, over 500 over the counter archery deer hunters and an average of 11,154 quail hunter days in 37B (3-year average between 2013-2015). The area where the Peg Leg TSF alternative (mine tailings) is proposed is excellent primary mule deer, javelina, and Gambel's quail habitat.

This worksheet was meant to capture the actual economic cost to the public with regard to wildlife recreation on the footprint of the proposed TSF. There is no way to capture the entire cost and the ancillary effects to the use of the area proximate to the tailings pile. The Department expects that use by the recreational public around the entire footprint would be greatly reduced due to the drastic change in the aesthetic appeal of the area and the perceived degradation to the outdoor experience, which is not captured with this worksheet.

COST WORKSHEET:

General Deer Hunting	$56.00	5.6	4.2	$1,317.12	
Archery Deer Hunting	$56.00	4.7	7.3	$1,921.36	
All Javelina Hunting	$56.00	20	3.7	$4,144.00	
Gambel's Quail Hunting[3]	$56.00	1	87	$4,872.00	
Wildlife Watching[5]	$33.00				
				$12,254.48	

[1]The daily financial values and number of days are based on information from the 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, U.S. Fish & Wildlife Service.

[2]Number of Participants is a best approximation of use for the area that is proposed to be covered by the Peg Leg TSF.

[3]AGFD small game data does not include number of participants at the unit level, hunter days are used without regard to individual hunters. Hunter days are derived from the AGFD small game/predator/furbearer hunter survey data using a 3-year average for # of hunter days between 2013 and 2015. Quail hunting is the most hunted small game in the vicinity of Peg Leg therefore we estimate for Gambel's quail hunts only. Migratory bird hunting (dove) is opportunistic and incidental to quail/small game; therefore not quantified.

[5]The Department does not collect data on wildlife watching across game management units; therefore we cannot provide an estimated value. We note that wildlife watching destinations occur in the unit and that many people are combining recreational experiences, such as OHV with wildlife watching.

ESTIMATED ECONOMIC IMPACT TO THE PUBLIC AND/OR WILDLIFE FROM THE PROPOSED PROJECT: $12,254.48 per year not accounting for inflation

Unit 24A – East Plant Site and Subsidence Rings

The following chart shows the average economic expenditure per day spent by sportsman to calculate the estimated annual economic impact of this project. This worksheet is derived from the worksheet AGFD uses to determine the cost/benefit of maintain access for access agreements with private parties.

The number of participants in the chart below is derived from hunter survey data combined with knowledge and experience of the district Wildlife Manager (Grant Pearce) based on yearly average use during: open general hunt seasons, migratory bird hunts, 4 white-tailed deer general hunts, 1 mule deer general hunt, 4 months of archery any antlered deer hunts, as well as general/spring HAM/youth only/archery javelina hunts and year-round use from wildlife watchers. Per year there are approximately 200 mule deer tags, 495 javelina tags, over 1025 white-tail tags, and approximately 400 over the counter archery deer hunters. According to the AGFD small game survey there was a 3-year average of 5654 quail hunter days in 24B between 2013 and 2015. The area where the East Plant Site and subsidence zone is anticipated is transitional white-tailed deer habitat and javelina habitat. This area is very close to the town of Superior and receives low hunting pressure due to the rocky terrain. The area is however heavily used by recreational campers, hikers, climbers, and OHV users. The campground and riparian areas are heavily visited but AGFD has no data on how many of those users are also wildlife watchers. The Oak Flat campground is an eBird.org hotspot location for destination birders.

This worksheet was meant to capture the actual economic cost to the public with regards to wildlife recreation on the footprint of the proposed tailings site. There is no way to capture the entire cost and the ancillary effects to the use of the area around the tailings pile. The Department would hypothesize that use by the recreational public around the entire footprint will be greatly reduced due future changes in access, and to the drastic change in the aesthetic appeal of the area and the perceived degradation to the outdoor experience; and which is not captured with this worksheet.

COST WORKSHEET:

Activity	Associated Cost Per Day[1]	Number of Participants[2]	Number of Days	Total Per Year	
Big Game Hunting	$56.00	33	5	$9,240.00	
Big Game Youth Event	$56.00	1	3	$168.00	
Small Game Hunting/Predator[3]	$55.00	1	10	$550.00	
Migratory Bird Hunting[4]	$55.00	10	1	$550.00	
Wildlife Watching[5]	$33.00			$0.00	
				$10,508.00	

[1]The daily financial values and number of days are based on information from the 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, U.S. Fish & Wildlife Service.

[2]Number of Participants is a best approximation of use for the area of 24A that is proposed to be the East Plant Site location for Resolution Mine.

[3]AGFD small game data does not include number of participants at the unit level, hunter days are used without regard to individual hunters. Hunter days are derived from the AGFD small game/predator/furbearer hunter survey data using a 3-year average for # of hunter days between 2013 and 2015.

[4]Migratory bird hunting (dove) is opportunistic and incidental to quail/small game.

[5]The Department does not collect data on wildlife watching across game management units; therefore we cannot provide an estimated value. We note that wildlife watching destinations occur in the unit and that many people are combining recreational experiences, such as OHV with wildlife watching.

ESTIMATED ECONOMIC IMPACT TO THE PUBLIC AND/OR WILDLIFE FROM THE PROPOSED PROJECT: $ 10,508 is the approximate cost per year not accounting for inflation.

Unit 24A – Alternative 6 (Skunk Camp) TSF Area

The following chart shows the average economic expenditure per day spent by sportsman to calculate the estimated annual economic impact of this project. This worksheet is derived from the worksheet AGFD uses to determine the cost/benefit of maintain access for access agreements with private parties.

The number of participants in the chart below is derived from hunter survey data combined with knowledge and experience of the district Wildlife Manager (Grant Pearce) based on yearly average use during: open general hunt seasons, migratory bird hunts, 4 white-tailed deer general hunts, 1 mule deer general hunt, 4 months of archery deer hunts, as well as general/ HAM/archery javelina hunts and year-round use from wildlife watchers. Per year there are approximately 200 mule deer tags, 495 javelina tags, over 1025 white-tail tags, and approximately 400 over the counter archery deer hunters and more than 1700 quail hunters in 24B. The area where the mine tailings are proposed is excellent primary mule deer, and javelina habitat as well as transitional white-tailed deer habitat. This area is very close to the towns of Globe, Kearney and Winkelman and receives an exaggerated amount of use in comparison to the rest of GMU 24A, especially during the archery hunts.

This worksheet was meant to capture the actual economic cost to the public with regards to wildlife recreation on the footprint of the proposed tailings site. There is no way to capture the entire cost and the ancillary effects to the use of the area around the tailings pile. The Department would hypothesize that use by the recreational public around the entire footprint will be greatly reduced due to the drastic change in the aesthetic appeal of the area and the perceived degradation to the outdoor experience, which is not captured with this worksheet.

COST WORKSHEET:

Activity	Associated Cost Per Day[1]	Number of Participants[2]	Number of Days	Total Per Year	
Big Game Hunting	$56.00	150	5	$42,000.00	
Big Game Youth Event	$56.00	3	3	$504.00	
Small Game Hunting/Predator[3]	$55.00	1	500	$27,500.00	
Migratory Bird Hunting[4]	$55.00	10	1	$550.00	
Wildlife Watching[5]	$33.00			$0.00	
				$70,554.00	

[1] The daily financial values and number of days are based on information from the 2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, U.S. Fish & Wildlife Service.

[2]Number of participants is a best approximation of use for the area of 24B that is proposed to be covered by mine tailings; based on assumption that half of hunters/camps within the footprint actually hunt within the footprint and half use the footprint as a staging/camping area to hunt surrounding area.

[3]AGFD small game data does not include number of participants at the unit level, hunter days are used without regard to individual hunters. Hunter days are derived from the AGFD small game/predator/furbearer hunter survey data using a 3-year average for # of hunter days between 2013 and 2015.

[4]Migratory bird hunting (dove) is opportunistic and incidental to quail/small game.

[5]The Department does not collect data on wildlife watching across game management units; therefore we cannot provide an estimated value. We note that wildlife watching destinations occur in the unit and that many people are combining recreational experiences, such as OHV with wildlife watching.

ESTIMATED ECONOMIC IMPACT TO THE PUBLIC AND/OR WILDLIFE FROM THE PROPOSED PROJECT: $ 70,554 is the approximate cost per year not accounting for inflation.

The estimate above is based on the assumption that Dripping Springs Road would be rerouted, or otherwise remain open for public access to the west of the proposed TSF to the Government Springs Ranch area. If this access is lost there will be a greater economic impact as a result of the TSF. Public access from Globe over the Pinal Mountains does not allow for motorized access with camping trailers, or trailers hauling UTV/ATV equipment. The following calculations estimate the impact if access via Dripping Springs Road is completely lost.

Activity	Associated Cost Per Day[1]	Number of Participants[2]	Number of Days	Total Per Year	
Big Game Hunting	$56.00	300	5	$84,000.00	
Big Game Youth Event	$56.00	5	3	$840.00	
Small Game Hunting/Predator[3]	$55.00	1	1000	$55,000.00	
Migratory Bird Hunting[4]	$55.00	10	1	$550.00	
Wildlife Watching[5]	$33.00			$0.00	
				$140,390.00	

ESTIMATED ECONOMIC IMPACT TO THE PUBLIC AND/OR WILDLIFE FROM THE PROPOSED PROJECT: $ 140,390 is the approximate cost per year not accounting for inflation.

Appendix 4 Acres of Habitat Classified by Vegetation Type[6] within the mine facility footprints

RCM Facility Name	Description	Acres	% of Facility
Alt2/3_GPO_NearWest_TSF_Fenceline	Riparian	192.161	3.92
Alt2/3_GPO_NearWest_TSF_Fenceline	Semidesert Grassland	2.524	0.05
Alt2/3_GPO_NearWest_TSF_Fenceline	Sonoran Desertscrub	0.466	0.01
Alt2/3_GPO_NearWest_TSF_Fenceline	Upland Sonoran Desertscrub	4712.704	96.02
Alt2/3_GPO_TSF_TailingsCorridor/Pipeline	Riparian	1.147	1.44
Alt2/3_GPO_TSF_TailingsCorridor/Pipeline	Semidesert Grassland	0.021	0.03
Alt2/3_GPO_TSF_TailingsCorridor/Pipeline	Upland Sonoran Desertscrub	78.471	98.54
Alt4_SilverKing_TSF_Fenceline	Interior Chaparral	117.527931	2.09
Alt4_SilverKing_TSF_Fenceline	Pine-Oak	0.978	0.02
Alt4_SilverKing_TSF_Fenceline	Pinyon-Juniper	12.004	0.21
Alt4_SilverKing_TSF_Fenceline	Riparian	223.746	3.98
Alt4_SilverKing_TSF_Fenceline	Semidesert Grassland	1250.047	22.25
Alt4_SilverKing_TSF_Fenceline	Sonoran Desertscrub	2078.419	37.00
Alt4_SilverKing_TSF_Fenceline	Upland Sonoran Desertscrub	1934.275	34.44
Alt4_SilverKing_TailingsCorridor/Pipeline	Interior Chaparral	50.897	12.67
Alt4_SilverKing_TailingsCorridor/Pipeline	Riparian	7.517	1.87
Alt4_SilverKing_TailingsCorridor/Pipeline	Semidesert Grassland	38.293	9.53
Alt4_SilverKing_TailingsCorridor/Pipeline	Sonoran Desertscrub	201.266	50.11
Alt4_SilverKing_TailingsCorridor/Pipeline	Upland Sonoran Desertscrub	103.635	25.80
Alt4_SilverKing_TaillingsCorridor/Pipeline_erased[7]	Interior Chaparral	1.824	9.13
Alt4_SilverKing_TaillingsCorridor/Pipeline_erased	Riparian	0.027	0.14
Alt4_SilverKing_TaillingsCorridor/Pipeline_erased	Sonoran Desertscrub	5.626	28.14
Alt4_SilverKing_TaillingsCorridor/Pipeline_erased	Upland Sonoran Desertscrub	12.512	62.60
Alt5_PegLeg_TSF_Fenceline	Pinyon-Juniper	5.420	0.05
Alt5_PegLeg_TSF_Fenceline	Riparian	455.003	4.22
Alt5_PegLeg_TSF_Fenceline	Semidesert Grassland	6.180	0.06
Alt5_PegLeg_TSF_Fenceline	Sonoran Desertscrub	353.522	3.28
Alt5_PegLeg_TSF_Fenceline	Upland Sonoran Desertscrub	9961.605	92.40

[6] During the development of the Arizona's State Wildlife Action Plan System (SWAPSAZ) the Southwest Regional GAP (SWReGAP) Land Cover Dataset (Lowry et al. 2007) was used as the basis for developing Arizona SGCN species distributions. The SWReGAP dataset was modified prior to use to more accurately reflect conditions on the ground in Arizona. We used this data set for all wildlife habitat calculations by habitat type in this report. See the State Wildlife Action Plan (SWAP; AGFD 2007) for additional information.

[7] All facilities named "Alt…TailingsCorridor/Pipeline_erased" are tailings corridors recalculated to include only the portions between the West Plant Site and the TSF fence line with no facility overlap.

RCM Facility Name	Description	Acres	% of Facility
Alt5_E_PegLeg_TailingsCorridor/Pipeline	Interior Chaparral	3.861	0.29
Alt5_E_PegLeg_TailingsCorridor/Pipeline	Pinyon-Juniper	3.479	0.26
Alt5_E_PegLeg_TailingsCorridor/Pipeline	Riparian	118.533	8.87
Alt5_E_PegLeg_TailingsCorridor/Pipeline	Semidesert Grassland	3.332	0.25
Alt5_E_PegLeg_TailingsCorridor/Pipeline	Sonoran Desertscrub	90.752	6.79
Alt5_E_PegLeg_TailingsCorridor/Pipeline	Upland Sonoran Desertscrub	1116.994	83.56
Alt5_E_PegLeg_TailingsCorridor/Pipeline_erased	Interior Chaparral	3.861	0.29
Alt5_E_PegLeg_TailingsCorridor/Pipeline_erased	Pinyon-Juniper	3.493	0.27
Alt5_E_PegLeg_TailingsCorridor/Pipeline_erased	Riparian	118.811	9.04
Alt5_E_PegLeg_TailingsCorridor/Pipeline_erased	Semidesert Grassland	3.332	0.25
Alt5_E_PegLeg_TailingsCorridor/Pipeline_erased	Sonoran Desertscrub	71.453	5.44
Alt5_E_PegLeg_TailingsCorridor/Pipeline_erased	Upland Sonoran Desertscrub	1113.363	84.71
Alt5_W_PegLeg_TailingsCorridor/Pipeline	Pinyon-Juniper	1.432	0.07
Alt5_W_PegLeg_TailingsCorridor/Pipeline	Riparian	186.700	9.56
Alt5_W_PegLeg_TailingsCorridor/Pipeline	Semidesert Grassland	1.144	0.06
Alt5_W_PegLeg_TailingsCorridor/Pipeline	Sonoran Desertscrub	18.721	0.96
Alt5_W_PegLeg_TailingsCorridor/Pipeline	Upland Sonoran Desertscrub	1743.173	89.28
Alt5_W_PegLeg_TailingsCorridor/Pipeline_erased	Riparian	170.904	10.24
Alt5_W_PegLeg_TailingsCorridor/Pipeline_erased	Semidesert Grassland	1.139	0.07
Alt5_W_PegLeg_TailingsCorridor/Pipeline_erased	Sonoran Desertscrub	7.756	0.46
Alt5_W_PegLeg_TailingsCorridor/Pipeline_erased	Upland Sonoran Desertscrub	1488.760	89.22
Alt6_SkunkCamp_TSF_Fenceline	Interior Chaparral	176.363	1.75
Alt6_SkunkCamp_TSF_Fenceline	Mesquite	7.061	0.07
Alt6_SkunkCamp_TSF_Fenceline	Pine-Oak	10.440	0.10
Alt6_SkunkCamp_TSF_Fenceline	Pinyon-Juniper	7.989	0.08
Alt6_SkunkCamp_TSF_Fenceline	Riparian	1100.163	10.92
Alt6_SkunkCamp_TSF_Fenceline	Semidesert Grassland	8105.826	80.48
Alt6_SkunkCamp_TSF_Fenceline	Sonoran Desertscrub	356.311	3.54
Alt6_SkunkCamp_TSF_Fenceline	Upland Sonoran Desertscrub	307.325	3.05
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline	Interior Chaparral	601.059	41.01
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline	Mesquite	0.032	0.00
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline	Pinyon-Juniper	7.695	0.53
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline	Riparian	236.437	16.13
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline	Semidesert Grassland	167.127	11.40
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline	Sonoran Desertscrub	262.906	17.94
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline	Upland Sonoran Desertscrub	190.568	13.00
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline_erased	Interior Chaparral	600.815	42.58
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline_erased	Mesquite	0.032	0.00
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline_erased	Pinyon-Juniper	7.695	0.55

RCM Facility Name	Description	Acres	% of Facility
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline_erased	Riparian	234.741	16.63
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline_erased	Semidesert Grassland	133.716	9.48
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline_erased	Sonoran Desertscrub	243.981	17.29
Alt6_N_SkunkCamp_TailingsCorridor/Pipeline_erased	Upland Sonoran Desertscrub	190.192	13.48
Alt6_S_SkunkCamp_TailingsCorridor/Pipeline	Interior Chaparral	501.469	26.22
Alt6_S_SkunkCamp_TailingsCorridor/Pipeline	Mesquite	0.032	0.00
Alt6_S_SkunkCamp_TailingsCorridor/Pipeline	Pinyon-Juniper	2.390	0.13
Alt6_S_SkunkCamp_TailingsCorridor/Pipeline	Riparian	337.182	17.63
Alt6_S_SkunkCamp_TailingsCorridor/Pipeline	Semidesert Grassland	158.277	8.28
Alt6_S_SkunkCamp_TailingsCorridor/Pipeline	Sonoran Desertscrub	294.776	15.41
Alt6_S_SkunkCamp_TailingsCorridor/Pipeline	Upland Sonoran Desertscrub	618.002	32.32
Alt6_S_SkunkCamp_TailingsCorridorPipeline_erased	Interior Chaparral	501.506	26.70
Alt6_S_SkunkCamp_TailingsCorridorPipeline_erased	Mesquite	0.032	0.00
Alt6_S_SkunkCamp_TailingsCorridorPipeline_erased	Pinyon-Juniper	2.390	0.13
Alt6_S_SkunkCamp_TailingsCorridorPipeline_erased	Riparian	335.565	17.86
Alt6_S_SkunkCamp_TailingsCorridorPipeline_erased	Semidesert Grassland	126.509	6.73
Alt6_S_SkunkCamp_TailingsCorridorPipeline_erased	Sonoran Desertscrub	294.670	15.69
Alt6_S_SkunkCamp_TailingsCorridorPipeline_erased	Upland Sonoran Desertscrub	617.864	32.89
Alt6_SkunkCamp_TransmissionLine	Interior Chaparral	185.116	43.90
Alt6_SkunkCamp_TransmissionLine	Mesquite	0.002	0.00
Alt6_SkunkCamp_TransmissionLine	Pine-Oak	4.026	0.95
Alt6_SkunkCamp_TransmissionLine	Pinyon-Juniper	0.890	0.21
Alt6_SkunkCamp_TransmissionLine	Riparian	89.208	21.15
Alt6_SkunkCamp_TransmissionLine	Semidesert Grassland	72.563	17.21
Alt6_SkunkCamp_TransmissionLine	Sonoran Desertscrub	37.122	8.80
Alt6_SkunkCamp_TransmissionLine	Upland Sonoran Desertscrub	32.879	7.80
Borrow_Alt 2/3/4	Riparian	0.166	0.18
Borrow_Alt 2/3/4	Upland Sonoran Desertscrub	90.046	99.81
Continuous Zone of Subsidence	Interior Chaparral	974.128	59.43
Continuous Zone of Subsidence	Pinyon-Juniper	3.038	0.19
Continuous Zone of Subsidence	Riparian	119.756	7.31
Continuous Zone of Subsidence	Semidesert Grassland	21.158	1.29
Continuous Zone of Subsidence	Sonoran Desertscrub	520.829	31.78
East Plant Site Facilities	Interior Chaparral	7.045	24.51
East Plant Site Facilities	Riparian	3.304	11.49
East Plant Site Facilities	Sonoran Desertscrub	18.382	63.95

Appendix 5 Report Maps

Placeholder for Maps 1-6 provided separately.

Map list:

Map 1 – Game Management Unit 24B Overview of Mule Deer Density

Map 2 – Game Management Unit 24B Overview of Hunting Areas

Map 3 – Game Management Unit 24B Overview of Recreation Access

Map 4 – Game Management Unit 24A Overview of Mule Deer Density Areas

Map 5 - Game Management Unit 24A Overview of Hunting Areas

Map 6 - Game Management Unit 24A Overview of Recreation Access – East Plant Site and Zone of Subsidence

Map 7 – Game Management Unit 24A Overview of Recreation Access – Skunk Camp TSF Alternative 6 Area

Map 8 – Game Management Unit 37B Overview of Recreation Access

MAP 1 Game Management Unit 24B - Overview of Observed Mule Deer Density

N

1:200,000

Origin: Arizona Game & Fish Department
Region VI Habitat, Evaluation and Lands Program
Date: October 2018
Report: Report on Species of Economic Importance, Wildlife Related Recreation and Public Access within the Resolution Copper Mine Project Area (AGFD 2018)

Legend

- RCM_AlternativePolygons_20180803_USFS
- OakFlat Exchange
- AGFDGameMgmtUnits
- SuperstitionWA
- RoadlessAreas

gmu24Bmuledeer

MD_density

- High
- Mod-Low

Land Ownership

Category

- Arizona Game and Fish Dept.
- Bureau of Land Mgmt
- Bureau of Reclamation
- Military
- Mixed/Other
- National Park Service
- National Wildlife Refuge
- Private
- State Trust Land
- State and Regional Parks
- Tribal Lands
- US Forest Service

GMU 24B Mod-Low Density Mule Deer

Roadless Areas

Superstition Wilderness

GMU 24B

GMU 24B High Density Mule Deer

GMU 26M

GMU 37B

GMU 24A

MAP 2 Game Management Unit 24B - Overview of Hunting Areas

1:200,000

Origin: Arizona Game & Fish Department
Region VI Habitat, Evaluation and Lands Program
Date: October 2018
Report: Report on Species of Economic Importance, Wildlife Related Recreation and Public Access within the Resolution Copper Mine Project Area (AGFD 2018)

Legend

- RCM_AlternativePolygons_20180803_USFS
- OakFlat Exchange
- AGFDGameMgmtUnits
- SuperstitionWA
- RoadlessAreas

Hunt_Use

- High
- Mod
- Low-Mod

Roadless Areas

GMU 24B Mod-Low Levels Hunting Mule Deer, Javelina & Quail

Superstition Wilderness

GMU 24B

GMU 24B Highest Levels Hunting Mule Deer, Javelina, & Quail

GMU 24B Mod Levels Hunting Mule Deer, Javelina & Quail

GMU 26M

GMU 37B

GMU 24A

Land Ownership

Category

- Arizona Game and Fish Dept.
- Bureau of Land Mgmt
- Bureau of Reclamation
- Military
- Mixed/Other
- National Park Service
- National Wildlife Refuge
- Private
- State Trust Land
- State and Regional Parks
- Tribal Lands
- US Forest Service

MAP 3 Game Management Unit 24B - Overview of Recreation Access

N

1:75,000

Origin: Arizona Game & Fish Department
Region VI Habitat, Evaluation and Lands Program
Date: October 2018
Report: Report on Species of Economic Importance, Wildlife Related Recreation and Public Access within the Resolution Copper Mine Project Area (AGFD 2018)

Legend

Hunt_Use
- High

Recreation Access
- PreTMP USFS Routes within RCM Facilities
- PreTMP USFS Routes GMU24b
- TIGERRoadsPinal

RCM Project Alternatives 20180803 USFS
- RCM Project Facilities
- OakFlat Exchange

Other Boundaries
- SuperstitionWA
- AGFDGameMgmtUnits

AGFD_WildlifeWaters_RCMproject
- Existing
- Proposed

Land Ownership
Category
- Arizona Game and Fish Dept.
- Bureau of Land Mgmt
- Bureau of Reclamation
- Military
- Mixed/Other
- National Park Service
- National Wildlife Refuge
- Private
- State Trust Land
- State and Regional Parks
- Tribal Lands
- US Forest Service

Superstition Wilderness

FR 172/650 loop is heavy use 4x4 "4 hr loop"

Area of High Hunter Use

Whitlow Canyon

Hackberry Canyon

Cutrie Wood

Hewitt Ridge

Roblas

GMU 24B

Extreme 4x4 Rt

Extreme 4x4 Rt

Extreme 4x4 Rt

Target Shooting Area

Silver King

GMU 24B

Benson Spring

Superior #2

Gonzales Pass

Gonzales Pass Alt2

Gonzales Pass Alt1

GMU 37B

GMU 24A

MAP 4 Game Management Unit 24A - Overview of Observed Mule Deer Density

1:275,000

Origin: Arizona Game & Fish Department
Region VI Habitat, Evaluation and Lands Program
Date: October 2018
Report: Report on Species of Economic Importance, Wildlife Related Recreation and Public Access within the Resolution Copper Mine Project Area (AGFD 2018)

Legend

- RCM Alternative Polygons 20180803 USFS
- OakFlat Exchange
- AGFDGameMgmtUnits
- WildernessAreas

GMU 24A_MD_Density

- High
- High to Moderate
- Moderate
- Moderate to Low
- Low

Land Ownership

Category

- Arizona Game and Fish Dept.
- Bureau of Land Mgmt
- Bureau of Reclamation
- Military
- Mixed/Other
- National Park Service
- National Wildlife Refuge
- Private
- State Trust Land
- State and Regional Parks
- Tribal Lands
- US Forest Service

GMU 24A High Density Mule Deer

GMU 24A High-Mod Density Mule Deer

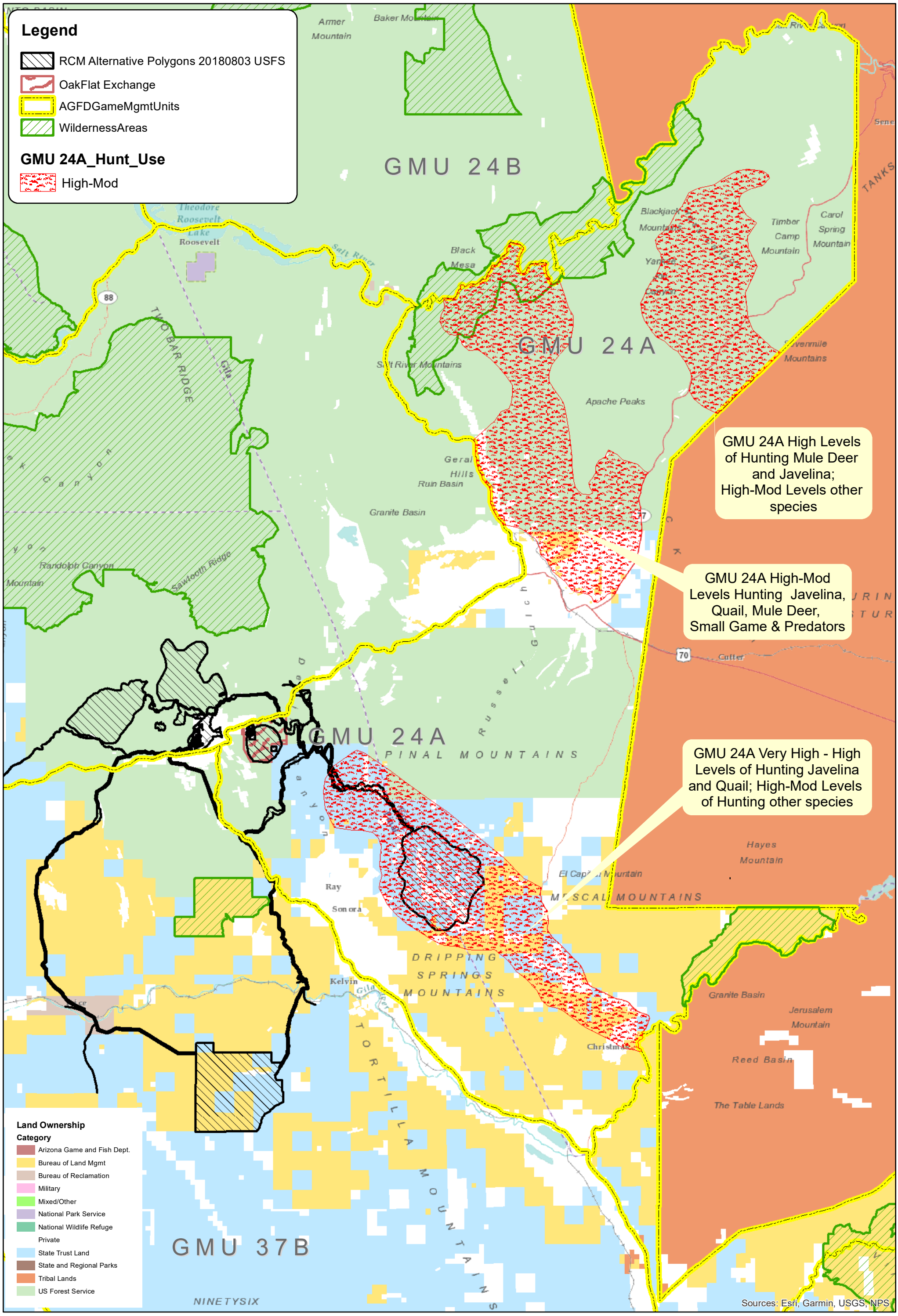
GMU 24A High-Mod Density Mule Deer

Sources: Esri, Garmin, USGS, NPS

MAP 5 Game Management Unit 24A - Overview of Hunting Areas

1:275,000

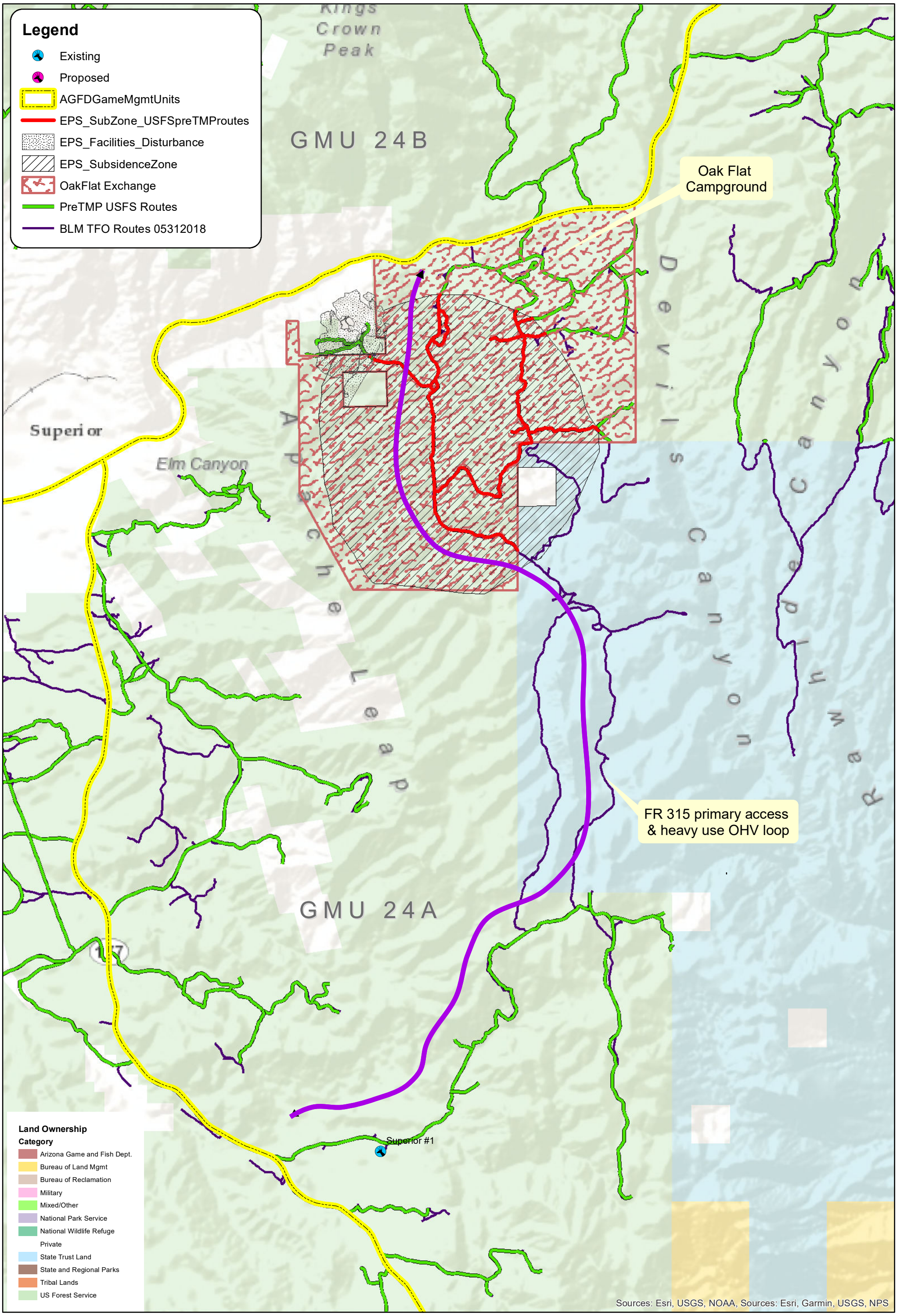
Origin: Arizona Game & Fish Department
Region VI Habitat, Evaluation and Lands Program
Date: October 2018
Report: Report on Species of Economic Importance, Wildlife Related Recreation and Public Access within the Resolution Copper Mine Project Area (AGFD 2018)



MAP 6 Game Management Unit 24A - Overview of Recreation Access within East Plant Site and Zone of Subsidence

1:34,600

Origin: Arizona Game & Fish Department
Region VI Habitat, Evaluation and Lands Program
Date: October 2018
Report: Report on Species of Economic Importance, Wildlife Related Recreation and Public Access within the Resolution Copper Mine Project Area (AGFD 2018)



MAP 7 Game Management Unit 24A - Overview of Recreation Access within the Skunk Camp TSF Alternative 6

1:100,000

Origin: Arizona Game & Fish Department
Region VI Habitat, Evaluation and Lands Program
Date: October 2018
Report: Report on Species of Economic Importance, Wildlife Related Recreation and Public Access within the Resolution Copper Mine Project Area (AGFD 2018)

GMU 24B

GMU 37B

GMU 24A

Silver King

Superior #2

Superior #1

60

177

77

Dripping Springs Road - Primary Access Route

Legend

Hunt_Use
- High

Recreation Access
- BLM-TFO & USFS routes within Skunk Camp Alt6 RCM Facilities
- PreTMP USFS Routes GMU24b
- BLM TFO Routes 05312018

RCM Project Alternatives 20180803 USFS
- RCM Project Facilities
- OakFlat Exchange

Other Boundaries
- Wilderness Areas
- AGFDGameMgmtUnits

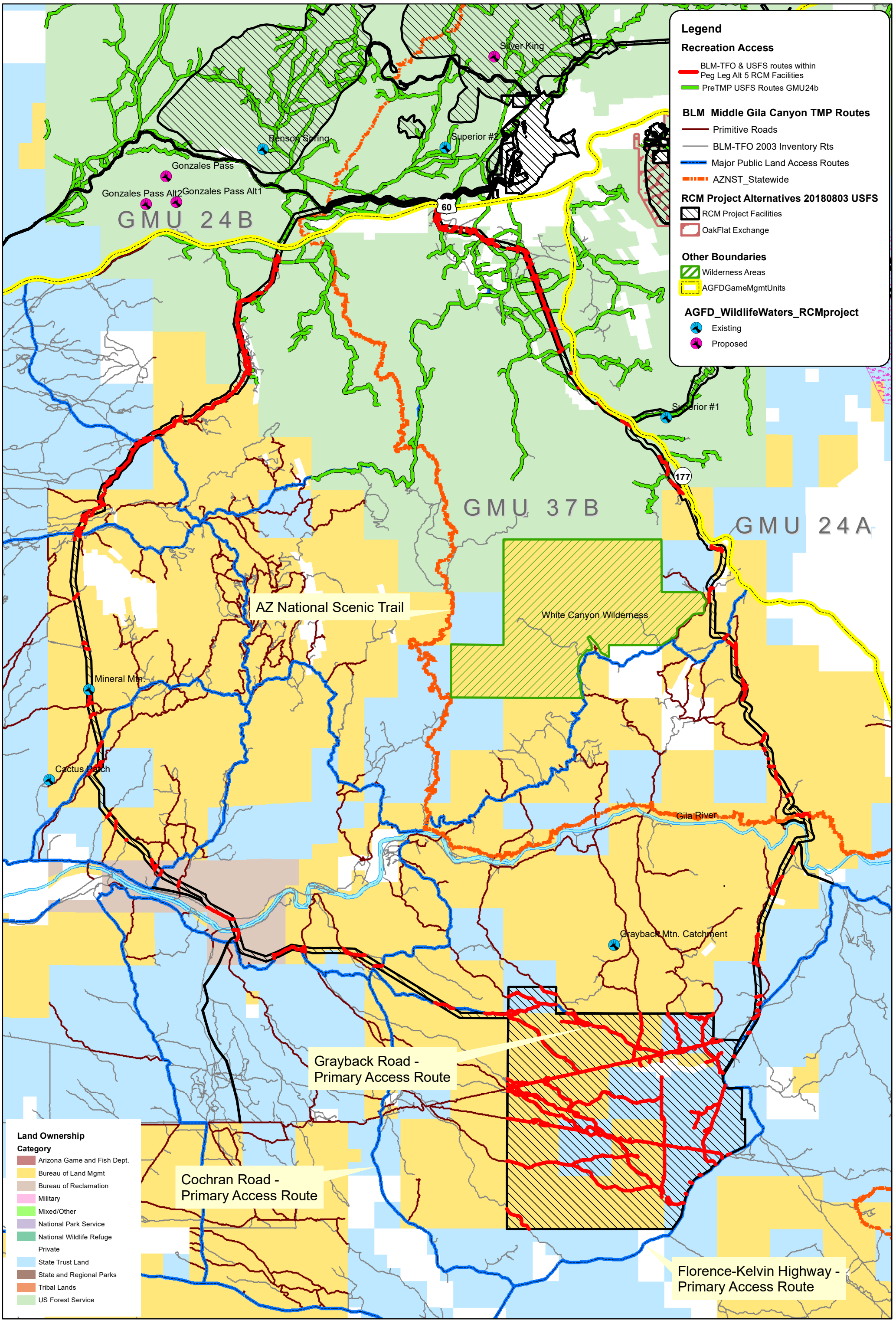
AGFD_WildlifeWaters_RCMproject
- Existing
- Proposed

Land Ownership
Category
- Arizona Game and Fish Dept.
- Bureau of Land Mgmt
- Bureau of Reclamation
- Military
- Mixed/Other
- National Park Service
- National Wildlife Refuge
- Private
- State Trust Land
- State and Regional Parks
- Tribal Lands
- US Forest Service

MAP 8 Game Management Unit 37B - Overview of Recreation Access within the Peg LegTSF Alternative 5

1:100,000

Origin: Arizona Game & Fish Department
Region VI Habitat, Evaluation and Lands Program
Date: October 2018
Report: Report on Species of Economic Importance, Wildlife Related Recreation and Public Access within the Resolution Copper Mine Project Area (AGFD 2018)



Appendix 6 Table – Summary of Recreation and Access Analysis for Game Management Units

Game Management Unit 24A Land & Access Summary				
Category	**Description**	**Acres**	**% of GMU Acres**	**Miles**
GMU 24A	GMU24A	519,390.25		
Private	Total acres in GMU 24A	68,871.84	13.26%	
State Trust	Total acres in GMU 24A	59,639.58	11.48%	
Bureau of Land Management (BLM)	Total acres in GMU 24A	85,420.96	16.45%	
National Forest (USFS)	Tonto NF - total acres in GMU 24A	304,632.21	58.65%	
Indian Reservation	White Mtn. Apache Indian Reservation- total acres in GMU 24B	826.03	0.16%	
Wilderness	Salt River Canyon Wilderness & Needles Eye Wilderness	30,302.54	5.834%	
Roadless Areas	Roadless Areas	4,922.95	0.948%	
USFS Lands Open to Motorized Travel	Tonto NF Lands excluding Wilderness & Roadless areas in GMU 24A	269,406.72	51.870%	
All Lands Potentially Open to Motorized Travel	USFS, BLM, Private, State Trust and Reservation lands potentially open to motorized travel	484,164.76	93.218%	
Resolution Mine GPO[1] Areas	Total acres within East Plant Site footprint in GMU 24A - USFS 87.5%, State Trust 8.3% , Private 4.2% (pre-land exchange)	1,746.67	0.336%	
Resolution Mine GPO[1] Areas	Total acres within East Plant Site footprint (EPS plus zone of continuous subsidence 3 rings) on USFS-TNF lands (pre-land exchange)	1,528.21	0.294%	
Resolution Mine GPO[1] Areas	Oak Flat USFS lands to be exchanged to Resolution Copper Mine holdings	2,407.03	0.893%	
Resolution Mine GPO[1] Areas	Total acres within Alt 6 Skunk Camp TSF fence line on State-Private-BLM lands	10,071.64	1.939%	
National Forest motorized routes	Total miles of motorized routes on USFS-TNF lands (excluding Wilderness Areas) within GMU 24A			752.44
National Forest dispersed camping	Total acres of motorized dispersed camping along TNF routes within GMU 24A	41,070.48	7.907%	

	East Plant Site & Subsidence Zone			
National Forest motorized routes	Total miles of motorized routes within the East Plant Site & Zone of Subsidence footprint			6.18
National Forest dispersed camping	Total acres of motorized dispersed camping within 300 ft. centerline of TNF routes within East Plant Site & Zone of Subsidence footprint	420.94	0.081%	
	Alt 6 Skunk Camp TSF			
Non-Forest motorized routes	Total miles of non-USFS motorized routes within Skunk Camp TSF Alt 6 fence line on BLM, State Trust or Private lands			32.07
Non-Forest dispersed camping	Alt 6 Skunk Camp TSF fence line - Total acres of motorized dispersed camping along BLM, Private and State Trust land routes within 100 ft. of road centerline (BLM Tucson Field Office route inventory 2003)	860.75	0.166%	
	Alt 6 Skunk Camp Tailings Corridor North			
National Forest motorized routes	Total miles of USFS motorized routes within Alt 6 Skunk Camp North Tailings Corridor footprint			4.21
Non-Forest motorized routes	Total miles of non-USFS motorized routes on BLM, State Trust or Private lands within Alt 6 Skunk Camp North Tailings Corridor footprint			13.64
National Forest dispersed camping	Total acres of motorized dispersed camping along USFS motorized routes within 300 ft. of road centerline within Alt 6 Skunk Camp Tailings Corridor North footprint	466.35	0.090%	
Non-Forest dispersed camping	Total acres of motorized dispersed camping along BLM, Private and State Trust land routes within 100 ft. of road centerline (BLM Tucson Field Office route inventory 2003) within Alt 6 Skunk Camp Tailings Corridor North footprint	357.10	0.069%	
	Alt 6 Skunk Camp Tailings Corridor South			
National Forest motorized routes	Total miles of USFS motorized routes within Alt 6 Skunk Camp South Tailings Corridor footprint			9.87
Non-Forest motorized routes	Total miles of non-USFS motorized routes within on BLM, State Trust or Private lands within Alt 6 Skunk Camp South Tailings Corridor footprint			16.03
National Forest dispersed camping	Total acres of motorized dispersed camping along USFS motorized routes within 300 ft. of road centerline within Alt 6 Skunk Camp Tailings Corridor South footprint	999.38	0.192%	

Non-Forest dispersed camping	Total acres of motorized dispersed camping along BLM and State Trust land routes within 100 ft. of road centerline (BLM Tucson Field Office route inventory 2003) within Alt 6 Skunk Camp Tailings Corridor South footprint	414.81	0.080%	

Game Management Unit 24B Land & Access Summary				
Land Category	**Description**	**Acres in GMU**	**% of GMU Acres**	**Miles**
GMU 24B	Total acres	497,959.83		
Bureau of Land Management (BLM)	Total acres in GMU 24B	4,303.38	0.864%	
Private	Total acres in GMU 24B	26,663.30	5.355%	
Indian Reservation	Salt River Indian Reservation-total acres in GMU 24B	15.60	0.003%	
State Trust	Total acres in GMU 24B	37,671.94	7.565%	
National Forest (USFS)	Tonto NF - total acres in GMU 24B	428,198.46	85.991%	
National Parks	Tonto National Monument - total acres in GMU 24B	1,107.14	0.222%	
Wilderness	Superstition Wilderness	160,155.24	32.162%	
Roadless Areas	Roadless Areas	30,344.02	6.094%	
USFS Lands Open to Motorized Travel	Tonto NF Lands excluding Wilderness & Roadless areas in GMU 24B	237,699.46	47.735%	
National Forest motorized routes	Total miles of motorized routes (excluding Wilderness Areas) within GMU 24B			990.74
National Forest dispersed camping	Total acres of motorized dispersed camping along TNF routes within GMU 24B	35982.14	7.226%	
	Alt 2 or 3 Near West			
National Forest motorized routes	Total miles of motorized routes within the Alt 2-3 Near West TSF fence line			22.46
National Forest motorized routes	Total miles of motorized routes within the Alt 2-3 Near West Tailings Corridor footprint			0.58
National Forest motorized routes	Total miles of motorized routes within the Alt2-3 MARRCO footprint			0.25
National Forest motorized routes	Total miles of motorized routes within the Alt2-3 Barrow footprint			0.20
National Forest dispersed camping	Total acres of motorized dispersed camping within 300 ft. centerline of TNF routes within Alt 2 or 3 Near West TSF fence line	1509.87	0.303%	
National Forest dispersed camping	Total acres of motorized dispersed camping within 300 ft. centerline of TNF routes within Alt 2 or 3 Near West Tailings Corridor footprints	94.51	0.019%	

National Forest dispersed camping	Total acres of motorized dispersed camping within 300 ft. centerline of TNF routes within Alt 2 or 3 MARRCO footprint	112.00	0.022%	
National Forest dispersed camping	Total acres of motorized dispersed camping within 300 ft. centerline of TNF routes within Alt 2 or 3 Barrow footprint	21.00	0.488%	
	Alt 4 Silver King			
National Forest motorized routes	Total miles of motorized routes within the Alt 4 Silver King TSF fence line			19.70
National Forest motorized routes	Total miles of motorized routes within the Alt 4 Barrow and West Plant footprints			0.41
National Forest dispersed camping	Total acres of motorized dispersed camping within 300 ft. centerline of TNF routes within Alt 4 Silver King TSF fence line	1379.00	0.277%	
National Forest dispersed camping	Total acres of motorized dispersed camping within 300 ft. centerline of TNF routes within Alt 4 Silver King Barrow and West Plant footprints	55.00	0.206%	

Game Management Unit 37B Land & Access Summary				
Category	**Description**	**Acres**[2]	**% of GMU Acres**	**Miles**
GMU 37B	Total acres	755,576.64		
Bureau of Land Management (BLM)	BLM - total acres in GMU 37B	127,639.69	16.89%	
Bureau of Reclamation (BOR)	BOR	26,587.47	3.52%	
Private	Private Land	116,951.83	15.48%	
Indian Reservation	Salt River Indian Reservation	404.83	0.05%	
State Trust	State Trust Land	453,393.83	60.01%	
National Forest (USFS)	Tonto NF - total acres in GMU 37B	26,722.52	3.54%	
Military	Florence Military Reservation	3,876.35	0.51%	
Wilderness	White Canyon Wilderness	5,885.65	0.779%	
Roadless Areas	None		N/A	
Resolution Mine GPO[1] Areas	Total acres within Alt 5 Peg Leg TSF footprint	10,781.45	1.427%	
Non-Forest motorized routes	Total miles of public access motorized routes on BLM and State Trust lands within the Alt 5 Peg Leg TSF fence line - BLM Tucson Field Office route inventory 2003			45.18

Non-Forest dispersed camping	Total acres of Motorized Dispersed Camping within Alt 5 Peg Leg TSF fence line along BLM and State Trust land routes within 100 ft. of road centerline - BLM Tucson Field Office route inventory 2003	1009	0.134%	
	Alt 5 Peg Leg Tailings Corridor West			
Non-Forest motorized routes	Total miles of public access motorized routes on BLM and State Trust lands within the Alt 5 Peg Leg Tailings Corridor West footprint - BLM Tucson Field Office route inventory 2003			18.97
Non-Forest dispersed camping	Total acres of Motorized Dispersed Camping within Alt 5 Peg Leg Tailings Corridor West footprint along BLM and State Trust land routes within 100 ft. of road centerline - BLM Tucson Field Office route inventory 2003	448	0.383%	
	Alt 5 Peg Leg Tailings Corridor East			
Non-Forest motorized routes	Total miles of public access motorized routes on BLM and State Trust lands within the Alt 5 Peg Leg Tailings Corridor East footprint - BLM Tucson Field Office route inventory 2003			14
Non-Forest dispersed camping	Total acres of Motorized Dispersed Camping within Alt 5 Peg Leg Tailings Corridor East footprint along BLM and State Trust land routes within 100 ft. of road centerline - BLM Tucson Field Office route inventory 2003	329	8.487%	

Resolution Copper Mine Facilities Summary				
Category	**Description**	**Acres[1]**	**AGFD Acres[3]**	
MARRCO	23.26 acres Private; 64.51 acres USFS; 81.30 acres State Trust lands	169.07	N/A	
Filter Plant	100% Private	552.50	N/A	
West Plant Site (WPS)	100% Private	940.08	N/A	
Barrow	100% USFS lands	90.21	90.21	
East Plant Site & Zone of Subsidence[2]	Pre-exchange: 1528.21 acres USFS; 144.82 acres State Trust; 73.64 acres Private lands	1,746.67	1667.64	
Alt 2 or 3 Near West TSF Fence line	4,933.23 acres USFS; 53.33 acres Private	4,908.66	4,907.89	
Alt 2 or 3 Tailings Corridor	77.54 acres USFS; 0.36 acres Private	77.90	79.63	
Alt 4 Silver King TSF Fence line	5616.08 acres USFS; 44.50 acres Private	5,660.58	5,617.10	
Alt 4 Silver King Tailings Corridor	18.04 acres USFS; 12.50 acres Private	30.54	19.99	

Alt 5 Peg Leg TSF Fence line	145.33 acres Private; 4151.78 acres State Trust; 6484.34 acres BLM lands	10,781.45	10,781.46	
Alt 5 Peg Leg Tailings Corridor "West"	501.26 acres USFS; 521.71 acres BLM; 557.32 acres BOR; 115.14 acres State Trust; 26.18 acres Private	1,721.61	1,677.07	
Alt 5 Peg Leg Tailings Corridor "East"	518.23 acres USFS; 460.66 acres BLM; 165.26 acres BOR; 157.52 acres State Trust; 51.31 acres Private	1,352.98	1,314.31	
Alt 6 Skunk Camp TSF Fence line	7,713.87 acres State Trust; 2,227.51 acres Private; 130.26 acres BLM lands	10,071.64	10,071.66	
Alt 6 Skunk Camp Tailings Corridor "North"	539.91 acres USFS; 645.26 acres State Trust; 279.85 acres Private	1,465.02	1,411.17	
Alt 6 Skunk Camp Tailings Corridor "South"	756.52 acres USFS; 880.72 acres State Trust; 306.50 acres Private	1,943.74	1,878.54	

[1] Acreages are based on Resolution Copper Project and Land Exchange Environmental Impact Statement; USFS Process Memorandum to File "Consistent Acres Memo for EIS Analysis (D. Morey, Aug. 7, 2018)

[2] EPS, not including area within subsidence rings (61.06 ac) plus zone of continuous subsidence not including EPS (1685.61ac)

[3]Acreages calculated by the Department using GIS spatial data for all RCM facilities and TSF alternatives provided by the USFS/SWCA (8-8-18; D. Morey); calculations do not include already disturbed lands or private lands owned by RCM.

Victoria Boyne

From: ResolutionProjectRecord
Subject: FW: Socioeconomic Analysis for Resolution Copper Mine: AGFD Final Report on Species of Economic Importance, Wildlife Related Recreation and Access
Attachments: SERI-WildlifeRec-Access_AGFDv20181031_FinalRptBinder.pdf

From: Dana Warnecke <dwarnecke@azgfd.gov>
Sent: Tuesday, November 13, 2018 11:58 AM
To: mcrasmussen@fs.fed.us; Chris Garrett <cgarrett@swca.com>; Eleanor Gladding <Egladding@swca.com>; Donna Morey <dmorey@swca.com>; Doug Jeavons <djeavons@bbcresearch.com>; Michael Verdone <mverdone@bbcresearch.com>
Cc: Clayton Crowder <CCrowder@azgfd.gov>; Jay Cook <JCook@azgfd.gov>; Kelly Wolff-Krauter <kwolff-krauter@azgfd.gov>
Subject: Socioeconomic Analysis for Resolution Copper Mine: AGFD Final Report on Species of Economic Importance, Wildlife Related Recreation and Access

Dear Mary and USFS Consultant Teams,

Attached you will find the Department's final report, "Species of Economic Importance, Wildlife Related Recreation and Public Access within the Resolution Copper Mine Project Area". This is the final revision of a draft report we provide last June, prior to the development of the final range of alternatives for the Resolution Copper Mine (RCM) project. We are submitting this report to you for consideration and use in the RCM Environmental Impact Statement (EIS) and related socioeconomic analysis. Wildlife related recreation provides a significant benefit to Arizona's economy and we hope that our report will be helpful in evaluating local impacts to that economy and recreation opportunity from the RCM project.

If you have any questions please feel free to contact me.

Sincerely, Dana Warnecke

DANA WARNECKE | HABITAT, EVALUATION & LANDS SPECIALIST

ARIZONA GAME AND FISH DEPARTMENT

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